



March to Wisbech Transport Corridor

Options Assessment Report

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Executive Summary

The Cambridgeshire and Peterborough Combined Authority (CPCA) objective for this project is to achieve sustainable growth by addressing inadequate transport connectivity between Cambridge and north Cambridgeshire. This Options Assessment Report (OAR) forms part of the business case development process for the March to Wisbech Transport Corridor. It sets out the process by which a preferred option has been identified for further development during the project's Full Business Case phase.

The OAR forms part of the wider March to Wisbech Transport Corridor Study which has been commissioned by Cambridgeshire County Council on behalf of CPCA. The study builds upon previous work commissioned by Cambridgeshire authorities and Network Rail from 2015-2018. The OAR has been developed by Mott MacDonald.

Context

The combined authority seeks to double the size of the economy of Cambridgeshire and Peterborough over 25 years while ensuring all communities share in this increased prosperity. By better integrating north Cambridgeshire into the Cambridge labour market, the public transport options assessed in this study will help to support sustainable and inclusive growth while also alleviating stress on Cambridge's overheated housing market.

The economies and the population of Cambridge and north Cambridgeshire are distinctive and have limited interaction. Challenges in travelling between the two areas appears to be a significant factor behind this, with north/south corridors in the area being generally of limited capacity, low quality, and often indirect routing. Wisbech, in particular, suffers from poor connectivity, as one of the largest towns in the country without a dedicated rail link. As a result, travel by private vehicle from Wisbech to Cambridge takes over an hour (despite a distance of under 35 miles) and public transport between the two areas is not possible without interchange.

These transport challenges are a significant factor in preventing residents of Wisbech and north Cambridgeshire commuting to the employment opportunities in and around Cambridge and may also hinder inward investment into north Cambridgeshire.

Improved access to Wisbech also support the combined authority and Fenland District Council's ambitions to substantially grow the town via a major dedicated urban extension, known as Wisbech Garden Town. This planned development comprises 12,000 new homes in the town, with further growth proposed to double its size over a 40-year period

The CPCA's plans to provide a dedicated public-transport link between Wisbech and Cambridge are one aspect of its wider strategy for the region. In addition to the north-south public transport link between Wisbech and Cambridge assessed in this report, the CPCA also has plans to improve east-west connectivity to Wisbech via dualling the A47 corridor, along with a package of local measures to address congestion within Wisbech.

Identifying potential options

In line with Department for Transport (DfT) Transport Analysis Guidance (TAG), the OAR has considered a wide variety of options to identify which best address the underlying challenges in the study area and the CPCA's objectives for the project. Options were structured around three main variables:

- **Mode** – conventional National Rail options; a “hybrid” tram-train mode, able to run on both the dedicated extant rail corridor between Wisbech and March and on-street within Wisbech; and, in line with TAG, a lower cost alternative of a guided busway.
- **Service Pattern** – between one and three services per hour from Wisbech, with destinations considered that include a “shuttle” service to March only, and “through” services to Cambridge and Peterborough.
- **Station location** – a variety of locations for a new station or stations across Wisbech, including a parkway option, options of various degrees of proximity to the existing town centre, and options within the planned garden town urban extension.

Selecting the preferred option

Following identification of this “long list”, Mott MacDonald undertook an initial sifting process based on a qualitative multicriteria assessment of their fit to the project’s objectives. A short-list of three core options, with a number of sensitivities around these core options, was taken forward for more detailed assessment. A description of these options and a summary of findings from this appraisal are summarised in the table below.

March to Wisbech Transport Corridor: Core Options

ID	Mode	Service	Station Location	Capital Cost Estimate (£ Q2 2019)	Benefit Cost Ratio
DS1	Tram-Train	Wisbech-Ely-Cambridge 2tph	Wisbech Town	152.5	2.5 – 3.0
DS2	National Rail	Wisbech-Ely-Cambridge 2tph	Wisbech Town	200.4	2.0 – 2.5
DS3 (LC)	Guided Busway	Wisbech-March 3bph	Wisbech Town	75.1	0.5 – 1.0

Source: Mott MacDonald analysis

Mott MacDonald prepared a capital cost estimate for each of these options to a GRIP 2 level of detail and also undertook an appraisal of their core (‘established’) monetised impacts based on passenger demand modelling. To be conservative, and consistent with TAG, demand modelling of the shortlisted options excluded growth associated with Wisbech Garden Town.

The key finding from this analysis was the importance of offering direct passenger transport services between Wisbech and Cambridge. This scheme is closely interdependent with the outcome of the proposed Ely North Junction works and the ability to operate the desired frequency between Wisbech and Cambridge. This OAR shows that even in a scenario where direct Wisbech to Cambridge services do not become possible for a decade after the March to Wisbech scheme opening, the project retains a positive benefit cost ratio of 1.5-2.0.

Related to this, the analysis showed that the location of the new station in Wisbech should be as close to the established town centre as possible to maximise the service’s potential catchment area. One other finding was that tram-train-based option could potentially be more cost effective than a similar National Rail option as it may be able to be built to a lower design standard, however, the national rail option has a more certain delivery path.

These findings mean that only rail-based services (DS1 - tram-train and DS2 - National Rail) are viable for delivering the desired outcomes and impacts for the March to Wisbech corridor.

Finally, Mott MacDonald factored an assessment of the deliverability of the remaining rail-based options to ensure a comprehensive view was taken of business case considerations in selecting the project’s preferred option, including project affordability, commercial risk and the combined

authority's delivery capability. This analysis found that, while a tram-train solution was estimated to be lower cost than a National Rail solution, it was judged that a National Rail solution offers a clearer structure for procurement and delivery than a tram-train solution, helping to reduce project construction and service delivery risks. It was also judged that a National Rail solution, whether delivered by Network Rail or a third party, presents lower interface risk than the tram-train option because a National Rail solution will be built to Network Rail standards.

Based on this analysis, Mott MacDonald recommend in the OAR that a National Rail option based on scenario DS2 be taken forward for further scheme development, with a lighter touch focus on the tram-train alternative.

Progressing the March to Wisbech transport corridor full business case

The OAR forms the first part of developing the March to Wisbech Transport Corridor full business case. Mott MacDonald is preparing designs and cost estimates of the preferred option to a broadly GRIP 3 level of detail, supported by wider technical work including refined passenger demand analysis (incorporating a sensitivity that includes Wisbech Garden Town levels of population growth in the study area), an operational planning study and a project delivery strategy (including assessment of third-party investment options for the scheme).

The full business case is planned for completion in Q2 2020.

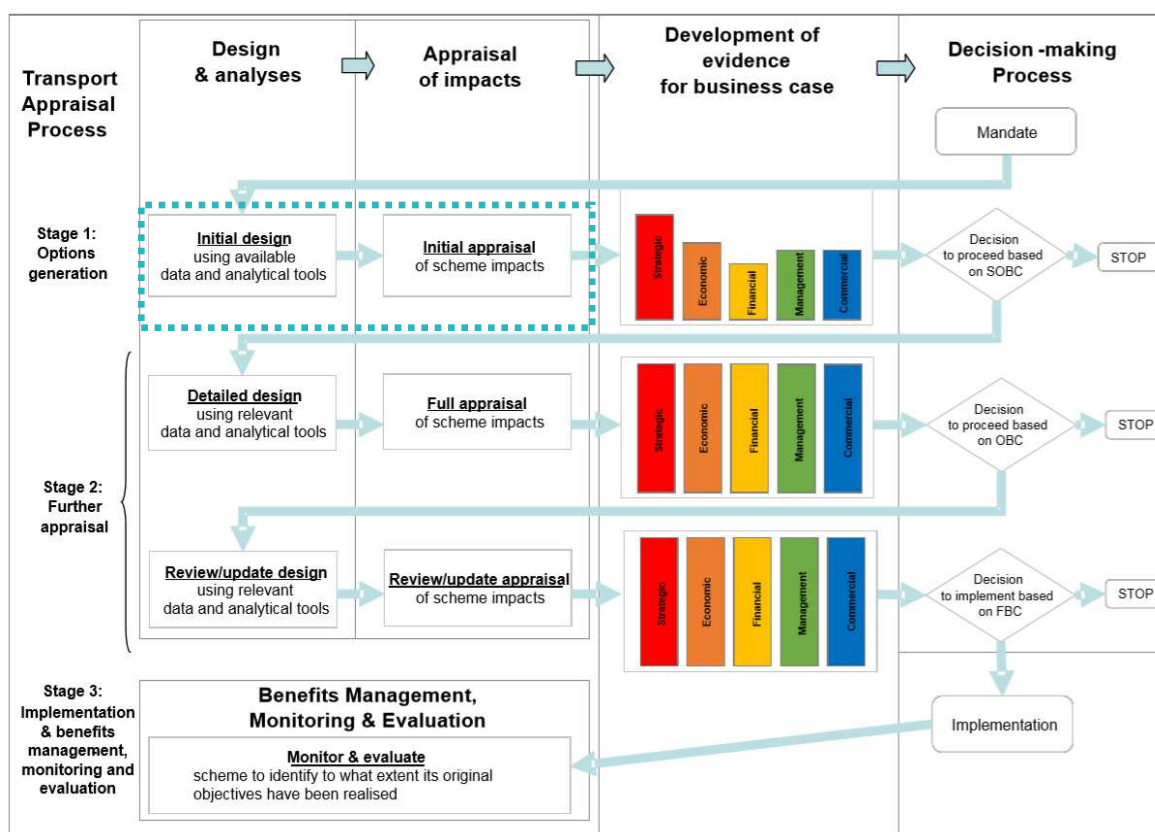
1 Introduction

The purpose of this Options Assessment Report (OAR) is to document the processes undertaken to develop a 'long list' of potential solutions to connectivity issues to, from and between March and Wisbech, and how this has been evolved into a 'short list' for the Full Business Case (FBC). This OAR will be appended to the FBC, and summarised therein, including any updates to reflect information which emerges between the completion of the OAR and FBC.

1.1 Option Development Process

The OAR documents the steps highlighted in Stage 1 of Figure 1. For the March to Wisbech Corridor Study the early Stage 1 and 2 steps have been refreshed for the FBC, reflecting the significant lag between the completion of the Strategic Outline Business Case (SOBC) and Outline Business Case (OBC) in 2015 and the present day. This lag has necessitated the SOBC and OBC 'long list' to be revisited alongside the scheme objectives, and pre-existing economic assessments. This OAR, although ultimately part of the final FBC, has therefore advanced the option development to a comparable stage as would be expected at the end of the OBC, i.e. a preferred option including economic assessment of that and alternatives, proposed sensitivity testing around this to reflect key uncertainties, and a low cost alternative.

Figure 1: Transport Appraisal Process



Source: Department for Transport, TAG for the Technical Project Manager

Further FBC stages will evolve the appraisal of the preferred option(s), building on the complementary design workstreams¹. This will lead to changes in the economic assessment as detailed in this OAR.

1.2 Sifting Workshops

The option generating, sifting and appraisal has been led by Mott MacDonald. This included an initial workshop on 8th April 2019. The outcomes of this workshop were then reviewed as part of a client workshop, with representatives of the Cambridgeshire and Peterborough Combined Authority (CPCA) and Cambridgeshire County Council (CCC), on 29th April 2019.

Following further analysis and scheme development, a series of further workshops were held on:

- 8th July 2019;
- 16th July 2019; and
- 22nd July 2019.

These workshops focussed on mode selection, and in continuously updating levels of certainty around key assumptions and risks.

1.3 OAR structure

Subsequent sections of this OAR:

- Summarise the need for intervention, i.e. the issues and challenges the option(s) aim to address²;
- Define the scenarios to be used in option appraisal, including the Do Minimum (DM) against which Do Something (DS) options will be judged;
- State the intended outcomes and anticipated impacts for the preferred option and the accompanying objectives which have been used to select it, including the geographic area which could be affected;
- Stakeholder strategy, including consultation;
- Document the initial options generation, sifting and assessment process;
- Provide additional evidence, particularly regarding economic assessment, of the shortlisted options being considered for further development through the FBC and complementary design stages; and
- A synopsis of processes and findings, highlighting the options which are advanced for further consideration as part of the wider business case and design stages. Key assumptions and risks are provided to help inform subsequent appraisal stages and FBC development.

¹ These are the Governance for Railway Investment Projects (GRIP) stages for the National Rail alternative(s).

² This is a summary of the Strategic Case refresh (the first section of the FBC) which has been developed in parallel to this OAR.

2 The need for intervention

This section provides a summary of the evidence gathered, and considered, as part of the Strategic Case of the FBC. It provides context for the challenges and issues the subsequent options are seeking to address, and the rationale behind subsequent objectives and option generation.

Appendices A to C provide supporting content for this section.

2.1 Socio-economic context

2.1.1 Cambridgeshire – disconnects between the north and south

Wisbech typifies the disconnect in the economic performance of north and south Cambridgeshire. With each displaying very different economic characteristics, there is currently limited interaction between the economies of north and south Cambridgeshire.

North Cambridgeshire's economy, and particularly Fenland District (in which both March and Wisbech are located) underperforms on key economic indicators compared to CPCA and national averages (see analysis in Appendix A). To consider, for example, wages, Fenland's workplace median annual pay is £21,900, c.£7,000 below the UK average. Greater Cambridge, to the south of the CPCA, in contrast, has grown into a highly successful city region where economic success, high quality of life and quality of place are inextricably linked, and boasting a high productivity and high levels of private sector jobs growth, all supporting high wages. Cambridge's median workplace pay is £33,199, more than £3,000 higher than the UK average, implying there is a significant opportunity for growth in Fenland³. However, it's worth noting that Fenland has a stronger resident wage than Peterborough, by just over £2,500.

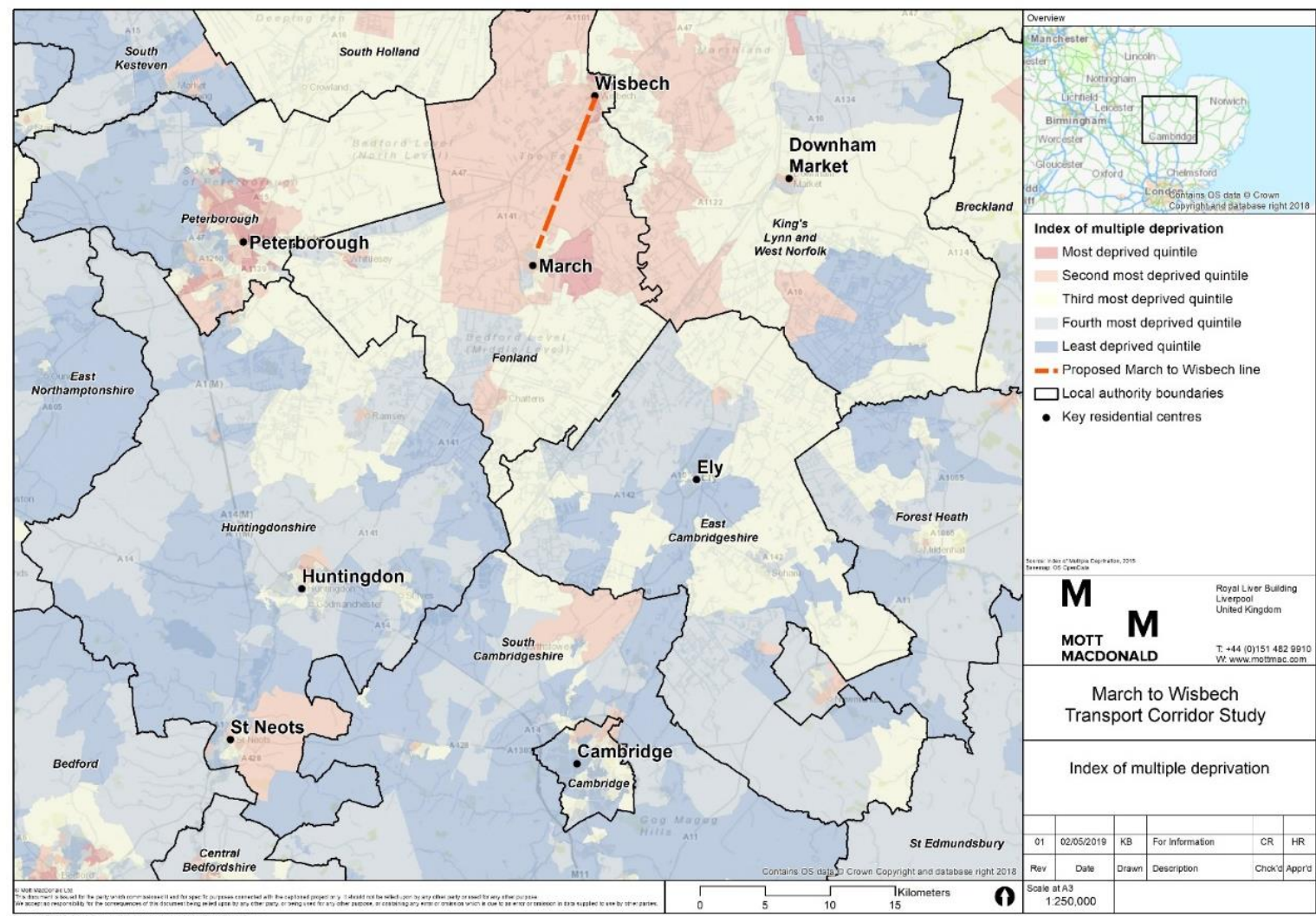
Cambridge's success and high levels of productivity are driven by a thriving hi-tech and biotech industry, which has developed since the 1960s and is known as the "Cambridge Phenomenon". Today Cambridge is one of the UK's fastest-growing and most productive cities and looks likely to continue to be a key hotspot for regional and national job creation should supply side constraints, such as labour market accessibility, be addressed.

The disconnect in the north and south of Cambridgeshire economies is also mirrored in socio-demographic measures and most clearly in levels of deprivation. Figure 2 shows a clear transition in levels of deprivation experienced across the county. Generally, the most deprived areas are located in pockets in the north of the county as well as in and around Peterborough, with lower levels of deprivation more widespread across the south and west of Cambridgeshire. Fenland, in particular, has higher levels of deprivation and has 12 Lower-layer Super Output Areas (LSOAs)⁴ in the 20% most deprived nationally. This compares to just two LSOAs in Cambridge City and two in Huntingdonshire in this category. Within Fenland there are severe pockets of deprivation in and around both Wisbech and March.

³ Annual Survey of Hours and Earnings, ONS, 2018

⁴ Out of a total of 32,844 LSOAs.

Figure 2: Map of Index of Multiple Deprivation (IMD), 2015



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

Cambridge and Peterborough are the primary employment centres for the CPCA area, with much smaller pockets of medium-to-high density employment also evident in Huntingdon, St Neots, Cambourne, St Ives, Waterbeach, Ely, March and Wisbech. Analysis of travel-to-work journeys for Wisbech, central Cambridge and central Peterborough has identified their relatively polycentric labour markets, with fewer journeys from Wisbech to both Cambridge and Peterborough than would be expected given their spatial proximity and their role as the CPCA area's main employment and urban centres.

Wisbech remains one of the largest towns in the UK without a rail connection, with an estimated population of 32,000 in the town itself from the 2011 Census, and a wider catchment, which views Wisbech as the main local centre, estimated at approximately 50,000 people⁵. Lack of intra-regional connectivity, and alternatives to the private car, is likely to be a contributory factor in a number of the observed outcomes for Wisbech and its surrounding area, as it will:

- Constrain access to employment, services and opportunities, particularly existing higher value jobs which are currently too distant to render them attractive alternatives;
- Diminish its attractiveness for inward investment;
- Stymie markets for businesses already located in the area; and
- Promote a high degree of car dependency, with associated adverse externalities from car use, in an area where highway supply is also constrained and subject to a lack of resilience.

2.1.2 Socio-economic context – implications for the March to Wisbech Transport Corridor

- The continued economic success of Greater Cambridge and the “Cambridge phenomenon” presents a growth opportunity for Fenland and other areas in north Cambridgeshire to share in its success, however this is dependent on increased interaction between the north and south areas of county – both commuting and in attracting businesses with synergies which can help provide local higher value employment. Increased interaction may also help to ease some of Greater Cambridge's housing and infrastructure burden.
- We note that The Cambridgeshire and Peterborough Independent Economic Review (CPIER), published in Autumn 2018, concluded that future employment growth in the CPCA area could be much higher than the levels set out in Local Plans.
- Investment in infrastructure to better connect areas in north Cambridgeshire, such as enhancements to the March to Wisbech transport corridor, presents an opportunity to overcome current trends and extend Cambridge's core commuter belt further into north Cambridgeshire.

2.2 Connectivity synopsis

2.2.1 Local connectivity

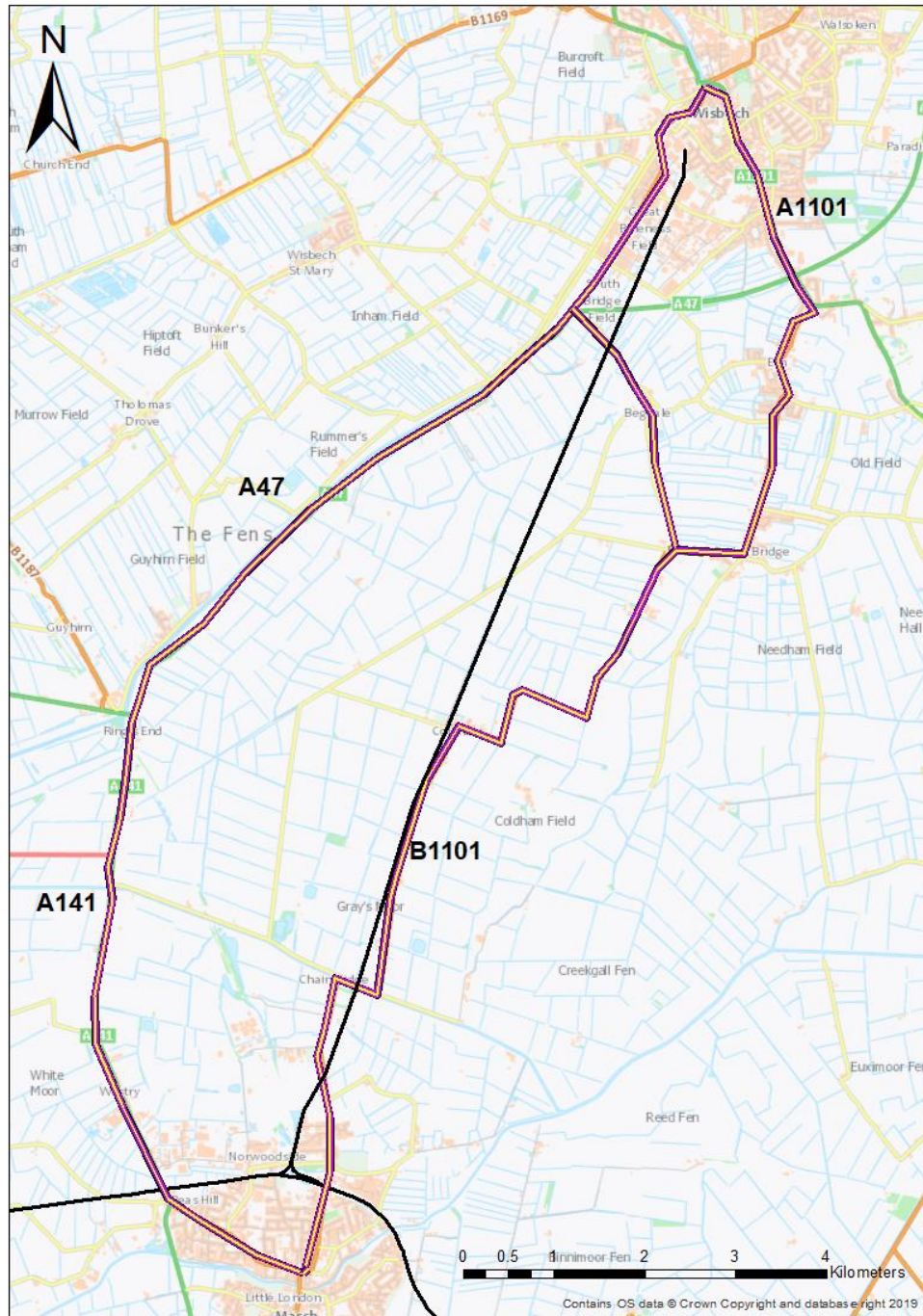
Highway Network

March and Wisbech are approximately 8.5 miles (14km) apart. Multiple highway options exist between the two, shown in Figure 3 below, but these are less direct than the former rail alignment. Peak hour travel times from centre to centre are estimated at 20 to 35 minutes (average based on typical traffic conditions from Google Maps journey planning facility), implying an average speed of approximately 30km/h. By comparison, a segregated public

⁵ Usual resident population, Census 2011, ONS

transport alignment offers the opportunity for station-to-station journey times of 10 to 15 minutes⁶ based on the standard segregated operational speeds for heavy or light rail operation.

Figure 3: March to Wisbech Highway Options



Source: Mott MacDonald

⁶ The timing will be dependent on the location of the station(s) at the Wisbech end, alignment, mode, and the treatment of junctions with the local highway network.

Local buses

Service buses 46 and 56 connect March and Wisbech. Other local bus provision is discussed in Appendix B.

