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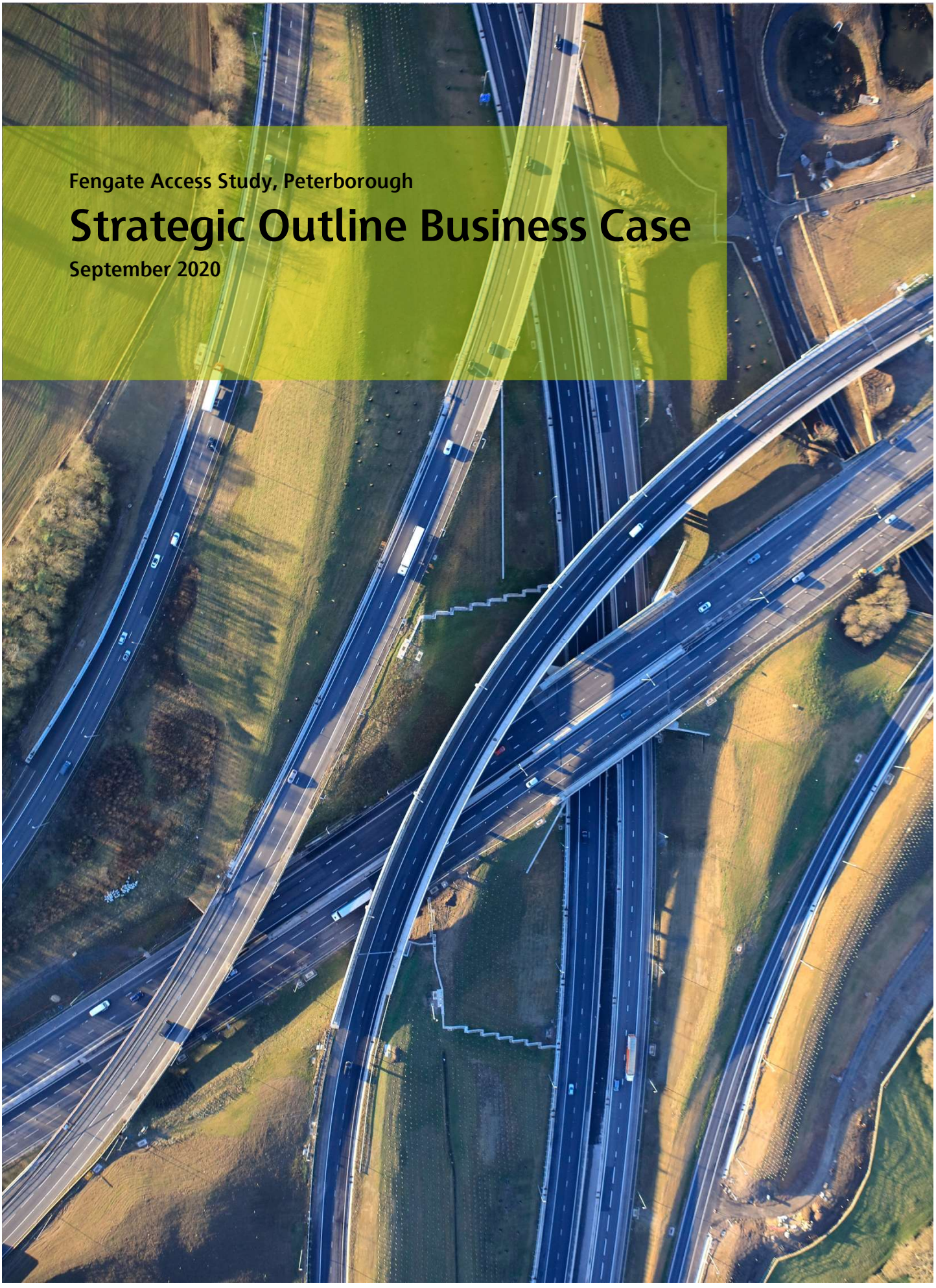

Fengate Access Study, Peterborough

Strategic Outline Business Case

September 2020

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4.0	Second Issue (2020 Update)	JWH	JB	RMJ	RMJ	28.09.2020
5.0	Final Issue (2020 Update)	JWH	JB	RMJ	RMJ	30.09.2020

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Executive Summary

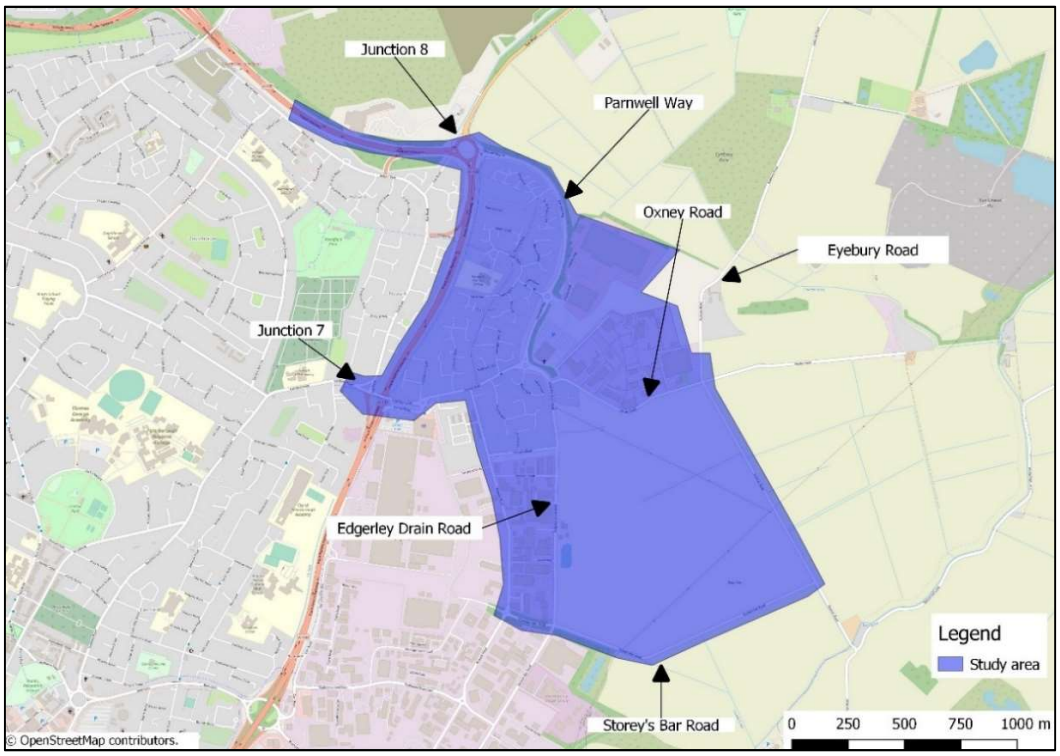
This Strategic Outline Business Case makes a strong strategic and economic case for the Fengate Access Study improvement schemes, which will return **High Value for Money**.

The package of schemes will add capacity to the highway network, addressing existing problems of peak hour congestion, and help to facilitate planned employment growth within Fengate.

The Peterborough Local Plan (adopted July 2019) sets out the overall vision, priorities and objectives for Peterborough up to 2036. The updated strategy identifies the required delivery of 19,440 new homes and 17,600 new jobs by 2036[1].

The largest employment allocation within Fengate is the Red Brick Farm site which covers 126,600 square metres. This is likely to be a mixture of B8 (Storage and Distribution) units and B2 (General Industry) unit with ancillary B1 office space.

The Fengate Access Study Area focuses on the north of Fengate, where the Red Brick Farm site is located. The study area is shown in the Figure overleaf, and considers Junction 7 and Junction 8 of the A1139 Fletton Parkway (key access to / from the parkway system), access routes into Fengate such as Parnwell Way and Oxney Road, and internal roads within Fengate such as Edgerley Drain Road and Storey's Bar Road.



Fengate Access Study Area

[1] https://www.peterborough.gov.uk/council/planning-and-development/planning-policies/local-development-plan

Planning discussions between the developer for the Red Brick Farm site and Peterborough City Council are well advanced, and the developers have the intention of meeting their highway obligations under any agreed planning conditions by October 2021. This provides Peterborough City Council with an opportunity to work alongside the developer to bring forward much needed employment at a time of economic uncertainty, whilst ensuring that the highway improvements associated with Red Brick Farm fit with wider requirements for the Fengate area.

The key project milestones are set out in the Table beneath. To meet this ambitious schedule, and subject to approval from the CPCA Board, Peterborough City Council are requesting permission to move straight from Strategic Outline Business Case to Full Business Case.

Key Project Milestones

Timescale	Milestone Activity
September 2020	Strategic Outline Business Case and Option Assessment Report submitted to CPCA for review. Approval sought for release of funding for Detailed Design and Full Business Case.
October 2020	Subject to approval, funding secured to undertake Full Business Case and Detailed Design.
November - December 2020	Detailed Design and Full Business Case commence. Stakeholder and Public Consultation undertaken.
March 2021	Full Business Case and Detailed Design submitted to CPCA for review and approval sought for release of funding for construction.
June 2021 – October 2021	Construction starts with Oxney Road / Edgerley Drain Road Roundabout (estimated 14 week construction programme)
October 2021 – October 2022	Construction of remaining schemes within the Package 1.

This Strategic Outline Business Case is set out in compliance with the DfT's Five Case Business Case Model.

Strategic Case

The Strategic Case has considered the policy context in which a scheme for this location has been developed. As well as policy, the need for intervention is explained, which includes existing peak hour congestion and associated delay that compromise local growth aspirations:

The policy review and data on existing issues has been used to identify scheme objectives, and different schemes, forming packages of potential improvement options, have been assessed against these objectives using the DfT's Early Assessment Sifting Tool (EAST). The Primary scheme objectives are set out beneath.

- **Tackle congestion and reduce delay**: Tackle congestion at key pinch points across the Study Area and reduce delay in to the Fengate area
- **Support Peterborough's Growth Agenda and facilitate the development of the Red Brick Farm site:** Ensure that the planned employment growth at Red Brick Farm is accommodated.

The Strategic Case concludes with details of the preferred package of schemes (Package 1) which is the subject of this Business Case. Full details of the modelling and assessment work undertaken to identify the preferred package of schemes can be found in the Fengate Access Study Option Assessment Report (OAR).

Package 1 consists of the following schemes:

- Creation of a roundabout at the junction of Oxney Road / Edgerley Drain Road
- Traffic Signal Improvements (including an initial Smart Junctions Trial) at the junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.
- Traffic Signal Improvements at Junction 7 of the A1139 Frank Perkins Parkway (A1139 Frank Perkins Parkway / Oxney Road / Eastfield Road)
- Creation of a third lane southbound on the A15 Paston Parkway approach to Junction 8 (A1139 Frank Perkins Parkway / A15 Paston Parkway / A1139 Eye Road / Parnwell Way).

The location of each of these schemes is shown in the Figure beneath.

Package 1 Scheme Locations

Economic Case

The Economic Case demonstrates the scheme achieves a Benefit to Cost Ratio of 2.7, and offers **High Value for Money** based on transport user benefits alone. A breakdown of the scheme BCR is provided in the Table beneath.

TUBA BCR Assessment

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	104
Consumer Users (commuting)	9,173
Consumer Users (Other)	2,734
Business Users/Providers	3,352
Indirect Taxes	-197
Present Value of Benefits (PVB)	**15,166**
Costs	
Broad Transport Budget	5,609
Present Value of Costs (PVC)	**5,609**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**9,557**
Benefit / Cost Ratio (BCR)	**2.704**

The Present Value of Benefits used in the assessment have been derived from the SATURN based Peterborough Transportation Model 3 (PTM3), and used to assess the impact of the scheme in future years. Results from this modelling were then assessed using the Transport User Benefits Appraisal (TUBA, 1.9.13) tool to calculate a scheme BCR. The **Present Value of Benefits** for the scheme are **£15,166** in 2010 prices.

The present value of costs used in the Economic Assessment is based upon a scheme cost estimate, and have been calculated in line with WebTAG guidance over a 60 year assessment period. The **Present Value of Costs** for the scheme are **£5,609** in 2010 prices.

Developer Contribution Sensitivity Test

It is anticipated that the package of schemes will be jointly funded by the CPCA and S106 Developer Contributions secured from the Red Brick Farm Site.

Discussions between Peterborough City Council and the Red Brick Farm Developers are well advanced, and it is considered highly likely that a significant developer contribution will be secured towards the cost of the package of schemes in the form of a S106 agreement, but details of the contribution have yet to be finalised, and consequently the level of developer contribution cannot be confirmed at this point.

However, a sensitivity test has been undertaken as part of the Economic Assessment to demonstrate the impact that the likely contribution will have on the package BCR. The sensitivity test has made the following changes to the schemes costs:

- The cost of the Oxney Road / Edgerley Drain Road Roundabout to be covered by a third party (developer contribution)
- A contribution of £325,000 towards the Traffic Signal improvements at the junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.

The updated Base Investment Cost then had the same levels of risk, inflation and Optimism Bias applied as the core scenario, and was discounted back to 2010 market prices using the same factors. The resultant BCR is shown in the Table beneath.

TUBA BCR Assessment – Developer Contribution Sensitivity Test

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	104
Consumer Users (commuting)	9,173
Consumer Users (Other)	2,734
Business Users/Providers	3,352
Indirect Taxes	-197
Present Value of Benefits (PVB)	**15,166**
Costs	
Broad Transport Budget	4,682
Present Value of Costs (PVC)	**4,682**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**10,484**
Benefit/Cost Ratio (BCR)	**3.239**

The Table demonstrates that the impact of a likely developer contribution towards the package cost will reduce the PVC to £4,682,000, increasing the scheme BCR to 3.2 which again offers **High Value for Money**.

Qualitative and quantitative assessments have also been undertaken for the following areas:

- Landscape
- Heritage
- Arboriculture
- Ecology
- Noise.

These assessments did not identify any significant concerns and will be considered in more detail during the detailed design process.

Financial Case

The Financial Case demonstrates that the scheme has been robustly costed in line with WebTAG guidance for this stage of assessment.

This Scheme Outturn Cost (including risk and inflation) is £5,869,582. This includes a 20% Risk Allowance, which is comprised of 10% construction risk and 10% COVID-19 related risk.

The initial scheme cost estimates are presented in the Table beneath.

Financial Case Scheme Cost Estimates

Description of Cost Type	Cost (£)
Base Investment Cost	4,599,343
Risk Adjusted Base Cost	5,499,211
Risk Adjusted Base Cost with Construction Industry Inflation (**Outturn Cost**)	**5,869,582**

It is anticipated that the full scheme Outturn Cost of £5,869,582 will be jointly funded by the CPCA from the Single Investment Fund and S106 Developer Contributions secured from the Red Brick Farm Site.

The level of developer contribution will be fully reported and accounted for within the Economic Case and Financial Case of the Full Business Case.

Peterborough City Council request that the Design Cost of £530,872 is released in advance of the funds required for construction, in order to undertake the Detailed Design and produce a Full Business Case. This work is provisionally programmed to be undertaken between November 2020 and March 2021, with a view to construction commencing on site in June 2021. These costs would then be reported as costs already incurred within the scheme cost estimates included within the Full Business Case.

This cost includes an allowance of £50,000 to undertake an innovative trial using real time data collection sensors at the Junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road to directly control the traffic signal operation based on live network conditions (replacing MOVA).

Commercial Case

The Commercial Case demonstrates that the scheme can be reliably procured and implemented through existing channels whilst ensuring value for money in delivery of the scheme.

All phases of the scheme, including detailed design, construction and site supervision will be delivered in house by Peterborough Highway Services (PHS), who have been responsible for all planning and design work undertaken on the Fengate Access Study to date.

The scheme will be procured using a Target Cost payment mechanism. This incentivises both parties to work together to reduce cost through a pain / gain mechanism. To ensure that the procurement remains commercially competitive and offers value for money, all subcontract packages will be subject to competitive tendering.

Procuring the scheme directly through the PHS contract enables Peterborough City Council to appoint a contractor in an efficient manner. Using PHS' in-house delivery capability offers the following benefits over alternative procurement routes.

- PHS is reliable and has a **proven track record** of delivering major schemes successfully, and this serves as a positive indicator of future performance.
- The scheme can be **procured far quicker** than would be the case with alternative procurement routes. As well as reducing the procurement costs for the procuring authority, the project benefits will be realised sooner.
- The integrated delivery model creates a **single point of responsibility** and encourages **more effective collaboration** between client, designer and contractor to reduce costs. As the scheme has been identified, planned and designed within PHS, continuity can be assured through to construction, and any issues identified on site can be quickly resolved by the design team.
- A well-established supply chain is already in place which provides **Value for Money**. All subcontract packages will be competitively tendered to ensure best value, and will be put to a minimum of three tenderers where possible.
- **Strong performance is highly incentivised** as all schemes delivered within the PHS contract contribute to a suite of KPIs which impacts on the term of the contract. Consistent good performance is rewarded with contract term extensions whereas consistently poor performance would see a reduction in the contract term.
- The contract duration and **strong collaborative relationship** encourages both parties to work towards long term gain rather than short term commercial gain.

Management Case

The Management Case demonstrates that Peterborough City Council, through the PHS Framework, has the necessary experience and governance structure to successfully manage the delivery of the package of schemes.

The Council, through PHS, have successfully delivered the following highway improvement schemes in recent years. The Staniland Way Roundabout has been included as an example of the contract's ability to deliver due to the similarities it bears to the proposed roundabout at Oxney Road / Edgerley Drain Road.