Table 1: March-Wisbech Bus Services

Number	Route	Operator	Approximate Mon-Fri Weekday Headway (minutes)	Journey Time (minutes)
46	Wisbech - Wisbech St Mary - Guyhirn - Murrow - March	Stagecoach in Cambridge	90	34
56	Wisbech - Elm - Coldham - March	Stagecoach in Peterborough	60	35

Source: Cambridgeshire County Council

2.2.2 Regional connectivity

Highway Connectivity

The regional highway network serving Wisbech is dominated by the A47, a Highways England maintained road connecting Norwich with Peterborough and the East Midlands. North-south connections are provided by the A141, to March, Chatteris and Huntingdon, and the A10 to Ely and Cambridge, accessed from Wisbech via the A1122. Table 2 summarises average peak hour travel times, distances and speeds from Wisbech to a set of major attractors within the CPCA area.

Table 2: Wisbech Highway Journey Time Analysis (departing 08:00)

Destination	Distance (km)	Time (minutes)	Speed (kilometres per hour)
Addenbrooke's	67.6	85	47.7
Cambridge	63.3	82	46.3
Cambridge Science Park	59.6	67	53.4
Chatteris	29.6	34	52.2
Downham Market	22.0	30	44.0
Ely	37.4	43	52.2
Huntingdon	52.0	60	52.0
March	16.8	21	48.0
Peterborough	36.3	48	45.4
Waterbeach	55.6	60	55.6

Source: Google Maps, July 2019

March Rail Connectivity

March Station is on the Peterborough to Ely line. The former is on the East Coast Mainline (ECML) with onward connectivity towards London, the Midlands, and Northern England. Services to/from Ely operate to Norwich, Cambridge, Stansted Airport and/or Ipswich. It is currently served by approximately three trains per hour across both directions, or three trains every two hours in each direction. The stylised two-hour service pattern, as of July 2019, is shown below. Ipswich services operate via Bury St Edmunds and Stowmarket (and do not serve Cambridge). The Cross Country service calls at Ely between March and Cambridge (with a peak period call at Manea), meaning interchange is required to access Waterbeach and Cambridge North (as it is for Downham Market).

Table 3: March Rail Services, across a standard two hours

ID	From	To	Operator
1	Birmingham New Street	Stansted Airport	Cross Country
2	Ipswich	Peterborough	Greater Anglia
3	Birmingham New Street	Stansted Airport	Cross Country
4	Stansted Airport	Birmingham New Street	Cross Country
5	Peterborough	Ipswich	Greater Anglia
6	Stansted Airport	Birmingham New Street	Cross Country

Source: National Rail Enquiries

Summary of Rail Provision

Direct comparison of station-to-station, as a proxy for centre-to-centre, journey times and speeds show that rail is generally competitive with the car from March (see Appendix B for further details):

- Average speeds are greater, and this is particularly true for access to Cambridge and Peterborough where lower average highway speeds on radial approaches help to provide rail with a competitive advantage;
- However, when frequencies of service are taken into account, through their associated wait times and constraints on preferred departure or arrival times, then rail's competitive advantage is dramatically reduced. As an example, for March to Cambridge, the single hourly service means that the journey time is effectively doubled and the speed is halved – bringing the highway and rail speeds to a comparable level;
- Requirements to interchange diminish the attractiveness of rail further, but March does offer direct connections to Cambridge and Peterborough – the principal centres in the CA area and
- Access and egress to and from the stations is a critical factor, alongside monetary costs (fares and parking) in determining the overall demand between two localities and rail's mode share.

Current local and regional connectivity – implications for the March to Wisbech Transport Corridor

- March and particularly Wisbech are, at present, on the periphery in terms of regional connectivity, with relatively slow peak-time journey times via the highway network to major attractors in the CPCA area.
- Bus connectivity is limited with approximately with one or two buses per hour connecting March and Wisbech. An express bus service links Wisbech to Peterborough. There are no direct bus services from Fenland to Greater Cambridge. This, in part, due to the elongated travel times which means the service would not be sufficiently attractive to generate a financially viable customer base.
- Travel by rail firstly requires travel to March and is then subject to infrequent services which pose a deterrent to use of rail travel. The re-opening of the March to Wisbech transport corridor presents the opportunity to re-integrate Wisbech more fully into the regional transport network and enhance service levels to/from March itself.
- For centre-to-centre travel, rail has the potential to offer attractive journey speeds, including competitiveness with car and bring Cambridge with an approximate 45-minute travel time of Wisbech which is likely to be attractive to commuters and other regular travellers.

2.3 Policy context - capacity for growth

Appendix C provides a detailed summary of the key policies and strategies of relevance to the scheme. For the purpose of this OAR, to succinctly demonstrate the need for intervention, the key outcomes and implications of these policies and strategies for the March to Wisbech Transport Corridor are summarised below.

- **Cambridgeshire and Peterborough Combined Authority Devolution Deal (2017)**⁷

Cambridgeshire and Peterborough's role as a world-leader in science and technology and its contribution to the UK economy is explicitly documented in the Cambridgeshire and Peterborough Devolution Deal. One of a handful of UK devolution deals awarded to date, the Cambridgeshire and Peterborough Devolution Deal, published in March 2017, awarded Cambridgeshire and Peterborough increased power and accountability over transport, planning and skills development, and funds to support economic and housing growth⁸.

The CPCA Devolution Deal aims to enable significant economic growth, building on Cambridgeshire and Peterborough economic success to date, increasing economic output by nearly 100% over 25 years with GVA increasing from £22 billion to more than £40 billion. The Deal also aims to accelerate the delivery of 72,000 new homes with £170 million investment.

The Devolution Deal states the importance of investing in transport and infrastructure to enable Cambridgeshire and Peterborough to realise its growth ambitions.

“Cambridgeshire and Peterborough recognise that for the Combined Authority to meet and exceed its ambitious targets for growth and wealth creation it needs to connect people and

⁷ Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

⁸ Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

places. Better connecting the whole of Cambridgeshire and Peterborough has the potential to reduce city pressures and give the Cambridge hub access to wider areas of housing growth.”⁹

The Deal includes direct reference to a new Fenland settlement based on garden town principles and which is aligned to improvements on the A47 and potential rail connectivity from Wisbech to Cambridge.

- **Fenland Local Plan**

At a more local level, Fenland's Local Plan, adopted in 2014, outlines targets for providing 11,000 new homes and 7,200 jobs during the plan period to 2031¹⁰. 4,200 new homes are allocated in March and 3,550 homes in Wisbech. Wisbech is earmarked as a key growth area for both housing and jobs in the Local Plan. Like the Devolution Deal, the Local Plan also includes direct reference to the reopening of the March to Wisbech rail line.

Fenland's Local Plan is currently undergoing review and refresh. At the time of writing no updates to the Local Plan are available in the public domain.

- **Wisbech Garden Town**

Housing growth in Wisbech could, however, significantly exceed current targets set out in Fenland's adopted Local Plan. Proposals for extending Wisbech to create 'Wisbech Garden Town' have gained traction since the Local Plan was adopted five years ago. Initial proposals for the development of Wisbech Garden Town set out plans for 12,000 new homes (including the existing allocations), new primary schools and a second secondary school, a 170ha country park and multiple employment sites including a new Enterprise Zone to the south of the Wisbech. If such development goes ahead, the population of Wisbech could double over a 40-year period.

Proposals for 'Wisbech Garden Town' are heavily dependent on improving the town's infrastructure and connectivity. The re-opening of the March to Wisbech Transport Corridor is a critical for supporting future growth in Wisbech as without a new segregated public transport link to and from Wisbech, the 'Wisbech Garden Town' proposals are not likely to be viable or feasible, thus limiting future investment in the town.

- **The Cambridge and Peterborough Independent Economic Review (CPIER)¹¹**

Whilst appreciating that Fenland's Local Plan is currently undergoing review and refresh, there is growing evidence that Local Plan targets across the wider CPCA area are pessimistic and that much higher employment growth can be achieved by building on the success of the 'Cambridge Phenomenon'. This has been most clearly demonstrated in the Cambridgeshire and Peterborough Independent Economic Review (CPIER), which was published in Autumn 2018.

The CPIER developed an evidence base on the economic performance and growth potential of Cambridgeshire and Peterborough, which has included consideration of a range of different growth scenarios beyond those set out in the Local Plans. Significantly, the CPIER¹²

⁹ Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

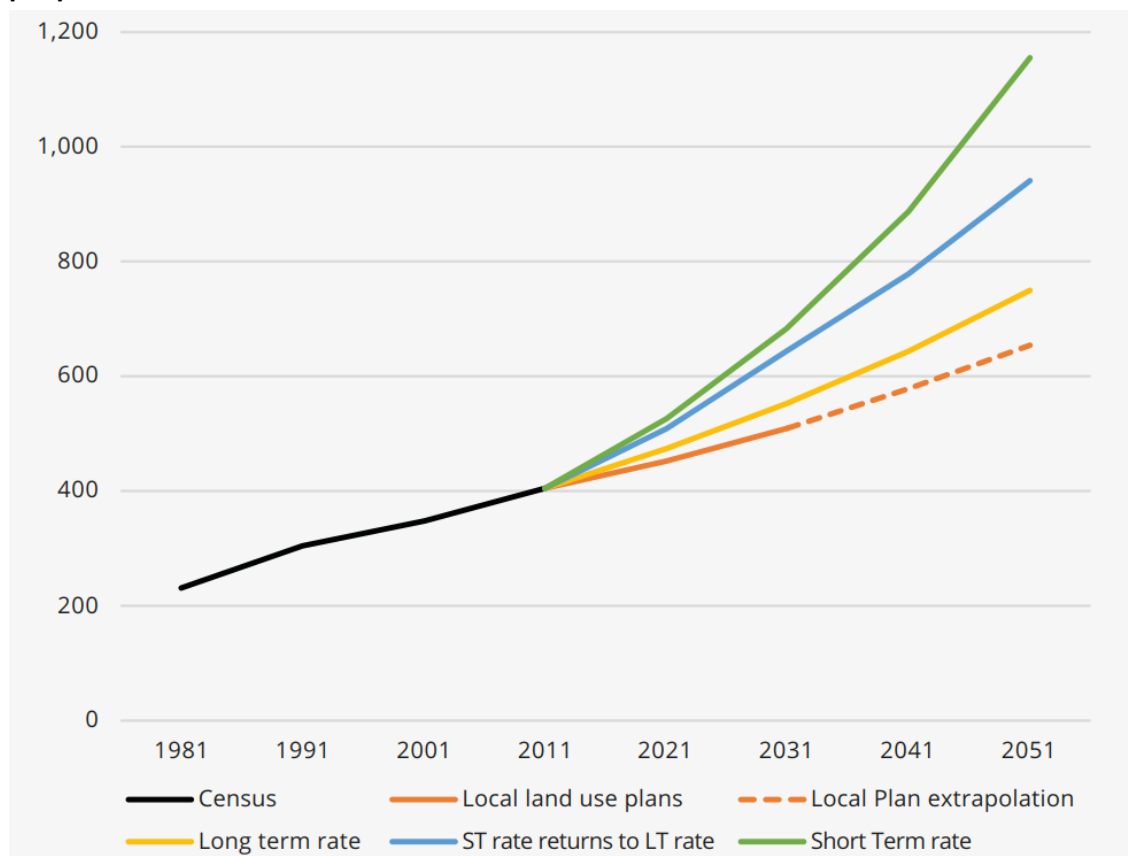
¹⁰ Fenland Local Plan (2014) Fenland District Council

¹¹ Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

¹² Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

is clear that not only has historical growth been underplayed, but future employment growth in the CPCA area could be much higher than the levels set out in Local Plans (see Appendix C).

Figure 4: Employment projections for Cambridgeshire and Peterborough – 000's of people



Source: Dr Ying Jin, Department of Architecture, University of Cambridge, extracted from Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

Higher levels of employment growth will add further pressure to housing markets and infrastructure, particularly in and around Cambridge. Critically, the CPIER identify that already house building and other infrastructure developments have not kept pace with employment growth in Greater Cambridge. As a result, many people have been priced away from the city, and journey times into work have risen significantly, causing many to endure longer commutes. The CPIER found there to be a large number of people in Cambridgeshire and Peterborough that commute over 60 minutes, some 90 minutes, one-way on a daily basis. It warns that this is unsustainable and could even risk future economic growth by making the city less attractive to even high-value businesses.

- **The Cambridgeshire and Peterborough Local Industrial Strategy**

The Cambridgeshire and Peterborough Local Industrial Strategy recognises the importance of infrastructure development as a key requirement for both maintaining current positive growth trends in the area, as well as building upon those trends. The strategy cites

businesses that operate in Cambridgeshire and Peterborough as being concerned that recent growth may be hindered by the poor infrastructure in the area:

“The views of businesses surveyed and engaged in the development of place and sector strategies is that poor infrastructure is hampering growth and is set to increase as a problem over the next decade. Sustaining and de-risking the area’s full potential for economic growth relies on transforming the transport, housing and infrastructure capacity in Greater Cambridge and improving the transport system for market towns. Improving connectivity is vital if recent growth is not to stall and will contribute to addressing the Future of Mobility Grand Challenge.”

The Cambridgeshire and Peterborough Local Industrial Strategy states that demand for transportation into Cambridge has tripled since 1997/98, hence the report’s ambition to establish the CAM in the area. The future investment strategy currently in place outlines plans for c.£600m worth of transformative infrastructure in the area up to 2031, including Phase 1 of the CAM.

- **The draft Cambridgeshire and Peterborough Local Transport Plan¹³**

The draft Plan outlines the CPCA’s priority transport schemes. The March to Wisbech transport corridor is clearly mapped as one of the priority schemes which will transform accessibility for residents and businesses in the town.

“Construction of a new link to Wisbech will transform accessibility to the town...Residents and businesses in Wisbech would benefit from being able to reach Cambridge directly, connecting them to the opportunities within Greater Cambridge, including well-paid, skilled roles in the knowledge economy, and education and training opportunities at The University of Cambridge, Anglia Ruskin University and Cambridge Regional College. It will also play a key role in supporting the ambition for Wisbech Garden Town, helping to secure the viability and delivery of additional development.”¹⁴

¹³ Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

¹⁴ Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

Policy context – implications for the March to Wisbech Transport Corridor

- North Cambridgeshire lags behind the economic prosperity of south Cambridgeshire. Whilst the latter suffers from housing affordability and labour supply issues which may constrain growth, residents in Wisbech in north Cambridgeshire face challenges relating to labour market access and connectivity with constrained travel opportunities. Both north and south could thus mutually benefit from enhanced connectivity between them.
- The CPCA Devolution Deal aims to enable significant economic growth, building on Cambridgeshire and Peterborough economic success to date, increasing economic output by nearly 100% over 25 years with GVA increasing from £22 billion to more than £40 billion. The Deal also aims to accelerate the delivery of 72,000 new homes with £170 million investment.
- Across the CPCA area, levels of future employment growth could be higher than currently set out in Local Plans, as presented in a 2018 report by the CPIER. Higher levels of employment growth will add further pressure to housing markets and infrastructure, particularly in and around Cambridge. Investment in housing and infrastructure is critical to support future employment growth.
- The re-opening of the March to Wisbech Transport Corridor is consistently referenced throughout local and regional transport and planning policies and strategies as an enabler to future growth, both locally in Wisbech and across the wider Cambridgeshire area.
- Whilst enhanced connectivity between, to and from March and Wisbech will play a role in delivering on local and regional economic, social, and environmental objectives, maximising the potential benefits will require complementary investment in non-transport measures. These include, but will not be limited to, housebuilding, quality of life, and skill and qualifications interventions.

3 Scenarios

The assessment of the options being appraised in this report needs to be made against a 'without scheme' scenario. That is the most likely future situation given existing commitments. This includes consideration of both exogenous influences, such as land use change, and other changes in transport supply. These combine to form a Do Minimum (DM) scenario against which options can be appraised.

3.1 Do minimum

The 'Do Minimum' (DM) scenario entails a continued reliance on the private car and local bus services. After some small-scale incremental enhancements to rail services during the 2010s, the only future committed changes which are material to the core modelled area are the increases in frequency of the:

- King's Lynn to London King's Cross, via Ely and Cambridge, service to half hourly from current hourly provision; and
- Ipswich – Peterborough, via March, service from 1 train every 2 hours to hourly.

The forthcoming acquisition of new 'hybrid' Class 755 rolling stock for the Greater Anglia franchise is noted, but this is not deemed material to transport supply within the corridor or a wider geographical area in which the options could produce impacts. It does though have implications for scheme design and the environmental impacts associated with additional National Rail services.

The Wisbech Access Strategy (WAS) has been developed for the area immediately north of the A47. Subject to final funding agreement, elements of the WAS proposals can now be considered as committed, including the Southern Access Road (SAR) – this is discussed in more detail in Section 3.3.5.

This will mean that current constraints on travel opportunities, particularly for those without access to a car, will largely persist, whilst economic growth in sub-regional centres and hubs will be hindered by a lack of access to labour. No changes have been assumed to the bus network, but the continuing pressures on operation from increases in running costs, and constraints of levels of local authority funding for tendered services should be noted.

Land use change is taken from local planning documents, e.g. the Fenland Local Plan, and is controlled to CPCA area totals from either the DfT's National Trip End Model (NTEM) or the local CCC High Growth Scenario (HGS). For the core assessment, the Wisbech Garden Town proposals are not at a sufficient stage of planning or commitment for them to be included in the core tests. They are therefore included as part of sensitivity testing around applicable options.

The context is therefore strong local growth from new development, set against no committed DM changes to transport supply, with the exception of WAS investments.

3.2 Do something

The Do Something (DS) scenario(s) overlay the change in transport supply (times and costs of travel) on the DM situation. There are no other changes in transport supply or land use. Wisbech Garden Town proposals are included in sensitivity testing, and in some cases this may involve adaptation of the DS schemes, and therefore changes in transport supply (e.g. changes to alignment and station location) relative to other DS scenarios. In all cases of additional

development, the DM land use is also changed, and is therefore consistent between the DM and DS scenarios, i.e. at this stage consideration is not being given to dependent development and/or dynamic land use scenarios.

3.3 Transport scheme interdependencies

3.3.1 Rail infrastructure proposals

There are a number of related proposals which will either have a direct influence on the proposed project and/or generate interdependencies. Although these proposals are not committed (if they were, they would be incorporated in the DM scenario) they are documented here for consideration as part of future sensitivity testing stages.

Previous network enhancement proposals have included:

- Romford Remote Operating Centre (ROC), which could have alleviated the needs for any resignalling of March East signal box to connect the March-Wisbech line back into the network;
- Electrification of the line between Ely and Peterborough, as part of the Felixstowe to Nuneaton scheme. As for Romford ROC, if a rail-based scheme between March and Wisbech is advanced as a result of this study then there could be substantial efficiencies, and the potential for additional benefits from the type of stock deployed and increase in paths, if this link was also electrified and operated using Electric Multiple Units (EMUs).

Potential rail services to/from Wisbech are only one of a number of proposed service enhancements on the Anglia rail network. Other proposals also exist to:

- Provide a half hourly service in each direction between Norwich and Cambridge via Ely;
- Provide an hourly service between Ipswich and Peterborough (noted above for DM); and
- Enhance the Birmingham to Stansted service to half hourly in each direction.

Given known pathing constraints in the area, all of the above conflict with options which involve services on the existing rail network beyond March. Allocation of any additional train paths would be subject to NR and DfT approval.

In addition, options are separately being considered, by Network Rail, for enhancing capacity and resilience at Ely North Junction. This is a critical constraint on the network, and services between Wisbech/March and Cambridge would need to operate through the junction. If a scheme is advanced which provides additional paths then, as previously noted, there may be competition from other passenger service proposals alongside aspirations to increase the number of freight paths which are made available through the junction. The 'Ely Area Capacity Enhancement' (EACE) scheme has recently been granted 'decision to design' status through the DfT's Rail Network Enhancements Pipeline (RNEP).

Analysis of capacity at the existing Ely North Junction has been carried out in the parallel 'Assessment of Rail Operations'. This analysis shows that there is scope, with some marginal retiming to run one Wisbech-Cambridge service per hour through Ely North (in each direction). This includes the increase in frequency of the Ipswich-Peterborough service (see above), and would provide an assumed 9 or 10 tph in each direction. Under current DM arrangements it is therefore assumed that a path is available for one Wisbech-Cambridge service per hour.

The understanding of the EACE proposals is that:

- A 'base' scenario for EACE could unlock an additional 1 or 2 tph in each direction (assumed to deliver 11 tph). A second Wisbech-Cambridge service per hour could potentially be accommodated by this enhancement, but would need to be considered alongside other potential service changes; and
- An uplifted alternative for EACE would provide for 14 tph. It is assumed, based on all known service enhancement proposals, that this uplifted EACE scenario could provide capacity for 2tph in each direction between Wisbech and Cambridge.

Sensitivity testing will be required around options with interdependencies, i.e. in the form of reduced service patterns through Ely North Junction on the assumption that the desired number of paths may not be available with or without the 'Ely Area Capacity Enhancement'.

3.3.2 Rail freight possibilities summary

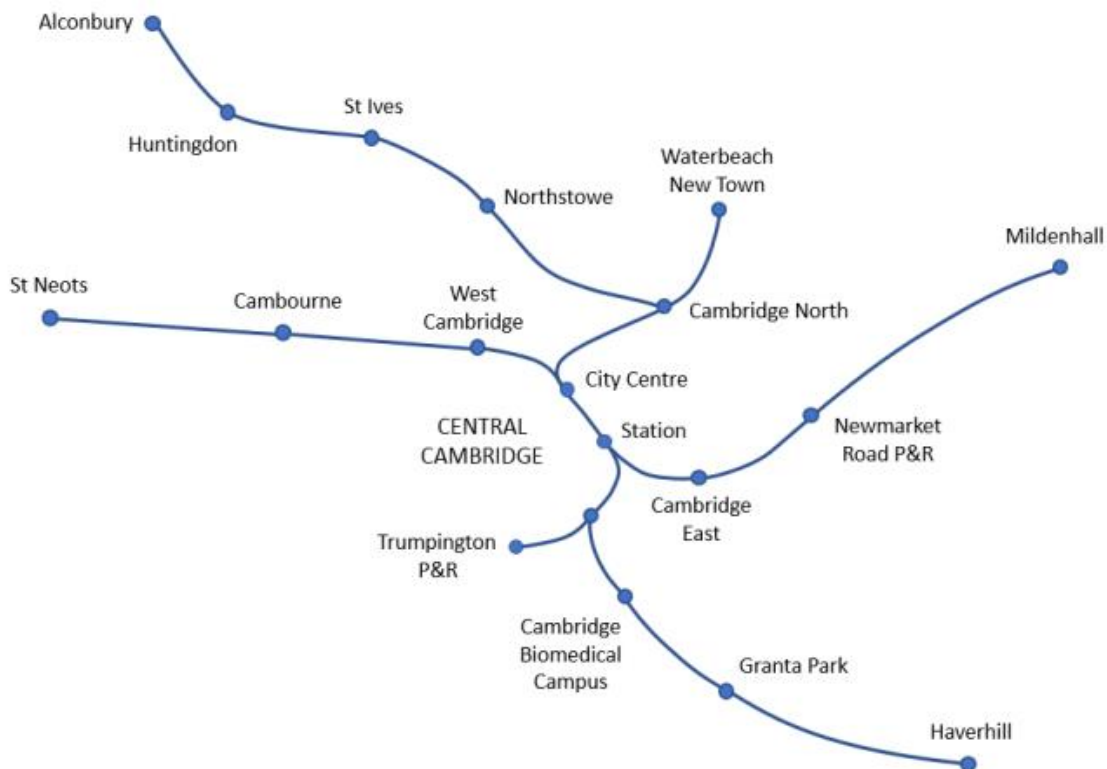
Appendix D contains consideration of the potential market for freight services on a reopened rail alignment between March and Wisbech. Reinstatement of the line for freight services would incur additional costs over and above those for passenger services alone. This potential market must take into account the changed nature of rail freight operations since the cessation of previous services in 2000, which currently focuses on large-scale intermodal (Deep Sea and Domestic), coal and Biomass movements. In addition, the use of the line for freight services would preclude any light rail-based option due to inter-operability standards.

While sufficiently sized markets may emerge in the future, and the scheme design should not, as far as reasonably practicable, preclude future provision of freight facilities at Wisbech, the current business case development processes should best proceed on the working assumption that rail freight services will not be delivered on the March-Wisbech corridor.

3.3.3 Cambridge Autonomous Metro

Cambridge Autonomous Metro (CAM) is an emerging concept for a 'metro-style' network focussed on Greater Cambridge but with the potential for expansion across the wider region. The proposals are at their early stage of development, with an SOBC for a CAM network published in February 2019¹⁵. The emerging network is shown in Figure 5.

¹⁵ See: <https://www.cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/CAM-SOBC-v2.1.pdf>

Figure 5: Cambridge Autonomous Metro Emerging Network Proposals

Source: Steer (2019)

The line to St Ives, already served by a guided busway between there and Cambridge City Centre, has the potential for a northern spur towards Chatteris and, from there, a further connection to March and the wider Fenland district. This could then link to the March-Wisbech corridor. This potential is contained within the draft CPCA Local Transport Plan (LTP), is shown in the image for Huntingdonshire area proposals in Figure 6.

Huntingdon & St Ives Pedestrian & Cycle Network

ST IVES

ST NEOTS

Combined Authority wide

- Wider Cambridgeshire Cycle Interventions
- Electrification of Rural Rail Routes
- Rural Travel Hubs
- Strategic Bus Review
- Cambridgeshire Rail Capacity Study

Highway schemes

Public transport schemes

Active travel schemes

Multi-modal schemes

Local Plan allocated growth areas

0 5 kms
0 2 miles

Contains OS data © Crown copyright and database right (2019).
Data from Cambridgeshire County Council and Peterborough City Council. Cartography by Steer 2019.

The CAM SOBC currently assumes an opening year of 2029 for the full network previously shown in Figure 5. It would have to be assumed that any further extensions, such as St Ives to Chatteris, Chatteris to March, and March to Wisbech would therefore follow in the 2030s, after the proposed opening of the March to Wisbech scheme.

An extension of the CAM to Wisbech could have impacts on the demand for rail services from Wisbech to March and Cambridge. However, as the CAM is at a relatively early stage of development and not 'committed' in formal terms, it has not been included in the demand modelling developed for this study. The longer-term timeframes anticipated for a potential CAM extension to Wisbech also means that CAM has not been assessed as a potential mode in this OAR.

3.3.4 A47 proposals

There is a concurrent study into the A47(T) which is likely to identify enhancements to this route which runs to the south of Wisbech. This would deliver journey time savings to car travel, and potentially bus travellers, but these are not 'committed' for this study and have therefore not been included. In addition to these competitive considerations, there may be opportunities to provide a single integrated design solution which could result in cost efficiencies across the two schemes. Indicative efficiencies for relevant options, i.e. those which involve crossing the A47 with segregation between rail and road, will be addressed through sensitivity testing.

3.3.5 Wisbech Access Strategy

The Wisbech Access Strategy¹⁶ (WAS) is a package of schemes aiming to enhance accessibility and support delivery of housing aspirations in the Fenland Local Plan. WAS objectives are to:

- Enable housing and employment growth in Wisbech;
- Enable and encourage sustainable modes;
- Provide an efficient, safe and secure network for all; and
- Sustain and enhance the environment.

Emerging proposals are split over three phases. Funds were provided by the Government Growth Fund to deliver a set of short-term Phase 1 schemes and undertake more detailed design work on the Phase 2 and 3 schemes.

The most pertinent scheme in the WAS proposals is for the Southern Access Road (SAR). Two outline designs have been progressed for SAR, with (see Figure 7 below) and without the re-opening of the March to Wisbech corridor for a segregated public transport alignment. The SAR aims to enable the proposed industrial and commercial development in Wisbech South from the Fenland Local Plan. The 'with rail' plans would see the removal of the rail crossing at New Bridge Lane between the A47 and Weasenham Lane. In totality, both SAR proposals aim to reduce the pressure placed on Weasenham Lane by existing and development related traffic. With certain station location options, traffic in Weasenham Lane would reduce accessibility to new public transport services. Additionally, depending on the mode and associated requirement for level crossing works (or a new overbridge), traffic on Weasenham Lane may be subject to delays.

Subject to a final funding agreement, the SAR can now be considered as 'committed' and included in the DM scenario. It is assumed that the 'with rail' proposal will now be progressed. Other wider elements of the WAS will require integration with station accessibility proposals should a 'town centre' location for Wisbech emerge as the preferred option.

¹⁶ See: <https://www.cambridgeshire.gov.uk/transport-funding-bids-and-studies/wisbech-access-strategy/>

[illegible]

 = March to Wisbech Rail Corridor

- Local Plan proposals for Fenland can be considered as committed for transport appraisal purposes, i.e. they are sufficiently certain in planning status.
- Other development proposals are not at a sufficient level of commitment for them to be included in the core appraisal, i.e. Wisbech Garden Town can only be considered through sensitivity testing.
- Greater Anglia is scheduled to introduce Class 755 'hybrid' trains across routes with only partial Overhead Line Electrification (OLE) coverage. This presents an opportunity for the potential services between Wisbech and Cambridge where the line between Ely and Cambridge has OLE. Greater Anglia is also scheduled to increase the frequency of the existing Ipswich to Peterborough service, calling at March, to hourly. This would increase the total level of service at March to 2tph in each direction, albeit only 1tph would run directly to/from Cambridge.

- The WAS SAR component is now at a sufficiently advanced stage to be considered as 'committed'. This is expected to reduce highway traffic on Weasenham Lane to the south of the town centre which bisects the former rail alignment between March and Wisbech.
- Ely North junction is a critical constraint on the network. Network Rail is considering options to improve network capacity and resilience in this area at present through the 'Ely Area Capacity Enhancement' scheme study. Enhancements to Ely North junction capacity have been assumed in the DS options modelled in the OAR.

4 Scheme objectives and expected impacts

This section details a set of scheme specific objectives against which options are initially appraised. The objectives are translated into a set of expected outcomes and impacts, for which a number of the latter are subsequently quantified as part of an initial economic assessment of shortlisted options.

4.1 Scheme objectives

The OBC study (2015) defined a set of scheme objectives for use in option appraisal. As part of this FBC these have been refreshed in light of changes in the regional governance context and associated strategy and planning documentation (see Section 2 for a synopsis and supporting appendices A, B, and C; the Strategic Case section of the business case will provide further detail). The full set of scheme objectives is shown in Table 4. These are structured around the main impacts which the DfT define for transport interventions:

- Economic;
- Environmental;
- Societal; and
- Financial.

Overarching these are some policy objectives which align with one or more of the above.

Table 4: March to Wisbech Transport Corridor Detailed Scheme Objectives

ID	Impact	Objective	Source(s)
A(i)	Economic	Provide enhanced access to new employment and training opportunities, which will help to raise educational attainment, skills and average incomes/GVAs per capita in and around Wisbech; in particular Alconbury Weald Enterprise Campus, Local FE colleges, Higher Education establishments, and strategic employment sites in Peterborough centre, Ely, Alconbury, Waterbeach, Cambridge Science Park, Cambridge Biomedical Campus (Addenbrooke's) and Cambridge centre (station area), by reducing travel time(s) and cost(s)	GC&GP SEP; Cambridgeshire LTTS
A(ii)		Provide enhanced connections for new or future businesses (inward investment) in the Wisbech area, with respect to access to labour, supply chains, customers and supporting services, supporting inward investment, by reducing travel time(s) and cost(s) to the major regional centres	Fenland Local Plan 2014
A(iii)		Help regional employers gain access to an enlarged and suitably skilled workforce, specifically in the employment growth areas of Cambridge centre (station area), Cambridge Biomedical Campus (Addenbrooke's), Cambridge Science Park, Ely, Waterbeach, Peterborough and Alconbury in Greater Cambridge and Greater Peterborough area	GC&GP SEP; Wisbech 2020 Vision; Cambridgeshire LTTS
A(iv)		Support the delivery of housing and employment land in Wisbech and March as envisaged in the Fenland Local Plan, by attracting, and bringing forward, inward investment due to better connectivity	Fenland Local Plan 2014
A(v)		Address the current deficit in transport infrastructure across Cambridgeshire which is required to align with significant growth aspirations of the CA and prevent deterioration to the quality of life which will result if this growth is not matched by the means of achieving it in sustainable way through better infrastructure.	Cambridgeshire and Peterborough Independent Economic Review

ID	Impact	Objective	Source(s)
A (vi)		Increase capacity for rail travel across Cambridgeshire and Peterborough and create better connectivity to meet the needs of travel demand which is expected to grow by 28% in Cambridge and 30% in Peterborough up to 2031.	CA Spatial Plan
B (i)	Environmental	Provide an attractive, sustainable, alternative to the private car on key local movements, helping to reduce current and future vehicle-kms, congestion and resulting emissions	Fenland Local Plan 2014; Cambridgeshire LTTS
C (i)	Societal	Provided enhanced access to key medical facilities, colleges, universities, and leisure/retail opportunities, through improved connectivity to major regional centres and facilities (e.g. Peterborough, Cambridge and King's Lynn)	Fenland Local Plan 2014; Cambridgeshire LTTS
C (ii)		Provide enhanced access for specific local groups; in particular young people Not in Education, Employment or Training (NEET), low income households, those with Level 2 qualifications or lower, and those on incapacity benefits	Fenland Local Plan 2014
D (i)	Policy	Enable the delivery of the Wisbech Garden town proposals which are enhanced by the provision of a rail link, and provide sustainable access to 11, 500 additional homes, 97 hectares of employment space and 4 new schools.	Wisbech Garden Town
D (ii)		Support the Town & Country Planning Act (TCPA) Garden Town Principles in relation to Wisbech Garden Town which states Garden Cities should be designed to encourage walking, cycling and low-carbon public transport and should be located 'only where there are existing rapid public transport links to major cities, or where plans are already in place for their provision.	Wisbech Garden Town
D (iii)		Support key components of the Wisbech Garden Town Vision to create: 'A connected town' which is supported locally and generates the values needed to regenerate the town; and 'A sustainable community' that is not predicated on car use and has within it, an integrated system for public transport.	Wisbech Garden Town
D (iv)		Support the key recommendations outlined within the CPIER including: Increasing the level of infrastructure investment to create better places; and Developing a package of transport and other infrastructure projects to alleviate the growing pains of Greater Cambridge which should be considered the single most important infrastructure priority facing the Combined Authority in the short to medium term.	CP CA Spatial Plan

ID	Impact	Objective	Source(s)
D (v)		<p>Support the aspirations and key principles of the Combined Authority Spatial Plan which include:</p> <p>Working with planning authorities, developers, Homes England and other agencies to ensure the effective delivery of the strategic housing sites;</p> <p>Developing and maintaining a long-term investment programme of infrastructure projects</p> <p>Working with local planning authorities to assess the need for and delivery of infrastructure to address future environmental sustainability;</p> <p>Taking a positive view of, and prioritising, investment that tackles deprivation and which increases sustainable, inclusive growth in disadvantaged areas of Cambridgeshire and Peterborough;</p> <p>Work with neighbouring authorities through their strategic partnerships and national initiatives to ensure a complementary, integrated approach to growth and to optimise investment opportunities to achieve mutually beneficial outcomes;</p> <p>Embrace positively the need to build new homes, create jobs, and improve infrastructure;</p> <p>Embrace positively the need to build new homes, create jobs, and improve infrastructure potentially along key dedicated public transport routes;</p> <p>Work with neighbouring authorities, Government, and other partners to develop strategic connections between areas; and</p> <p>Be an exemplar of low carbon living, efficient use of resources, sustainable development and green infrastructure.</p>	CP CA Spatial Plan
E (i)	Financial	To minimise long term commitments for public revenue support	
Source: Mott MacDonald			

For the purposes of the subsequent option sifting, these objectives have been distilled to those in Table 5.

Table 5: March to Wisbech Transport Corridor Distilled Scheme Objectives

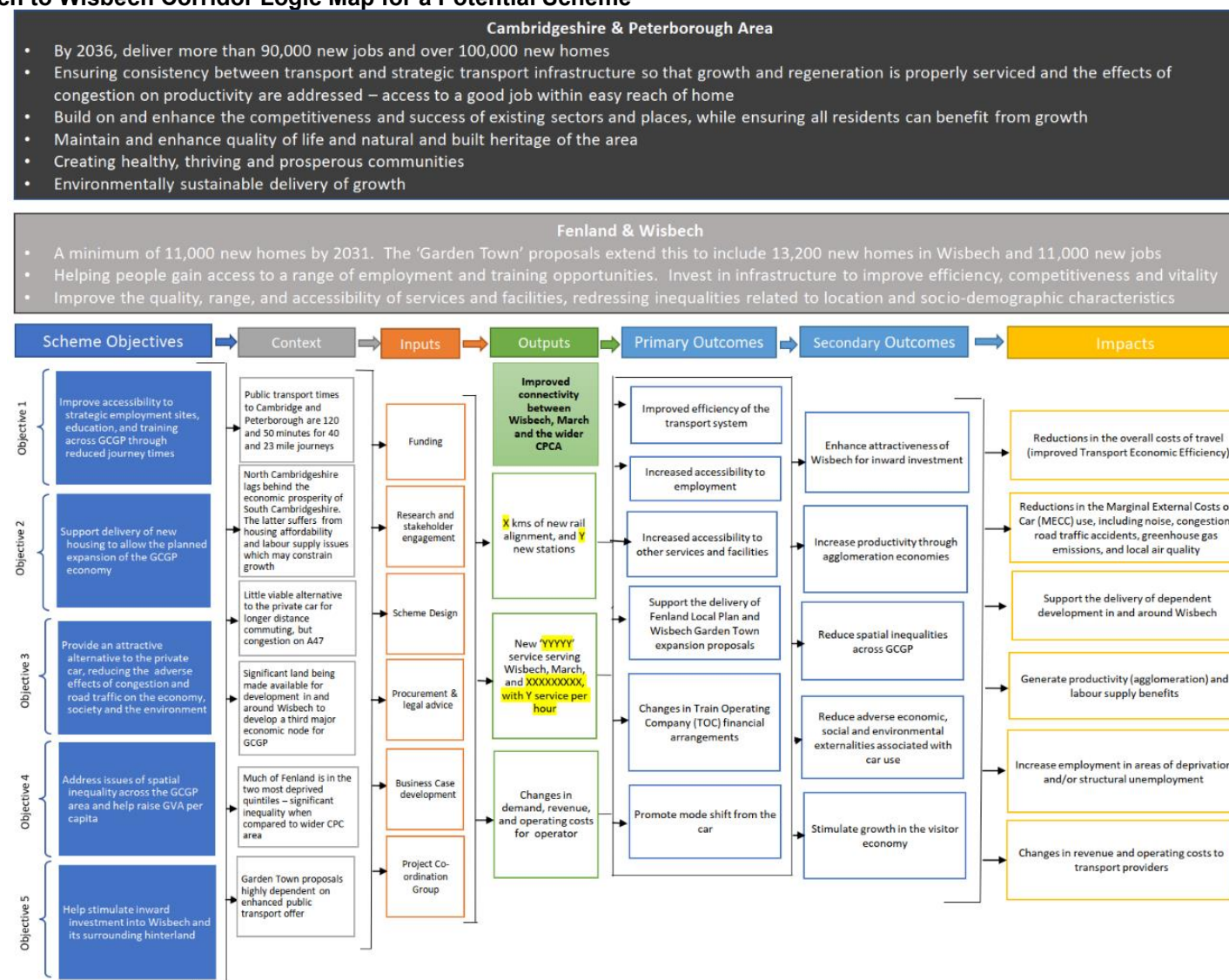
ID	Impact	Detailed Objectives	Detail
A	Economy	A i), iii) and vi)	Improve access to key employment and education sites (Alconbury, Peterborough Centre, Ely, Cambridge Science Park, Cambridge Biomedical Campus & Cambridge Centre)
	Economy	A ii), v) and vi)	Improved connectivity to major centres for inward investment to Wisbech (Cambridge, Peterborough, London and Stansted Airport)
	Economy	A iv), v) and vi), D i), iv) and v)	Support delivery of housing - Fenland Local Plan and Wisbech Garden Town which allows key employment locations to continue to grow
B	Environmental	B i) and D ii), iii) and v)	Help to support economic growth in a sustainable manner by providing an attractive alternative to car travel, reducing associated externalities
C	Social	C i) and ii), and D v)	Improve local access to key services, e.g. medical facilities, colleges and universities (located in major centres, e.g. Cambridge, Huntingdon, King's Lynn and Peterborough)
	Social	D iii)	Support the regeneration of the town centre and existing urban area
D	Financial	E i)	To minimise long term commitments for public revenue support

Source: Mott MacDonald

4.2 Expected Outcomes and Impacts

Although the exact detail of the options, and thus the outputs and finalisation of outcomes, cannot be included at this stage, the logic map in Figure 8 shows how a potential scheme in the March to Wisbech corridor could, through its primary and secondary outcomes, impact on the economy, society, and the environment in a beneficial manner.

Figure 8: March to Wisbech Corridor Logic Map for a Potential Scheme



Source: Mott MacDonald

4.3 Geographic Extent of Impacts

Although the focus of the study is on addressing challenges and issues facing Wisbech and the wider Fenland area including March, options which extend their range beyond the immediate corridor between the two settlements will naturally have a wider geographical influence. In the context of options for this corridor, these are principally rail-based interventions which involve through running beyond March to major centres such as Cambridge and/or Peterborough. As well as additional impacts for Wisbech and March, there will therefore be further impacts to capture for other intermediary communities along the route, with this being dependent on the proposed calling pattern.

The area of influence therefore covers the entire CPCA, but with a tighter focus for transport modelling and economics on the locations served by the existing rail lines between Peterborough and Ely, and Cambridge and King's Lynn via Ely.

5 Stakeholder strategy

This section provides an overview of the strategy for engaging with stakeholders.

5.1 Promotion

The main local stakeholders are the CPCA as the scheme promoters and the main strategic transport planning authority affected by the options, CCC, as the main strategic highway authority affected by the options, FDC, as the local district authority with planning powers, and local land owners and businesses. It is expected that the scheme, subject to the gateway decisions on the FBC and the GRIP reports, would be taken forward through the emerging CPCA assurance framework and major schemes programme.

Both CPCA and CCC have been engaged throughout the option generation, sifting and appraisal stages via a series of workshops.

The Office for Rail & Road (ORR) have also been engaged and contributed to the evidence base and assumptions for the study, particularly with regard to the status of the level crossings between March to Wisbech.

At this stage the DfT and Network Rail have been informed of the study's remit and timescales, but have not been actively engaged in option development and appraisal.

Further engagement will be undertaken with all parties once the option assessment is finalised.

5.2 Delivery

Given the range of model options being considered, and the recent Hansford Review of the UK rail industry¹⁷, there are multiple paths to scheme delivery:

- If a National Rail, or similar, option is progressed, Network Rail may be the delivery body. Other options for delivery for a heavy rail scheme may exist, including CPCA taking the lead for the reinstatement works or a private-sector third party;
- Lighter rail, bus-based, and other options between these, would be led by CPCA and partners such as CCC; and
- Walk or cycle options may be most effectively progressed by CCC in partnership with FDC.

Regardless of whether Network Rail or another body delivered a reinstated rail option between March and Wisbech, there will be a need to engage with Network Rail regarding connections at March and any aspirations for onward operation on the existing network beyond this location.

Network Rail have been engaged during the early stages of the FBC and concurrent GRIP3 study, including incorporation of latest outcomes from the Ely North Junction study.

Four franchises currently serve the area

- Abellio Greater Anglia;
- Govia Thameslink
- East Midlands Trains; and
- Arriva Cross Country.

¹⁷ See: <http://www.cepa.co.uk/userfiles/The-Hansford-Review.pdf>

Abellio Greater Anglia are considered the most likely operator of a National Rail service (or similar) and will be engaged following selection of a preferred option. They are also operators of March Station, albeit this is a function of geography rather than service levels, with Arriva Cross Country the main service provider. It is recognised though that delivery timescales mean that it would be the next incumbent at that franchise which would be affected.

For bus options, First Essex, Suffolk and Norfolk, the operator of the current XL service between Peterborough and Norwich, via Wisbech, has been informed of the study at OBC stage and contributed to the analysis.

The extension of the line to a site in close proximity to Wisbech town centre would necessitate crossing the A47(T). CPCA are undertaking a concurrent study for this route, and their consultants and Highways England (HE), will be kept informed of the emerging findings from this study.

Discussions have also been held by the CPCA representatives promoting the Wisbech Garden Town concept.

A dedicated delivery strategy will be developed for the scheme preferred option as part of the FBC.

6 Option generation, sifting and appraisal

This section provides an overview of the full list of options available for the corridor, documents those which have been removed, and provides details of the initial sifting and appraisal exercise to produce the refreshed short list for further assessment

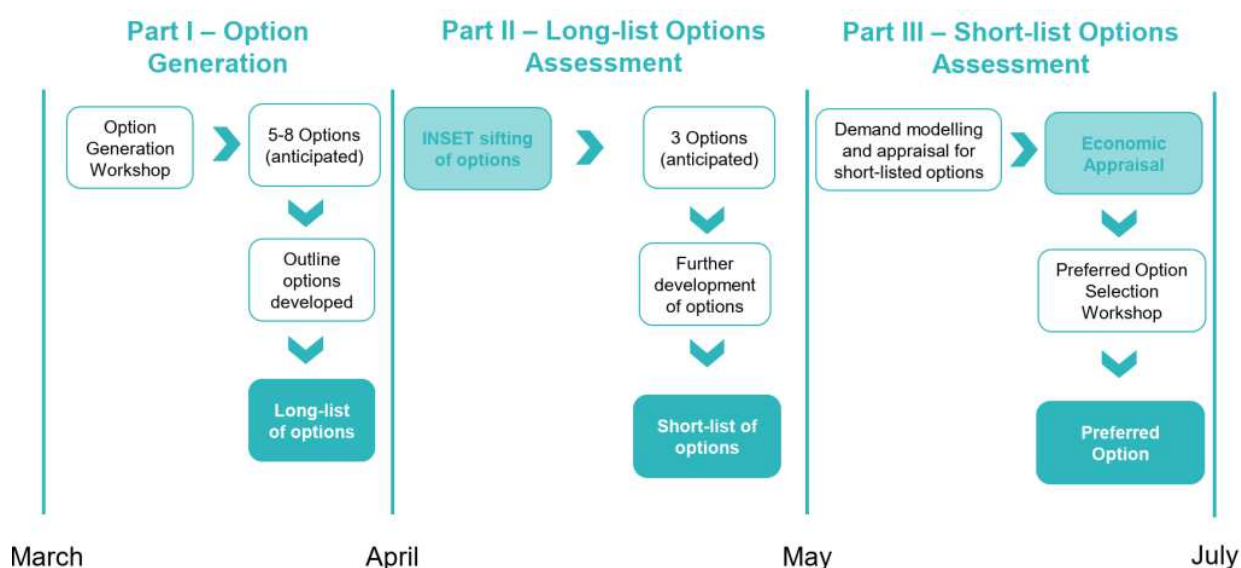
6.1 Overview of processes

Figure 9 provides an overview of the complete option appraisal process. There are essentially three stages:

- Early option generation, sifting, and packaging to generate the ‘long list’ of options (Phase 1 - Part I);
- Appraisal of the ‘long list’ against scheme objectives to produce a ‘short list’ of options (Phase 1 - Part II); and
- Demand modelling and economic appraisal for the ‘short list’ options.

This section details the outcomes of Parts I and II from the above.

Figure 9: Option Generation, Sifting and Appraisal Cycle



Source: Mott MacDonald

6.2 Option definition

In line with DfT guidance¹⁸, a wide range of possible alternatives to address an identified problem or meet a particular objective should be considered before recommending a specific proposal. These should reflect a variety of approaches and scales of intervention and should not be limited to infrastructure or single mode solutions where alternatives might be feasible.

¹⁸ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/630704/value-for-money-framework.pdf

Connectivity enhancements between March and Wisbech could also be facilitated by:

- Highway enhancements; and
- Improvements to walking and cycling.

Both these modal alternatives have been eliminated at this early stage:

- Highway enhancements for east-west movements along the A47 are being investigated by a separate study; and
- Walk and cycle connectivity between the two settlements would be possible by converting the former alignment to a 'greenway'. However, distances and times for walking and cycling are prohibitive, especially when the need for stronger connectivity between north and south Cambridgeshire are considered. The potential for a complementary facility alongside a public transport alignment remains.

The focus therefore falls on public transport options.

For public transport schemes, options should include different technologies and lower cost alternatives. For example, where national rail schemes are being considered then 'lighter' solutions should also be identified, and, likewise, when light rail schemes are being considered, alternative bus-based options should also be identified¹⁹.

The public transport options for improving connectivity in the March to Wisbech corridor span:

- Station or stop locations;
- Modes; and
- Service patterns.

A number of the combinations within these are mutually exclusive. For example:

- Wisbech would only ever be served by a single National Rail station. This relates principally to proposals which involve serving the Garden Town and the existing settlement. Curvatures and the need to integrate with Garden Town planning principles mean that a heavy rail alignment could not be provided which simultaneously serves the Garden Town and existing settlement with two separate stations;
- Bus based options would not operate all the way to Cambridge as the journey times would be unattractive and prohibitive (instead an interchange at March can be assumed);
- Selected station locations make little sense for bus-based modes.

A number of other considerations are relevant for some modes:

- It is unlikely that direct journey times for non-rail-based modes to Cambridge from Wisbech would provide a viable and attractive alternative for regular travellers (see Section 6.5); and
- It is assumed, following engagement with the Office for Rail and Road (ORR), that heavy rail options would require existing level crossings along the route between March and Wisbech to be closed or grade separated, consistent with Network Rail policy. Other modes may support lower standard solutions to manage risks associated with level crossings.

6.3 Key Considerations and Assumptions

The option appraisal process detailed in this report is dependent on a number of assumptions regarding either scheme components and/or interdependent schemes or planning proposals – see Section 3 for the earlier definition of DM and DS scenarios and identification of critical

¹⁹ See: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/712965/webtag-transport-appraisal-process-may-2018.pdf

interdependencies. Evolution of each of these assumptions, i.e. as parallel studies progress, will need to be incorporated in future iterations of option development through the business case development cycle.

These assumptions have been treated equally across the appraised options. Some of the assumptions do though result in variations between options, as detailed in Table 6.