- Staniland Way Roundabout (Werrington) - £0.5m
- Junction 20 Improvement Scheme (A47 Soke Parkway / A15 Paston Parkway) - £5.7m

Staniland Way Roundabout (post scheme)

Delivery of the scheme will be managed by a Project Team led by a PCC Project Manager, and consisting of all the key project delivery partners. The Project Team will be responsible for the daily running of the project, coordinating with all key stakeholders, and managing the delivery programme.

The existing PHS Project Board will be used to oversee the continued development and delivery of the scheme by the Project Team, and to make key decisions relating to the delivery of the project. The Project Board will be supported by technical specialists, and key stakeholders will be invited to attend as necessary.

Every month the Project Manager will also submit a highlight report to the CPCA recording what progress has been made and whether there are any new risks that could impact the scheme.

An online public and stakeholder consultation exercise on the final package of schemes will be undertaken prior to completion of the Detailed Design. No residents are adversely affected by the proposed schemes. All other communication with key stakeholders and the public will be coordinated by a designated Project Liaison Officer who will be based with the project delivery team.

A Risk Register was produced during project initiation to identify potential risks and to evaluate factors that could have a detrimental effect on the project. The Risk Register is a live document and is reviewed regularly at progress meetings and updates are reported to the CPCA through the monthly Highlight Reports.

Details about how the scheme will be monitored and evaluated against the objectives are shown within the Management Case, and include a range of quantitative and qualitative data collection methods that will be undertaken at one, three and five years post scheme opening.

Summary

This Outline Business Case makes a strong strategic and economic case for the Fengate Access Study Improvements, which will return **High Value for Money**.

The Business Case demonstrates that the scheme has been carefully costed based on the information available, can be efficiently procured through existing commercial channels whilst proving value for money, and that the necessary mechanisms are in place to ensure that delivery of the scheme can be successfully managed on behalf of the Cambridgeshire and Peterborough Combined Authority.

This package of schemes will directly facilitate the Red Brick Farm development, along with wider growth in Fengate, and provide much needed employment opportunities in the uncertain wake of COVID-19.

1. Introduction

This document sets out the Business Case for the Fengate Access Study improvement schemes in Peterborough. The package of schemes will add capacity to the highway network and unlock congestion throughout the study area, to facilitate planned employment growth within Fengate.

This Strategic Outline Business Case is the first stage of the decision making process using the format set out in "The Transport Business Cases" document published by the Department for Transport (DfT) in January 2013.

The level of detail provided within the Business Case continually builds as the project progresses from Strategic Outline Business Case (SOBC) to Outline Business Case (OBC), and then onto Full Business Case (FBC). This reflects the greater level of detail that becomes available as the list of potential schemes is refined, a preferred scheme is identified, and increasingly detailed designs are produced.

The primary purpose of the SOBC is to:

- Confirm the need for change and the policy fit of a scheme at this location
- Demonstrate that a range of options have been considered, and that a preferred option has been identified that meets the scheme objectives
- Evidence that the preferred option offers value for money, and has been robustly costed based on all the information available
- Explain how the scheme will be procured, and how delivery of the project will be managed.

1.1. Fengate Area

Fengate is a large industrial area to the east of Peterborough, it is bordered to the west by the A1139 Frank Perkins Parkway, and to the east by the Fens. The industrial area has a wide variety of businesses ranging from Small to Medium Enterprises (SME's) to large national retail chains and the city's only cinema. Perkins Engines is also based in the area, and has its own access junction from the A1139 Frank Perkins Parkway.

Figure 1.1 beneath highlights the location of Fengate within Peterborough, and in relation to the Parkway Network.

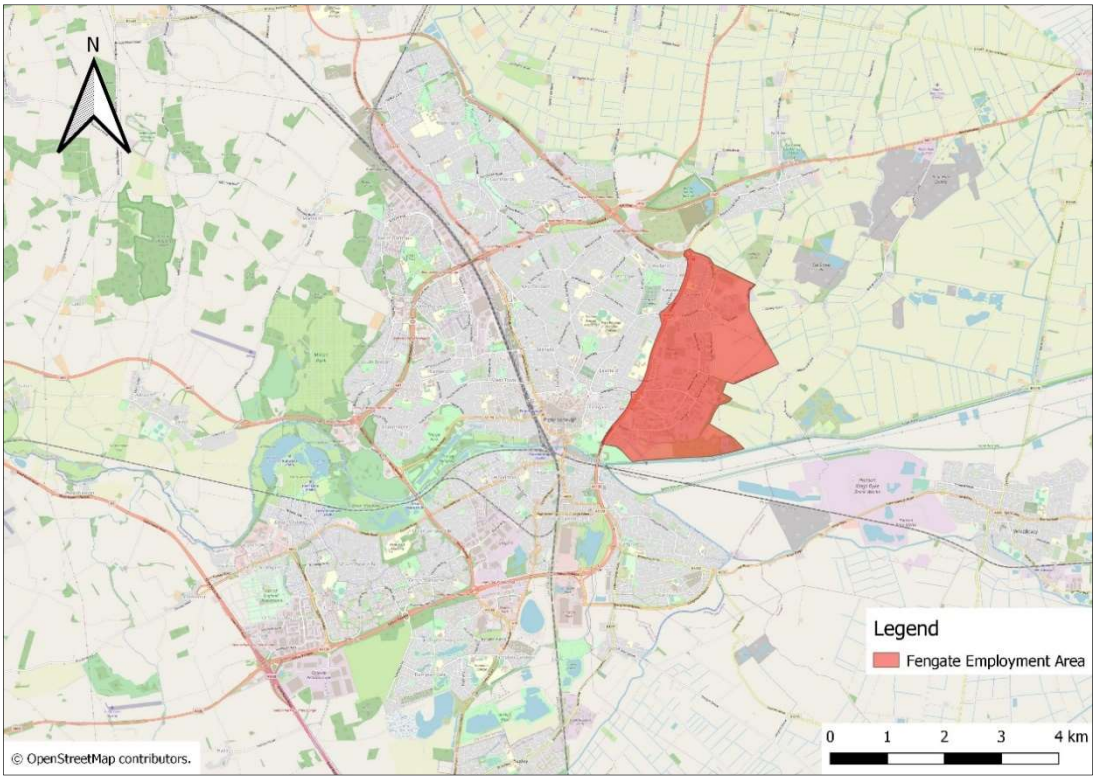


Figure 1.1: Location of Fengate within Peterborough

The main entry points to Fengate are via Junction 5 and Junction 8 of the A1139 Frank Perkins Parkway. At peak times these junctions operate over capacity with significant queueing and delays. Alternative routes to access Fengate include Bishops Road, Eastfield Road, Oxney Road and Storey's Bar Road, although these routes are less congested than Junctions 5 and 8, they still become very busy and experience peak hour delay.

The Peterborough Local Plan (2018) identifies Fengate as an area of employment growth for Peterborough. This growth could range between 18ha to 48ha of employment land, generating over 3,000 jobs in the area. Investment (beyond developer contributions) is needed into the highway network to support the development aspirations

1.2. Study Area

The Fengate Access Study Area focuses on the north of the Fengate area, where the Red Brick Farm site is located. The study area is shown in Figure 1.2 beneath, and considers Junction 7 and Junction 8 of the A1139 Fletton Parkway (key access to / from the parkway system), access routes into Fengate such as Parnwell Way and Oxney Road, and internal roads within Fengate such as Edgerley Drain Road and Storeys Bar Road.

Junction 5 of the A1139 Frank Perkins Parkway also suffers from severe peak hour congestion, but will be considered by the University Access Study.

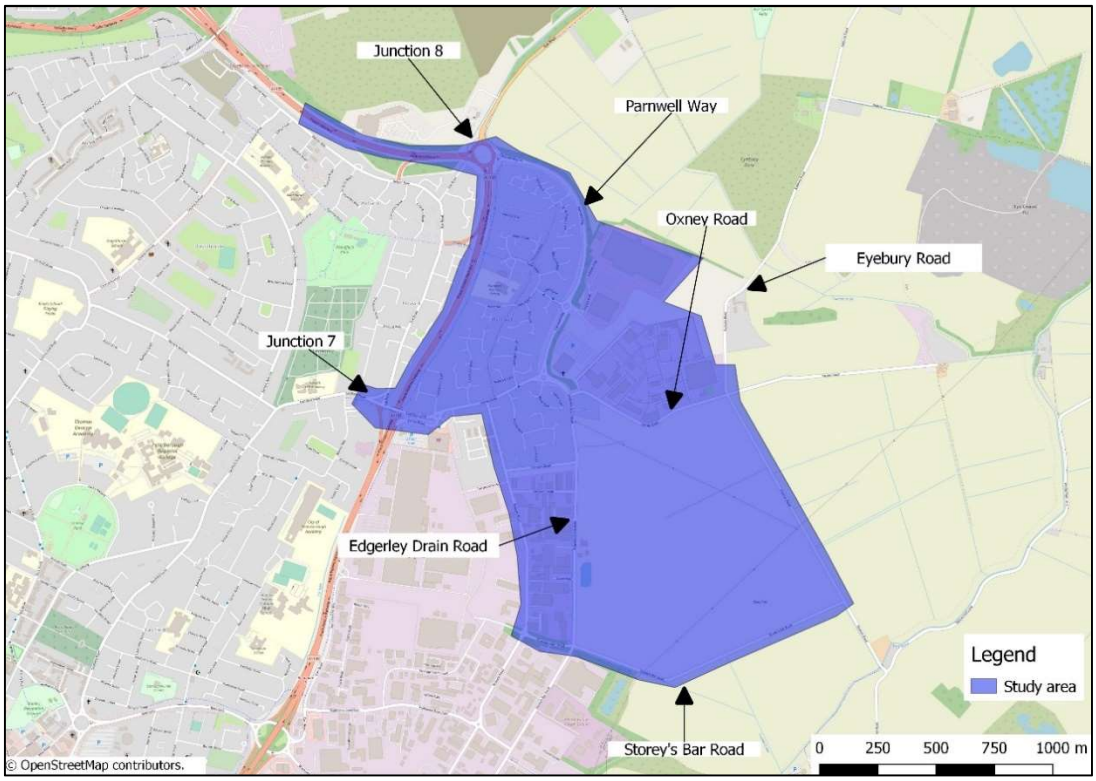


Figure 1.2: Fengate Access Study Area

1.3. Growth Context

The Peterborough Local Plan (adopted July 2019) sets out the overall vision, priorities and objectives for Peterborough up to 2036. The updated strategy identifies the required delivery of 19,440 new homes and 17,600 new jobs by 2036.

The Fengate area is an important employment area for Peterborough, with a large number of small and medium sized businesses located there, alongside large employers like Perkins Engines. The Local Plan seeks to build upon the industry in this area and has a number of allocations within the area for employment development.

The largest employment allocation within Fengate is the Red Brick Farm site which covers 126,600 square metres. This is likely to be a mixture of B8 (Storage and Distribution) units and B2 (General Industry) unit with ancillary B1 office space.

Figure 1.3 shows a plan of the allocated sites.

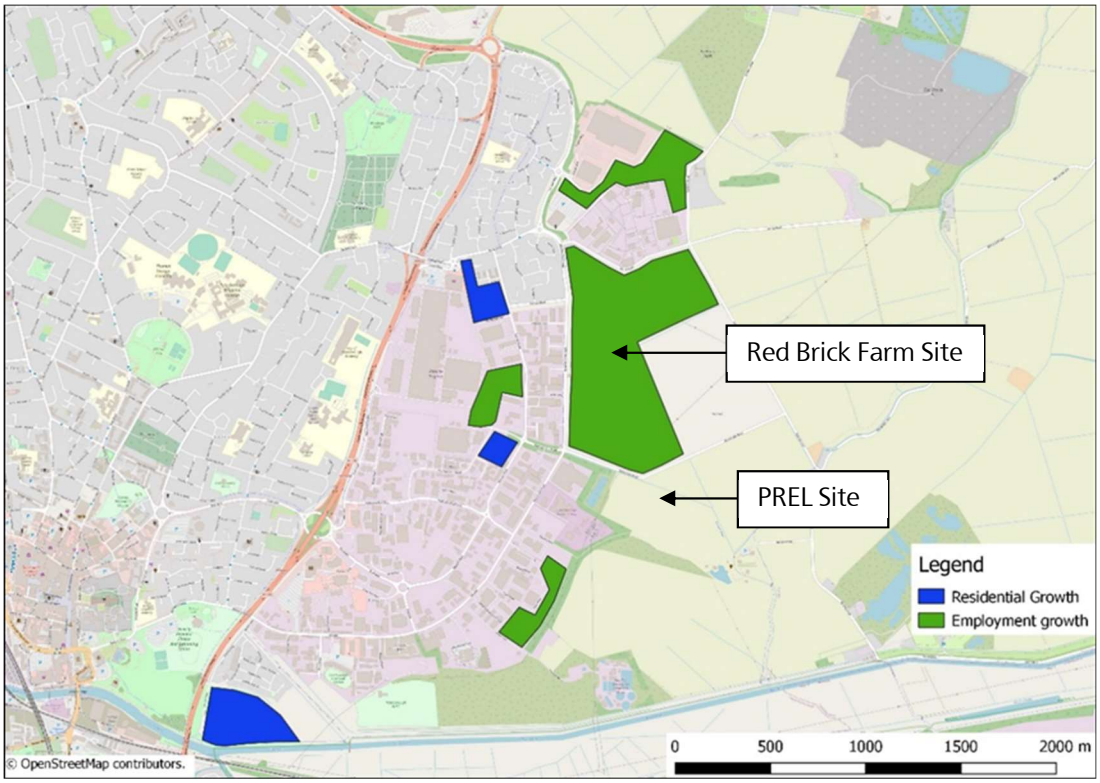


Figure 1.3: Allocated Sites for Fengate within Peterborough Local Plan

Beyond the Local Plan growth, Peterborough Renewable Energy Limited (PREL) received planning permission in October 2018. This has not been included within the assessment at this stage, as there is still uncertainty as to when this development will come forward, and in what form. However, this will be considered in later stages of the Business Case, and within the detailed operation modelling, either as part of the core scenario, or a sensitivity test.

PREL will convert biomass slurry waste in to solid fuel. The site will also include a research and development visitor centre to host schools, universities and other interested parties to educate on the process of turning waste in to fuel, rather than landfill. As part of the planning permission, the following highway improvements are proposed:

- Reconstruction and widening of Storey's Bar Road (east) to 7.3m with a 3m cycleway on the south side, eastwards from the junction with Edgerley Drain Road to a point just west of Adderley Drain
- Provision of a roundabout and Right Turn Lane facility to serve the PREL site
- A new Toucan Crossing on Storey's Bar Road (south) to the south of the existing Edgerley Drain Road junction including upgraded pedestrian/cycle facilities.
- Upgrading of the Puffin Crossing on Vicarage Farm Road at the Edgerley Drain Road junction to a Toucan Crossing including upgraded pedestrian/cycle facilities.
- Reduction in speed limit on Storey's Bar Road (east) to 50mph.

The Business Case seeks to identify schemes that together will provide the necessary increase in highway capacity within Fengate (and accesses into Fengate) to enable this growth to be realised. Improving capacity at access points, and improving the operational performance of the internal road network, will help to support further growth. Access improvements to Fengate would also have wider network benefits to the Parkway system, as they would alleviate congestion which can queue back towards the Parkway network.

1.4. Document Structure

The remainder of this document is structured as follows:

- **Chapter 2: The Strategic Case** identifies the need for an improvement at this location, considers an initial long list of options, and how these perform against CPCA, Peterborough City Council and the scheme objectives
- **Chapter 3: Economic Case** demonstrates that the preferred option offers value for money, and includes a sensitivity test exploring the impact of the likely developer contribution on the scheme cost and resultant Value for Money
- **Chapter 4: Financial Case** shows how the scheme has been costed, and the expected funding arrangement for delivering the scheme
- **Chapter 5: Commercial Case** sets out how Peterborough City Council will procure in a way that delivers value for money
- **Chapter 6: Management Case** explains how delivery of the scheme will be managed.

2. Strategic Case

2.1. Introduction

This chapter sets out the strategic case for the Fengate Access Study package of improvements. It demonstrates why improvements are needed at this location, and considers how the package of schemes fit with local, regional and national policy, assisting Peterborough to deliver its planned growth.

2.2. Business Strategy

The Government's strategy for facilitating further economic growth requires continued investment in transport infrastructure to enable businesses to invest in job creation and the provision of new residential developments. Achieving economic growth, increasing living standards and the provision of new housing are key Government objectives at national, regional and local level. This section details how the Fengate Access Study will contribute to achieving these strategic aims and polices.

Department for Transport Single Departmental Plan

The Single Departmental Plan published in June 2019[2] sets out the DfT's objectives and the plans for achieving them.

The objectives are:

- Support the creation of a stronger, cleaner, more productive economy
- Help to connect people and places, balancing investment across the country
- Make journeys easier, modern and reliable
- Make sure transport is safe, secure and sustainable
- Prepare the transport system for technological progress and a prosperous future outside the EU
- Promote a culture of efficiency and productivity in everything they do.

An improvement scheme at Fengate has the potential to reduce congestion and improve journey time reliability. The delivery of these benefits will support economic growth. As such, the delivery of a package of schemes at Fengate will provide benefits aligned to delivering the main objectives of DfT's Investment Strategy.