Table 6: Key Considerations and Assumptions

Issue	Considerations	OAR assumption(s)
Ely North Junction	<ul style="list-style-type: none"> Limited existing capacity for new train paths through Ely North Junction Proposed enhancement scheme at an early stage of scheme development (SOBC), with uncertainty around how many additional paths could be created No commitment to funding Other proposals for additional services Ely North exist which are likely to compete with Wisbech-Cambridge proposals 	<ul style="list-style-type: none"> Paths available through Ely North at the date of scheme opening which permit either 1 or 2 tph to/from Cambridge
Level crossings	<ul style="list-style-type: none"> If level crossings are not considered a safe means of operation, then there are significant costs associated with highway diversions and overbridges Light rail solutions have different standards for highway crossings, and therefore the potential for lower cost solutions 	<ul style="list-style-type: none"> National Rail options require level crossing closures in line with the findings of the 2016 Network Rail risk assessment. These include a combination of new highway overbridges, formal closures and re-routings to combine existing crossings.
A47	<ul style="list-style-type: none"> Traffic volumes necessitate a fully segregated solution at this location Proposals under development by CPCA for A47 upgrades which could lead to efficiencies and cost sharing 	<ul style="list-style-type: none"> Highway overbridge required Required for all options except Wisbech Parkway station location As a worst case alternative for costs, assume 100% borne by the rail scheme. It is noted that a combined alternative may offer efficiencies and/or a chance for sharing scheme costs
Spatial development	<ul style="list-style-type: none"> Garden Town proposals would approximately double the size of Wisbech Other wider CPCA area proposals for 'above plan' growth 	<ul style="list-style-type: none"> Core scenario consistent with DfT guidance and levels of certainty around development 'Above plan' and Garden Town growth to be considered through later sensitivity tests for shortlisted options
Interdependent transport schemes	<ul style="list-style-type: none"> Schemes under development include Cambridge Autonomous Metro (CAM), A47 dualling, Romford ROC (see below), and Peterborough-Ely electrification 	<ul style="list-style-type: none"> None of these schemes are sufficiently committed to include in the core assessment as part of the Do Minimum Consider through sensitivity testing
Romford Remote Operating Centre (ROC)	<ul style="list-style-type: none"> Transfer of signalling to Romford could lead to efficiencies for required upgrades to signalling 	<ul style="list-style-type: none"> Assume Romford ROC post-dates and scheme on the March-Wisbech line Costs for upgrading March East signalbox are required

Source: Mott MacDonald

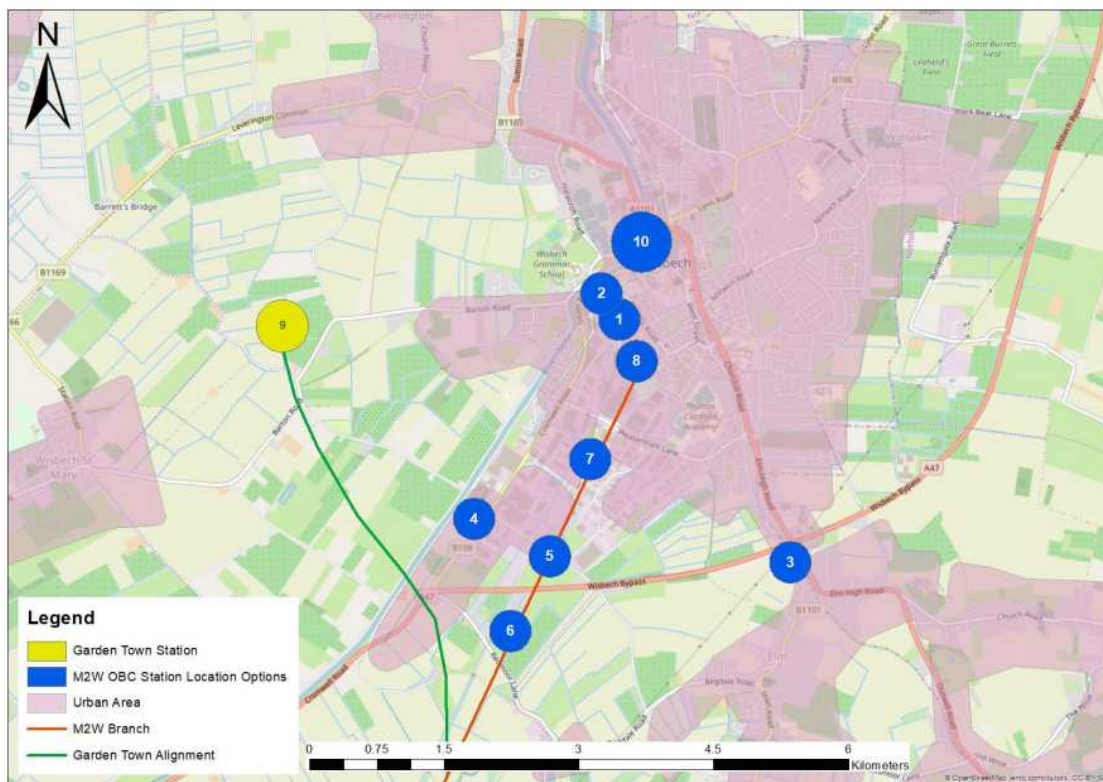
These assumptions are based on the best available information as of August 2019 and are as agreed with the CPCA.

6.4 Station or Stop Locations

Figure 9 shows the ten potential station locations for rail-based options considered in the Part I option appraisal. Segregated bus-based solutions could use similar locations, but with greater flexibility. On-street bus-based solutions obviously offer even greater flexibility but with the downside of lack of segregation from general traffic which can lead to journey time and punctuality issues. Location 9, to the west of Wisbech, is linked to the most significant component of the Garden Town proposal. Locations have been selected for their land availability given an estimated size for the station or stop plus associated ancillary facilities such as car parking, network access for maintenance, etc. The exceptions are Sites 2 and 10. As noted in Table 7, Site 2 would require land to become available on the current Nestle Purina site – this is noted as an aspiration and Sites 1 and 8 provide alternatives on the same alignment which can be further developed as options now. Site 10, which is linked to non-National Rail, alternatives could take the form of a transit stop with a much smaller footprint than a National rail station. A potential location is closely linked to the preferred tram-train alignment and provision of links to/from the Garden Town site (#9).

Lighter rail or rapid transit solutions offer the opportunity for multiple stops or stations, and this is reflected in the final 'long list' of options shown in Section 6.7.1.

Figure 10: Wisbech Station and Stop Locations



Source: Mott MacDonald

Table 7: Wisbech Station Location Options


ID	Location	Notes
1	Town (currently available)	2000s housing and industrial development mean that the closest town centre site is north of Weasenham Lane, at the southwest end of Hilburn Road.
2	Town (future development)	Changes in land use may permit a site closer to the town centre to become available at a later date (at southwest end of Kingsley Avenue).
3	Wisbech Meadowgate (A1101)	Proposals for site close to junction of A47 and A1101, which could enable a future onward connection to King's Lynn following the A47 alignment.
4	Cromwell Road area	Option explicitly linked to providing a service to King's Lynn, by increasing the radius of the curve for direct working, following a turn back, towards King's Lynn in a North-easterly direction. Requires crossing of Cromwell Road (in addition to A47), and may necessitate land take from local businesses.
5	North of A47	Site in centre of Wisbech Enterprise Park proposals (currently car parking for local industrial sites).
6	South of A47	Avoids highway overbridge for A47. Can be considered a 'classic' parkway site. Could be north or south of Redmoor Lane.
7	Site between Enterprise Way and Europa Way (on existing alignment)	Centred on land with immediate development potential, and potential for car parking provision.
8	Town, NE of Weasenham Lane (slightly east of existing alignment at terminus)	Changes in land use may permit this site to be used for the new rail station, to the south of Victory Road.
9	Garden Town	Alignment to serve the proposed Garden Town should this be taken forward for development
10	Town centre	Transit stop in close proximity to the River Nene, adjacent to town centre. Exact location is being examined through further alignment work as part of the tram-train proposals.
11	1 and 5	Combination possible with lighter mode
12	8, 9 and 10	Combination possible with lighter mode and additional alignment






Source: Mott MacDonald

6.5 Modes

The previous OBC considered different modal options, and this list has been refreshed in light of technological developments in Table 8.

Table 8: March to Wisbech Corridor Mode Options

ID	Mode	Image	Notes
1	National Rail		<ul style="list-style-type: none"> • Diesel, electric or bi-mode traction – Greater Anglia TOC is currently introducing new bi-mode stock • Through running possibilities beyond March (with capacity interactions to EACE) • Technology well established • High standards re level crossings etc.

ID	Mode	Image	Notes
2	Tram-Train		<ul style="list-style-type: none"> • Diesel, electric or hybrid alternatives, including battery for on-street running (DC required otherwise – National Rail between Ely and Cambridge is AC) • Through running possibilities beyond March (with capacity interactions to EACE) • Would require high floor platforms on any on-street sections • Potential on-street running in Wisbech • Technology evolving • Medium standards re level crossings etc.
3	Light Rail		<ul style="list-style-type: none"> • Electric traction or hybrid alternatives • Limited to March-Wisbech only • Potential on-street running in Wisbech • Technology well established • Medium standards re level crossings etc.
4	Guided Busway		<ul style="list-style-type: none"> • Diesel or hybrid • Different levels of segmentation possible on March-Wisbech existing rail alignment • Limited to March-Wisbech only • Potential on-street running in Wisbech • Technology well established – wide choice of vehicle and “track” specification • Medium standards re level crossings etc.
5	Bus		<ul style="list-style-type: none"> • Diesel or hybrid • Assumed to use existing highway network • Flexibility on destinations served, but limited by journey times • On-street running in Wisbech • Technology well established • Low standards re level crossings etc.
6	ULTRA - light rapid transit		<ul style="list-style-type: none"> • Electric or hybrid • Limited to March-Wisbech only • Potential on-street running in Wisbech • Technology still emerging for an operation in an urban area • Medium standards re level crossings etc. (assumed)

Source: Mott MacDonald

6.5.1 Tram-Train

Section 6.5.1 describes the tram-train mode in more detail, as a novel option in the UK context.

Tram-train operation, whereby lighter street running vehicles co-operate with heavy rail units on National Rail infrastructure have been common across Western Europe for many decades. Karlsruhe (Germany) is the most extensive example. They have primarily been developed to allow:

- Cost effective expansion of regional rail systems, or a more efficient means of operating existing heavy rail lines; and
- On-street operation which helps to minimise access and egress distances to passengers' ultimate origins and destinations.

In the UK the Tyne & Wear Metro shares common infrastructure with heavy rail on the Sunderland line, albeit the Metro vehicles do not provide on-street running on this network. The first trial of tram-train technology in the UK was the Sheffield-Rotherham pilot service which opened in October 2018. The new services operate on a combination of Sheffield Supertram and National Rail infrastructure, which were both upgraded as part of the scheme to enable

through running. Importantly, this pilot involved the combination of two pre-existing networks with associated new infrastructure to enable the connections.

A number of other UK city regions are actively pursuing tram-train schemes. The most advanced of these include:

- South East Wales – this would involve on-street running from the Valleys lines in Cardiff City Centre and/or the Cardiff Bay area as part of the ‘South Wales Metro’²⁰ concept;
- Greater Manchester – a number of existing National Rail lines into Manchester City Centre have been proposed for conversion to tram-train technology, using the existing Metrolink network for on-street running; and
- Glasgow – proposals were developed for a line between Glasgow Airport and Glasgow Central Station using the National Rail network between Paisley and Glasgow City Centre; however, lack of capacity at Central Station has meant that current development work has been paused.

Because tram-train vehicles have different operational characteristics, and have different standards applicable when in tram/light rail mode of operation, they can offer the:

- Ability to increase catchments through on-street running which brings stops closer to residential locations and clusters of economic activity;
- Potential for more closely located stops or stations. This is linked to quicker acceleration than heavy rail units, but also by necessity as the on-street running brings more origins and destinations within its potential catchment; and
- Scope for alternative solutions when considering level crossings as tram-style operation can be undertaken using ‘driver line of sight’ as opposed to the increasing requirement of complete segregation to ensure safe operation of National Rail solutions.

Tram-train options were included in the modes assessed for this OAR because they appeared to be consistent with the transport needs of Wisbech as described in Section 2, in particular the town’s significant planned expansion through the Wisbech Garden Town proposal.

6.6 Service Options

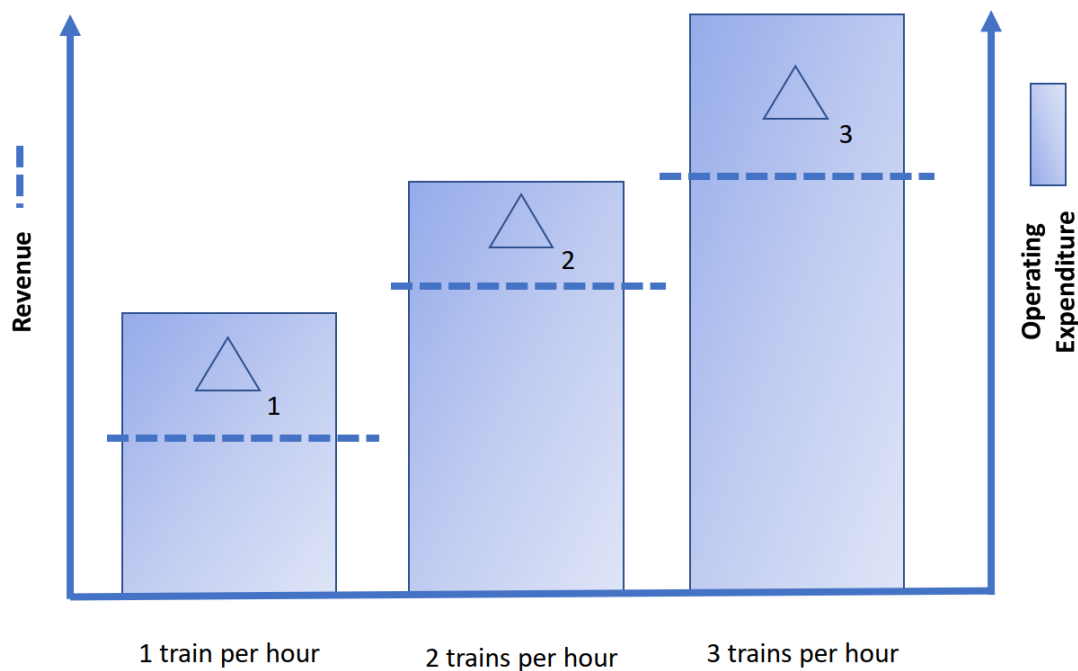
Table 9 below summarises potential service options, with principal stops and stations only, and an indicative number of services per hour (sph) in each direction. There is the potential for these to extend beyond the stated stops and stations, i.e. Stansted Airport could be served beyond Cambridge. Clearly the greater the service level the greater the level of performance against scheme objectives which aim to deliver economic, social and environmental benefits. However, these aims must be balanced against:

- Deliverability – Ely North Junction is already a major constraint on network capacity (see Section 3.3.1 for detail on current and potential capacity assumptions). As noted previously, Network Rail is currently developing options for EACS enhancement (to SOBC level). Based on current understanding (as of September 2019), the number of tph which could operate between Peterborough (or March or Wisbech) and Norwich or Cambridge could remain constrained under a smaller scale enhancement. A larger scale EACS would unlock a minimum of 2 paths per hour in each direction; and
- Sustainability – principally financial. There will be incremental increases in demand and revenue from a better service offer, but we would expect the percentage gap between revenue and operating cost to initially close as a viable, attractive, service is offered,

²⁰ See: <https://gov.wales/sites/default/files/publications/2018-06/south-wales-metro-summary-brochure.pdf>

followed by a widening as there is insufficient base demand to justify the increased service level (this likelihood is illustrated in Figure 11 below where subsidy requirement, operating expenditure minus revenue, is minimised at 2 trains per hour (Δ_2)). In practice, while the absolute gap is likely to be lowest at the corresponding lowest level of service, the percentage gap may be higher than the next increment.

Figure 11: Illustrative Operating Expenditure versus Revenue by Level of Service



Source: Mott MacDonald

Another consideration which needs to be brought to bear in the option appraisal is the incremental improvement offered to other intermediary communities which could be served. In the case of tram-train type services this includes opportunities around new stops or stations, or diversion, e.g. to avoid Ely North Junction and better serve local communities. Three 'end destinations' are shown in Table 9:

- March – a number of modes would, under current and foreseeable standards, be limited to this location as there is no viable means of segregated onwars running. Under these circumstances, interchange is therefore required for onward connections, e.g. to Cambridge or Peterborough. There are no substantial intermediary communities between March and Wisbech which are likely to justify a stop or station. The possibility of onward running to Chatteris and St Ives was considered as a possibly intermediary for non-rail based options (see Section 3.3.3 in the context of CAM, but this was thought unlikely to offer significant benefits and value for money without subsequent through running to Cambridge);
- Peterborough – the configuration of (existing, albeit some are currently redundant) platforms at March Station and track infrastructure could make concurrent serving of March and Peterborough to/from Wisbech either costly or operationally impractical. Capital expenditure for alternatives with this service specification would therefore differ from March and/or Cambridge. Between Peterborough and March there is only one intermediary settlement of any note, Whittlesea, which has a National Rail station. There may be capacity constraints at Peterborough which would limit this opportunity, including 'through running' possibilities to

destinations further afield, especially when the necessity to prioritise the efficient and reliable operation of East Coast Mainline (ECML) services is considered; and

- Cambridge – through running, calling at March is operationally more feasible, but is likely to require bringing the redundant platforms back into use, particularly for terminating services to avoid lengthy, capacity eroding, ‘turn around’ times in the platforms. March would therefore be served by all services, and there are further existing intermediary stations at Manea, Ely, Waterbeach, and Cambridge North. It is our understanding that Cambridge Station has sufficient platform capacity to accommodate terminating services, e.g. Platforms 5 and 6 for services terminating from the north (most services run through the station). This is based on the current 2019 timetable and there may be other proposed rail services which could, in the future, make use of these platforms instead of the Wisbech services. It is recognised that accessing Platforms 5 and 6 could create conflicts with through services, but operational analysis of existing services and commitments, overlain by proposed Wisbech services, suggest that they can be accommodated. Through running from Wisbech may be possible to destinations such as Stansted Airport, but the capacity analysis to examine this is beyond the scope of this study. There are also understood to be capacity constraints on the leads into Stansted Airport which make Cambridge a more viable terminus.

Table 9: March to Wisbech Corridor Service Pattern Options

ID	Service Pattern (selected stops or stations only)
Cambridge	
1	Wisbech-Ely-Cambridge 3sph
2	Wisbech-Ely-Cambridge 2sph
3	Wisbech-Ely-Cambridge 1sph
Peterborough	
4	Wisbech-Peterborough 2sph
5	Wisbech-Peterborough 1sph
March	
6	Wisbech-March 3sph
7	Wisbech-March 2sph
8	Wisbech-March 1sph
Combinations	
9	Wisbech-Ely-Cambridge 2sph; Wisbech-March 1sph
10	Wisbech-Ely-Cambridge 1sph; Wisbech-March 1sph
11	Wisbech-Ely-Cambridge 1sph; Wisbech-March 2sph
12	Wisbech-Ely-Cambridge 1sph; Wisbech-Peterborough 1sph
13	Wisbech-Peterborough 1sph; Wisbech-March 1sph
14	Wisbech-March-Chatteris 3sph (bus or similar only)

Source: Mott MacDonald

6.7 Part I option sift


The initial sifting exercise sought to reduce the possible permutations to a manageable ‘long list’ for more detailed appraisal. This was achieved by firstly excluding mutually exclusive, or impractical, combinations of station/stop location, mode, and service pattern, and then examining each item again in turn to identify those which would offer greatest impact against scheme objectives and/or be most deliverable (accounting for risk etc.). Appendix F details station/stop, modes, and service patterns which were excluded at the Part I option sift stage, and the supporting rationale for doing so. This station/stop location design aspect was informed



by a separate discrete exercise, documented in '*March to Wisbech Rail Re-Opening: Station Location Appraisal – Strategic Context & localised Spatial Assessment*' (see Appendix E).

6.7.1 Long list of options

The initial sift left the potential combinations of scheme components in Table 10, where their key merits are detailed.

Table 10: March to Wisbech Corridor – Retained Scheme Components

ID	Location	Rationale for Inclusion
Station or Stop Locations		
1	Town (currently available)	<ul style="list-style-type: none"> Provides closest physical location to the town centre on the former rail alignment – supports regeneration, accessibility and demand, with lower levels of car travel Access could be provided by Oldfield Lane, Nestle Purina, Victory Road, and/or Kingsley Avenue Land likely to be available to provide P&R provision
6	South of A47	<ul style="list-style-type: none"> Avoids highway overbridge for A47 and potential associated costs (depending on A47 proposals) Land likely to be available to provide P&R provision, albeit there are flood risks in this area
8	Town, NE of Weasenham Lane (slightly east of existing alignment at terminus)	<ul style="list-style-type: none"> Potential alternative to Site 1 depending on station accessibility findings– supports regeneration, accessibility and demand, with lower levels of car travel Assumed small capital cost saving relative to Site 1 due to shorter length of reinstated track Would improve accessibility to destinations in south of town
9	Garden Town	<ul style="list-style-type: none"> Stop/station on new alignment to serve Garden Town Helps support higher quantum of development in Garden Town and more sustainable/transit orientated development By directly serving the Garden Town, in much closer proximity than other sites, new public transport demand would be significantly increased. Scheme revenue and economic impacts would increase accordingly Could be combined with extension to serve town centre station/stop in vicinity of Site 10
10	Town centre	<ul style="list-style-type: none"> Maximises accessibility, and therefore demand, for residents of, and visitors to, Wisbech – supports regeneration, accessibility and demand, with lower levels of car travel Most likely to support direct town centre regeneration ambitions
Modes		
1	National Rail	 <ul style="list-style-type: none"> Diesel, electric or bi-mode traction – Greater Anglia TOC is currently introducing a new bi-mode fleet which would provide efficiencies for Wisbech-Cambridge services. Electric or bi-mode offer the potential for lower local and global emissions Easily integrated into existing franchise(s) and fares and ticketing Through running possibilities beyond March (capacity permitting at locations such as Ely North Junction) Technology well established Procurement and delivery routes well established High safety standards re level crossings etc. Potential for direct links to Ely, Cambridge North, Cam bridge, and/or Peterborough, depending on Ely North capacity, with associated accessibility benefits to Fenland residents and businesses

ID	Location	Rationale for Inclusion
2	Tram-Train 	<ul style="list-style-type: none"> • Diesel, electric or hybrid alternatives, including battery for potential on-street running in Garden Town and town centre (DC required otherwise – National Rail between Ely and Cambridge is AC). Electric or hybrid offer the potential for lower local and global emissions • Through running possibilities beyond March (capacity permitting, e.g. at EI North Junction), but this concept would need to be more thoroughly tested with Network Rail and the DfT • Would require high floor platforms on any on-street sections to integrate with existing National Rail network • Potential on-street running in Wisbech • Technology evolving • Potential for direct links to Ely, Cambridge North, Cambridge, and/or Peterborough, depending on Ely North capacity, with associated accessibility benefits to Fenland residents and businesses • Medium standards re level crossings etc., which are likely to result in cost efficiencies versus National Rail (except at the A47 where total segregation will be required)
4	Guided Busway 	<ul style="list-style-type: none"> • Diesel or hybrid alternatives available. The latter would assist in minimising adverse local and global environmental impacts • Different levels of segmentation possible on March-Wisbech existing rail alignment • Potential on-street running in Wisbech to enhance accessibility to the network • Technology well established – wide choice of vehicle and “track” specification to provide a ‘lower cost’ alternative • Medium standards re level crossings etc., which are likely to result in cost efficiencies versus National Rail (except at the A47 where total segregation will be required). This is assumed given the emerging nature of the technology

Service Patterns

2	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2sph 	<ul style="list-style-type: none"> • Provides desired accessibility to major centres and associated services and opportunities • Two direct services per hour deemed a desired minimum threshold for encouraging economic connections between Wisbech and Cambridge
6	<ul style="list-style-type: none"> • Wisbech-March 3sph 	<ul style="list-style-type: none"> • Alternative solution which, depending on mode, either avoids pathing constraints through EI North Junction or reflects the lack of opportunities for segregated onward operation beyond March • Potential for integration with existing rail services at March Station (principally the hourly Arriva Cross Country services)
9	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2sph; Wisbech-March 1sph 	<ul style="list-style-type: none"> • Provides desired accessibility to major centres and associated services and opportunities • Additional infill shuttle to integrate with hourly Arriva Cross Country service
10	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1sph; Wisbech-March 1sph 	<ul style="list-style-type: none"> • Alternative option which reflects potential for fewer paths being available through Ely North Junction, but maintains direct Cambridge connectivity • Infill hourly shuttle to integrate with hourly Arriva Cross Country service at March Station
11	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1sph; Wisbech-March 2sph 	<ul style="list-style-type: none"> • Alternative option which reflects potential for fewer paths being available through Ely North Junction
12	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1sph; Wisbech-Peterborough 1sph 	<ul style="list-style-type: none"> • Alternative option which reflects potential for fewer paths being available through Ely North Junction, but maintains direct Cambridge connectivity • Provides dual focus with connection to Peterborough with the associated onward connectivity opportunities this provides

Remaining scheme components were then packaged into a set of holistic viable options. The results of this packaging is the 'long list' shown in Table 11. This combines the modes, service patterns and station/stop locations into a set of discrete 'packages'. Flexibility remains, e.g. the potential station or stop locations for a tram-train mode will be determined through the parallel station location study.

Table 11: March to Wisbech Corridor Long List of Options

ID	Mode	Service	Wisbech Stations	Station Names	Notes
1	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2tph 	1	Town centre (currently available)	<ul style="list-style-type: none"> • Option to iterate station to site 2 should it become available
2	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2tph 	6	South of A47	<ul style="list-style-type: none"> • Avoids A47(T) highway overbridge
3	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2tph 	9	Garden Town	<ul style="list-style-type: none"> • New alignment to west of town
4	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-March 1tph 	1	Town centre (currently available)	<ul style="list-style-type: none"> • Iteration of Option 1 assuming only 1tph possible through Ely North Junction
5	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-March 1tph 	6	South of A47	<ul style="list-style-type: none"> • Iteration of Option 2 assuming only 1tph possible through Ely North Junction
6	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-March 1tph 	9	Garden Town	<ul style="list-style-type: none"> • Iteration of Option 3 assuming only 1tph possible through Ely North Junction
7	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-Peterborough 1tph 	1	Town centre (currently available)	<ul style="list-style-type: none"> • Iteration of Option 1 assuming only 1tph possible through Ely North Junction
8	National Rail	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-Peterborough 1tph 	6	South of A47	<ul style="list-style-type: none"> • Iteration of Option 2 assuming only 1tph possible through Ely North Junction
9	Tram-Train	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Tram-Train alternative to Option 1
10	Tram-Train	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 2tph; • Wisbech-March 1tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Adds third March-Wisbech service due to local connectivity possibilities
11	Tram-Train	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-March 1tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Tram-Train alternative to Option 4
12	Tram-Train	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-March 2tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Adds March-Wisbech service due to local connectivity possibilities
13	Tram-Train	<ul style="list-style-type: none"> • Wisbech-Ely-Cambridge 1tph; • Wisbech-Peterborough 1tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Tram-Train alternative to Option 7
14	Guided Busway	<ul style="list-style-type: none"> • Wisbech-March 3tph 	12	8, 9 and 10	<ul style="list-style-type: none"> • Low cost alternative – assumed maximum level of provision within financial constraints

Source: Mott MacDonald

6.7.2 Part II option sift

Table 12 details the outcomes of the Part II appraisal. Within this, each:

- Objectives from Table 5 are given a weighting;
- Objective within a given impact is given equal weighting; and
- Option is scored on a scale of +3 to -3 against each objective.

Weighted scores and ranks are then produced. Weights for the four themes were agreed at the sifting workshop on 16th July 2019 and reflect the rationale for intervention detailed in Section 2 which drove the objectives described in Section 4.1. This places the greatest emphasis on the:

- Economy, seeking to twin address both the lower levels of earnings and productivity observed in Wisbech and the pressures which constrained labour supply are exerting on the potential expansion of Cambridge; followed by
- Environment, recognising that sustainable modes which maximise their effectiveness in reducing car-kms will provide significant contributions to reductions in global greenhouse gas and local NOx and particulate emissions.

Consistent with TAG, major risks around feasibility, deliverability and constructability are noted, but do not form part of the appraisal. These risks will be formally quantified as part of the subsequent economic appraisal of 'short listed' options.

Table 12: March to Wisbech Objective Weighting

Theme	Weight	Sub-Criteria	Sub-Weight
Economy	0.4	3	0.13
Environmental	0.3	1	0.30
Social	0.2	2	0.10
Financial	0.1	1	0.10

Source: Mott MacDonald

The results in Figure 12 were the result of an internal Mott MacDonald workshop, with results subsequently validated in a separate client workshop (where the weights to objectives were also applied).

As the options introduce a new mode, and an associated increase in connectivity, the options score positively on most objectives. Other key features of the scoring include:

- A greater number of employment and service related (e.g. health and education establishments) attractions for services to Cambridge, with direct services and higher frequencies to this location naturally scoring higher;
- Tram-Train options score higher due to their greater accessibility to existing and potential future populations around Wisbech, particularly with regard to town centre regeneration as they also offer opportunities for local travel; and
- Financial scores are negative as it is likely that, depending on the scale of new development, all options will require some degree of ongoing public subsidy. This will be tested further in the demand modelling, featuring in the Economic Case, and being explored further in the Financial Case.

Figure 12: Part II Option Appraisal Results

Options																	
						Economy		Environmental		Social		Financial					
						Improve access to key employment and education sites (Alconbury, Peterborough Centre, Ely, Cambridge Science Park, Cambridge Biomedical Campus & Cambridge Centre)	Improved connectivity to major centres for inward investment to Wisbech (Cambridge, Peterborough, London and Stansted Airport)	Support delivery of housing - Fenland Local Plan and Wisbech Garden Town which allows key employment locations to continue to grow	Help to support economic growth in a sustainable manner by providing an attractive alternative to car travel, reducing associated externalities	Improve local access to key services, e.g. medical facilities, colleges and universities (located in major centres, e.g. Cambridge, Huntingdon, King's Lynn and Peterborough)	Support the regeneration of the town centre and existing urban area	To minimise long term commitments for public revenue support					
ID	Mode	Service	Statio	Varia	nts/Description	Station Names	0.13	0.13	0.13	0.30	0.10	0.10	0.10	Score	Rank	Economic Case	
																Risks / Deliverability etc.	
1	National Rail	Wisbech-Ely-Cambridge 2tph	i		Assume (i) or (viii) but with scope to extend to (ii) if site becomes available	Town centre (currently available)	3	3	2	2	3	2	-1	2.1	3	DS2	Ely North Junction; level crossings; March East signalbox
2	National Rail	Wisbech-Ely-Cambridge 2tph	vi			South of A47	2	2	1	1	2	0	-2	1.0	12		Ely North Junction; level crossings; March East signalbox
3	National Rail	Wisbech-Ely-Cambridge 2tph	ix			Garden Town	1	2	3	2	1	0	-1	1.4	8		Ely North Junction; level crossings; March East signalbox
4	National Rail	Wisbech-Ely-Cambridge 1tph; Wisbech-March 1tph	i			Town centre (currently available)	2	2	2	1	2	2	-1	1.4	8		Ely North Junction - 1tph unfeasible; level crossings; March East signalbox
5	National Rail	Wisbech-Ely-Cambridge 1tph; Wisbech-March 1tph	vi			South of A47	1	1	1	1	1	0	-2	0.6	14		Ely North Junction - 1tph unfeasible; level crossings; March East signalbox; Wisbech catchment likely to be heavily skewed to north
6	National Rail	Wisbech-Ely-Cambridge 1tph; Wisbech-March 1tph	ix			Garden Town	1	2	3	1	1	0	-2	1.0	11		Ely North Junction - 1tph unfeasible; level crossings; March East signalbox
7	National Rail	Wisbech-Ely-Cambridge 1tph; Wisbech-Peterborough 1tph	i			Town centre (currently available)	2	3	2	1	2	2	-2	1.4	7	DS2a	Works at March Station; level crossings; March East signalbox; 2nd service may have to bypass March or require significant new infrastructure thereat
8	National Rail	Wisbech-Ely-Cambridge 1tph; Wisbech-Peterborough 1tph	vi			South of A47	1	2	1	1	1	0	-3	0.6	13		Works at March Station; level crossings; March East signalbox; 2nd service may have to bypass March; 2nd service may have to bypass March or require significant new infrastructure thereat; Wisbech catchment likely to be heavily skewed to north
9	Tram-Train	Wisbech-Ely-Cambridge 2tph	xii		Potential for Ely North bypass and new station at Milton; also opportunity to extend network north to Holbeach, King's Lynn et al; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	3	3	3	3	3	3	-1	2.6	1	DS1	Cost per km of extending to Garden Town; conservation area affects potential alignments on west of Nene; assume high platforms throughout (acceptable in Town Centre); Ely North junction - 2tph unfeasible
10	Tram-Train	Wisbech-Ely-Cambridge 2tph; Wisbech-March 1tph	xii		Potential for Ely North bypass and new station at Milton; also opportunity to extend network north to Holbeach, King's Lynn et al; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	3	3	3	3	3	3	-1	2.6	1	DS1a	Cost per km of extending to Garden Town; conservation area affects potential alignments on west of Nene; assume high platforms throughout (acceptable in Town Centre); Ely North junction - 2tph unfeasible
11	Tram-Train	Wisbech-Ely-Cambridge 1tph; Wisbech-March 1tph	xii		Potential for Ely North bypass and new station at Milton; also opportunity to extend network north to Holbeach, King's Lynn et al; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	2	2	3	2	2	3	-2	1.8	5		Cost per km of extending to Garden Town; conservation area affects potential alignments on west of Nene; assume high platforms throughout (acceptable in Town Centre); Ely North junction - 1tph unfeasible
12	Tram-Train	Wisbech-Ely-Cambridge 1tph; Wisbech-March 2tph	xii		Potential for Ely North bypass and new station at Milton; also opportunity to extend network north to Holbeach, King's Lynn et al; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	2	2	3	2	2	3	-2	1.8	5		Cost per km of extending to Garden Town; conservation area affects potential alignments on west of Nene; assume high platforms throughout (acceptable in Town Centre); Ely North junction - 1tph unfeasible
13	Tram-Train	Wisbech-Ely-Cambridge 1tph; Wisbech-Peterborough 1tph	xii		Potential for Ely North bypass and new station at Milton; also opportunity to extend network north to Holbeach, King's Lynn et al; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	2	3	3	2	2	3	-2	2.0	4		Cost per km of extending to Garden Town; conservation area affects potential alignments on west of Nene; assume high platforms throughout (acceptable in Town Centre); Ely North junction - 1tph unfeasible; additional risks associated with infrastructure and capacity towards Peterborough from joint running
14	BRT	Wisbech-March 3tph	xii		Network of routes connecting existing and garden town to new segregated alignment; only run to existing Wisbech urban area in absence of Garden Town	VIII, X and IX	1	1	2	2	1	2	-1	1.3	10	LC	What is the exact concept? Quality and cost can vary to a significant extent.; through ticketing?

Source: Mott MacDonald

6.7.3 Short list of options

The results of the Part II sifting and appraisal is the 'long list' shown in Table 13. This provides:

- Two core options – DS1 and DS2;
- A Low Cost (LC) alternative in line with TAG (DS3); and
- Proposed sensitivity tests around the service patterns (more sensitivity tests will be included in the FBC, e.g. on costs, development assumptions etc). Those with suffixes “a” or “b” are service-related sensitivity tests, albeit they would have significant infrastructure implications, e.g. with regard to the layout and operation of March Station. DS4 and DS5 are more fundamental infrastructure choices, with the former considering the avoidance of crossing (underneath) the (realigned) A47 via a providing a parkway station only, and the latter introducing an alignment via the Garden Town and taking the opportunity to reach the town centre – this has been subject to separate work – see '*Tram-Train Feasibility Study*'. It should be noted that the Garden Town development is uncommitted development and DS5 cannot be advanced as the core preferred option as it only becomes a viable alternative with that demand driver.

Table 13: March to Wisbech Corridor Short List of Options

ID	Mode	Service	Stations	Station Names
Core options				
DS1	Tram-Train	Wisbech-Ely-Cambridge 2tph	1	Wisbech Town
DS2	National Rail	Wisbech-Ely-Cambridge 2tph	1	Wisbech Town
DS3 (LC)	Guided Busway	Wisbech-March 3bph	1	Wisbech Town
Options related to sensitivity tests				
DS1a	Tram-Train	Wisbech-Cambridge 2tph and Wisbech-March 1tph	1	Wisbech Town
DS1b	Tram-Train	Wisbech-Cambridge 1tph and Wisbech-March 1tph	1	Wisbech Town
DS2a	National Rail	Wisbech-Cambridge 1tph and Wisbech-Peterborough 1tph	1	Wisbech Town
DS4	National Rail	Wisbech-Ely-Cambridge 2tph	6	Wisbech Parkway
DS5	Tram-Train	Wisbech-Ely-Cambridge 2tph	9 and 10	Wisbech Garden Town & Wisbech Town Centre

Source: Mott MacDonald

7 Assessment of shortlisted options

Having identified a short list of options, further outline design and economic assessment was undertaken to help determine a preferred mode and station location(s). Service patterns remain subject to sensitivity testing as the demand modelling, economic appraisals and required designs are progressed through FBC and GRIP, or GRIP equivalent, design stages.

7.1 Strengths, Weaknesses, Opportunities and Threats Analysis

Prior to the full demand modelling and economic appraisal, a strengths, weaknesses, opportunities, and threats (SWOT) analysis was undertaken of the three shortlisted modes, as documented in Table 14, Table 15 and Table 16. The aim being to help inform mode selection as a primary consideration but being cognisant of the interrelated station location and service pattern considerations.

Table 14: DS1 – Tram-Train SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> • Dual mode providing for segregated and on-street sections, e.g. diesel as core and battery in urban areas • Multiple station/stop solution – integrating Garden Town with existing settlement and improving local accessibility • Possibility for creating true ‘town centre’ stop/station with associated accessibility and regeneration benefits, in both Wisbech and Wisbech Garden Town • Associated funding package opportunities from serving Garden Town • Standards for infrastructure likely to be less, e.g. in relation to level crossings • Potential for through running to Cambridge and Peterborough, removing interchange penalty, and providing additional scheme benefits for intermediary communities • Could be more readily delivered outside of Network Rail standards and processes which may expedite delivery and reduce costs on elements such as the level crossings 	<ul style="list-style-type: none"> • Emerging technology (in the UK) – cost and deliverability uncertainties • Bespoke fleet required with associated stabling requirements and potential inefficiencies for TOC • If delivered outside of Network Rail processes and standards, subsequent acceptance for through running may be more difficult • High floor platforms in on-street/urban locations • Highway interactions
Opportunities	Threats
<ul style="list-style-type: none"> • Additional services through Ely North could be possible depending on solution at that location • Hybrid propulsion technologies could be available in future (e.g. by time of anticipated opening in late 2020s), e.g. AC power between Ely and Cambridge, diesel between Ely and Wisbech, and battery for on-street running • Further stop and station opportunities, e.g. Milton • Potential for diversion to avoid Ely North and serve Ely itself more directly • Phasing solution, e.g. March-Wisbech standalone, extend to Cambridge, extend to town centre/Garden Town, and divert around Ely North • New alignment to Garden Town and Town Centre would be integrated with the former development and associated infrastructure, ameliorating concerns over land acquisition, disruption, and disturbance • Onward connections to north, e.g. Holbeach or King’s Lynn • Truly Transit Orientated Development (TOD) in Garden Town with station/stop at heart 	<ul style="list-style-type: none"> • Land acquisition costs to serve town centre • Highway impacts • Network Rail approvals for through running on to National Rail network • Network Rail appetite for engagement • Possible network adaptations to accommodate new fleet • Capacity at Ely North Junction, Peterborough Station, and potentially, depending on other future services, Cambridge Station • Works at March East signalbox / Romford ROC • Value for money offered by on-street section or segregated alignment to Garden Town • Physical and environmental constraints with preferred on-street and/or segregated alignment to Garden Town. River Nene must be crossed (albeit new highway is also likely to be required in same vicinity)

Source: Mott MacDonald

Table 15: DS2 – National Rail SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> Established technology Compliant with Network Rail standards Potential for through running to Cambridge and Peterborough, removing interchange penalty, and providing additional scheme benefits for intermediary communities Greater Anglia now introducing bi-mode fleet which potentially addresses some of the 'weaknesses' associated with diesel and electric as standalone propulsion options 	<ul style="list-style-type: none"> Diesel service would have adverse environmental implications, or additional cost of electrification, including, possibly, March to Ely (see also new stock opportunity) Single station/stop solution and this could be peripheral to main residential locations and commercial activity, with difficult access Costs associated with addressing level crossings on route – very likely to require costly highway diversions and bridges, and landscape intrusion If infrastructure delivery is reliant on Network Rail, risk of delays, extensions and cost overruns. If delivery is via third-party, this approach is still relatively untested
Opportunities	Threats
<ul style="list-style-type: none"> Additional services through Ely North could be possible depending on solution at that location Through running beyond Cambridge, e.g. to Stansted Airport or London Split destination service, e.g. Peterborough and Cambridge, more deliverable. Could be delivered in a phased manner, e.g. aligned with Ely North Junction enhancement Potential for third-party (private or local authority) led infrastructure delivery solution following Hansford Review New hybrid units for Greater Anglia franchise likely to offer operational cost efficiencies and environmental gains versus pure diesel services 	<ul style="list-style-type: none"> Network Rail appetite for engagement Capacity at Ely North Junction, Peterborough Station, and potentially, depending on other future services, Cambridge Station Wisbech – Cambridge services may be remote from Greater Anglia stabling options Works at March East signalbox / Romford ROC Additional works required for split destination service

Source: Mott MacDonald

Table 16: DS3 – Guided Busway SWOT Analysis

Strengths	Weaknesses
<ul style="list-style-type: none"> Dual mode providing for segregated and on-street sections Multiple station/stop solution – potentially integrating Garden Town with existing settlement and improving local accessibility Possibility for creating true 'town centre' stop/station with associated accessibility and regeneration benefits Potential future integration with wider CAM or guided bus concept for Cambridge Associated funding package opportunities from serving Garden Town Standards for infrastructure will be less Delivered outside of Network Rail standards and processes Lower cost than rail and flexibility on specification Avoids Ely North interaction Would require less adaptation to town centre traffic management and infrastructure Delivery could be led by CPCA, and integrated into wider guided bus or CAM programme delivery, realising efficiencies 	<ul style="list-style-type: none"> Limited potential for onward running beyond March without either costly infrastructure works to provide new segregated alignment or using existing highways with associated performance and resilience risks Interchange at March for onward destinations – low level of service here likely to make public transport unattractive for such journeys Potential issues with through ticketing and physical interchange (if not integrated into March Station) Less transformational, as the mode and service pattern are less transformational and links to funding opportunities less tangible and more difficult Could be emerging technology – cost and deliverability uncertainties Bespoke fleet required with associated stabling requirements Lower visibility if not prioritised in town centre and stop is a simple 'bus stop'

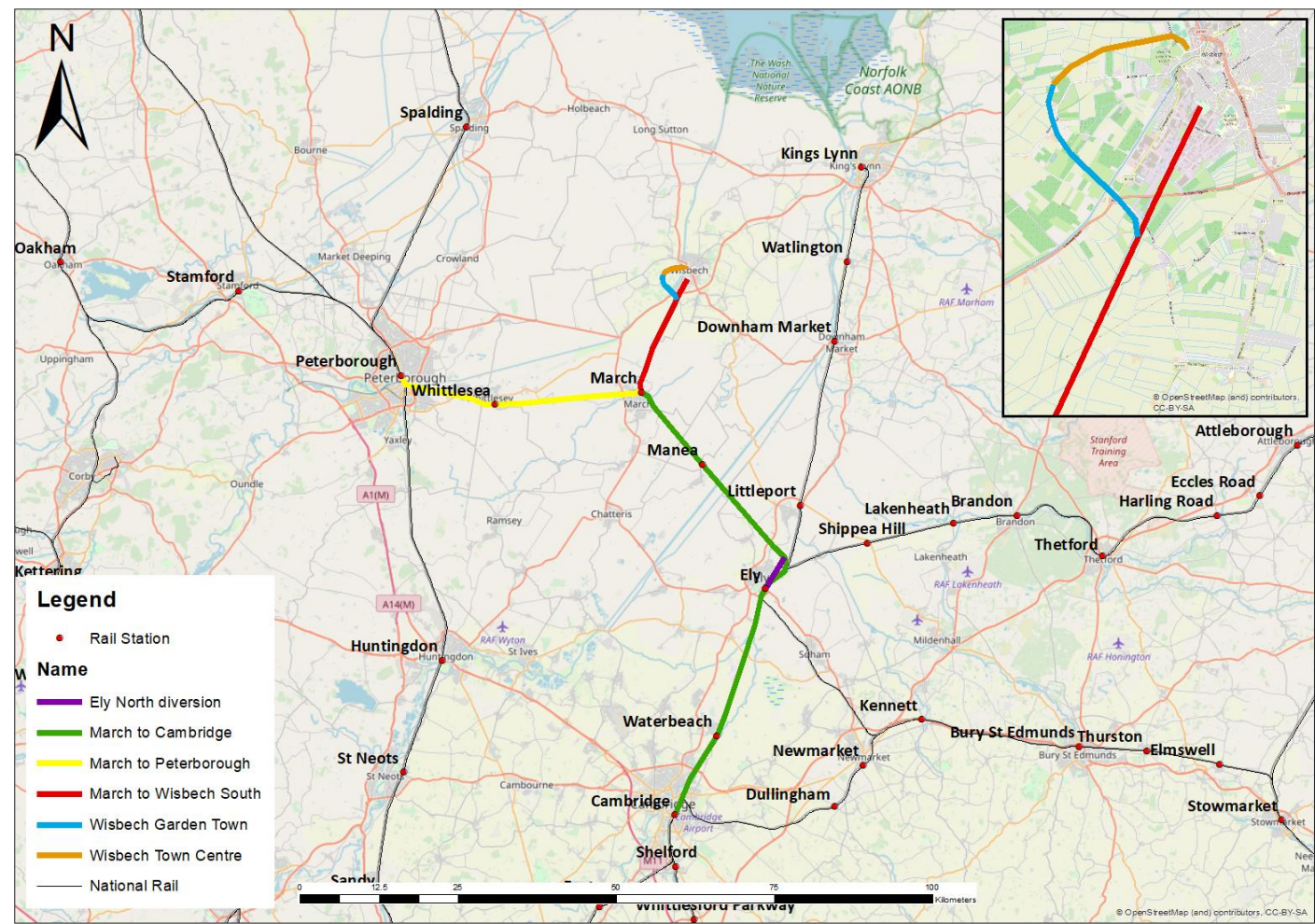
Opportunities	Threats
<ul style="list-style-type: none"> • Clean propulsion technologies • Flexibility on specification • Phasing solution, e.g. March-Wisbech standalone, extend to town centre/Garden Town • Flexibility on routing within Wisbech away from any segregated solutions • Onward connections to north, e.g. Holbeach or King's Lynn • Truly Transit Orientated Development (TOD) in garden Town with station/stop at heart 	<ul style="list-style-type: none"> • Introduction of a new mode – in between current guided bus and CAM proposals • Works at March Station could be greater if truly integrated with rail • Value for money offered by segregated alignment to Garden Town, or difficulties in accessing using existing highway • Physical and environmental constraints with preferred on-street and/or segregated alignment to Garden Town

Source: Mott MacDonald

Lighter alternatives with the potential for multiple station locations offer opportunity for a phased solution within Wisbech. Beyond March, both lighter tram-train and National Rail alternatives offer opportunity for phased service introduction.

As noted in the SWOT analysis, these include potential phased introduction of through services to Cambridge or Peterborough (beyond March), pending further engineering work and/or Network Rail acceptance (this phased option is appraised in section 7.3). In Wisbech, intermediary destinations (e.g. Ely), and at Cambridge, this offers opportunities for on-street running which may help alleviate network capacity issues.

Figure 13: March to Wisbech Phasing Opportunities



Source: Mott MacDonald

7.2 Costs

To support the assessment of the shortlisted options DS1 to DS5, new capital cost estimates have been produced. These are summarised in Tables 20 to 24. Costs are initial point estimates in 2019 Q2 prices, with an initial risk adjustment, but without the subsequent application of Optimism Bias (OB) which is included in Section 7.3. To aid comparison the stop/station location in DS1 to DS3 has been standardised to Station Site #1 (Wisbech Town). The critical differentiators are:

- Lower costs from the tram-train solution for the intermediary level crossing works in DS1 versus DS2;
- Guided Busway costs, in DS3, have been taken from unit costs per km for similar recent schemes coupled with estimates for depot requirements etc.;
- Cost savings from not extending beyond Wisbech Parkway (Site #6; DS4), from both the avoidance of creating an overbridge for the A47 and a reduction in new rail infrastructure; and
- Addition of on-street running and an additional stop in DS5, with the cost saving in DS1 versus DS2 being slightly lower than the estimates to extend the route using tram-train operation in DS5.

Table 17: DS1 – Tram-Train to Station Site #1, Capital Cost Estimates

Component	Costs (£m, 2019 Q2 prices)
Wisbech station (2 platforms)	5.2
Re-open line for light rail operation (includes March East signalbox*)	86.2
Level crossing works	10.3
March station (re-open 2 through platforms)	18.1
Extend line to Wisbech Centre	7.2
Risk @ 20%	25.4
TOTAL	152.5

Source: Mott MacDonald

Table 18: DS2 – National Rail to Station Site #1, Capital Cost Estimates

Component	Costs (£m, 2019 Q2 prices)
Wisbech station (2 platforms)	5.2
Re-open line for heavy rail operation (includes March East signalbox*)	85.3
Level crossing works	51.1
March station (re-open 2 through platforms)	18.2
Extend line to Wisbech Centre	7.2
Risk @ 20%	33.4
TOTAL	200.4

Source: Mott MacDonald

Table 19: DS3 – Guided Busway to Station Site #1, Capital Cost Estimates

Component	Costs (£m, 2019 Q2 prices)
Route construction	45.3
Depot	0.6
Vehicle costs	1.2
Charging infrastructure	1.2
Design, management etc.	14.2
Risk @ 20%	12.5
TOTAL	75.1

Source: Mott MacDonald from unit estimates for comparable segregated Guided Busway schemes

Table 20: DS4 – National Rail to Station Site #6, Capital Cost Estimates

Component	Costs (£m, 2019 Q2 prices)
Wisbech station (2 platforms)	5.2
Re-open line for light rail operation (includes March East signalbox*)	85.3
Level crossing works	32.2
March station (re-open 2 through platforms)	18.2
Extend line to Wisbech Centre	N/A
Risk @ 20%	28.2
TOTAL	169.1

Source: Mott MacDonald

Table 21: DS5 – Tram-Train to Station Sites #9 and10, Capital Cost Estimates

Component	Costs (£m, 2019 Q2 prices)
Wisbech Town Centre station (2 platforms)	5.2
Re-open line for light rail operation (includes March East signalbox*)	86.2
Level crossing works	2.2
March station (re-open 2 through platforms)	18.1
Extend line to Wisbech Centre and Garden Town, includes stop at latter	66.3
Risk @ 20%	35.5
TOTAL	213.5

Source: Mott MacDonald

Costs for all five options are summarised in Table 22.