[2] https://www.gov.uk/government/publications/department-for-transport-single-departmental-plan

Cambridgeshire and Peterborough Combined Authority

The Cambridgeshire and Peterborough Combined Authority (CPCA) was formed in 2017 as a Mayoral Combined Authority. It is made of seven local authorities (Cambridgeshire County Council, Peterborough City Council, Huntingdonshire District Council, East Cambridgeshire District Council, Fenland District Council, Cambridge City Council and South Cambridgeshire District Council) and the Business Board (Local Enterprise Partnership).

The focus of the CPCA is on strategic issues (such as housing, transport and infrastructure demand) which cross council borders and span the entire Cambridgeshire and Peterborough area. The Devolution Deal for Cambridgeshire and Peterborough runs for 30 years and sets out key ambitions for the CPCA as well as including a list of specific projects which the CPCA and its member councils will support over that time.

To help achieve these ambitions and provide the requisite support, the CPCA has set out a short-term business plan[3] that is aimed at giving a clear pathway to deliver on their ambitious and transformational agenda for Cambridgeshire and Peterborough. The business plan sets out the CPCA budget plans for the next four-year period alongside a focussed to-do list of projects of which Improvement works within the Fengate area are listed. Figure 2.1 sets out the CPCA Policy Framework.

Figure 2.1: CPCA Policy Framework

The CPCA Mayor's Growth Ambition Strategy sets out the area's priorities for achieving ambitious levels of inclusive growth and meeting the commitments of the Devolution Deal. The Strategy is based upon significant work undertaken by the Cambridgeshire and Peterborough Independent Economic Review (CPIER).

[3] https://cambridgeshirepeterborough-ca.gov.uk/assets/Uploads/CPCA-Business-Plan-2019-20-dps.pdf

The CPIER[4] was commissioned by the Combined Authority and other local partners to provide a robust and independent assessment of the Cambridgeshire and Peterborough Economy and its potential for growth. The assessment makes a number of recommendations for the CPCA to take forward over the short, medium and long-term.

The success of Cambridgeshire and Peterborough as a project of national importance is highlighted in the CPIER. This is because the area contains some of the most important companies and institutions in the country, much of the country's high value agricultural land, and the cities and towns that continue to support both.

The CPIER identifies Peterborough as a city with a dynamic business environment, built on its history of industry including brickmaking and manufacturing. It is an attractive place for business due to its position on the A1 and East Coast Main Line, as well as for aspirational workers who want easy access to London, the Midlands and the North. However it also states that it has a lower proportion of high-level skills than elsewhere in the area, and educational and health outcomes in Peterborough are relatively poor. The CPIER believes a strong focus on these issues is needed to improve productivity and well-being, which should also include new higher education provision.

The Local Industrial Strategy[5] sets out the economic strategy for Cambridgeshire and Peterborough, taking a lead role in implementing the business growth, productivity and skills elements of the Growth Ambitions Strategy. The Local Industrial Strategy is focussed around five key foundations of productivity established in the UK Industrial Strategy:

- People
- Ideas
- Business Environment
- Infrastructure
- Place.

It is a core principle of the Local Industrial Strategy that the fifth foundation of place reflects the findings of the CPIER, responding to the three sub-economies identified:

- Greater Cambridge
- Greater Peterborough
- The Fens.

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[4] https://www.cpier.org.uk

[5] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818886/Cambridge_SINGLE_PAGE.pdf

The CPCA Assurance Framework states that investments will only be made if they can demonstrate that they will support the delivery of the Growth Ambitions Statement and the Local Industrial Strategies, as well as the more detailed place and sector strategies.

In January 2020, the CPCA adopted a Local Transport Plan for Cambridgeshire and Peterborough6 and it replaces the interim Local Transport Plan published in 2017. The plan describes how transport interventions can be used to address current and future challenges and opportunities for Cambridgeshire and Peterborough, and sets out the policies and strategies needed to secure growth and ensure that planned large-scale development can take place in the county in a sustainable way.

The Local Transport Plan is split in to two main parts: The 'Local Transport Plan' which sets out the vision, goals and objectives and the policies designed to deliver the objectives, and the 'Transport Delivery Plan' (2019 to 2035) which explains how the Local Transport Plan strategy will be delivered. It details programmes for delivery of improvements to the transport network and for its day to day management and maintenance.

The development of the Local Transport Plan was undertaken concurrently with the CPIER and the Growth Ambition Strategy which enabled the challenges and opportunities detailed in these documents to be reflected within the Local Transport Pan. The Local Transport Plan completes the suite of documents which articulates the Combined Authority's response to the CPIER.

The vision for the Local Transport Plan is:

'To deliver a world-class transport network for Cambridgeshire and Peterborough that supports sustainable growth and opportunity for all'.

The goals of the Local Transport Plan outline the wider outcomes the transport network in Cambridgeshire and Peterborough will aim to achieve. They are:

- **Economy** – deliver economic growth and opportunity for all communities
- **Society** – Provide an accessible transport system to ensure everyone can thrive and be healthy
- **Environment** – Protect and enhance our environment and tackle climate change together.

The objectives of the Local Transport Plan underpin the delivery of the goals for improvements within the Fengate Area, and form the basis against which schemes, initiatives and policies will be assessed. The initial scheme objectives for a Fengate Area improvement scheme/s were devised at the beginning of the study and pre-date the objectives of the Local Transport Plan.

[6] https://cambridgeshirepeterborough-ca.gov.uk/assets/Transport/Draft-LTP.pdf

Since the introduction of the CPCA's Local Transport Plan, these initial scheme objectives have been refined to ensure they meet those objectives both locally (for Peterborough) and regionally (for the CPCA). The scheme objectives for a Fengate Area improvement scheme/s are set out later on in this chapter.

The objectives of the CPCA Local Transport Plan are:

- **Housing** – support new housing and development to accommodate a growing population and workforce
- **Employment** – connect all new and existing communities so all residents can easily access jobs within 30 minutes by public transport
- **Business and Tourism** – Ensure all of our region's businesses and tourist attractions are connected sustainably to our main transport hubs, ports and airports
- **Resilience** – build a transport network that is resilient and adaptive to human and environmental disruption, improving journey time reliability
- **Safety** – embed a safe systems approach in to all planning and transport operations to achieve Vision Zero (zero fatalities or serious injuries)
- **Accessibility** – promote social inclusion through the provision of a sustainable transport network that is affordable and accessible for all
- **Health and Well-being** – provide 'healthy streets' and high quality public realm that puts people first and promotes active lifestyles
- **Air Quality** – ensure transport initiatives improve air quality across the region to exceed good practice standards
- **Environment** – deliver a transport network that protects and enhances our natural, historic and built environments
- **Climate Change** – reduce emissions to as close to zero as possible to minimise the impact of transport and travel on climate change.

Fengate is identified within the Local Transport Plan as an area where improvements are necessary to improve journey time reliability, and enable the growth identified within the Local Plan to emerge[7].

2.3. Fit with the Wider Policy Context

The wider policy context is set out in Table 2.1 below, each policy document is set out alongside its objectives and the impact of the study on the objectives of each policy document.

Appendix A details each of the individual policies in more detail.

[7] Peterborough Long Term Transport Strategy, 2010

Table 2.1: Wider Policy Context for Fengate and Impact of the Proposed Measures

Policy Framework	Policy Function	Objectives	How the Study Supports and Facilitates the Policy Objectives
Department for Transport Single Departmental Plan	Sets out the DfT's objectives and the plans for achieving them	• Support the creation of stronger, cleaner, more productive economy • Help to connect people and places, balancing investment across the country • Make journeys easier, modern and reliable • Make sure transport is safe secure and sustainable • Prepare the transport system for technological progress and a prosperous future outside the EU • Promote a culture of efficiency and productivity in everything we do.	Improvements within Fengate: • Support economic growth ambitions at Red Brick Farm • Improve reliability for drivers on this section of the city's road network
Cambridgeshire and Peterborough Combined Authority Local Transport Plan	Describes how transport interventions can be used to address current and future challenges and opportunities. Sets out policies and strategies needed to secure growth and ensure planned large scale development can take place in the county in a sustainable way. The Local Transport Plan completes the suite of documents which articulates the Combined Authority's response to the CPIER	• Housing – support new housing and development to accommodate a growing population and workforce • Employment – connect all new and existing communities so all residents can easily access jobs within 30 minutes by public transport • Business and Tourism – Ensure all of our region's businesses and tourist attractions are connected sustainably to our main transport hubs, ports and airports • Resilience – build a transport network that is resilient and adaptive to human and environmental disruption, improving journey time reliability • Safety – embed a safe systems approach in to all planning and transport operations to achieve Vision Zero (zero fatalities or serious injuries) • Accessibility – promote social inclusion through the provision of a sustainable transport network that is affordable and accessible for all • Health and Well-being – provide 'healthy streets' and high quality public realm that puts people first and promotes active lifestyles • Air Quality – ensure transport initiatives improve air quality across the region to exceed good practice standards • Environment – deliver a transport network that protects and enhances our natural, historic and built environments • Climate Change – reduce emissions to as close to zero as possible to minimise the impact of transport and travel on climate change.	Improvements within Fengate: • Support economic growth ambitions at Red Brick Farm • Improve reliability for drivers on this section of the city's road network
Peterborough City Council Strategic Priorities	The Council's priorities to help meet its vision to 'create and bigger and better Peterborough that grows the right way, and through truly sustainable growth	• Drive growth, regeneration and economic development • Improve educational attainment and skills • Safeguard vulnerable children and adults • Implement the Environment Capital Agenda • Support Peterborough's culture and leisure trust Vivacity • Keep all our communities safe, cohesive and healthy • Achieve the best health and wellbeing for the city	Improvements within Fengate: • Support economic growth ambitions at Red Brick Farm • Improve reliability for drivers on this section of the city's road network
Peterborough City Council Local Plan	Updates the 2011 Core Strategy and looks to deliver 21,315 homes and 19,440 jobs by 2036		

2.4. The Need for Change

There is a very clear and compelling case for change within Fengate. The Local Plan allocates a significant proportion of employment growth within the Fengate area. The Red Brick Farm site is the largest of these growth allocations, and is currently progressing through the planning process with the intention of developing the site by late 2021. The timing of this development, and the employment that it will create, will provide Peterborough with crucial economic resilience in the wake of the COVID-19 Pandemic, and the subsequent impact that is being felt on the economy.

However, evidence of existing and future conditions demonstrate that there are issues that need to be overcome to enable the growth to be realised, particularly at Red Brick Farm. Transport investment (beyond any agreed developer contributions) is needed to address existing issues of congestion and delay and poor infrastructure quality.

These challenges are documented in the Option Assessment Repot (OAR) and are set out beneath in the following themes:

- Existing Congestion and Delay
- Local Issues within Fengate
- Wider Access Issues.

Existing Congestion and Delay

High levels of congestion and delay are experienced across the study area in both the AM and PM peak periods. Figure 2.2 below shows the typical traffic conditions across the study area on an average weekday (pre COVID-19) approximately halfway through the AM peak hour.

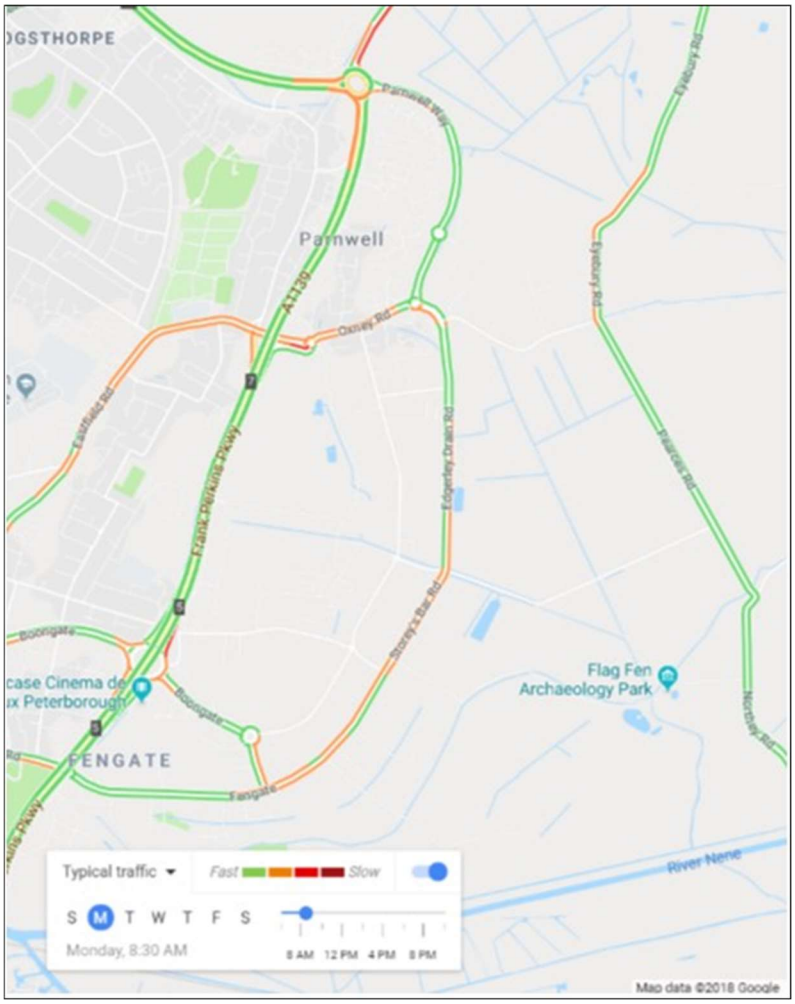

Figure 2.2: AM Peak Hour Congestion within Fengate (Google Live Traffic)

Delay within Fengate is particularly common along Storey's Bar Road and Edgerley Drain Road during the AM peak hour, which is a consequence of the signalised junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road. The delay on Storey's Bar Road extends back to its junction with Fengate and Boongate. Oxney Road also experiences lengthy delays from its junction with Parnwell Way, and queueing often extends back to Junction 7 of the A1139 Frank Perkins Parkway. The Eastfield Road approach to Junction 7 also suffers from delays, which extend back to the Peterborough Regional College site.

All approaches to Junction 8 experience delay during the AM peak, with the most significant delay on the A1139 Eye Road approach. This is due to commuters from the east of Peterborough, including Eye and Thorney, as well as from further afield from places such as Wisbech, accessing the Parkway Network via Junction 8.

Figure 2.3 shows the overall situation across the area on an average weekday (pre COVID-19) halfway through the PM peak hour.

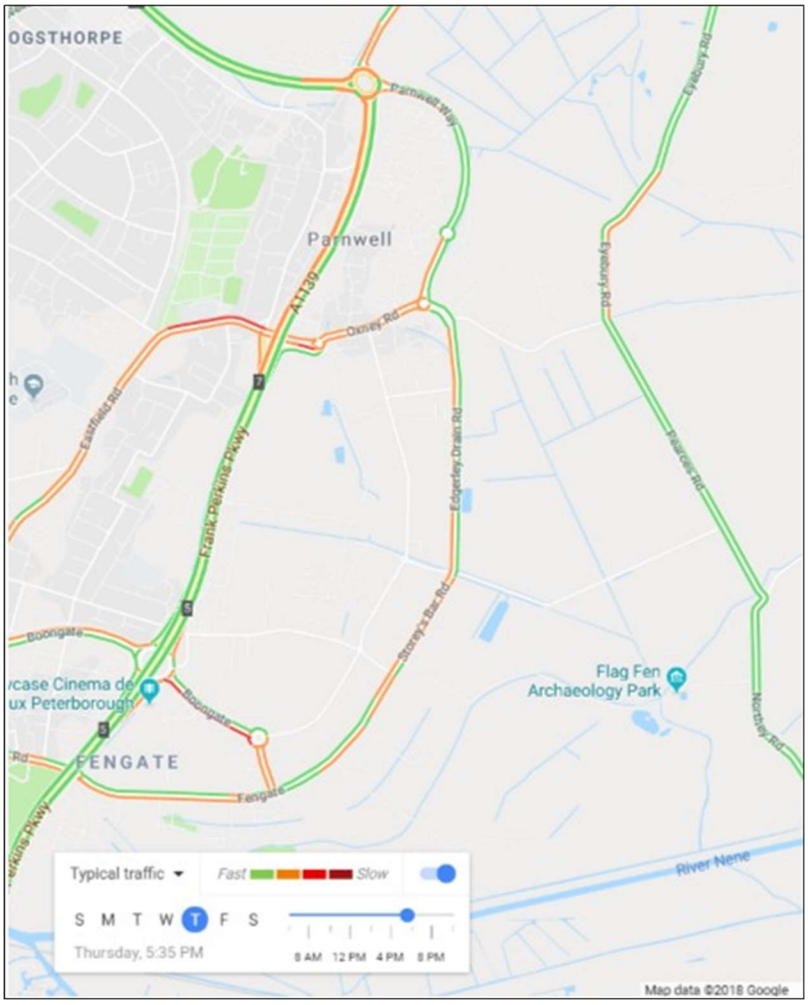

Figure 2.3: PM Peak Hour Congestion within Fengate (Google Live Traffic)

The PM peak shows that delay occurs similar locations as in the AM peak hour, however on the delay and congestion experienced is generally more significant. Within Fengate itself, delays are again experiences on Storey's Bar Road and Edgerley Drain Road, however in the PM peak period, the delay on Edgerley Drain Road and Storey's Bar Road extends back from the junction with Oxney Road and Parnwell Way.