Table 22: DS1 - DS5 Total Capital Cost Estimate Comparison

Options	Costs (£m, 2019 Q2 prices)
DS1 – Tram-Train to Station Site #1 (Wisbech Town)	152.5
DS2 – National Rail to Station Site #1 (Wisbech Town)	200.4
DS3 – Cambridge Autonomous Metro to Station Site #1 (Wisbech Town)	192.4
DS4 – National Rail to Station Site #6 (Wisbech Parkway)	169.1
DS5 – Tram-Train to Station Sites #9 and10 (Wisbech Garden Town and Wisbech Town Centre)	213.5

Source: Mott MacDonald

7.3 Economic Assessment

Using the costs in Section 7.2, operating cost estimates, and outputs from initial demand modelling and economic appraisal, initial assessments of DS1 to DS5 have been produced (shown in Table 23). These show broadly comparable initial VfM estimates for DS1, DS2 and DS5, all being in the 'high' category. Further iterations to the modelling approach for DS5, which is a sensitivity test, to better capture the impact of new development at the Garden Town²¹.

Table 23: DS1 - DS5 Economic Assessment Summary

Metric²²	DS1 – Tram-Train to Station Site #1	DS2 – National Rail to Station Site #1	DS3 – Guided Busway to Station Site #1	DS4 – National Rail to Station Site #6	DS5 – Tram-Train to Station Sites #9 and 10
PVB	400 to 450	400 to 450	50 to 100	300 to 350	400 to 450
PVC	150 to 200	200 to 250	50 to 100	200 to 250	200 to 250
NPV	250 to 300	200 to 250	-50 to 0	100 to 150	200 to 250
BCR	2.5 to 3.0	2.0 to 2.5	0.5 to 1.0	1.5 to 2.0	2.0 to 2.5
VfM	High	High	Poor	Medium	High

Source: Mott MacDonald

DS4, running to the Parkway Station only, offers medium VfM due to the elongated access/egress times and costs. The impacts of these on demand, revenue, and user impacts do not offset the cost savings in the BCR. A qualitative reflection on the merits of the parkway versus more central alternatives is given in Section 7.4, based on the previous option sifting and appraisal.

DS3, due to the lower benefits (due to interchange requirements, little incremental level of service change at March, and no changes in level of service beyond March), offers the lowest VfM.

7.4 Wisbech Parkway

At this stage we also recommend that further detailed design work on DS4, the National Rail option with a station at Site #6 (Wisbech Parkway), is not advanced. This would principally be in relation to station design as it otherwise shares common elements with other options which extend closer to the core urban area. This is because it offers lower VfM than other rail-based options, and it:

- Does not cater well for the existing local catchment – it is distant from where people live now, especially for those without access to a car;
- Does little for inwards connectivity within Wisbech;
- Does little to encourage use of more sustainable transport modes, as it will be heavily reliant on Park & Ride (P&R) and Kiss & Ride (K&R) for access/egress, with the additional pressure on the local highway network this would create for those who are attracted to rail;
- Does little to support direct regeneration of town centre, being too distant for any attributable land use impacts;

²¹ These include the treatment of 'empty zones', with no existing development, and travel patterns for zones with very little development where travel patterns and behaviour are likely to significantly differ between the existing and new development.

²² Present Value of Benefits (PVB); Present Value of Costs (PVC); Net Present Value (NPV); Benefit:Cost Ratio (BCR); and Value for Money (VfM).

- Lies in Flood Zone 3, making it unlikely to be viable to provide any additional development immediately around the Parkway Station; and
- Has potential for phasing to Garden Town but is less feasible/more costly than the tram-train alternative, e.g. DS5, due to larger curve radii, additional bridges, and its full segregation/dedicated corridor precludes transit orientated development (TOD).

7.5 Assumptions and Risk

A set of key assumptions, for the remaining DS options (excluding DS3 which will be evolved as the low cost alternative), which each carry associated risks for subsequent quantified consideration, are shown in Table 24.

Table 24: Do Something Options – Key Assumptions

ID	Assumption	DS1 – Tram-Train to Station Site #1	DS2 – National Rail to Station Site #1	DS5 – Tram-Train to Station Sites #9 and 10
1	Paths available through Ely North Junction to support 2tph to Cambridge	✓	✓	✓
2	Development at Garden Town included	N/A	N/A	✓ (sensitivity test)
3	Costs associated with March East control area re-signalling included, i.e. no Romford ROC within implementation timescales	✓	✓	✓
4	All existing level crossings between March and Wisbech are closed – construction of new grade separated crossings required	✗	✓	✗
5	Costs for grade separation of A47 included	✓	✓	✓
6	Possible requirements for enhancement of existing Network Rail infrastructure between March and Cambridge (due to increase in rail traffic to accommodate Wisbech Cambridge services) - costs excluded	✓	✓	✓
7	Risk at 20% + Optimism Bias at 64% applied	✓	✓	✓
8	Single line track between March and Wisbech – sufficient operational robustness with services passing at March Station or between March and Cambridge	✓	✓	✓
9	Vehicle performance assumed adequate to avoid disruption of existing National Rail services	✓	N/A	✓
10	No adverse impact to road traffic from on street running/level crossings – likely to be segregated except in Garden Town	✓	N/A	✓
11	A47 corridor improvement proposals excluded	✓	✓	✓

ID	Assumption	DS1 – Tram-Train to Station Site #1	DS2 – National Rail to Station Site #1	DS5 – Tram-Train to Station Sites #9 and 10
12	Operational analysis – assumed level crossing delay for tram/train is 2 min compared to Heavy Rail	✓	N/A	✓
13	Level crossings reinstated between March to Wisbech for all crossings except A47	✓	X	✓

Source: Mott MacDonald

7.6 Five Case Assessment

The option sifting and appraisal detailed in preceding sections focuses on Strategic and Economic Case considerations. To help inform the final sifting stage, the client workshop on 8th July 2019 included a wider consideration of the other three cases in the DfT and HM Treasury five case model. The five cases are weighted based on discussions with the clients and stakeholders on 8th July 2019. This was necessary to draw in some of the considerations around feasibility, risk, procurement, funding and finance, and scheme/service delivery which sit within the Financial, Commercial, and Management Cases.

Scores across the five cases reflect:

- Findings from existing Strategic and Economic Case analysis. The former, as extracted from the draft business case, is summarised in Section 2 and the initial assessment for the latter in Section 7.3;
- Financial Case metrics reflect differences in funding options, including revenue generation and the ability of this to cover ongoing operating costs. Revenue generation and operating cost estimates have both been completed as part of the initial Economic Case. DS1 has a lower capital cost than DS2 but this is judged to be offset by the potentially higher potential for ancillary revenue generation associated with a National Rail service of the same configuration (for example, from providing testing services for rolling stock manufacturers or, over the long-term with further investment, offering rail freight services on the corridor). DS5 scores higher than DS1 and DS2 due to its higher passenger demand levels and hence user revenues, linked to the Garden Town development and the ability to serve the catchments in closer proximity, and also ancillary funding possibilities linked to the development (such as from developer contributions or other forms of land value capture, which in other schemes have been substantial), as well as synergies on costs with other infrastructure proposals;
- DS2 and DS3 score highest on the Commercial Case as there are clearer and more established procurement and delivery strategies and risk mitigation procedures for National Rail and Guided Busway alternatives. By contrast, the tram-train options in DS1 and DS5 has a less well-established set of processes to ensure successful delivery, potentially leading to greater risk of cost-overruns and/or delays. There is also a higher level of interface risk with tram-train options relative to National Rail options (even where the infrastructure for the latter is owned and operated under a third-party structure), relating to operating of a light rail service on National Rail infrastructure between Cambridge and March; and
- DS2 and DS3 score highest on the Management Case section as they are closest to current client experience and skillset, with Guided Busway proposals being considered akin to the CAM scheme being developed by the CPCA and guided bus projects that have been delivered by CCC, and a National Rail solution clearly falling within a Network Rail Governance for Rail Investment Projects (GRIP) set of processes and the accompanying Rail Network Enhancement Pipeline (RNEP), or, if progressed under a third-part structure, via Network Rail's post-Hansford Review third-party investor framework. DS1 and DS5

score lower as there is no existing client knowledge and experience of delivering tram-train schemes, plus the technology and delivery mechanisms are less proven.

It should be noted that, just as for the Part II option sift against scheme objectives, the scoring of alternatives against the five cases is subjective and based on input from the consultant and client team. Scores could be subject to revision as the five cases are advanced through the business case development cycle.

Table 25: March to Wisbech Shortlisted Options – Initial 5 Case Assessment

Option	Strategic Case	Economic Case	Financial Case	Commercial Case	Management Case	Weighted Total	Rank
<u>Weight:</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>1</u>	<u>1</u>		
DS1: Hybrid 'Tram-Train'	4	4	3	2	2	27.0	3
DS2: National Rail	3	4	3	4	4	28.0	1
DS3: Guided Busway	2	0	1	3	4	14.0	4
DS5: Hybrid 'Tram-Train' with Garden Town extension	4	4	4	2	2	28.0	1

Source: Mott MacDonald

7.7 Synopsis

This section has detailed additional analysis across shortlisted options from Sections 6 and 7. This has identified that:

- A Guided Busway-based option in this corridor performs the worst of all the options due to its lower benefits. These are a result of the interchange requirement at March for passengers to/from Wisbech, coupled with little or no incremental improvements in level of service at March and beyond towards Cambridge;
- The Wisbech Parkway station option for National Rail (DS4) will deliver lower benefits for lower capital costs; however, the reduction in the former is greater than the latter meaning the VfM is lower than the town option (DS2);
- There are significant opportunities and risks/threats associated with the tram-train across aspects of all five cases. Capital costs for the core option (DS1) are estimated to be lower than the National Rail option (DS2), and the sensitivity test with a new alignment to serve the Garden Town (DS5) indicates that the capital cost for that option would be circa 5 to 10% higher than DS2;
- Benefits will be very similar for the National Rail and tram-train options, and the VfM for DS1, DS2 and DS5 is comparable;
- Five case assessment indicates that the National Rail to Wisbech Town (DS2) and the tram-train solution linked to the Garden Town (DS5) perform best. Tram-train solutions score highest on the Strategic Case due to their flexibility and cost, with DS5 boosted on the Financial Case by the additional revenue which would be expected from serving both the Garden Town and existing settlement more directly. Tram-train solutions score lower on the Commercial and Management Cases due to uncertainties regarding procurement and delivery, and the associated risks which are created; and
- The differentiation between the tram-train and National Rail options as preferred mode is still not clear cut. However, it is recommended that design stages and further modelling and economic appraisal should though focus on DS2 given its stronger commercial and

management case and the fact that much of the benefits of DS5 are linked to the Garden Town, and that this development carries considerable uncertainty.

7.8 Phasing Options of National Rail DS2 Option

Two additional sensitivities considering the economic case were undertaken following the completion of the Five Case Assessment at the client's request where:

- i. only shuttle services were able to be provided from Wisbech to March for the duration of the study period. This option (DS6) assumes Wisbech – March 2tph.
- ii. Direct services from Wisbech to Cambridge were delayed by 10 years after the scheme opening. This option (DS7) assumes Wisbech – March 2tph until 2038 and then Wisbech – Cambridge 2pth from 2038).

These sensitivities reflect the uncertainty at the time of writing this report over the solution for addressing the existing constraints at Ely North Junction, where enhancements may be required to deliver either 1 or 2 tph between Wisbech and Cambridge.

Each of these sensitivities has been based on the design configuration for DS2 (National Rail to Wisbech Town). The estimated capital costs for DS6 is shown in Table 31. The cost estimate for DS7 is the same as DS2.

Table 26: DS6: National Rail “Shuttle Service” Capital Costs

Component	Costs (£m, 2019 Q2 prices)
Wisbech station (2 platforms)	2.0
Re-open line for light rail operation (includes March East signalbox*)	85.3
Level crossing works	51.1
March station (re-open 1 bay platform)	5.6
Extend line to Wisbech Centre	7.2
Passing loop	8.7
Risk @ 20%	31.9
TOTAL	191.8

Source: Mott MacDonald

Using the costs in Table 31, operating cost estimates, and outputs from initial demand modelling and economic appraisal, initial economic assessments of DS6 to DS7 have been produced (shown in Table 32).

These show that DS7, which assumes a national rail shuttle service to March until 2038, and then a direct service to Cambridge thereafter, still presents a reasonable VfM case. This sensitivity represents a phased option for introducing National Rail services on the March to Wisbech corridor.

DS6, where services are run only as a shuttle service for the study period, represents poor value for money. This is consistent with findings for DS3 and reflects the interchange penalty at March and its impacts on demand.

Table 27: DS6 – DS7 Economic Assessment Summary

Metric²³	DS6 – National Rail Shuttle to March	DS7 – National Rail Shuttle to March (to 2038) and Cambridge (from 2038)
PVB	100 to 150	350 to 400
PVC	150 to 200	200 to 250
NPV	0 to -50	150 to 200
BCR	0.5 to 1.0	1.5 to 2.0
VfM	Poor	Medium

Source: Mott MacDonald

²³ Present Value of Benefits (PVB); Present Value of Costs (PVC); Net Present Value (NPV); Benefit:Cost Ratio (BCR); and Value for Money (VfM).

8 Summary

Sections 7.6, 7.7 and 7.8 detail the final findings from the current option assessment process, with the National Rail solution to Wisbech Town (DS2) performing best, alongside a tram-train solution (DS5) which offered the flexibility to serve the Garden Town. The findings to date can be summarised as:

1. Wisbech is considerably more geographically distant than the existing Cambridge commuter belt. This is a factor in both lower earnings and productivity and more adverse socio-economic outcomes such as deprivation. Connections to Cambridge offer the opportunity to transform Wisbech as a place for inward investment and provide much enhanced accessibility to key services and opportunities. Conversely, Cambridge is under significant labour supply pressure which may throttle potential employment growth. Connecting Wisbech into the Cambridge economy requires a rapid, direct service which will be attractive to commuters and businesses. Based on the indicative journey time assessments, this indicates only rail-based options are consistent with the project objectives.
2. The optimal station location for an established market town with growth ambitions such as Wisbech should be as close to its current and planned population centres as possible. This will help ensure the project's objective of supporting sustainable economic growth and maximising regeneration. While a "parkway" option could achieve significant passenger demand, reliance on car journeys to access this location run counter to this objective, would exclude groups without car access, and could cause localised peak hours congestion.
3. Costs of National Rail options are increased by the need to address risks associated with the existing level crossings along the route, in line with Network Rail and ORR policy. A tram-train-based solution would be expected to be able to avoid some of these ancillary safety costs, leading to a lower capital cost than a similarly scoped National Rail option, with similar levels of patronage and economic benefit.
4. When the planned development in Wisbech Garden Town is taken into consideration, a tram-train option offers potential strategic benefits relative to a National Rail solution. This option could potentially allow multiple stations, over the longer term, within Wisbech as the combined authority and FDC look to develop the town as a regional growth centre. Higher levels of service accessibility within Wisbech may also better support local funding options via land value capture, improving the project financial case.
5. However, these cost savings and potential strategic advantages need to be balanced against critical deliverability considerations. A National Rail solution offers a clearer structure for procurement and delivery, helping to reduce project construction and service delivery risks. Tram-train services are also less established than National Rail options in the UK, and this may lead to significant interface risks for the project.
6. Given the limited differences in the expected strategic, economic and financial outcomes, and the early stage of the Wisbech Garden Town proposals, it is prudent to focus scheme development, including both GRIP design work, delivery strategy and business case, around the National Rail option, with a lighter touch focus on the tram-train alternatives to both Wisbech Town (DS1) and Wisbech Garden Town and Town centre (DS5).
7. The success of this scheme is closely interdependent with the outcomes of the proposed Ely North Junction works and the ability to operate the desired 2tph between Wisbech and Cambridge. This OAR shows that even in a scenario where direct Wisbech to Cambridge services do not become possible for a decade after the March to Wisbech scheme opening, the project retains a positive benefit-cost ratio.

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A. Socio-economic context – supporting analysis

Fenland accounts for 12% of CPCA's total population, but just 8% of its employee jobs. Cambridge, in contrast, accounts for 15% of CPCA's resident population and a significant 23% of its total employee population. It's a similar picture when considering the economic contribution of Fenland and Cambridge. As shown in Table 28, Fenland is slightly behind Cambridge, Peterborough and the wider CPCA area in its contribution to the CPCA's overall GVA and in its GVA per capita. When looking at the workplace wages and the resident wages, we can also see there to be key differences between Fenland and neighbouring areas. While Fenland's workplace median annual pay is £21,900, c.£7,000 below the UK average, Cambridge's median workplace pay is £33,199, more than £3,000 higher than the UK average, implying there is a significant opportunity for growth in Fenland²⁴. However, it's worth noting that Fenland has a stronger resident wage than Peterborough, by just over £2,500.

²⁴ Annual Survey of Hours and Earnings, ONS, 2018

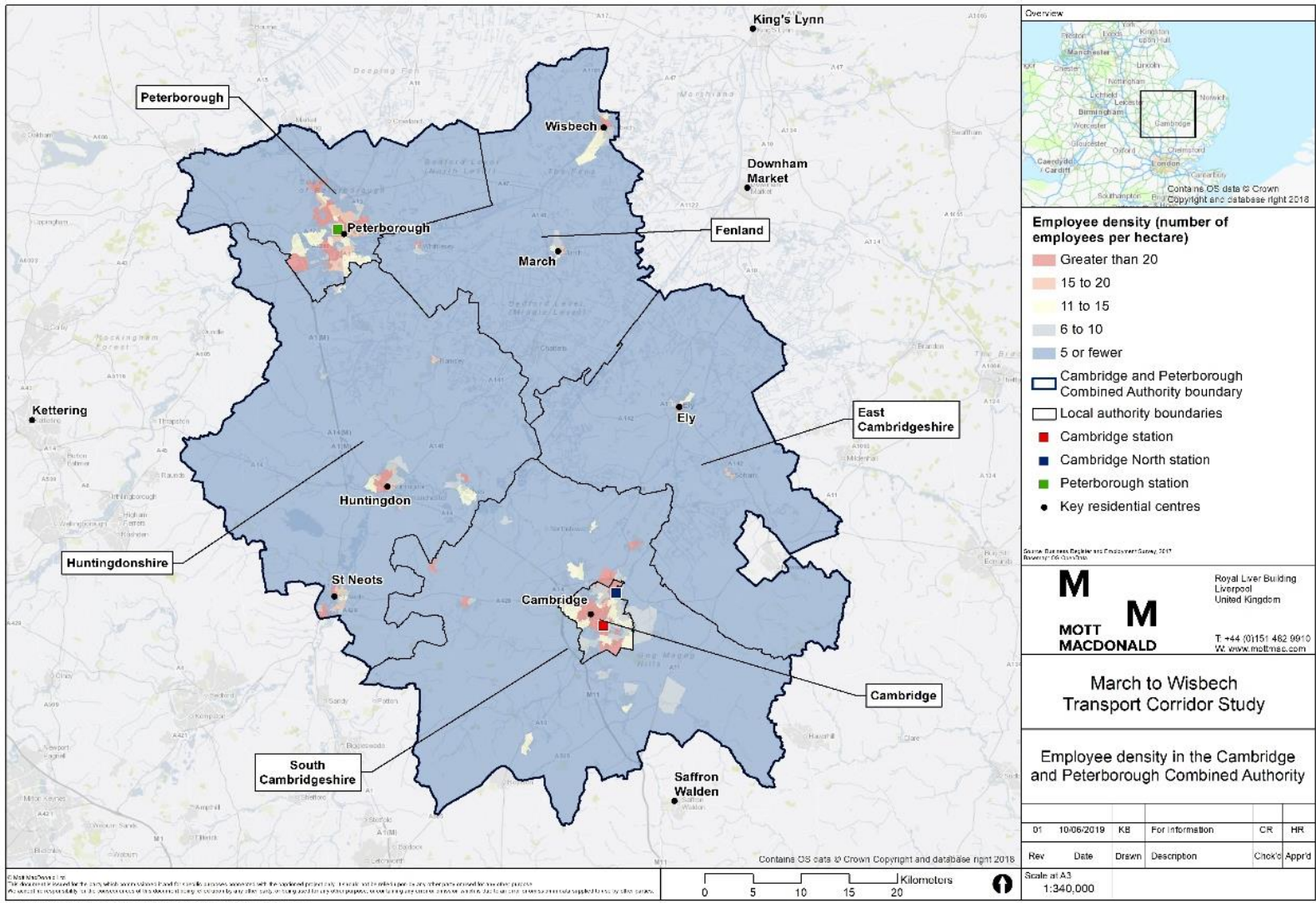
Table 28: Key economic indicators

	Fenland	Cambridge	South Cambridgeshire	Peterborough	CPCA	East	UK
Population, 000s, 2017	100.8	124.9	156.7	198.9	847.2	6,168.4	66,040.2
Employees, 000s, 2017	36.0	104.2	84.9	116.5	447.0	2,756.0	27,062.0*
GVA, £m, 2016	£2,288	£5,127	£4,591	£5,439	£23,743	£147,384	£1,729,092
Economic activity rate (16-64 population), %, 2018	80.0%	79.5%	85.5%	79.3%	82.2%	80.8%	78.3%
GVA per capita, £, 2016	£22,837	£38,900	£29,343	£27,595	£27,965	£24,041	£26,339
GVA per filled job, £, 2017	£52,587**	£52,587**	£52,587**	£45,528	£50,775	£50,398	£54,330
Resident median annual pay, £, 2018	£27,755	£33,173	£37,411	£25,301	£30,859	£31,033	£29,574
Workplace median annual pay, £, 2018	£21,900	£33,199	£ 35,349	£27,238	£28,704	£ 29,128	£29,574

Source: Population Estimates 2017, Annual Population Survey (APS) 2018, Business Register and Employment Survey (BRES) 2017, Annual Survey of Hours and Earnings 2018, Regional gross value added (balanced) by local authority in the UK, Regional gross value added (balanced) by combined authority in the UK, Sub regional productivity: labour productivity indices by UK NUTS2 and NUTS3 subregions, all ONS. *Data for UK. **Data for Cambridgeshire County Council.

Figure 14 demonstrates the uneven spread of employee jobs across the CPCA area. The dominance of Cambridge and Peterborough as the primary employment centres for the area is clear to see, with much smaller pockets of medium-to-high density employment also evident in Huntingdon, St Neots, Cambourne, St Ives, Waterbeach, Ely, March and Wisbech. Whilst Cambridge and Peterborough form the primary urban and employment centres for the CPCA area, the spatial distribution of jobs within these two key cities is by no means uniform. Key employment locations in Cambridge are clustered in and around its compact city centre, along Hills Road toward Addenbrooke's Hospital and the Cambridge Biomedical Campus and to the north of the city at the Cambridge Science Park and close to Cambridge North Station (which opened in 2017).

Figure 14: Employee density – CPCA area



Source: BRES, 2017, ONS

B. Baseline Connectivity

B.1 Rail Services at March

The implications for the service pattern at March Station on access to other locations on the rail network in the CPCA area is shown in Table 29. Where changes are required, then timetabled connection times include this time. In these cases, a typical range is shown – outliers exist around this. The effects of frequency are reported separately. Rail speeds from March are comparable, or faster, than the highway journey times to/from Wisbech. However, network speeds ignore the connection times and include the distance effects of both indirectness in the network and any interchange requirement. As an example, the effective speeds using crow-fly distances for March to Downham Market is less than 20kph, and the speed to/from Cambridge North (for the Science Park) drops from one which is directly comparable to highway from Wisbech to a lower value. However, rail still remains competitive, versus highway, on direct journey time alone for centre-to-centre (station-to-station) movements.

Frequencies will clearly play a role in diminishing this attractiveness though, as they are always less than two per hour due to the underlying timetable at March. These impose significant disbenefits on passengers either through direct wait time at the station and/or constraints in scheduling activities. As an example, the UK rail industry's Passenger Demand Forecasting Handbook (PDFH) provides guidance that an hourly service imposes an additional time disbenefit to passengers which is, on average, equivalent to 30 to 35 minutes of travel time. Current frequencies at March therefore impose significant disbenefits, and deterrents, to use of rail.

Table 29: March Station Level of Service Analysis

Destination	Network Distance (km)	Crow-fly Distance (km)	Time (minutes)	Network Speed (kms per hour)	Direct Frequency (trains per hour)	Changes
Cambridge	48.0	40.9	33	87.3	1	-
Cambridge North (for Science Park)	45.0	37.6	50 to 55	51.4	- (change at Ely)	-
Downham Market	51.3	19.3	45 to 75	51.3	- (change at Ely)	1
Ely	25.0	22.4	18 to 22	75.0	1.5	-
Huntingdon	52.2	32.2	50 to 65	54.5	-	change at Peterborough
Peterborough	24.0	23.2	18	80.0	1.5	-
Waterbeach	39.9	33.9	48 to 54	46.9	- (change at Ely)	1

Source: National Rail Enquiries and Mott MacDonald analysis

B.2 Other Local Bus Provision

In addition to the local bus services within the corridor shown in Table 1, there are a number of other services which connect:

- Communities within Wisbech to the town centre;
- Wisbech to other non-rail connected settlements, e.g. Long Sutton; and

- Major centres.