Junction 7 experiences congestion on all approaches during the PM peak hour, and there are lengthy delays on Oxney Road which extend back along Parnwell Way.

All approaches to Junction 8 experience delay, however the most significant delay is on the A1139 Frank Perkins Parkway approach where traffic queues back to Junction 7.

Local Issues within Fengate

The highway network within Fengate consists of single carriageway roads. Many routes have a footpath on either side, with a speed limit of 30 mph. The main north-south route through the study area is via Oxney Road, Edgerley Drain Road and Storey's Bar Road. Two key junctions on this route which suffer from peak period congestion are Oxney Road / Edgerley Drain Road and Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.

Satellite Navigation data has been used to assess journey times and delay within the Study Area. The data provided is for the period from the 15th November 2017 to 13th December 2017. The dataset was selected to avoid major roadworks scheduled for 2018 that would have influenced the journey times.

Figure 2.4 displays the journey times for vehicles on the approaches to Oxney Road / Edgerley Drain Road Junction and Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road Junctions, for the following time periods:

- Free Flow (FF) (00:00 – 05:00)
- AM peak hour (08:00-09:00)
- PM peak hour (17:00 – 18:00).

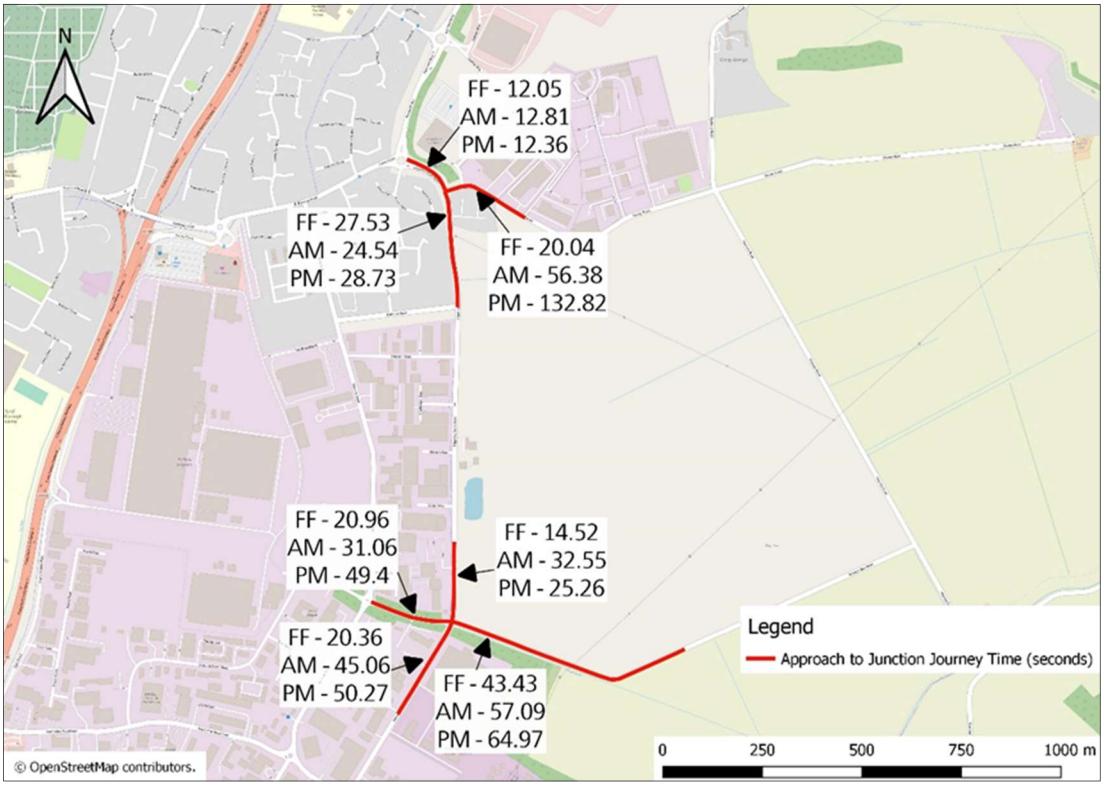

Figure 2.4: Journey Time Data for Oxney Road / Edgerley Drain Road Junction and Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road Junction

Oxney Road / Edgerley Drain Road

The journey time data at the Oxney Road / Edgerley Drain Road junction demonstrates that the Oxney Road (east) arm suffers from significant delay in journey times with average journey times of 56 seconds in the AM peak hour and 132 seconds in the PM peak hour, compared to the free flow journey time of 20 seconds.

Although the other approaches to this junction do suffer from delay to journey times it is not as significant, ranging between 0.5 - 4.0 seconds as neither of these approaches are require to give way (except for the Edgerley Drain Road northbound right turn, which is held in a separate right turn lane).

Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road

Journey time data at the Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road shows that delays occur on all approaches to the junction in both the AM and PM peak hours. The approach with the most significant delay in the AM peak hour is the Edgerley Drain Road approach with a journey time of 45 seconds compared to the free flow journey time of 23 seconds.

This approach also experiences significant delay during the PM peak hour with a journey time of 50 seconds. The Vicarage Farm Road approach also experiences significant delays in the PM peak hour with a journey time of 49 seconds compared to the free flow journey time of 20 seconds.

Wider Access Issues

Junction 7

Junction 7 provides access from the A1139 Frank Perkins Parkway to the north of Fengate and a supermarket via Oxney Road, as well as access to the north-east residential areas of the city including Eastfield, Newark and Parnwell. The junction only accommodates a northbound off-slip from the A1139 Frank Perkins Parkway for. To re-join the southbound A1139 Frank Perkins Parkway, vehicles are required to use the Oxney Road roundabout to join the southbound on-slip.

The traffic signal equipment at this junction is beyond its serviceable life and is the second oldest asset in Peterborough. The site infrastructure was originally installed in 1984 and has been highlighted as a maintenance risk due to lack of ducting. In addition the Site controller was installed in 2003, which has exceeded its recommended design life of 15 years.

This junction encounters severe peak hour congestion. Satellite Navigation data has been used to assess journey times and delay. Figure 2.5 shows the journey times for vehicles travelling in the free flow (FF) (00:00 – 05:00), AM peak hour (08:00-09:00) and PM peak hour (17:00 – 18:00) at Junction 7.

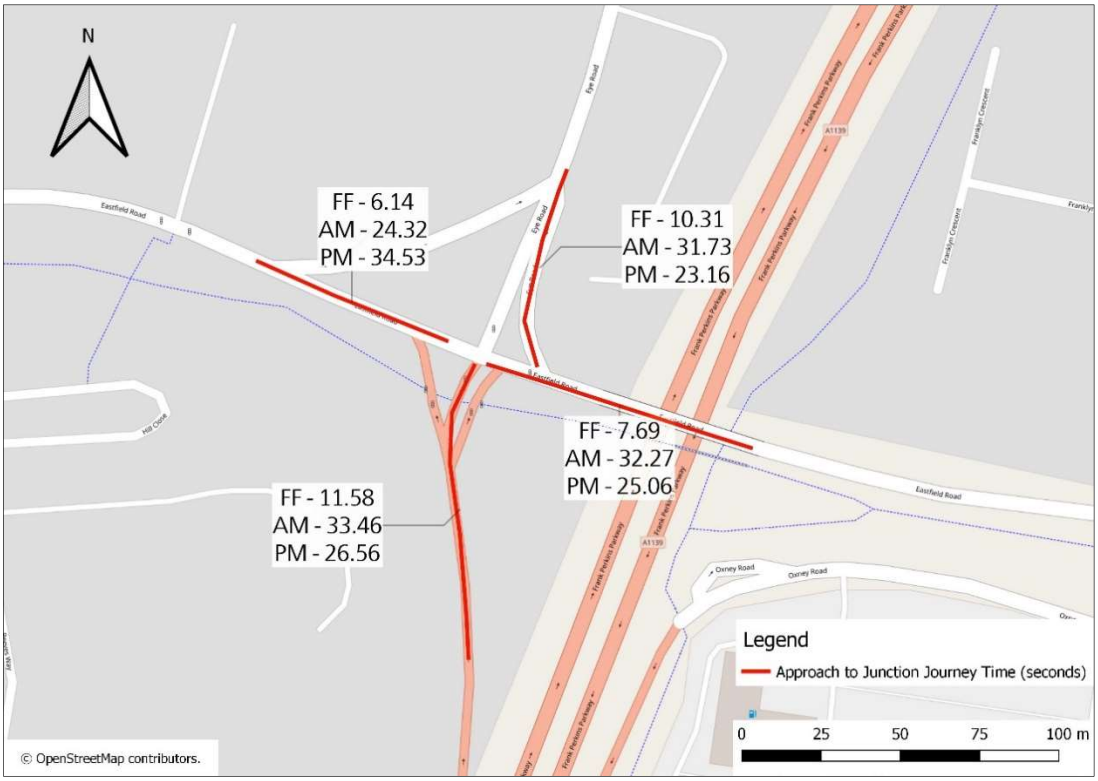

Figure 2.5: Journey Time Data for Junction 7

The Eastfield Road westbound approach to the junction has the most significant increase in delay in the AM peak hour compared to free flow conditions, with a journey time of 32 seconds compared to 10 seconds. All the other approaches to the junction have a journey time increase of around 20 seconds compared to the free flow journey time.

The Eastfield Road eastbound approach has the largest increase in delay during the PM peak hour compared to free flow conditions, with a journey time increase of 28 seconds. The approaches all experience delay with journey times between 13-20 seconds above the free flow journey time.

Junction 8

Junction 8 is a very large signalised roundabout to the north-east of Peterborough. It is a key junction on the Parkway Network linking the A1139 Frank Perkins Parkway with the A15 Paston Parkway. It also provide a key route linking the A47 with the Parkway Network via A1139 Eye Road.

Parnwell Way provides access for traffic travelling southbound in to the north of Fengate, and vice versa.

As expected with such high traffic flows, the junction also experiences severe peak time congestion. Figure 2.6 displays the average journey times for Junction 8, extracted from the same Satellite Navigation described above.

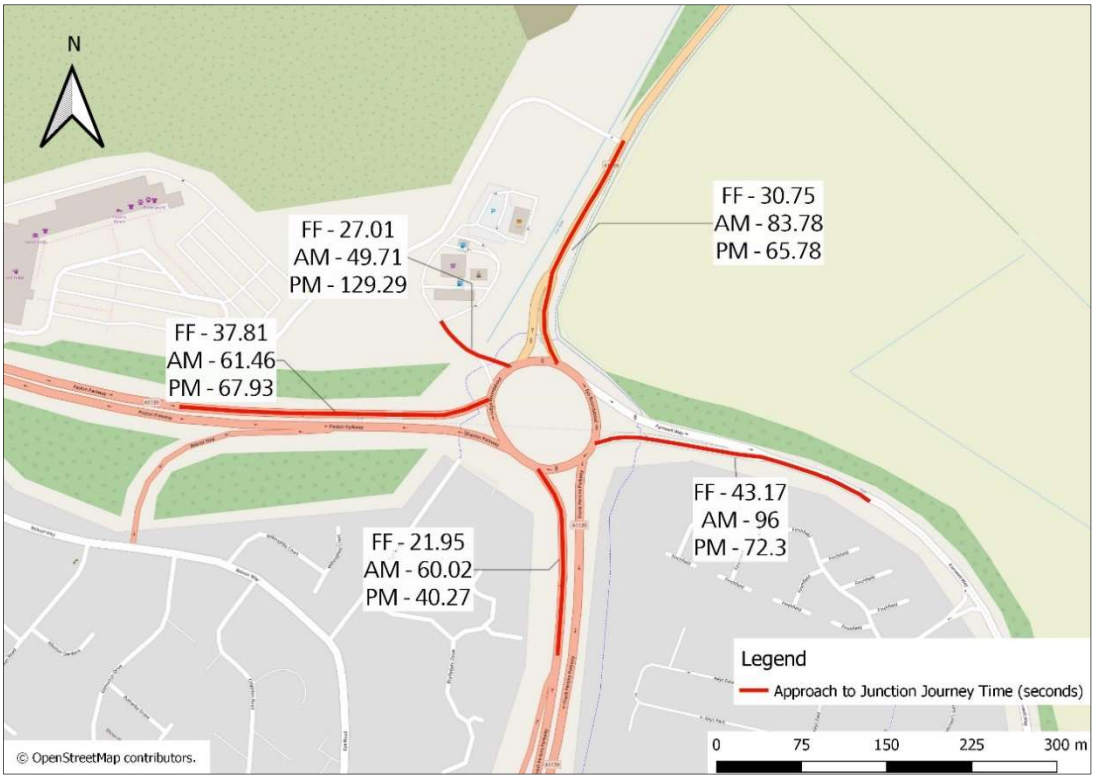

Figure 2.6: Journey Time Data for Junction 8

All arms on the approach to Junction 8 experience delays during the AM peak hour compared to the free flow journey times. In particular, Parnwell Way sees a significant increase in journey time for vehicles approaching the junction, from 43 seconds in the free flow period compared to 96 seconds in the AM peak hour. The A1139 Eye Road also has a significant of delay with an increase in journey time of over 50 seconds. Both the A1139 Frank Perkins Parkway and A15 Paston Parkway approaches experience delays of around 60 seconds per vehicle in the AM pear hour.

The PM peak hour difference in journey times is not as pronounced as in the AM peak hour, however all approaches have a minimum of a 50% increase. Parnwell Way, the A1139 Eye Road and A15 Paston Parkway have an additional 30 seconds per vehicle journey time on the approach to Junction 8. The A1139 Frank Perkins Parkway has an increase of approximately 20 seconds.

2.5. Impact of Not Changing

As highlighted above, Fengate is identified as an area of growth in the Peterborough Local Plan, with residential and employment allocations expected to come forward before 2036.

Without intervention, the existing issues of congestion, delay and poor journey times will continue to worsen, impacting the operational performance of the highway network across the study area, and compromising the viability of growth aspirations.

The Peterborough Transportation Model (PTM3) has been used to assess conditions within Fengate should the growth occur without any highway improvements.

PTM3 was developed using SATURN (v11.4.07H), which is a suite of network analysis programs. SATURN allows the user to model baseline and future year traffic conditions, such as traffic volumes, capacities and delays, at a strategic level and analyse the impact of potential road-investment schemes.

The model has been constructed to represent the morning (08:00 - 09:00), Inter (14:00 - 15:00) and evening (17:00 - 18:00) peak hours, to reflect the most congested time periods across Peterborough's network, and it models cars, LGVs, HGVs and buses. The base model was validated using traffic count and travel time data from 2019.

The PTM3 forecast models use the base model and applies traffic growth sourced from the Department for Transport's Trip End Model Presentation Program (TEMPro), National Road Traffic Forecasts (NRTF) and trip rates for local developments. Forecast growth has been calculated for 2026, 2031 and 2036 to align with the Local Plan.

AM Peak Hour

Figure 2.7 provides a comparison of AM peak hour delay across the study area network between the 2019 Base Scenario and the 2036 Do Minimum scenario. The green bars represent an increase in delay by 2036 as a result of growth within the area. These bars indicate where future congestion and delay is expected to occur.

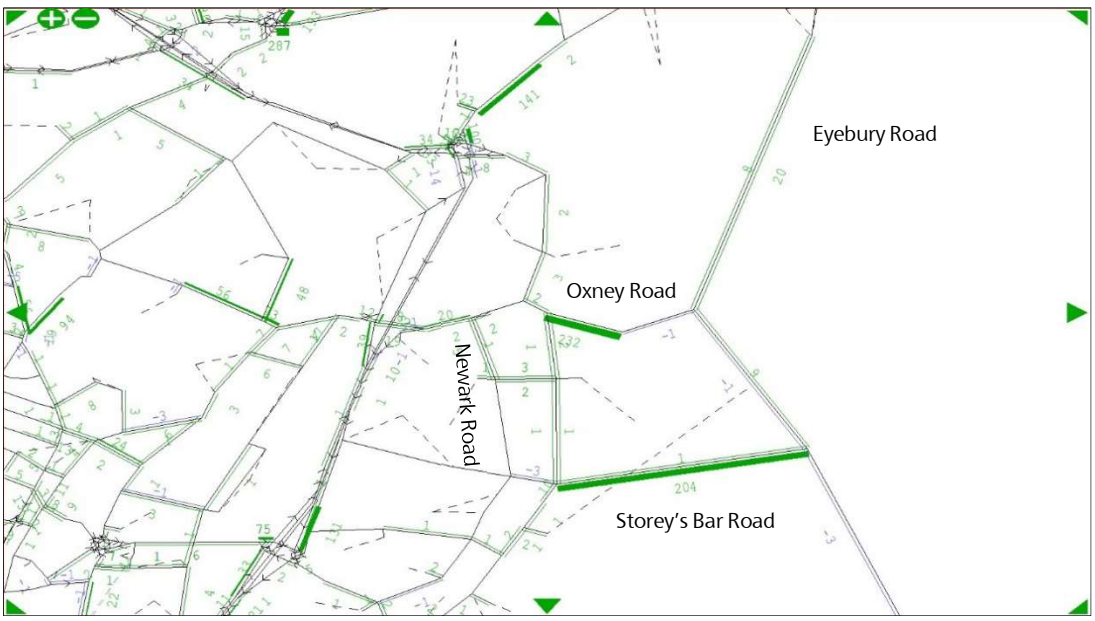

Figure 2.7: Increase in AM peak hour delay between 2019 Base Model and 2036 Do Minimum Scenario (PTM3)

Figure 2.7 shows that the biggest increases in delay are forecast at:

- Oxney Road / Edgerley Drain Road Junction – the Oxney Road westbound approach will see an increase in delay of 232 seconds per vehicle.
- Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road Junction – Storey's Bar Road westbound approach will experience an increase in delay of 204 seconds per vehicle.
- Junction 8 – A1139 Eye Road approach will have an increase in delay of around 100 seconds per vehicle.