From a Wisbech perspective, principal amongst the latter is the XL service operated by First Eastern Counties between Peterborough and Norwich via Wisbech and King's Lynn. The XL service is half hourly on Monday to Saturday daytimes. Journey times are approximately 45 to 50 minutes between Wisbech and both Peterborough and King's Lynn. Wisbech to/from Peterborough is therefore already comparatively well served by public transport, especially when compared to the level of service which a rail-based alternative could offer.

March is also (separately) served by bus routes to Ely, Chatteris and Peterborough. These operate at less than hourly frequencies, in part due to the lack of competitiveness with rail for travel to/from Ely and Peterborough. This indicates that provision of direct rail services between Wisbech and Peterborough may, eventually, directly substitute for the existing bus service.

C. Policy context

C.1 Cambridgeshire and Peterborough Combined Authority Devolution Deal (2017)²⁵

Cambridgeshire and Peterborough's role as a world-leader in science and technology and its contribution to the UK economy is explicitly documented in the Cambridgeshire and Peterborough Devolution Deal. One of a handful of UK devolution deals awarded to date, the Cambridgeshire and Peterborough Devolution Deal, published in March 2017, awarded Cambridgeshire and Peterborough increased power and accountability over transport, planning and skills development, and funds to support economic and housing growth²⁶.

Today the CPCA works together on strategic issues, such as housing, transport and infrastructure, which span council borders and the entire Cambridgeshire and Peterborough area²⁷.

The Devolution Deal aims to enable significant economic growth, building on Cambridgeshire and Peterborough economic success to date, increasing economic output by nearly 100% over 25 years with GVA increasing from £22 billion to more than £40 billion. To support this, the CPCA received control of a £600 million investment fund over 30 years. The Deal also aims to accelerate the delivery of 72,000 new homes with £170 million investment.

The Devolution Deal outlines the importance of investing in transport and infrastructure to enable Cambridgeshire and Peterborough to realise its growth ambitions.

"Cambridgeshire and Peterborough recognise that for the Combined Authority to meet and exceed its ambitious targets for growth and wealth creation it needs to connect people and places. Better connecting the whole of Cambridgeshire and Peterborough has the potential to reduce city pressures and give the Cambridge hub access to wider areas of housing growth."

Source: Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

Within the Devolution Deal, the CPCA commit to working with local areas' ambitions for new housing settlements and unlock economic growth, with specifically reference potential rail connectivity from Wisbech to Cambridge as part of these ambitions. The Devolution Deal also cites a new Fenland settlement based on garden town principles which is aligned to improvements on the A47 for east-west connectivity and the rail connectivity to Cambridge. The Devolution Deal goes on to state its recognition of the importance of development at March and of associated transport and infrastructure investments to unlock commercial and housing growth in that part of Fenland.

²⁵ Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

²⁶ Cambridgeshire and Peterborough Combined Authority Devolution Deal, Ministry of Housing, Communities & Local Government and Department for Business, Energy & Industrial Strategy, March 2017

²⁷ The CPCA comprises eight founding partners: Cambridge City Council, Cambridgeshire County Council, East Cambridgeshire District Council, Fenland District Council, Huntingdonshire District Council, Peterborough City Council and South Cambridgeshire District Council.

C.2 Cambridgeshire and Peterborough Strategic Spatial Framework (2018)

The CPCA has developed a non-statutory Strategic Spatial Framework for Cambridgeshire and Peterborough, which is divided into two phases. Phase 1 of the Framework, adopted in March 2018, defines the Authority's immediate priorities for sustainable growth to support the delivery of 100,000 new homes and over 90,000 jobs as set out in existing Combined Authority plans and Local Plans²⁸. Phase 2 of the Framework, which is yet to be published, will take a longer-term view, setting out a growth strategy beyond the current Local Plan periods to 2031/36 and toward 2050.

The non-statutory Strategic Spatial Framework identifies the important contribution of Wisbech and March to the growth targets set out in the Fenland Local Plan (which is discussed below) and identifies both March and Wisbech as two of 22 identified 'strategic growth sites' for the CPCA area.

Furthermore, of particular relevance to this scheme is the Phase 1 document's Strategic Spatial Priority 2, which aims to extend the Market Towns Masterplan for Growth initiative to other towns (this initiative was piloted in St Neots in 2017)²⁹. The aim of this initiative is to stimulate economic growth and create employment opportunities in market towns, through providing an integrated investment and regeneration programme for education and skills, commercial and industrial development and supporting infrastructure. Whilst not specifically referenced in the Spatial Framework, feasibility studies for the Wisbech Garden Town Project are due to commence in 2019/2020.

C.3 Fenland Local Plan

Fenland District Council's (FDC's) Local Plan was adopted in May 2014. In line with the revised National Planning Policy Framework (NPPF) published in July 2018, as the plan is now over five years old, the Local Plan is currently being reviewed and updated³⁰. The FDC's 2019 Five Year Housing Land Supply report offers some insight into the not yet released, revised local plan, though it seems to maintain alignment with the 2014 version. The plan remains based around the broad locations for growth³¹. At the time of writing no updates to the Local Plan are available in the public domain.

The current adopted Local Plan sets out targets for providing 11,000 new homes and 7,200 jobs during the plan period to 2031. The district's four market towns are the main contributors to this planned development, with March and Wisbech allocated 4,200 and 3,550 homes³², respectively. This proposed increase in homes for Wisbech is in addition to the current proposed Wisbech Garden Town estimates³³.

Key policies from the adopted Local Plan which are of relevance to this scheme include:

- **Policy LP8 – Wisbech**, which earmarks Wisbech (alongside March) as a 'main focus for housing, employment and retail growth' for the district and outlines the broad locations of new urban extensions to Wisbech; and,

²⁸ Cambridgeshire and Peterborough Strategy Spatial Framework (Non-Statutory): Towards a sustainable growth strategy to 2050, Phase 1, 2018

²⁹ Cambridgeshire and Peterborough Strategy Spatial Framework (Non-Statutory): Towards a sustainable growth strategy to 2050, Phase 1, 2018

³⁰ <https://www.fenland.gov.uk/article/14143/Emerging-Local-Plan> [Accessed 31st May 2019]

³¹ Five Year Housing Land Supply (2019) Fenland District Council

³² The 3,550 homes allocation for Wisbech comprises 3,000 new homes allocated in the Fenland Local Plan and 550 on the edge of Wisbech in the Kings Lynn and West Norfolk Local Plan.

³³ Fenland Local Plan (2014) Fenland District Council

- **Policy LP15 - Facilitating the Creation of a More Sustainable Transport Network in Fenland**, which includes direct reference to the reopening of the March to Wisbech rail line. Policy LP15 will be implemented through the on-going submission and determination of planning applications. Successful implementation of this policy is also reliant on the coherent partnership working of FDC, the CCC, public and private developers, and local public transport operators. A rigid and up-to-date account of transport impact assessments and travel plans will also be kept.

Further population growth is planned for the market town over the next decade, with the Fenland and Kings Lynn and West Norfolk Local Plans together allocating 3,550 new homes in and around Wisbech for the period up to 2031³⁴. More recently, a proposal for the development of Wisbech Garden Town³⁵ outlines a plan for an even more significant increase in the town's housing levels compared to the Local Plan targets, with a further 8,450 new homes (in addition to those allocated in the Local Plans). If realised, the development of the Local Plan and Wisbech Garden Town proposals would nearly double the population of Wisbech over a 40 year period. Updated forecasts in the emerging Fenland Local Plan have not yet been published. March also has smaller scale, but significant, residential development proposals.

C.4 The Cambridge and Peterborough Independent Economic Review (CPIER)

36

Whilst appreciating that Fenland's Local Plan is currently undergoing review and refresh, there is growing evidence that Local Plan targets across the wider CPCA area are pessimistic and that much higher growth is likely. This has been most clearly demonstrated in the Cambridgeshire and Peterborough Independent Economic Review (CPIER), which was published in Autumn 2018.

Undertaken by an independent economic commission, the purpose of the review was to create a single strategic position to help Cambridgeshire and Peterborough “*consider the case for greater fiscal devolution and powers to unlock the delivery of major infrastructure, including showing how the area delivers benefits to the rest of UK*”³⁷. The CPIER developed an evidence base on the economic performance and growth potential of Cambridgeshire and Peterborough, which has included consideration of a range of different growth scenarios beyond those set out in the Local Plans. Significantly, the CPIER³⁸ is clear that not only has historical growth been underplayed, but future employment growth in the CPCA area could be much higher than the levels set out in Local Plans (see Figure 15).

³⁴ Fenland Local Plan Adopted May 2014, Fenland District Council, 2014; Site Allocations and Development Management Policies Plan, Adopted September 2016, Borough Council of Kings Lynn and West Norfolk, 2016

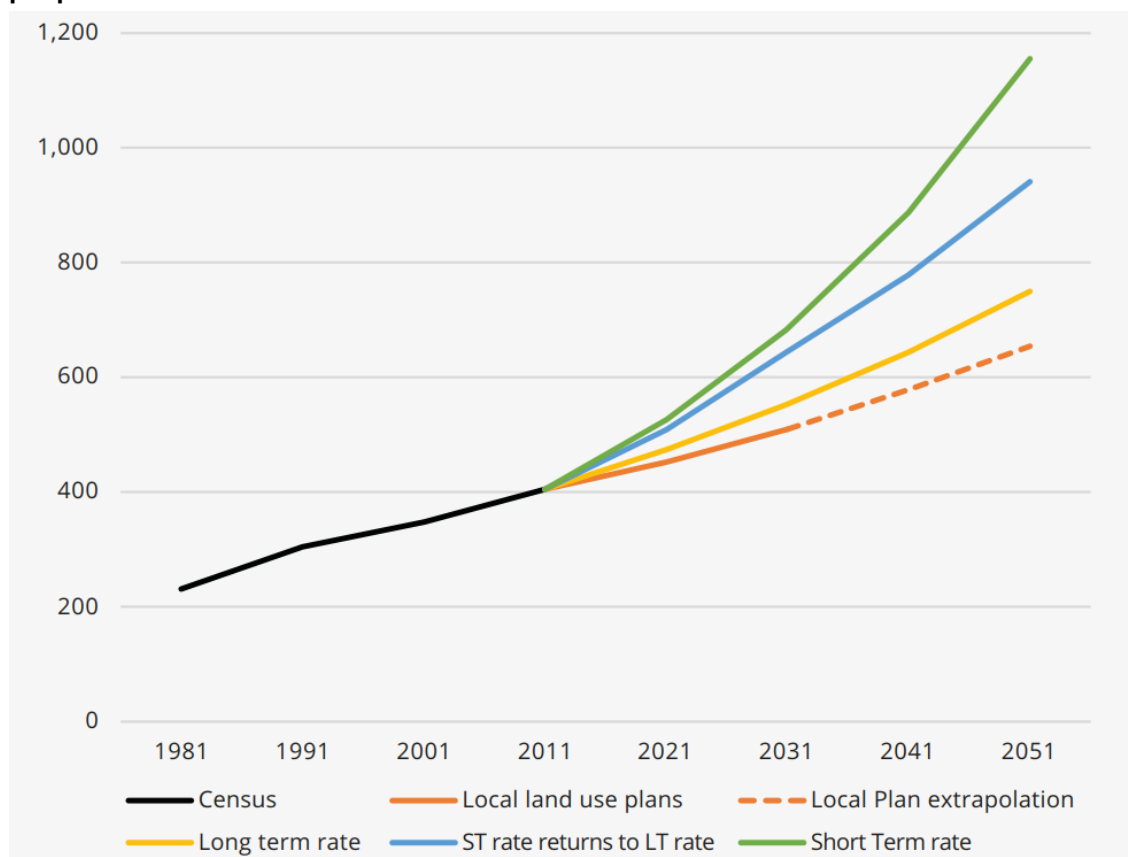
³⁵ Wisbech Garden Town, Report by URBED and TradeRisks for: Fenland District Council, Cambridgeshire County Council, Foster Property Developments Ltd. and Anglian Water, January 2017

³⁶ Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

³⁷ See <https://www.cpier.org.uk/about-us/cpier/> [Accessed 10 May 2019]

³⁸ Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

Figure 15: Employment projections for Cambridgeshire and Peterborough – 000's of people



Source: Dr Ying Jin, Department of Architecture, University of Cambridge, extracted from Cambridgeshire and Peterborough Independent Economic Review (CPIER) Final Report, Cambridgeshire and Peterborough Independent Economic Commission, September 2018

That future levels of employment growth may be higher than currently envisaged and planned for may have significant implications for the CPCA area and its housing and infrastructure needs over coming years. Critically, the CPIER identify that already house building and developments in infrastructure have not kept pace with employment growth in Greater Cambridge. As a result, many people have been priced away from the city, and journey times into work have risen significantly, causing many to endure longer commutes. The CPIER found there to be a large number of people in Cambridgeshire and Peterborough that commute over 60 minutes, some 90 minutes, one-way on a daily basis. It warns that this is unsustainable and could even risk future economic growth by making the city less attractive to even high-value businesses. Citing futures work by Dr Ying Jin and his Cities and Transport team of the University of Cambridge, the CPIER report describes a possible future whereby employment growth in Cambridge could even begin to slow by 2021, and actually go into reverse beyond 2031, with the city's high living and business costs, driven by high housing costs, leading to businesses moving away from the area. This is based on an inconsistency between current plans for infrastructure and housing development and the CPIER's hypothetical 'central projection' rate of employment growth (where recent high ONS employment growth rates gradually return to longer-term levels, shown by the blue line in Figure 15).

A central element of the Devolution Deal for the CPCA was the commitment to doubling the area's economic output (GVA) over the following 25 years (from £22bn to over £40bn) in return for new powers. Achieving this level of growth will depend largely on the economy of Greater Cambridge and it having sufficient capacity in its labour market, housing market and infrastructure to accommodate growth.

C.5 Business Board of the CPCA Strategic Economic Plan (SEP)³⁹

The Business Board was constituted in September 2018, embracing the role that was previously fulfilled by the Greater Cambridge and Peterborough Enterprise Partnership. The Business Board is designed to *“give commerce a strong voice in strategy development and decision making relating to the Combined Authority”*⁴⁰. The CPCA utilises the Business Board as an advisory group, working towards their commitment to make the area a leading place to work, live and learn.

Building on the analysis provided in Section 2.1, the Greater Cambridge Greater Peterborough (GCGP) Enterprise Partnership SEP, published in 2014, several years prior to the Devolution Deal, provides important context on understanding the area's diverse economy. The 2014 SEP identifies a number of growth industries and hubs for the Cambridge and Peterborough area, and highlights the area's strengths in:

- Biotech and life sciences
- ICT and telecommunications
- Low carbon environmental goods and services
- Manufacturing, engineering and processing
- Agriculture, food and drink
- Logistics
- Water and energy
- Visitor economy

The SEP recognises the important role of the area's two cities, Peterborough and Cambridge, as major employment centres, both of which attract residents from surrounding districts who commute in. The SEP also identifies, however, that 69 per cent of employment is not in the two main urban centres but is more widely dispersed across the area's local economies.

The SEP recognised the important role of transport connectivity for the GCGP economy. Of relevance to this scheme, rail links, frequency and capacity are identified in the SEP as one the area's key transport problems and challenges.

The SEP set out a strategy for local sustainable transport programmes to *“develop a highly connected and efficient transport network which enables easy and reliable access to and between key employment clusters, growth areas and markets”*⁴¹. This strategy is captured within four main aims:

- An integrated and reliable transport network that enables efficient movement of goods and people.
- A highly connected and efficient rail network linking key destinations.
- Sustainable transport capacity to support and unlock growth along key corridors / hubs.

³⁹ Strategic Economic Plan, Greater Cambridge and Greater Peterborough Enterprise Partnership, 2014

⁴⁰ <https://cambridgeshirepeterborough-ca.gov.uk/business-board> [Accessed 16 September 2019]

⁴¹ Strategic Economic Plan, Greater Cambridge and Greater Peterborough Enterprise Partnership, 2014

- Good and reliable access to and between the key economic clusters.

The SEP stated the LEP's wish to see greater access to the rail network across Cambridge and Peterborough where a rail link or station could help unlock growth or regeneration. The SEP cites Mott MacDonald's previous work investigating the wider economic impacts of reconnecting Wisbech to the rail network through the reopening of the railway between March and Wisbech to passenger services⁴².

C.6 Wisbech 2020 Vision

The Wisbech 2020 Vision first emerged in 2012 and was formally launched in 2013 as a partnership between the leaders of Fenland District Council and Cambridgeshire County Council and the MP for North-East Cambridgeshire. The aim of the Wisbech 2020 Vision is to regenerate the market town and surrounding area to make it "*a great place to work, live and visit*"⁴³. In 2015, the Wisbech 2020 Vision's original themes of 'live', 'work' and 'visit' were replaced with 'infrastructure and growth', 'town centre', 'skills' and 'education, health and wellbeing' and 'communication', reflecting a greater emphasis on the market town's social issues⁴⁴.

Major initiatives, such as the idea of Wisbech Garden Town, have emerged from the Wisbech 2020 Vision. Work on the Wisbech Garden Town project is now running separately, but in parallel, to wider Wisbech 2020 Vision initiatives.

C.7 Wisbech Garden Town

Since the adoption of the Fenland Local Plan in 2014, proposals for extending Wisbech to create 'Wisbech Garden Town' have gained traction. A garden town is one which aims to extend an existing large town, rather than attempting to grow a new one. The idea for the Wisbech Garden Town was first proposed in 2016. Evolving on from the Wisbech 2020 vision⁴⁵, these proposals significantly exceed growth targets for new homes set out in the Fenland Local Plan. The ambition is to reverse the levels of deprivation found in the area, through the housing growth and the development of a stronger economy⁴⁶.

A report by Urbed for FDC, CCC, Foster Property Developments and Anglian Water, published in 2017, sets out a future vision and strategy for Wisbech as a 'Garden Town', with plans to extend the existing footprint of the town and deliver radical improvements in the town's transport infrastructure and connectivity. The purpose of the Urbed report was to support Wisbech's bid to the Ministry for Housing, Communities and Local Government's (MHCLG) Locally Led Garden Villages, Towns and Cities prospectus. Initial proposals for the development of Wisbech Garden Town outlined in the report include 12,000 new homes (including existing allocations from the Local Plan), new primary schools and a second secondary school, a 170ha country park and multiple employment sites including a new Enterprise Zone to the south of the Wisbech. The impact of these proposals would be to nearly double the population of Wisbech over a 40-year period, with the town therefore becoming 'a major growth node for the Cambridgeshire/Peterborough Combined Authority'⁴⁷.

⁴² Wider Economic Benefits of a Rail Service Between March and Wisbech, Mott MacDonald, March 2014 and refreshed in 2016.

⁴³ <http://www.wisbech2020vision.co.uk/>

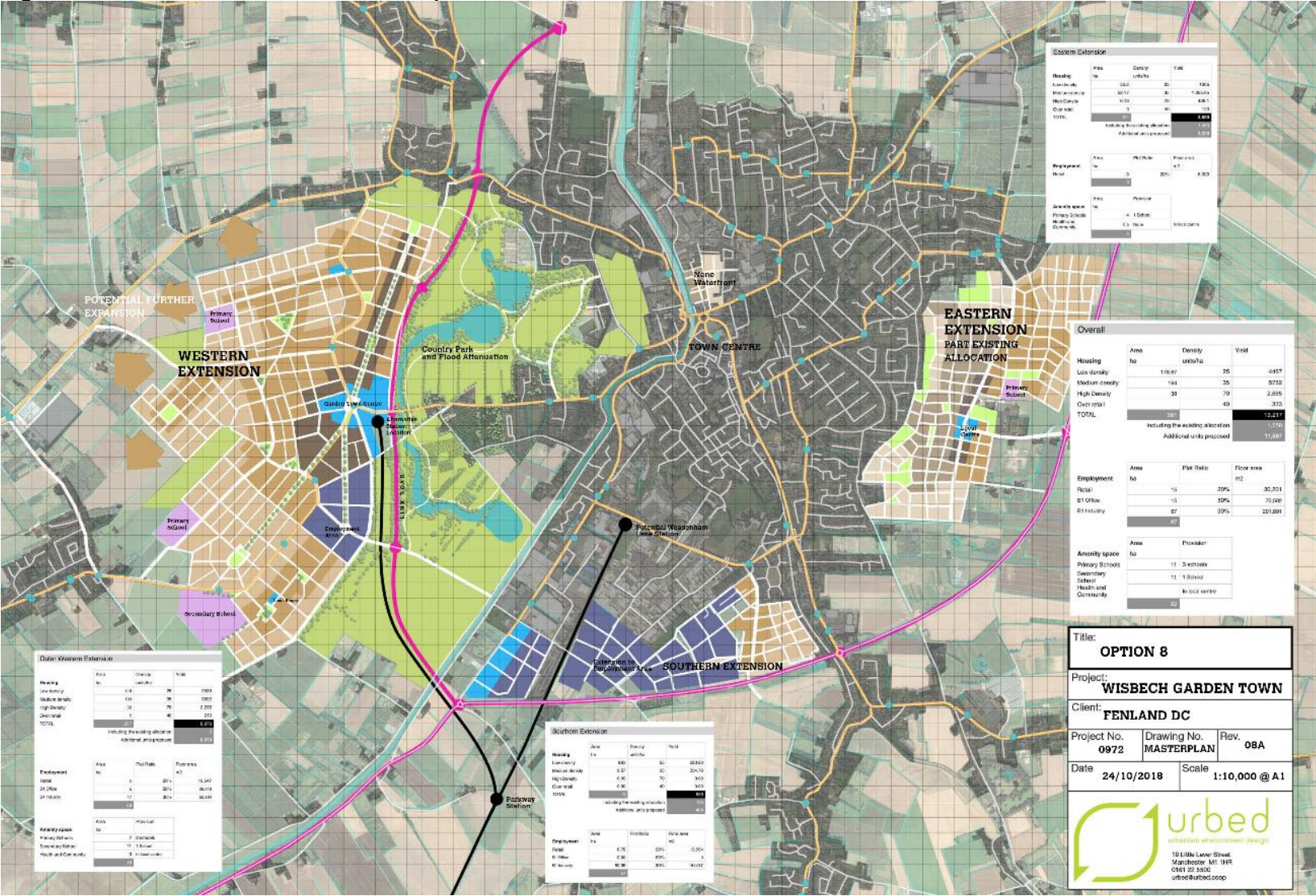
⁴⁴ <http://www.wisbech2020vision.co.uk/>

⁴⁵ See <http://www.wisbech2020vision.co.uk/gardentown>

⁴⁶ <http://www.wisbech2020vision.co.uk/gardentown> [Accessed 16 September 2019]

⁴⁷ Wisbech Garden Town, Report by URBED and TradeRisks for: Fenland District Council, Cambridgeshire County Council, Foster Property Developments Ltd. and Anglian Water, January 2017

Figure 16: Wisbech Garden Town – Masterplan



Source: Urbed, September 2018

Throughout the Urbed report, the importance of the March to Wisbech transport link to Wisbech's economy is clearly articulated, both in terms of Wisbech's decline over the last half century and the necessity of its reinstatement if Wisbech is to realise ambitions for future growth and revival:

"The key issue for the people of Wisbech is the loss its railway in 1968. A town that once had three railway stations, started to feel isolated and entered a long period of decline. There is a stark difference between the levels of affluence in the southern and eastern parts of Cambridgeshire and the deprivation of the isolated north. Bridging this divide lies at the heart of the Garden Town vision. Nowhere else is there a town with so little development pressure so close to an area of such high demand where all that is required to connect the two is 11 miles of railway."

Source: Wisbech Garden Town, Report by URBED and TradeRisks for: Fenland District Council, Cambridgeshire County Council, Foster Property Developments Ltd. and Anglian Water, January 2017

Critically, the Garden Town proposals set out by Urbed are, at least in part, dependent on the development of a new segregated public transport link to and from Wisbech.

Proposals for Wisbech Garden Town have since progressed to their next stage of development; the CPCA provided funding in June 2017 for the purpose of testing the viability and feasibility of the garden town proposals with an anticipated duration of two years for these feasibility studies⁴⁸.

C.8 Transport strategy

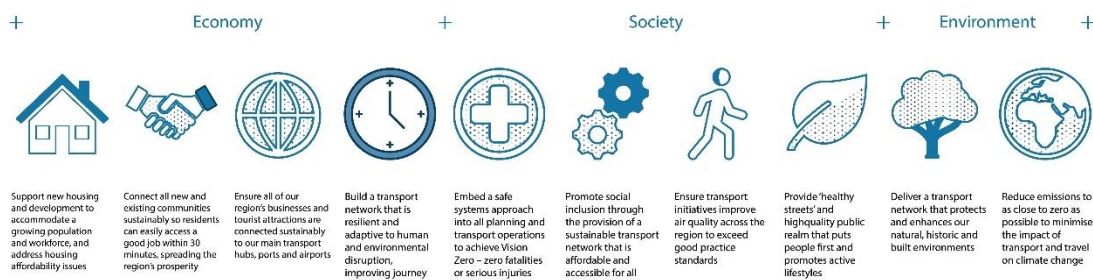
C.8.1 The draft Cambridgeshire and Peterborough Local Transport Plan

The CPCA has recently published in draft its first Local Transport Plan for Cambridgeshire and Peterborough. This document replaces the Authority's Interim Local Transport Plan, published in June 2017, which was based on the existing Local Transport Plans for Peterborough and Cambridgeshire. The CPCA draft Local Transport Plan will be subject to public consultation during summer of 2019.