Delays at Junction 7 and Oxney Road, are not forecast to be as significant as the other junctions highlighted above, with an increase of 20 seconds per vehicle. However this junction is already operating with significant delay, and the infrastructure is in very poor condition.

PM Peak Hour

Figure 2.8 provides a comparison of PM peak hour delay across the study area network between the 2019 Base Scenario and the 2036 Do Minimum scenario. The green bars represent an increase in delay by 2036 as a result of growth within the area. These bars indicate where future congestion and delay is expected to occur.

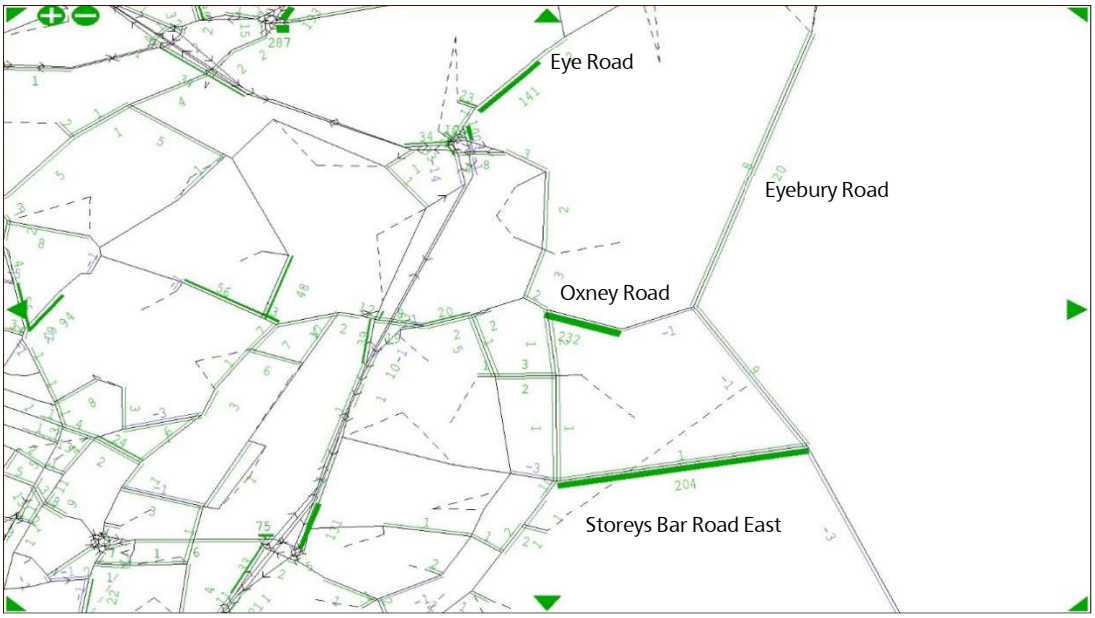

Figure 2.8: Increase in PM peak hour delay between 2019 Base Model and 2036 Do Minimum Scenario (PTM3)

Figure 2.8 shows that the biggest increases in delay are forecast at:

- Oxney Road / Edgerley Drain Road Junction – the Oxney Road (east) approach will see an increase in delay of 232 seconds per vehicle.
- Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road Junction – Storey's Bar Road (east) approach will experience an increase in delay of 204 seconds per vehicle.
- Junction 8 – A1139 Eye Road approach will have an increase in delay of around 100 seconds per vehicle.

2.6. Internal Drivers for Change

Internal drivers for change are factors that are driving the need for change, and come from the scheme promoter, such as aspirations for growth, or to increase network resilience. In this instance the scheme promoters are Peterborough City Council, with the CPCA acting as scheme funders.

The internal drivers for improvements to access Fengate come from local growth aspirations, and the structured framework of support provided by the CPCA to enable this growth to be realised.

Local Growth Aspirations

Peterborough is forecast to experience significant employment and population growth over the next few decades, reflecting a continuation of past trends.

Peterborough is one of the fastest growing cities in England, with 25,000 new homes required by 2031. This level of growth will in turn further strengthen the city's economy, contribute to regional growth, and increase the demand for travel on the local network.

Peterborough strives to become a 'destination of choice', to be continually recognised as a regional centre and economic partner with Cambridge. With the attractiveness of the city set to increase as a place to live, work and travel, this in turn creates pressure in relation to housing and employment growth, which in turn increases the strain on the transport infrastructure. Improving the transport infrastructure to enable Peterborough's strong history of growth to continue is the main internal driver for improving access to the key employment area of Fengate.

Table 2.2 and Table 2.3 below show the breakdown of the allocated sites by location and the timescale in which they are expected to come forward. There are 488 dwellings proposed within Fengate, however 350 of these are proposed at Fengate South, which lays beyond the Fengate Access Study area.

The largest employment allocation is Red Brick Farm at 126,600 sqm, this is likely to be a mixture of B8 (Storage and Distribution) units and B2 (General Industry) unit with ancillary B1 office space. The remaining allocated land takes the form of smaller sites across Fengate which are likely to be B1 or B2 uses.

Table 2.2: Residential Development proposed for Fengate

	Residential Developments (units)				
Local Plan Development	Up to 2019	2019-2026	2026-2031	2031-2036	Total Units
Potters Way Fengate	0	18	0	0	18
Fengate South	0	0	150	200	350
former Perkins Engines site Newark Road	0	104	0	0	104
Tanholt Farm, Eyebury Road	0	3	0	0	3
rear of 83 Oxney Road	0	5	0	0	5
105 Oxney Road	0	8	0	0	8

Table 2.3: Employment Development proposed for Fengate

Mixed Commercial Developments (sq. m)						
Local Plan Development	Land Use Class	up to 2019	2019 - 2026	2026 - 2031	2031 - 2036	Total Size (sq.m)
Red Brick Farm	Employment			126600		126600
Oxney Road site C	Employment			34825		34825
Perkins South	Employment			14700		14700
Land off Third Drove and fronting Fengate	Employment			5950		5950

This Business Case seeks to identify schemes that together will provide the necessary increase in highway capacity within Fengate (and accesses into Fengate) to enable this growth to be realised. Improving capacity at access points, and improving the operational performance of the internal road network, will help to support further growth. Access improvements to Fengate would also have wider network benefits to the Parkway system, as they would alleviate congestion which can queue back towards the Parkway network.

Combined Authority Support

The CPCA has identified a number of strategic projects which it believes will provide transformational benefits for the area. The feasibility study of the 'Fengate Access Study' is one of the studies shortlisted as a priority.

The CPCA recognises that the development of a wider, multi-year pipeline of transport schemes can also contribute towards its objectives. The benefits of such a pipeline include:

- The provision of a steady flow of transport improvements over the short, medium and long term including potential strategic projects of the future
- Greater opportunity to consider local issues and spread investment around the Combined Authority area
- Early investment in the development of schemes places the Combined Authority in a strong position to bid for and secure additional funding as alternative sources become available.

In order to facilitate the pipeline of work, the process includes initially exploring the feasibility of schemes, and then developing business cases. These are essential steps in defining an improvement and securing funding for its realisation.

In October 2017 the CPCA methodology was set out for prioritising investment, which was based on the criteria shown in Table 2.4.

Table 2.4: Combined Authority Criteria

Case	Criteria
Strategic	• Reduce congestion • Unlock housing and jobs
Economic	• Scale of impact • Value for money
Financial	• Other funding sources / contributors
Management	• Delivery certainty • Project risks • Stakeholder support

Fengate has been prioritised for investment by the Combined Authority, and the Combined Authorities' investment strategy is another internal driver for change, and an enabler for a scheme to be developed at this location.

2.7. External Drivers for Change

There are currently no identified external drivers for change beyond the Fengate Access Study.

2.8. Scheme Objectives

A transport scheme can have both primary and secondary objectives. The primary objectives are the fundamental outputs of why the scheme is being promoted and therefore must be achieved whereas secondary objectives are other outputs that are achieved along the way, but are not necessary to the success of the scheme. The secondary objectives tend to be delivered as a consequence of delivering the primary objectives, as a causal chain effect.

The primary objectives therefore represent the transport outcomes required by the scheme.

The primary and secondary objectives of the study are summarised below. These objectives build upon CPCA objectives outlined previously within this chapter and include objectives selected by Peterborough City Council.

- **Tackle congestion and reduce delay**: Tackle congestion at key pinch points across the Study Area and reduce delay in to the Fengate area
- **Support Peterborough's Growth Agenda and facilitate the development of the Red Brick Farm site:** Ensure that the planned employment growth at Red Brick Farm is accommodated.

Secondary objectives include:

- **Positively impact traffic conditions on the wider network:** Positively impact the performance of local routes impacted by the traffic and congestion in and around Fengate
- **Improve Road Safety**: Reduce personal injury accidents and improve personal security amongst all travellers
- **Limit impact on the local environment and improve biodiversity:** ensure a biodiversity net gain within the study area.

Any schemes developed for Fengate will need to satisfy all of the primary objectives, and as many of the secondary objectives as possible.

Both the CPCA and Peterborough City Council have committed to combatting climate change and moving towards net zero carbon emission in communities and economies, as well as to protect and increase biodiversity. Any transport scheme must take this into account and work towards these objectives. Any scheme/s identified for Fengate will look to mitigate any carbon emission and biodiversity issues throughout the design stage in a number of ways, including but not limited to:

- Tree planting and landscaping
- Improvements to localised sustainable transport routes
- Use of sustainable material in construction
- Improved ways of working.

All Peterborough City Council decisions require a Carbon Impact Assessment to be undertaken prior to a project being given the go ahead. This is one of the governance steps the council has setup in relation to it declaring a climate emergency (net zero by 2030) which details what benefits and implications there could be and mitigation measures.

2.9. Measures of Success

Table 2.5 beneath sets out the measures for success against which any potential improvements should be monitored. The primary objectives are highlighted in white and the secondary objectives are highlighted in blue.

Table 2.5: Study Objectives and Measures of Success

Objective	Scheme Outcome	Method of Assessment
Tackle congestion and reduce delay	• Tackle congestion and address journey time reliability on the approaches to Fengate, particularly to the north from Junction 8. Improved journey times and journey time reliability on the same approaches as above	• Traffic surveys at major junctions within the study area. • Comparison of existing and future journey times for routes within the study area.
Support Peterborough's Growth Agenda and facilitate the development of the Red Brick Farm site	• Ensure successful delivery of committed and statutory development across Peterborough, through increasing capacity on the road network, in order to cater for existing and future traffic demand	• Preferred scheme to be assessed against future traffic growth. • Monitor quantum of development at Red Brick Farm against agreed development profile.
Positively impact the wider network	• Positively impact the interaction between Junction 8 and the surrounding road network • Reduce delay at junctions within Fengate compared to the DM scenario	• Traffic surveys at major junctions within the study area. • Comparison of existing and future journey times for routes within the study area.
Improve road safety	• Reduce personal injury accidents and improve personal security amongst all modes of transport	• Review the existing accident statistics for the study area, then compare this against future data post construction.
Limit impact on the local environment and improve biodiversity	• Reduce air quality caused by stationary traffic across the designated study area • Increase biodiversity through planting and landscaping within the scheme	• Traffic modelling and satellite navigation data at major junctions before and after completion of the preferred scheme. • Post scheme review of biodiversity gain compared to before scheme situation.

2.10. Constraints

The following constraints have been identified within the vicinity of Fengate and the associated local road network.

- **Funding**: the cost of the scheme will need to compete with other transport infrastructure funding priorities which may exceed the CPCA's core transport investment budget allocation
- **Environmental:** There is a potential for significant archaeological constraints in the area. Flag Fen is close by and there have been other historical finds in the local area recently. Thorough searches will be undertaken as part of the ensuing design phases to identify where archaeological remains may be found.
- **Topographical:** Fengate is at the edge of the Fens, and the water table is typically quite high. Any schemes developed in this area will need to include mitigations for flood risk.
- **Funding / Budget:** Improvements will need to be achievable within the budgets available but options should not be constrained by current funding, as other funding sources may be found to compliment CPCA budgets.
- **Structural / Highway Boundary:** Improvements will need to be achievable within the land available, which consists of the land within the highway boundary, wider Peterborough City Council land (such as CRA land) and any developer owned land that could be made available.
- **Non acceptance from the public or stakeholders**: The scheme should not be considered controversial, and should be capable of gaining support during stakeholder and public consultation.
- **COVID-19** – it is not yet known what long term impact the COVID-19 will have on travel and transport systems moving forward, and any assumptions made on future traffic growth will need to be tested rigorously through sensitivity tests undertaken as part of the Economic Assessment in later stages of the Business Case process.

Further scheme development and design work will be mindful of these constraints.

2.11. Interdependencies

Beyond typical highway scheme risks, and the constraints listed above, there are not considered to be any internal or external factors upon which the successful delivery of the scheme is dependent.

The scheme is self-contained, and does not require the completion of any other highway works to progress and there is considered to be sufficient land available.

A scheme may only be justified if the proposed development at Red Brick Farm comes forward. Without the proposed growth, smaller improvement schemes may be required. A sensitivity test will be undertaken at later Business Case stages to understand what traffic levels are required to justify any proposed schemes.

Discussions with developers are currently well advanced, and Peterborough City Council are close to agreeing a developer contribution for the Red Brick Farm site. A sensitivity has been undertaken in the Economic Case to understand if the developer contribution is required to support the value for money case for the scheme.

2.12. Stakeholders

The key stakeholders have been identified as:

- Cambridgeshire and Peterborough Combined Authority (CPCA)
- Peterborough City Council (The Council)
- Highways England (in relation to the construction of the A15 Paston Parkway scheme)
- Natural England
- Environment Agency
- Businesses and residents situated in Fengate that are within the vicinity of the scheme / s including the developers for the Red Brick Farm site.

Engagement and communication with key stakeholders is an essential element of the planning process for major transport schemes. Stakeholder's needs and requirements should be considered as part of the final scheme design.

The CPCA and the council are both directly involved in the Fengate Access Study project. Public consultation will follow at a later date as part of the development of the Business Case.

2.13. Option Development and Assessment

An option development workshop was held on the 15th May 2018 and attended by representatives from Skanska and Peterborough City Council. The workshop reviewed the existing conditions and issues surrounding access at Fengate, explored its relationship with the surrounding road network and discussed the various constraints at the site. The purpose of the workshop was to develop potential improvement options to be considered by this study.

A total of 24 options were identified, with potential schemes ranging in estimated cost and level of impact on the network. These options form the 'Long List', and are summarised in Table 2.6 beneath (note these are not ranked in priority order):

Table 2.6: Long List of Options for Fengate

Eye Road
Restrictions along Eye Road, including possible closure
Dual Eye Road southbound towards Junction 8
Junction 8
Grade-Separated Road (above Junction 8) connecting A15 Paston Parkway to A1139 Frank Perkins Parkway southbound
At-Grade Road connecting A15 Paston Parkway to A1139 Frank Perkins Parkway southbound through Junction 8 (Hamburger style roundabout)
Provide an additional Lane on the A15 eastbound from Junction 20 to Junction 8
New Link Road Options from Eye
New link road from Eye Road to Parnwell Way at the Keys Park Junction
New link road from Eyebury Road to the A47 on the west of Eye
Southern Eye bypass linking Eyebury Road to the A47 to the east of Eye
Oxney Road
Build a roundabout at Oxney Road / Edgerley Drain Road Junction
Build an elongated roundabout incorporating the Oxney Road / Edgerley Drain Road roundabout and the current roundabout at the Parnwell Way / Oxney Road junction
Signalise Oxney Road / Edgerley Drain Road Junction
Signalise the Oxney Road / Edgerley Drain Road Junction and the Parnwell Way / Oxney Road Junction
Restrict access to Oxney Road west from the Parnwell Way / Oxney Road junction
Junction 7
Build a grade separated junction at Junction 7
Build a grade separated junction at Junction 7 and dual Oxney Road towards Parnwell Way
Open Junction 6 to allow entrance and exit
Build a new link road from Newark Road to Sainsbury's Roundabout
Improvements to existing signals
Other Options
Add additional lane to Storey's Bar Road westbound from North Bank
Build a southern access road from Stanground Bypass to Storey's Bar Road
Replace signals at Storeys Bar Road \ Edgerley Drain Road / Vicarage Farm Road with a roundabout
Signal improvements to existing signals at Storeys Bar Road \ Edgerley Drain Road \ Vicarage Farm Road
Raise North Bank so it is not susceptible to flooding which requires route to close
Create a Park and Ride site

EAST Assessment

The DfT's Early Assessment and Sifting Tool (EAST) was used to assess the long list of options against objectives, to discount any schemes that are not considered to meet the fundamental scheme objectives.

The objectives used in the EAST assessment were formulated to reflect the scheme objectives and other factors which can influence the deliverability of a scheme such as public and stakeholder acceptability. Scores were based on the discussion and collective opinion of the workshop delegates. The objectives used are outlined in Table 2.7 beneath.

Table 2.7: Scheme Objectives

Strategic Objectives
Ability to reduce congestion
Ability to reduce journey times
Ability to improve air quality and reduce emissions
Ability to support the local growth agenda, including housing and employment growth
Economic Objectives
Affordability (Value for Money)
Scale of impact on local environment
Management/Deliverability Objectives
Project risk
Stakeholder support and public acceptability

The EAST Scoring Assessment is reported within the OAR. Scores were given in relation to the proportion of the expected impact on the entire junction and not just the section of road it occurs on. A neutral score was given when the score against an objective is uncertain, or there is a comparable negative and a positive element associated with the scheme.

Shortly after the EAST assessment had been undertaken, the scale of development planned for Red Brick Farm was significantly reduced from the original expectations. Initial proposals for the development meant that it was expected to generate around 6,000 vehicle trips per day, however the proposed land use mix was changed and it is now expected that there will be around 600 vehicle trips per day.

Due to the reduced impact of the development on the highway network, the large strategic schemes being considered, such as bypasses and grade separated junctions, were removed from the list of potential options, and the smaller, more localised improvement schemes which scored well in the EAST assessment were taken forward for further assessment.

Table 3.4 details the options taken forward for further assessment within the traffic modelling.

Table 2.8: Shortlisted Options

Junction 8
Provide an additional Lane on the A15 eastbound from Junction 20 to Junction 8
Oxney Road
Build a roundabout at Oxney Road / Edgerley Drain Road Junction
Signalise Oxney Road / Edgerley Drain Road Junction
Junction 7
Improvements to existing signals
Other Options
Replace signals at Storeys Bar Road \ Edgerley Drain Road / Vicarage Farm Road with a roundabout
Signal improvements to existing signals at Storeys Bar Road \ Edgerley Drain Road \ Vicarage Farm Road

Technical Assessment

The technical assessment of shortlisted options has been undertaken using the PTM3 model.

PTM3 has been developed using SATURN (Version 11.4.07), a traffic and assignment model which can be used to evaluate potential traffic schemes. Saturn focuses on whether a defined network can cope with a defined vehicle demand in a defined period of time.

The Saturn traffic model has been constructed to represent the morning (AM) peak hour from 08:00 to 09:00, and an evening (PM) peak hour from 17:00 to 18:00, in order to represent the most congested time periods. In addition, an Inter-Peak (14:00 to 15:00) model has also been constructed to understand the impact of any improvements outside of the congested periods of the day.

PTM3 has a 2019 baseline, and the model is validated and calibrated to ensure it represents the traffic conditions experienced on the network during the survey period.

To understand traffic conditions in future years, growth factors have been derived from the DfT's Trip End Model Presentation Program (TEMPro) from the appropriate National Trip Ends Model (NTEM) zone for each traffic input zone to the network in the forecast years 2026, 2031 and 2036. Local growth of LGV and HGV traffic has been estimated using 2015 Road Traffic Forecast data produced from the National Transport Model (NTM).

Do-Minimum (DM) models for 2026, 2031 and 2036 have been produced to enable an assessment of the options and a comparison to what would happen if no transport intervention(s) were delivered.

The technical assessment undertaken at this stage of the Fengate Access Study has concentrated on the 2036 future year to capture the full impact of the Local Plan growth. Further information on this assessment is contained within the Fengate Access Study OAR.

Packaging of Options

Each of the options described above were arranged into a packages of improvements designed to address the identified and forecast issues across the study area.

The analysis of the options has focused on the change in delay and demand traffic flow at sites across the network in both the AM and PM peak hours compared to the DM scenario.

The three packages tested were:

- Package 1 – New Roundabout at the Oxney Road / Edgerley Drain Road Junction, signal improvements to Edgerley Drain Road / Storey's Bar Road / Vicarage Farm road and an additional lane on A15 Paston Parkway between Junction 20 and Junction 8.
- Package 2 – New Roundabout at the Oxney Road / Edgerley Drain Road Junction, New Roundabout at Edgerley Drain Road / Storey's Bar Road / Vicarage Farm road and an additional lane on A15 Paston Parkway between Junction 20 and Junction 8.
- Package 3 – New traffic signals at the Oxney Road / Edgerley Drain Road Junction, signal improvements to Edgerley Drain Road / Storey's Bar Road / Vicarage Farm road and an additional lane on A15 Paston Parkway between Junction 20 and Junction 8.The package locations are shown in Figure 2.9 below.

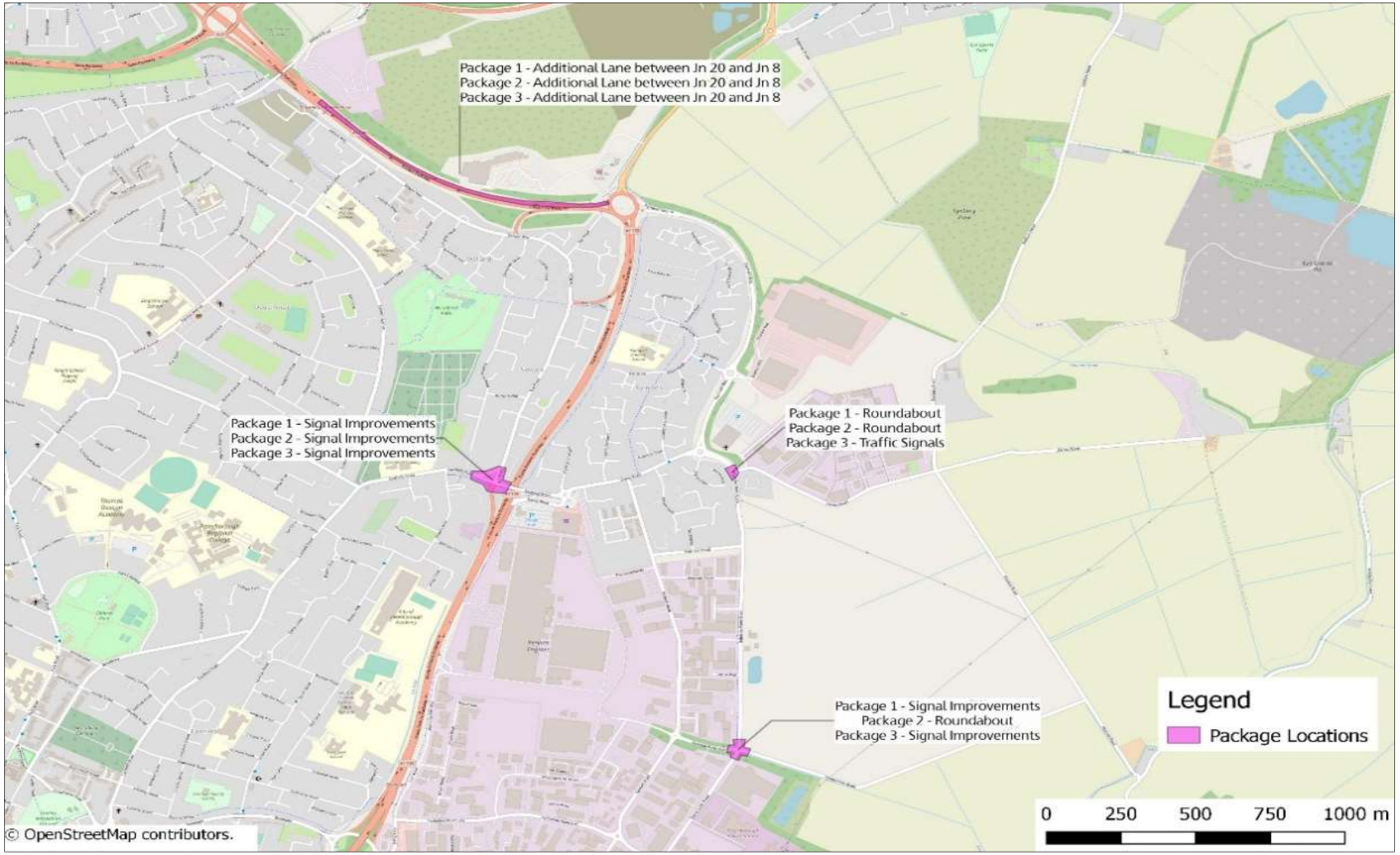

Figure 2.9: Location of Packages and Schemes Included

Package 3 has been included to assess the potential impact of a developer proposed scheme to signalised the junction of Oxney Road / Edgerley Drain Road Junction. The developer assessment of this scheme has only focused on this junction and does not take account of any wider measures within the Fengate area, or the potential impact of re-routing.

It critical that a package of measures is identified that ensures that a scheme can be progressed at this location which enables the Red Brick Farm development to come forward, without compromising the wider performance of the network (and wider growth within Fengate). Further information on the assessment of the developer proposal to signalise this junction is included within Fengate Access Study OAR (Appendix C).

The improvements at Junction 7 have been modelled separately in LINSIG and are already at a detailed design stage. This has been reflected within the SATURN model through the use of signal optimisation, but this has not been modelled as a specific capacity improvement at this stage of assessment.

Further information about the three packages and the results are discussed in the Fengate Access Study OAR.

2.14. Preferred Option

The transport modelling demonstrates that Packages 1 and 2 consistently perform well across all time periods assessed and will accommodate the growth identified for Fengate as well as wider background traffic growth. Both the SATURN and developer led LINSIG modelling show that traffic signals at Oxney Road / Edgerley Drain Road are not expected to operate within capacity.

Package 2 performs slightly better than Package 1 (reducing higher levels of delay), however initial design work on the proposed roundabout scheme at Edgerley Drain road / Storey's Bar Road / Vicarage Farm Road junction has shown that a roundabout would not be feasible in the highway space available, and significant land take would be required to accommodate a roundabout that would be large enough to handle the anticipated levels of HGV traffic.

Package 1 is considered to be the preferred option based on this assessment, and will be taken forward for assessment through the Business Case process.

Package 1 consists of the following schemes:

- Creation of a roundabout at the junction of Oxney Road / Edgerley Drain Road
- Traffic Signal Improvements (including an initial Smart Junctions Trial) at the junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.
- Traffic Signal Improvements at Junction 7 of the A1139 Frank Perkins Parkway (A1139 Frank Perkins Parkway / Oxney Road / Eastfield Road)
- Creation of a third lane southbound on the A15 Paston Parkway approach to Junction 8 (A1139 Frank Perkins Parkway / A15 Paston Parkway / A1139 Eye Road / Parnwell Way).

Sustainable Transport Measures

Fengate has significant scope for improvements to be made to the existing walking and cycling infrastructure, and this will form a key part of the final scheme. Improvements will be identified within the next stage of design through a walked audit and review of existing policy documents such as the LCWIP (Local Cycling and Walking Infrastructure Plan), and included within the Full Business Case.

3. The Economic Case

3.1. Introduction

This section sets out the approach taken to assess the economic case for the Fengate Access Study, and demonstrates that the proposed package of schemes would offer **High Value for Money**.

The scheme appraisal focuses on the aspects of scheme performance that are relevant to the nature of the intervention and uses the latest WebTAG guidance. These impacts are not limited to those directly impacting on the economy or those which can be monetised. The economic, environmental, social and distributional impacts of the proposal are all examined, using qualitative, quantitative and monetised information where appropriate.

3.2. Options Appraised

Details of the option development and assessment process are summarised in the Strategic Case and full details are provided in the OAR.

The technical assessment documented in the OAR has identified a package of schemes (Package 1) as the preferred package of measures. This package consists of the following schemes:

- Creation of a roundabout at the junction of Oxney Road / Edgerley Drain Road
- Traffic Signal Improvements (including an initial Smart Junctions Trial) at the junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.
- Traffic Signal Improvements at Junction 7 of the A1139 Frank Perkins Parkway (A1139 Frank Perkins Parkway / Oxney Road / Eastfield Road)
- Creation of a third lane southbound on the A15 Paston Parkway approach to Junction 8 (A1139 Frank Perkins Parkway / A15 Paston Parkway / A1139 Eye Road / Parnwell Way).

The location of these schemes are shown in Figure 3.1 beneath.

Figure 3.1: Fengate Access Study Package - Scheme Locations

3.3. Economic Assessment

Approach to Appraisal

The Economic Case for this scheme is focused on the following aspects:

- Assessing the monetised direct, localised, and economic efficiency benefits of the scheme
- Qualitative appraisal of wider scheme benefits, such an environmental, noise, and enablement of planned development
- Offsetting identified benefits against the scheme costs to provide a Benefit to Cost (BCR) ratio.

Details regarding the benefits and costs are detailed in the rest of this chapter.

The PTM3 model has been used to test the package of options, and model outputs, along with scheme costs, have been assessed in DfT's Transport User Benefit Appraisal (TUBA) tool to calculate a package Benefit to Cost Ratio (BCR).

The SATURN based highway model includes forecast years of 2026, 2031 and 2036, which have been used to appraise impacts of the core scenario. These modelled forecast years have been used in the current TUBA economic appraisal and operational assessment.

Travel demands in the core scenario are consistent between the Do Minimum and Do Something situations, for each forecast year. The model demonstrates that the preferred package of schemes will reduce congestion, leading to less delay and travel time.

A proportionate approach focused on transport user benefits (Transport Economic efficiency; TEE) has been undertaken to demonstrate value for money from the preferred package of schemes.

Present Value Costs

A scheme cost estimate has been produced. The Base Investment Costs are detailed in Table 3.1 below, and the subsequent steps taken to calculate the Present Value Costs (PVC) are described beneath.

The Economic Assessment has undertaken for a 60 year assessment period (2020 to 2080).

The Base Investment Cost is the capital cost required to construct the scheme in current year (2020) prices, without a risk allowance. This is derived from the scheme cost estimate based on the Preliminary Design produced by Highway and Structures Engineers.

Table 3.1 shows the Base Investment Cost profiled over the next five calendar years, and broken down into Construction, Land, Design and Supervision costs.

Table 3.1: Base Investment Cost (2020 Prices)

Calendar Year	Construction Costs (Highways)	Land & Property Costs	Preparation / Supervision Costs	Other	Total
2020			265,436		**265,436**
2021	2,260,261		378,449		**2,638,711**
2022	1,614,472		80,724		**1,695,196**
2023					
2024					
Total	**3,874,734**		**724,609**		**4,599,343**

The PVC for use in the Economic Assessment has been calculated using the following steps:

- Real Cost increases were calculated based on the Base Investment Cost spend profile. The Base Cost adjustment factor was calculated by dividing the Construction Industry Inflation Rate (5%) by the Annual GDP Factor derived from the TAG Databook (May 2019) for each of the years within the assessment period. The inflation rate of 5% was derived from construction output price indices as well as previous knowledge of costs associated with past schemes in Peterborough. Peterborough Highways Services works is measured using BCIS indices, the Table 3.2 shows the categories and price increase (%) for 2019-2020.

Table 3.2: Inflation increases on Construction Costs 2019-2020

Category	Price increase 2019-2020
WC10/ 1 Routine, Cyclic and Time Charge Works	3.25%
WC10/ 2 Renewals and Construction Works	1.81%
WC10/ 3 Professional Services	3.62%
WC10/ 4 Machine Surfacing	4.23%
WC10/ 5 Hand Surfacing/Patching	3.04%
WC10/ 6 Surface Dressing	5.38%
WC10/ 7 Road Markings	1.76%
WC10/ 8 Street Lighting	1.56%

- A Risk Allowance of 20% (10% Construction Risk, 10% COVID-19 working practices) was then applied during the years of construction. The total cost of the Risk Allowance is £899,869. The risk associated with post-COVID19 includes working practices such as social distancing requirements, for example additional welfare facilities on site and increased site compound size.
- Optimism Bias was then applied in line with W guidance provided in TAG unit A1.2 (July 2017). An Optimism Bias of 44% was applied to represent the maturity of the design. The total Optimism Bias applied was £2,375,653.
- Costs were then rebased back to 2010 using factors derived from the TAG Databook (May 2019) GDP Deflator.
- Costs were then discounted to 2010 in line with guidance provided in TAG unit A1.2 (July 2017).
- Finally, costs were converted to 2010 Market Prices using a factor of 1.19.

Table 3.3 beneath shows the costs described above.

Table 3.3: Economic Case Scheme Cost Estimates

Description of Cost Type	Construction Cost (£)
Base Investment Cost	4,599,343
Base Cost with Real Cost Increases	4,809,943
Risk Adjusted Base Cost with Real Cost Increases	5,709,811
Risk Adjusted Base Cost with Real Cost Increases and Optimism Bias	8,085,464
Rebased to 2021 Price Year	6,799,658
Discounted to 2010 Prices	4,620,122
Adjusted to Market Prices	5,309,630

Present Value Benefits

The transport benefits of the scheme were assessed using the SATURN based PTM3 (built in v11.4.07H).

Full details relating to the calibration and validation of the model can be found in the Local Model Validation Report (LMVR), and details about the forecasting procedure can be found in the Forecasting Report.

Two core network scenarios were developed for the Economic Assessment, these were the Do Minimum (DM) and Do Something (DS) scenarios. The DM scenario represents future growth without highway intervention (without scheme), and the DS scenario includes the package of schemes within the model network (with scheme) with the same level of future traffic growth.