The CPCA draft Local Transport Plan sets out a vision *"To deliver a world-class transport network for Cambridgeshire and Peterborough that supports sustainable growth and opportunity for all"*⁴⁹. The draft Plan sets out three goals, focused on the economy, society and the environment, each of which is underpinned by a series of objectives against which schemes, initiatives and policies will be assessed.

⁴⁸ <http://www.wisbech2020vision.co.uk/gardentown>

⁴⁹ Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

Figure 17: CPCA draft Local Transport Plan objectives

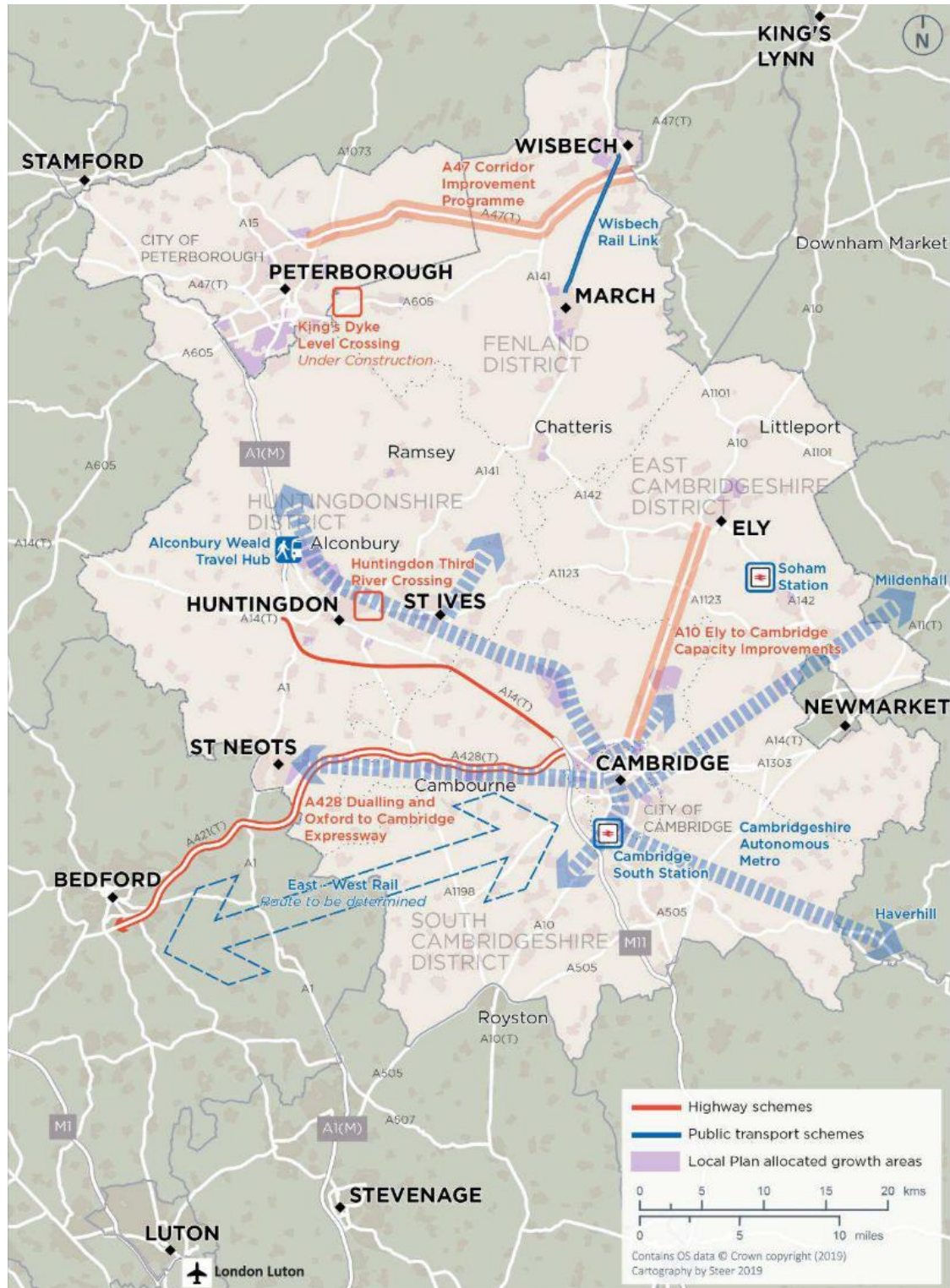
Source: Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

The draft Plan outlines the Authority's priority transport schemes, which are shown in Figure 18. The March to Wisbech transport corridor is clearly mapped as one of the priority schemes which will transform accessibility for residents and businesses in the town.

“Construction of a new link to Wisbech will transform accessibility to the town...Residents and businesses in Wisbech would benefit from being able to reach Cambridge directly, connecting them to the opportunities within Greater Cambridge, including well-paid, skilled roles in the knowledge economy, and education and training opportunities at The University of Cambridge, Anglia Ruskin University and Cambridge Regional College. It will also play a key role in supporting the ambition for Wisbech Garden Town, helping to secure the viability and delivery of additional development.”

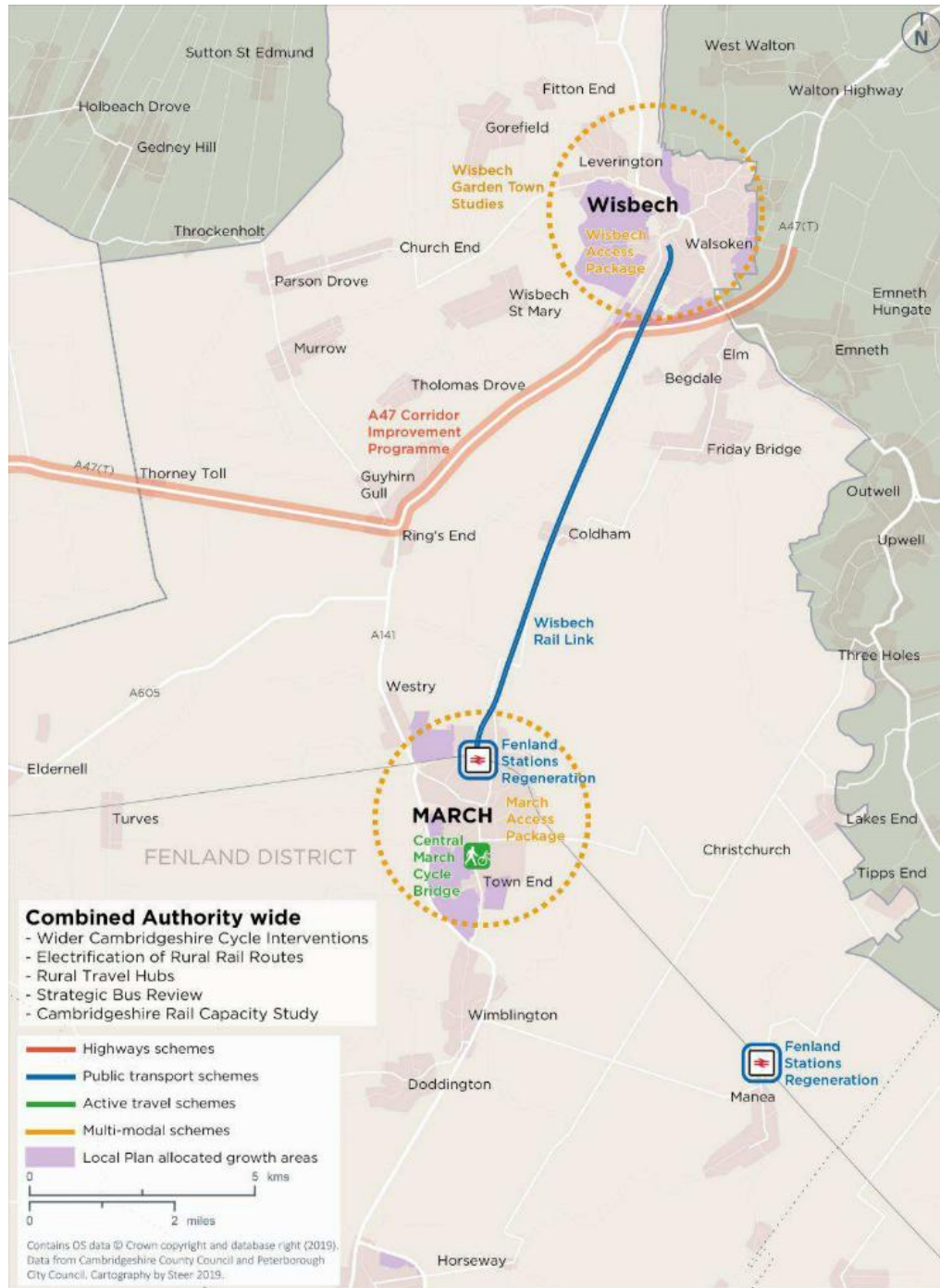
Source: Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

Figure 18: Key transport and infrastructure projects - Cambridgeshire and Peterborough



As shown in Figure 19 below, the March to Wisbech transport corridor is one of several complementary transport and infrastructure schemes proposed in and around Wisbech which will help to realise the proposals and ambitions for Wisbech today and help support ambitions such as Wisbech Garden Town.

Figure 19: Draft Cambridgeshire and Peterborough Local Transport Plan - Summary of key project in Fenland



Source: Draft Cambridgeshire and Peterborough Local Transport Plan, prepared by Steer for the Cambridgeshire and Peterborough Combined Authority, 20 May 2019

C.8.2 Long Term Transport Strategy 2011-2031

CCC, working in partnership with other agencies, including its constituent district and city councils and the CPCA, aims to provide efficient and reliable travel between key locations for its residents and employees, helping to support a thriving local economy.

This context is currently embodied in the Long Term Transport Strategy (LTTS) for the county, which covers the period 2011 to 2031 and which was last updated in November 2014. The LTTS was produced as part of the 3rd Local Transport Plan (LTP)⁵⁰ for the county. The LTTS sets the following strategic objectives for transport proposals:

- To ensure that the transport network supports sustainable growth and continued economic prosperity;
- To improve accessibility to employment and key services;
- To encourage sustainable alternatives to the private car, including rail, bus, guided bus, walking and cycling, car sharing and low emission vehicles;
- To encourage healthy and active travel, supporting improved well-being;
- To make the most efficient use of the transport network;
- To reduce the need to travel;
- To minimise the impact of travel on the environment; and
- To prioritise investment where it has the greatest impact.

Source: Cambridgeshire Local Transport Plan 2011-2031: Long Term Transport Strategy, Cambridgeshire County Council, July 2015

The re-instatement of the March to Wisbech rail line for public transport services is identified in the LTTS as one of four locally promoted major schemes across Cambridgeshire which is necessary to provide capacity for growth and address existing problems in the transport network.

⁵⁰

See: Cambridgeshire Local Transport Plan 2011-2031: Policies and Strategy, Cambridgeshire County Council, July 2015

D. Freight Market Analysis

D.1 Potential Freight Market

The potential market for freight services has also been considered, with the line having been kept open for these purposes to 2000. Prior to 2000 the route had been regular in use, servicing agricultural / foodstuffs industries; however, despite substantial flows, the services were deemed financially unviable. Wisbech retains a major focus on these industries, with many road transport movements per day, providing a potential opportunity for use of the March – Wisbech line for freight traffic.

Some key considerations with this proposal for a joint passenger and freight offer include the need for:

- Sufficient demand in Wisbech to produce standalone ‘train loads’ or the scope for splitting and joining with other freight trains;
- Chilled or frozen facilities throughout transit, with an expectation that the maintenance of appropriate temperatures can be demonstrated for the totality of the product, throughout the logistics chain; and
- Additional infrastructure in the form of passing loops and creation of a dedicated handling facility at Wisbech, coupled with the potential need for construction of the line to a higher standard than that required for passenger only operation.

These are considered in turn in the following sub-sections.

D.2 UK Rail Freight Market

In the period since the cessation of freight services on the March-Wisbech line in 2000, the UK rail freight industry has become increasingly focussed on:

- Large scale inter-modal shipments, e.g. containers from major sea ports and large rail freight facilities;
- Coal and aggregates (including rail construction and renewal in the latter); and
- Biomass.

Rail freight services for palletised goods, such as those most likely to be generated to/from Wisbech, could be provided on a trainload basis, subject to suitable arrangements. This could be to either a dedicated freight loading terminal or to a distribution terminal which would be capable of transshipping containerised freight. These would be dependent on adequate volumes being provided, on a regular basis, to/from focused destinations elsewhere on the rail network.

Conveyance on a less-than-trainload basis would be dependent on the availability of capacity on existing regular services on suitable routes, and willingness of such operators to interrupt their journeys for the addition of extra vehicles. In practice, services in the vicinity are currently limited to intermodal services passing through on the Felixstowe – Midlands and North axis, aggregates to East Anglia from other areas, and regular infrastructure materials services to Whitemoor from Doncaster (and beyond) and Hoo Junction in Kent (thus transiting London). It is uncertain whether, given constraints on rail network capacity for connectional services to ultimate destinations, any of these would offer realistic potential for reliable services to the standards required to support investment in freight terminal facilities on the Wisbech branch.

Annex Map 2 in '*Strategic rail freight interchange policy guidance*'⁵¹ indicates that, while Wisbech (connected at March) is located alongside the identified 'Key Strategic Rail Freight Route' network (as well as the Whitemoor terminal), any flows towards the south will involve 'interaction with frequent suburban / interurban services' if not also with high-speed passenger services. Daytime route capacity for freight is typically under severe pressure in such locations. While mitigations can often be found, they may, in general, erode the viability of the freight services, particularly where they traverse a number of such routes, e.g. in the London area.

It is therefore most likely that arrangements could be made for overnight services of dedicated trains to and from Wisbech, allowing daytime for loading/offloading at terminals. This would be constrained by the availability of viable traffic volumes to potential origins and destinations elsewhere on the rail network.

Taking a European perspective, it should also be noted that sets of wagons moved as above could be attached to existing cross-Channel rail services currently assembled at Wembley (London) or Daventry. Such services, which have operated for many years, potentially offer connections widely across Europe and particularly to and from Italy and Spain where imports of fruit may be sourced. However, it is of note that a new service direct from Spain to London (Dagenham) serving imports of fruit has recently been established operating in the UK exclusively on the Channel Tunnel 'HS1' route (at night). While this thus offers greater wagon payloads in European-gauge rail wagons it therefore does not obviate the final road haul to destinations in Wisbech or elsewhere.

Alternatively, if an intermodal terminal were to be established, then traffic originating or destinating in containerised form could be handled and could be delivered to a wider range of locations in Wisbech and elsewhere. However, there is no particular likelihood, pending a more detailed analysis of potential freight flows in the region, that such a terminal would be best located either in Wisbech or necessarily on the Wisbech line at all.

D.3 Infrastructure Requirements and National Standards

The use of the line for freight trains may impose additional infrastructure costs or standards compared to passenger only operation. Assuming track is reinstated to Track Category 3 then the relevant metric for determining freight path availability is the Equivalent Million Gross Tonnes per Annum (EMGTPA). Based on Network Rail standards, at 60mph track category three can be operated at up to 12 EMGTPA. The heavy rail options all have an estimated EMGTPA of 1.5 to 2.0 million, leaving over 10 million tonnes of "headroom". This equates to four 2,500 tonne trains every day all year.

The loading imposed on bridges by rail vehicles is measured in units of Route Availability (RA) loading; most multiple unit passenger vehicles are RA 4 or lower, whereas diesel locomotives and many freight vehicles are RA 8. The effect of this loading can be managed for high RA vehicles by limiting their speed by imposing a differential speed for freight trains; on the Wisbech branch this could be around 30 or 40 mph (subject to detailed assessment of the underline structures during the GRIP process). This speed differential relative to passenger services may necessitate additional passing infrastructure to ensure efficient, punctual and reliable operation if freight services are not timetabled at night.

Dependent on detailed timetabling, it may be possible to permit a freight service to transit the route during the hours of passenger operation, although this would be subject to provision of appropriate turnouts and signalling arrangements into the Wisbech freight facilities so as to

⁵¹ Strategic rail freight interchange policy guidance', DfT, Nov 2011, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/4377/strategic-rail-freight-interchange.pdf

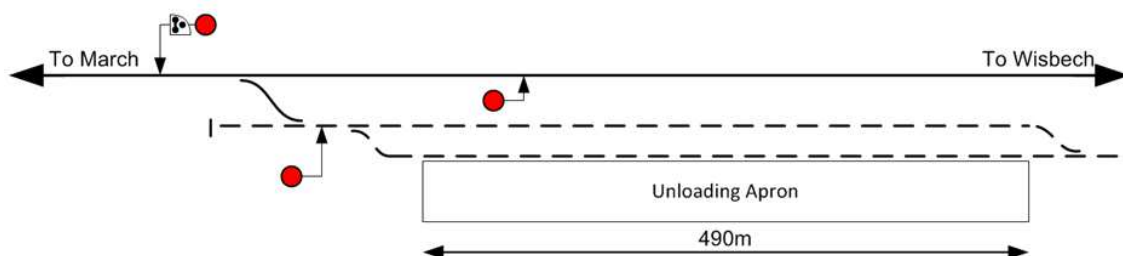
vacate the line for passenger use. Such arrangements will have significant cost. It may be that functionality and line capacity can be more viably provided when (eventually) signalling in the area upgrades, under the European Rail Traffic Management System (ERTMS), from the use of fixed trackside signals to in-cab arrangements, though this is not expected to be until at least 2021⁵². Therefore, any freight services on the line during the period of passenger train operations would need to run to precise timings which, in practice granted constraints on the wider network, might require timetabling of the trains to spend time in March Up or Down Freight Yards so as to be positioned ready to make immediate use of the available slots on the Wisbech line.

The industry in the area suggests that the likely freight flows would be of palletised goods, in which case a siding with an adjacent hard standing for forklift trucks would be required. While there is, nationally, a supportive climate towards the building of such new intermodal freight terminals, their siting is subject to local traffic and environmental planning considerations which have resulted in some significant delays in obtaining consent. If such a terminal were not located within, or close to, Wisbech this would however largely remove any freight benefit from re-opening of the line.

Development of a freight facility at Wisbech would be subject to location and planning constraints, as well as having significant cost.

The default assumption for freight facilities is that they should be designed to accommodate 775m long “Channel Tunnel” trains, though many facilities are arranged to hold these trains in two halves of 400m. However, such trains are likely to be recessed at March, so the longest likely train length (in the near future) is that of the longest siding at March, or 487m. An indicative ‘minimum’ facility is shown in Figure 20.

Figure 20: Wisbech Rail Freight Facility – Minimum Specification



Source: Mott MacDonald

Assuming a single unloading siding and second line to allow the arriving locomotive to run round the train before departing, the only interface with the passenger line would require three additional signals (this could be reduced to two depending where the freight siding is in relation to the new Wisbech station) and one additional crossover (to provide protection from trains rolling away).

The run round line would require two hand-lever operated turnouts to connect it to the unloading line.

⁵² <http://ertmsonline.com/ertms-in-the-news/ertms-update-by-simon-whitehorn/>

E. Station Location Appraisal Technical Note

F. Rationale for Option Exclusion

F.1 Station and stop locations

Table 30 details the station/stop locations which were excluded at the Part I option sifting stage, and the supporting rationale for doing so.

Table 30: Wisbech Station or Stop Location Options – Rationale for Exclusion




ID	Location	Notes
2	Town (future development)	<ul style="list-style-type: none"> This is the most desirable location for a 'town centre' National Rail station, or a lighter alternative which avoids, or phases, on-street running The required footprint for a new station or light rapid transit stop at this site is currently unavailable Options 1 or 8 could be extended to this location if the site was to become available Option 10 supersedes this option if on-street running is pursued due to greater accessibility to the town centre P&R access share should be reduced due to higher walk accessibility Traffic congestion in Wisbech Town Centre in peaks would constrain access
3	Wisbech Meadowgate (A1101)	<ul style="list-style-type: none"> Intrinsically linked to an onward service towards King's Lynn (subsequent stage of network development) Economic and Financial Cases for connection to King's Lynn likely to be poor Poor local accessibility for existing communities. Would require new, likely subsidised, bus services Closer to significant development envisaged in Fenland Local Plan, but further afield from main Garden Town sites Potential highway constraints from A47(T), including peak period congestion
4	Cromwell Road area	<ul style="list-style-type: none"> Peripheral to all residential areas, including proposed development Site close to Cromwell Road raises visibility and Park & Ride (P&R) based access Requires bridging of A47(T) Poor onward connectivity options for future alignment Potential highway access constraints from both town centre and A47(T) Wisbech P&R catchment likely to be to north of town
5	North of A47	<ul style="list-style-type: none"> Requires bridging of A47(T), but fewer additional kms of reinstated rail track (than options 1, 2 and 8) Reduces severance of A47(T) Peripheral to all residential areas Proposed local development (Local Plan) is mainly low density employment and small amount of residential, c100 dwellings Essentially remains a 'parkway' solution but with additional cost Wisbech P&R catchment likely to be to north of town
7	Site between Enterprise Way and Europa Way (on existing alignment)	<ul style="list-style-type: none"> Requires bridging of A47(T), but fewer additional kms of reinstated rail track (than options 1, 2 and 8) and no crossing of Weasenham Lane Reduces severance of A47(T) Peripheral to all residential areas At heart of development area, but this is currently planned for mainly low density employment and small amount of residential, c100 dwellings Essentially remains a 'parkway' solution but with additional cost Potential to integrate with alternative alignment via Weasenham Lane and B198 Wisbech P&R catchment likely to be to north of town
11	I and V	<ul style="list-style-type: none"> Multiple station solution with 'lighter' alternative, but little additional benefit over Option 1 (see rationale for Option 5)

Source: Mott MacDonald

F.2 Modes

Table 31 summarises modes which were removed at the initial Part I option sift. Developments across the wider CPCA area may offer opportunities in the future depending on progression of the business case for the preferred mode(s). Within Wisbech, and any possible urban extensions, this may involve opportunities as feeder modes to a main mode.

Table 31: March to Wisbech Corridor Mode Options – Rationale for Exclusion

ID	Mode	Image	Rationale for Exclusion
3	Light Rail		<ul style="list-style-type: none"> No discernible cost difference relative to tram-train and standards to be applied should be similar Limits through running opportunities, i.e. March-Wisbech only Greater opportunity for on-street running in Wisbech, and improved local accessibility (e.g. multiple stops), as can be implemented with DC supply (National Rail AC), albeit advances in hybrid technology mean these opportunities are now becoming negated
5	Bus		<ul style="list-style-type: none"> Not considered transformational which would generate significant changes in mode and destination, business perceptions, or the opportunities available to residents Difficult to link funding to development proposals without fixed infrastructure Greater flexibility on stop locations and higher local accessibility Prohibitive journey times to/from Cambridge and March due to convoluted and elongated highway access Already have existing X1 service connecting Wisbech with King's Lynn and Peterborough – Wisbech-March-Peterborough unlikely to offer attractive alternative Difficulties with integration with National Rail at March, both physical interchange and through ticketing opportunities
6	ULTRA - light rapid transit		<ul style="list-style-type: none"> Relatively untried technology in this type of market – additional costs and risk which may be difficult to quantify Vehicles may be ill suited to peak period or require a large Peak vehicle Requirement (PVR) Limited to March-Wisbech only, necessitating interchange to National Rail Potential difficulties with integration with National Rail at March, both physical interchange and through ticketing opportunities Potential on-street running in Wisbech

Source: Mott MacDonald

F.3 Service Patterns

Table 32 details the service patterns excluded at the initial sift. Some of the retained options are limited to certain modes. This is particularly the case for through running to Cambridge or Peterborough which requires use of the existing rail network.

Table 32: March to Wisbech Corridor Service Pattern Options – Rationale for Exclusion

ID	Service Pattern (selected stops or stations only)	Rationale for Exclusion
1	Wisbech-Ely-Cambridge 3tph	<ul style="list-style-type: none"> 3 tph through Ely North Junction in each direction considered highly unlikely without major investment over and above that currently envisaged
3	Wisbech-Ely-Cambridge 1tph	<ul style="list-style-type: none"> 1 tph unlikely to provide an attractive or viable solution
4	Wisbech-Peterborough 2tph	<ul style="list-style-type: none"> Peterborough is a low density location with few suitable employment and business opportunities located close to station. Only Whittlesea served as intermediary location
5	Wisbech-Peterborough 1tph	<ul style="list-style-type: none"> 1 tph unlikely to provide an attractive or commercially viable solution, especially as Peterborough is a low density location with few suitable employment and business opportunities located close to station. Only Whittlesea served as intermediary location
7	Wisbech-March 2tph	<ul style="list-style-type: none"> Not commercially viable or likely to offer value for money. No intermediary locations served
8	Wisbech-March 1tph	<ul style="list-style-type: none"> Not commercially viable or likely to offer value for money. No intermediary locations served
13	Wisbech-Peterborough 1tph; Wisbech-March 1tph	<ul style="list-style-type: none"> 1 tph unlikely to provide an attractive or commercially viable solution, especially as Peterborough is a low density location with few suitable employment and business opportunities located close to station. Only Whittlesea served as intermediary location
14	Wisbech-March-Chatteris 3sph (bus or similar only)	<ul style="list-style-type: none"> Limited attractions and commercial viability in this corridor Significant costs involved in new segregate alignment between March and Chatteris, or on highway operation required with associated performance issues Limited onward connectivity from Chatteris

Source: Mott MacDonald