The difference between the DM and DS scenarios demonstrate the benefits of implementing the scheme. These benefits are measured using:

- Network assignment statistics
- Link flow changes
- Journey times
- Journey routing.

The Model output files are then entered into the Transport User Benefits Appraisal (TUBA, 1.9.13) software to undertake the Economic Assessment and calculate a BCR.

TUBA produces figures for a number of benefits, including Greenhouse Gases, User benefits, and Indirect Taxation. Indirect taxation often provides a negative benefit figure. This is a result of the reduced fuel being purchased as journeys become more efficient with the improvements. This in turn reduces the money the government receives in taxes.

This identifies the Present Value Benefits (PVB) to be **£15,166,000**. A breakdown of these benefits are shown in Table 3.4 beneath.

Benefit Cost Ratio

The Benefit Cost Ratio (BCR) is the ratio of PVB to PVC. Table 3.4 beneath summarises the BCR for the preferred scheme as calculated using TUBA.

Table 3.4: TUBA BCR Assessment

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	101
Consumer Users (Commuting)	9,173
Consumer Users (Other)	2,734
Business Users/Providers	3,352
Indirect Taxes	-197
Present Value of Benefits (PVB)	**15,166**
Costs	
Broad Transport Budget	5,609
Present Value of Costs (PVC)	**5,609**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**9,557**
Benefit/Cost Ratio (BCR)	**2.704**

The DfT uses the following thresholds to determine the Value for Money statement associated with a BCR:

- Low Value for Money if BCR = 1.0 to 1.5
- Medium Value for Money if BCR = 1.5 to 2.0
- High Value for Money if BCR = 2.0 to 4.0
- Very High Value for Money if BCR > 4.0.

Based on transport user benefits alone, this scheme will provide **High Value for Money**.

It should be noted that this BCR was achieved with the costs for the Traffic Signal improvements at the A1139 Junction 7 included, but with no modelled benefit from this scheme due to the limitations of modelling traffic signal junctions within strategic models. This will be included as part of the more refined transport modelling and Economic Assessment undertaken during later stages of the Business Case process.

Developer Contribution Sensitivity Test

It is anticipated that the package of schemes will be jointly funded by the CPCA and S106 Developer Contributions secured from the Red Brick Farm Site.

Discussions between Peterborough City Council and the Red Brick Farm Developers are well advanced, and it is considered highly likely that a significant developer contribution will be secured towards the cost of the package of schemes in the form of a S106 agreement, however details of the contribution have yet to be finalised, and consequently the level of developer contribution cannot be confirmed at this point. However, a sensitivity test has been undertaken as part of the Economic Assessment to demonstrate the impact that the likely contribution will have on the package BCR.

The sensitivity test has made the following changes to the schemes costs:

- The cost of the Oxney Road / Edgerley Drain Road Roundabout to be covered by a third party (developer contribution)
- A contribution of £325,000 towards the Traffic Signal improvements at the junction of Edgerley Drain Road / Storeys Bar Road / Vicarage Farm Road.

The updated Base Investment Cost then had the same levels of risk, inflation and Optimism Bias applied as the core scenario, and was discounted back to 2010 market prices using the same factors.

The resultant BCR is shown in Table 3.5 beneath.

Table 3.5: TUBA BCR Assessment – Developer Contribution Sensitivity Test

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	104
Consumer Users (commuting)	9,173
Consumer Users (Other)	2,734
Business Users/Providers	3,352
Indirect Taxes	-197
Present Value of Benefits (PVB)	**15,166**
Costs	
Broad Transport Budget	4,682
Present Value of Costs (PVC)	**4,682**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**10,484**
Benefit/Cost Ratio (BCR)	**3.239**

Table 3.5 demonstrates that the impact of a likely developer contribution towards the package cost will reduce the PVC to £4,682,000, increasing the scheme BCR to 3.2 which again offers **High Value for Money**.

3.4. Additional Appraisal Elements

The scheme appraisal has focussed on the impacts directly impacting on the economy or those which can be monetised. An initial qualitative analysis has been undertaken for environmental, social and distributional impacts of a scheme to improve access to Fengate, and input in to an Appraisal Summary Table (AST) in Appendix B.

The additional appraisal elements are detailed in Table 3.6 below, along with the proposed assessment approach for the next stage of the Business Case process.

Table 3.6: Additional Appraisal Elements

Element	Approach to Assessment at OBC	Comments
Road Safety (Social)	Safe design and qualitative assessment	Although impact of the proposed scheme is not expected to be significant in terms of speeds, flows of types of traffic, an assessment will be conducted.
Noise (Environmental)	Quantitative assessment made using the SATURN model outputs	Although significant noise impacts are not anticipated, an assessment will be undertaken.
Air Quality (Environmental)		Scheme not expected to impact significantly upon air quality, assessment will be undertaken.
Landscape, Townscape, Historic Environment, Ecology and Water Environment	Qualitative assessment to be undertaken at OBC stage to inform the design process	Scheme not expected to have any significant impact on any of these elements, however an assessment will still be undertaken.
Physical Activity (Social)	Qualitative	Scheme could include improvements to pedestrians and cycle infrastructure at junctions
Access/Severance	Qualitative	Improvements to pedestrian and cycle infrastructure could ease severance.

3.5 Key Risks, Sensitivities and Uncertainties

The scheme is considered to be low risk in construction terms, especially since the required land is within ownership of Peterborough City Council.

As the benefits of the scheme largely rate to reducing delay to existing and future traffic, a growth in future traffic levels beneath that anticipated is considered to be the greatest risk to the scheme.

The COVID-19 pandemic has caused a significant drop in highway usage as part of the national lock-down, and although this is slowly returning, no-one knows what overall impact this will have on future travel. Traffic levels within the Study Area will continue to be monitored as the package of schemes are developed, and full sensitivity testing on the impact of COVID-19 on transport demand will be undertaken at the next Business Case stage.

As part of the scheme design and costing process that will form part of further design, a Risk Register and a Quantified Risk Assessment (QRA) will be produced and an updated risk allowance incorporated into the scheme costs used within the next Economic Assessment (whilst the Risk Allowance used within this assessment is considered to be robust for the level of detail available).

3.6 Value for Money Statement

VFM Category

Based on this initial assessment, it is considered reasonable that a scheme achieving **High Value for Money** can be achieved with the Fengate Access Study improvements.

4. The Financial Case

4.1. Introduction

This section presents the Financial Case for the Fengate Access Study improvement schemes. It concentrates on the affordability of the proposals and the funding arrangements.

4.2. Scheme Costing

The scheme cost estimates for the Financial Case have been prepared in line with WebTAG guidance set out in TAG Unit A1-2 Scheme Costs (DfT, May 2019). Each of the steps taken to produce the cost estimates are explained beneath. The estimate has been costed based on initial design information, and includes a risk allowance which includes COVID-19 related construction costs.

The scheme costs have been prepared using the parameters shown in Table 4.1 beneath.

Table 4.1: Scheme Costing Parameters

Input		
Years	DfT Base Year	2010
	Scheme Cost Estimate Year	2020
	Present Year (Assessment Year)	2020
	Scheme Start Year	2020
	Scheme Year of Opening	2022
	Analysis Period (Years)	60
Economic Values	Market Price Factor (Indirect Taxation)	1.19
	Normal Inflation Rate	1.025
	Construction Inflation Rate	1.05
Risk & Optimism Bias	Risk Allowance	£899,869
	Optimism Bias Total	£2,375,653
	Optimism Bias Rate - Highways	44%
	Optimism Bias Rate - Structures	66%
	Optimism Bias Rate - Maintenance	0%

The initial scheme cost estimates are presented in Table 4.2 beneath, and each is explained in further detail beneath.

Table 4.2: Financial Case Scheme Cost Estimates

Description of Cost Type	Cost (£)
Base Investment Cost	4,599,343
Risk Adjusted Base Cost	5,499,211
Risk Adjusted Base Cost with Construction Industry Inflation (**Outturn Cost**)	**5,869,582**

Base Investment Cost

The Base Investment Cost is the capital cost required to construct the scheme in current year (2020) prices, without a risk allowance or inflation. This is the scheme cost estimate based on the initial design work.

Table 4.3 shows the Base Investment Cost broken down into Construction, Land, Design and Supervision costs (note that there are no 'Other' costs).

Table 4.3: Base Investment Cost (2020 Prices)

Calendar Year	Construction Costs (Highways) (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Total Base Investment Cost (£)
2020			265,436	265,436
2021	2,260,261		378,449	2,638,711
2022	1,614,472		80,724	1,695,196
2023				
2024				
Total	**3,874,734**		**724,609**	**4,599,343**

The scheme Base Investment Cost in 2020 prices is £4,599,343. This includes £3,874,734 of Construction related costs and £724,609 of Design and Supervision costs (£530,872 Design / £193,737 Supervision). The Design costs include all necessary surveys and an allowance to develop a Full Business Case during the next stage of the project.

The cost profile assumes the business case and design work being undertaken in 2020 / 21, and construction beginning in June 2021 and lasting for twelve months.

There are no land or property costs associated with this scheme, as all the required land is within the Council's ownership.

Risk Adjusted Base Cost

The Risk Adjusted Base Cost includes a component for risk. A 20% risk allowance has been included within the cost estimate, which includes 10% for construction risk and 10% for COVID-19 related risk.

Table 4.4: Risk Adjusted Base Costs (2020 Prices)

Calendar Year	Construction Costs (Highways) (£)	Preparation and Supervision Costs (£)	Risk Allowance (£)	Risk Adjusted Base Cost (£)
2020		265,436		**265,436**
2021	2,260,261	378,449	524,923	**3,163,634**
2022	1,614,472	80,724	374,945	**2,070,141**
2023				
2024				
Total	**3,874,734**	**724,609**	**899,869**	**5,499,211**

The addition of the risk allowance (£899,869) takes the Risk Adjusted Base Cost to £5,499,211.

Inflated Risk Adjusted Cost (Outturn Cost)

The Inflated Risk Adjusted Cost, or Outturn Cost, is the Risk Adjusted Base Cost with construction industry inflation applied. An inflation rate of 5% per annum has been used based on the Office for National Statistics (ONS) Construction Output Price Indices8 (2019 / Q4) for 'New Work / Infrastructure. The inflation rate of 5%, as well as being derived from Construction Output Price Indices was derived using previous knowledge of costs associated with past schemes in Peterborough. Peterborough Highways Services works is measured using BCIS indices, Table 4.4 shows the categories and price increase (%) for 2019-2020.

Inflation has been applied in line with the construction profile assumed within the scheme costing, and the cost of this is presented beneath in Table 4.5.

Table 4.5: Inflated Risk Adjusted Cost (2020 Prices)

Calendar Year	Risk Adjusted Base Cost (£)	Cost of Inflation (£)	Total with Inflation (£)
2020	265,436		265,436
2021	3,163,634	158,182	3,321,816
2022	2,070,141	212,189	2,282,331
2023			
2024			
Total	**5,499,211**	**370,371**	**5,869,582**

The cost of inflation is £370,211, which brings Scheme Outturn Cost to £5,869,582. The Outturn Cost represents the amount required by Peterborough City Council to deliver the scheme.

Further Refinement

The scheme cost will be revaluated based on more mature design information, including Detailed Designs and a Quantified Risk Assessment, as the preferred scheme is carried forward to FBC. The costing will be in line with WebTAG unit A1-2, Scheme Costs (May 2019). The scheme cost will then be used to identify and secure funding, and to undertake further economic assessment using the Transport User Benefit Appraisal package (TUBA) at the OBC stage to re-determine value for money.

Future maintenance costs / works associated with the schemes will also be considered and added to the maintenance inventory and funded from the Council's maintenance budgets. However, it is anticipated that the provision of new or upgraded assets will not significantly impact upon future maintenance liabilities.

4.3. Budgets and Funding Cover

Funding Cover

It is anticipated that the full scheme Outturn Cost of £5,869,582 will be jointly funded by the CPCA from the Single Investment Fund and S106 Developer Contributions secured from the Red Brick Farm Site.

The CPCA have an infrastructure delivery budget of £20 million per year, allocated for the next 30 years. This funding will be invested into the Cambridgeshire and Peterborough Single Investment Fund, in order to boost growth within the region. The CPCA have committed to providing £16 million of funding within its first four years, to complete major highway improvements that decrease congestion and support local growth.

Discussions between Peterborough City Council and the Red Brick Farm Developers are well advanced, and it is considered highly likely that a significant developer contribution will be secured towards the cost of the package of schemes in the form of a S106 agreement.

Details of the contribution have yet to be finalised, and consequently the level of developer contribution cannot be confirmed at this point, and so the scheme costs and value for money assessment presented within this SOBC do not take account of it. However, a sensitivity test has been undertaken as part of the Economic Assessment to demonstrate the impact that the likely contribution will have on the package BCR.

The level of developer contribution will be fully reported and accounted for within the Economic Case and Financial Case of the Full Business Case.

Completion of the Business Case

Subject to acceptance of the SOBC, Peterborough City Council propose advancing straight to Detailed Design and Full Business Case to avoid causing delay to the Red Brick Farm Development Site.

Costs for the Detailed Design and Full Business Case tasks are currently included within the scheme costs reported within this chapter and the Value for Money assessment undertaken within the Economic Case, however funding to progress the Detailed Design and Full Business Case needs to be secured to enable this work to progress.

Peterborough City Council request that the Design Cost of £530,872 is released in advance of the funds required for construction, in order to undertake the Detailed Design and produce a Full Business Case. This work is provisionally programmed to be undertaken between November 2020 and March 2021, with a view to construction commencing on site in June 2021. These costs would then be reported as costs already incurred within the scheme cost estimates included within the Full Business Case.

This cost includes an allowance of £50,000 to undertake an innovative trial using real time data collection sensors at the Junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road to directly control the traffic signal operation based on live network conditions (replacing MOVA).

Similar trials elsewhere in the country have demonstrated potential capacity gains in the region of 5% - 15%, and if successful, this will be incorporated into final junction design, and be used to support a wider Business Case across Peterborough to fund implementation of the Smart Cities Strategy.

Data from the sensors will also be used to build and validate the operational transport models produced at the next stage of the assessment, and as part of the post scheme monitoring programme.

5. The Commercial Case

5.1. Introduction

The Commercial Case demonstrates that the scheme can be reliably procured and implemented through existing channels whilst ensuring value for money in delivery of the scheme.

5.2. Output Based Specification

Any achievable option must meet all the primary scheme objectives and most of the secondary scheme objectives. The scheme objectives are outlined in Chapter 2 and also detailed beneath:

Primary objectives include:

- **Tackle congestion and reduce delay**: Tackle congestion at key pinch points across the study area and reduce delay in to the Fengate area
- **Support Peterborough's Growth Agenda and facilitate the development of the Red Brick Farm site:** Ensure that the planned employment growth at Red Brick Farm can be accommodated within the highway network.

Secondary objectives include:

- **Positively impact traffic conditions on the wider network:** Positively impact the performance of local routes impacted by the traffic and congestion in and around Fengate
- **Improve Road Safety**: Reduce personal injury accidents and improve personal security amongst all travellers
- **Limit impact on the local environment and improve biodiversity:** ensure a biodiversity net gain within the study area.

The Fengate Access Study Option Assessment Report (OAR) details the work undertaken to develop and test a range of improvement options within the Study Area to meet these objectives, and the modelling undertaken to identify the preferred package of schemes.

The OAR discusses the process through which the preferred package of schemes has been identified. The package of schemes will include the following outputs:

- Creation of a roundabout at the junction of Oxney Road / Edgerley Drain Road
- Traffic Signal Improvements (including an initial Smart Junctions Trial) at the junction of Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road.
- Traffic Signal Improvements at Junction 7 of the A1139 Frank Perkins Parkway (A1139 Frank Perkins Parkway / Oxney Road / Eastfield Road)
- Creation of a third lane southbound on the A15 Paston Parkway approach to Junction 8 (A1139 Frank Perkins Parkway / A15 Paston Parkway / A1139 Eye Road / Parnwell Way).

Figure 5.1: Fengate Access Study - Scheme Locations

These schemes will meet all of the primary scheme objectives outlined in the Strategic Case, and strive to fulfil the secondary objectives as well. Principles of how the schemes will be measured against these objectives are discussed in the Management Case, and a full Benefits Realisation Plan (BRP) and Monitoring and Evaluation Plan (MEP) will be included at the next stage of the Business Case.

5.3 Procurement Strategy

All phases of the scheme, including transport planning, design, construction and site supervision will be delivered in house by Peterborough Highway Services (PHS).

PHS is a ten-year NEC3 Term Service Contract between Peterborough City Council and Skanska, with responsibility for improving and maintaining Peterborough's highway network. The collaboration began in 2013 and runs to 2023, with the possibility of a further ten-year extension.

The contract is built upon a collaborative and multi-disciplined team capable of developing schemes from policy concept right through to design and construction, and then maintaining them.

Market Maturity

PHS has successfully developed and delivered multiple highway schemes around Peterborough since the beginning of the contract in 2013, including several CPCA schemes. PHS has been responsible for all planning and design work undertaken on the Fengate Access Study to date. All skills and competencies to deliver this scheme are available within the local PHS contract

To ensure that the procurement remains commercially competitive and offers value for money, all subcontract packages will be subject to competitive tendering.

6. The Management Case

6.1. Introduction

The Management Case explains how the scheme promoter will successfully manage the delivery of the proposed scheme and achieve the expected outcomes.

6.2. Evidence of Similar Projects

Peterborough has a long history of significant growth spanning back to its designation as a New Town in 1967, and consequently the city is used to managing and delivering large infrastructure schemes. Although the preferred scheme for Fengate is comprised of a number of localised junction improvement schemes, the overall cost of this equates to that of a larger infrastructure scheme. As such evidence of delivering projects with significant budgets has been provided, as well as evidence of delivering localised junction schemes.

The council has completed the following significant highway improvement schemes in recent years. Two of these schemes are located on the Parkway Network, and the improvements made to Junction 20 were at an A47 junction and required close working with Highways England. Both of these scheme evidence Peterborough's ability to procure and manage highway schemes of this scale.

Junction 20 Improvement Scheme (A47 Soke Parkway / A15 Paston Parkway) - £5.7m

This scheme was constructed between summer 2016 and spring 2017, and consisted of implementing a fully signalised junction with an associated increase in lanes on both the approaches and the circulatory of the roundabout. The scheme has reduced congestion and journey times at a crucial section of the network, and provided the capacity for the Norwood and Paston Reserve sites also.

This junction is a major interchange on Peterborough's network, with daily peak hour traffic (at the time of construction) through the roundabout being recorded as approximately 4,500 vehicles. With high traffic demand, the traffic management put in place during construction demonstrated careful management and collaborative working between partners.

The scheme was completed on time and budget, at £5.7m, with funding secured from the Greater Cambridgeshire and Greater Peterborough Local Enterprise Partnership.

Figure 6.1: Junction 20 Improvement

A1139 Junction 17 – Junction 2 Improvement Scheme (A1139 Fletton Parkway) - £18m

This scheme was constructed between spring 2014 and summer 2015 and consisted of the widening of the A1139 Fletton Parkway from two to three lanes between the A1 (M) and Junction 2 in Peterborough to provide significant and critically needed capacity improvements. The total cost of the scheme was £18m and funded through the Greater Cambridgeshire and Greater Peterborough Local Enterprise Partnership, Developer Funding and Council Capital Funding.

The scheme successfully delivered a major upgrade to Peterborough's Parkway Network. During construction, abnormally high levels of soil contamination were discovered throughout the site, and significant volumes of soil had to be sent for specialist treatment and disposal which had not been expected. However, through careful management and by collaborative working amongst all partners, there was a minimal impact on the scheme delivery programme, and additional funding was provided by the DfT due to the severity of the contamination which had not been detected despite all of the industry standard Waste and Contamination (WAC) tests being undertaken.

Figure 6.2: Junction 17 Improvement

Staniland Way Junction Improvement - £0.5m

The Stanliand Way scheme was a major roundabout construction and road realignment project close to Werrington Centre. The site was a known accident cluster site, and the purpose of the scheme was to improve safety. Peterborough Highways Services designed and built the roundabout through its term maintenance contract. The scheme was completed ahead of schedule in May 2015. This scheme bears many similarities to the proposed roundabout at Oxney Road / Edgerley Drain Road.

Figure 6.3: Staniland Way Junction Improvement

6.3. Programme / Project Dependencies

The scheme programme will need to consider the following key dependencies:

- **Red Brick Farm Development Delivery** – the need for the package of schemes is driven by the planned growth at Red Brick Farm coming forward (as identified within the Local Plan). This site constitutes a significant proportion of the anticipated growth within this area, the viability of the package of schemes would need to be reassessed if delivery of the Red Brick Farm site were compromised.
- **Red Brick Farm Development Programme** – design and delivery of the package of schemes should be coordinated with the development proposals for the Red Brick Farm site to ensure that any highway improvement works do not hold back the planned growth, and creation of employment opportunities, in Fengate. It is for this purpose that Peterborough City Council propose to move from SOBC to FBC and Detailed Design,
- **Programme Constraints** – it will be important during the finalisation of the programme that other works in Peterborough are accounted for. Undertaking work at the same time as another nearby scheme should be avoided as it would increase the impact on traffic. If complementary network improvements are being developed then communication should take place to maximise the positive impacts of the scheme.
- **Construction Disruption** – the finalised programme will need to consider the impact on traffic during scheme construction and be adjusted accordingly.
- **Utility Diversions** – unexpected utility diversions have the potential to cause significant programme delays and cost increases. Full Stats searches will be undertaken as part of the Preliminary Design work during the next phase of the scheme development.

6.4. Governance, Organisational Structures and Roles

The CPCA are the organisation ultimately responsible for the delivery of the Fengate Access Study schemes, and Peterborough City Council are nominated as the delivery partner.

Delivery of the scheme will be managed by a Project Team led by a Peterborough City Council Project Manager, and consisting of all the key project delivery partners. The Project Team will be responsible for the daily running of the project, coordinating with all key stakeholders, and managing the delivery programme.

The existing PHS Project Board will be used to oversee the continued development and delivery of the scheme by the Project Team, and to make key decisions relating to the delivery of the project. The Project Board will be supported by technical specialists, and key stakeholders will be invited to attend as necessary.

Project Management Team

The Project Management Team will report to the Project Board, and ultimately to the CPCA Board.

The Project Team will be responsible for scheme delivery, and the day to day management of all partners. The Project Team will co-ordinate inputs from technical advisors responsible for the delivery of key work streams within an agreed programme, including:

- Stakeholder Engagement
- Design Development
- Transport Modelling
- Environmental Assessment
- Business Case Development
- Early Contractor Involvement (ECI) and Scheme delivery.

The key roles and lines of accountability for the development and delivery of the scheme are shown beneath in Figure 6.4.

The team has successfully developed and delivered multiple highway schemes around Peterborough since the beginning of the contract in 2013, including several CPCA schemes. All skills and competencies to deliver this scheme are available within the local PHS contract.

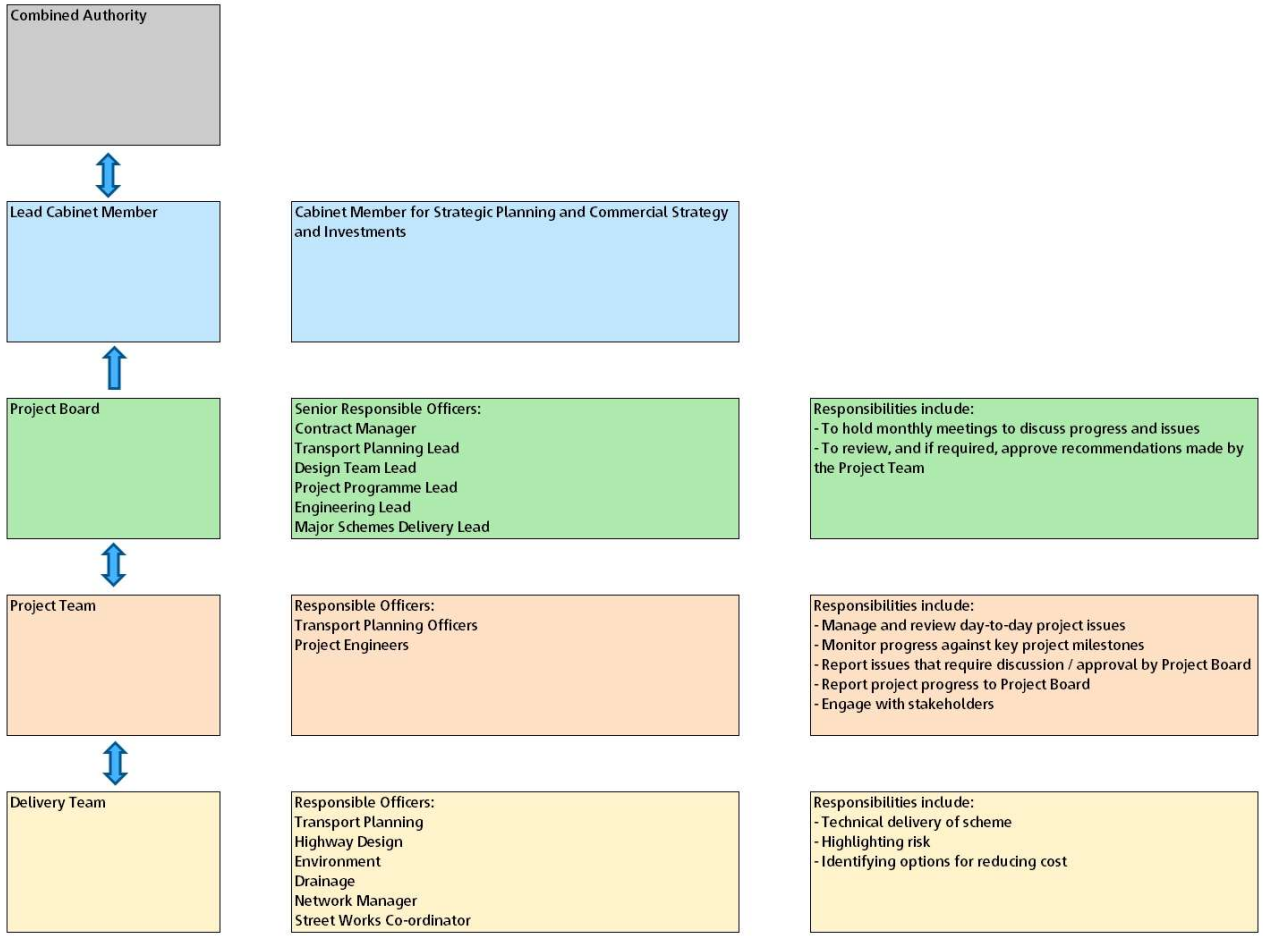

Figure 6.4: Key Project Roles and Responsibilities

6.5. Programme / Project Reporting

The Project Manager will report how the project is performing against the project objectives / key milestones. This will be completed using established finance and programme management tools such as Verto and reported on a regular basis to the Project Board.

Every month the Project Manager will also submit a highlight report to the CPCA recording what progress has been made and whether there are any new risks that could impact the scheme. Financial progress will be reported to the PHS Dashboard, which monitors the progress of work delivered through the PHS contract, and approval for any key decisions is made by the Project Board.

Regular Project Progress Meetings will be held throughout the duration of the scheme to allow key staff to discuss important issues that could affect the delivery of the scheme.

Delivery of the scheme through the PHS Framework contract ensures that all stages of work are conducted in-house, ensuring a smooth transition of information and communication between the different delivery teams.

6.6. Project Plan: Reporting and Timescales

The programme shows the order in which each of the scheme elements will be implemented and estimated dates for design, target costing and construction.

The current key programme milestones are outlined in Table 6.1 below.

Table 6.1: Key Project Milestones

Timescale	Milestone Activity
September 2020	Strategic Outline Business Case and Option Assessment Report submitted to CPCA for review and approval sought for release of funding for Detailed Design and development of a Full Business Case.
October 2020	Subject to approval, funding secured to undertake Full Business Case and Detailed Design.
November - December 2020	Full Business Case and Detailed Design commence. Stakeholder and Public Consultation undertaken.
March 2021	Full Business Case and Detailed Design submitted to CPCA for review and approval sought for release of funding for construction.
June 2021 – October 2021	Construction starts with Oxney Road / Edgerley Drain Road Roundabout (estimated 14 week construction programme)
October 2021 – October 2022	Construction of remaining schemes within the Package 1.

6.7. Assurance and Approvals Plan

Once the preferred scheme has been identified, approval is needed from the portfolio holder. With this initial support, the project team will be in a position to seek approval from the Combined Authority Transport Committee and / or the Combined Authority Board, outlining the benefits of the scheme and how much funding is required to deliver it.

The Council will manage the project in line with their existing assurance and approvals process. The Project Manager will be responsible for the daily running of the project, and any approvals required will be provided by the Project Board.

Technical Assurance is provided by the CPCA's technical assurance framework, and each stage of the project is reviewed by the CPCA's independent technical reviewer. Once the independent technical reviewer is satisfied, a recommendation is made to the CPCA Board to approve funding for further stages of the project, including construction.

6.8. Communications and Stakeholder Management

Communication and Stakeholder engagement will be managed through:

- Providing regular updates on delivery progress and key activities for the local community, businesses and key stakeholders
- Engaging with the local community, businesses and key stakeholders about the delivery to ensure local needs are taken into account throughout the duration of the project
- Ensure information is shared using appropriate methods of communication to all sectors of the community, businesses and key stakeholders.

Project Liaison Officer

A designated Project Liaison Officer (PLO) will be assigned to the project throughout the public consultation period and during construction, and will act as a single point of contact for outgoing and incoming communication. The PLO will be attached to the scheme delivery team and their responsibilities will include issuing progress updates via email and social media in the lead up to, and during construction, and coordinating responses to members of the public and key stakeholders when queries are received.

Stakeholder Consultation

Stakeholder consultation will be undertaken by the Project Team following approval from the CPCA, and before work commences on the Detailed Design. This consultation will be on the proposed package of measures, and will enable feedback from key stakeholders to be taken into consideration during the Detailed Design stage.

The key stakeholders identified for this consultation event include:

- Cambridgeshire and Peterborough Combined Authority (CPCA)
- Peterborough City Council (The Council)
- Highways England (in relation to the construction of the A15 Paston Parkway scheme)
- Natural England
- Environment Agency
- Businesses and residents situated in Fengate that are within the vicinity of the scheme / s including the developers for the Red Brick Farm site.

All key Stakeholders will be consulted via email for comments on the preferred option prior to completion of Detailed Design. Key Stakeholders will also be communicated to regularly throughout the construction phase by the PLO.

Public Consultation

Public consultation on the concept of a scheme at this location has already been undertaken as part of the CPCA Local Transport Plan[9] that was adopted in January 2020.

An online consultation exercise on the proposed package of schemes will be undertaken following approval of the SOBC, and prior to completion of the Detailed Design. This is expected to be occur in November / December 2020. The feedback from this consultation will be included within the FBC and reflected in the Detailed Design.

No residents are directly affected by this scheme, although there are several residential properties within close proximity to the Oxney Road / Edgerley Drain Road Roundabout, and commercial properties close to the Junction 7 and Edgerley Drain Road / Storey's Bar Road / Vicarage Farm Road signal improvements. These residents and businesses will receive letters advising them of the proposals, and directing them towards the online consultation to provide feedback.

6.9. Risk Management Strategy

A Risk Register was produced during the project initiation to identify potential risks associated with the project and to evaluate factors that could have a detrimental effect on the project. The Risk Register considers the risk's potential impact, likelihood of the impact and summarises the mitigation measures that will be taken and actions recorded to that effect. It is a live register, with all risks reviewed at progress meetings throughout the delivery of the project. Consideration is given to whether new risks need to be added or managed or an existing risk status amended.

Risk Management will be undertaken as part of the general Project Management activity. Reports on risk will be a standing component of reports to the Project Team and Project Board.

As the project moves in to the FBC stage, a QRA will be undertaken to inform a risk budget relating to the scheme delivery and incorporated in to updated scheme costs.

[9] https://cambridgeshirepeterborough-ca.gov.uk/assets/Transport/Draft-LTP.pdf

6.10. Scheme Evaluation Plan (Benefits Realisation and Monitoring)

This Scheme Evaluation Plan for the Fengate Access Study has been prepared prior to scheme construction to set out guidance detailing how this scheme's effects should be evaluated following implementation of the scheme.

The Scheme Evaluation Plan comprises the Benefits Realisation Plan and the Monitoring and Evaluation Plan.

The purpose of the Scheme Evaluation Plan is to clearly set out which indicators should be monitored to verify that the scheme achieves its objectives. Post monitoring is important for determining that the scheme has been successful.

Expected Benefits

The scheme objectives, outputs and outcomes are summarised below. These objectives are described within the Strategic Case and explain what the scheme is expected to deliver.

Primary objectives include:

- **Tackle congestion and reduce delay**: Tackle congestion at key pinch points across the Study Area and reduce delay in to the Fengate area
- **Support Peterborough's Growth Agenda and facilitate the development of the Red Brick Farm site:** Ensure that the planned employment growth at Red Brick Farm is accommodated.

Secondary objectives include:

- **Positively impact traffic conditions on the wider network:** Positively impact the performance of local routes impacted by the traffic and congestion in and around Fengate
- **Improve Road Safety**: Reduce personal injury accidents and improve personal security amongst all travellers
- **Limit impact on the local environment and improve biodiversity:** ensure a biodiversity net gain within the study area.

Benefits Monitoring and Evaluation

The Monitoring and Evaluation plan for the Fengate Access Study takes a proportionate and targeted approach, which will aim to demonstrate how the scheme has performed in relation to its objectives and intended outcomes. The principal aims of Monitoring and Evaluation are to determine whether a scheme has been delivered as planned and whether it has delivered the expected benefits. Where outcomes differ from those expected, data collected for Monitoring and Evaluation evidence base will assist in understanding the reasons for this and the lessons that can be learnt.

Monitoring and evaluation of the schemes performance against its objectives must be undertaken to determine whether the scheme has been a success. Details of how this will be measured are provided in Table 6.2 beneath.

Table 6.2: Benefits Realisation Monitoring

	Indicator / Metrics	Source	Reporting Programme			Ownership	Indicative Cost
			Baseline	Implementation	Post Implementation		
Inputs							
Scheme Funding	CPCA Funding	CPCA Funding submission Final Scheme Cost Data	Planned	Actual	-	PCC	
Outputs							
Infrastructure	Infrastructure delivered as part of the scheme	Site Inspection	Jan 2021	June 2021	October 2022	PCC	£500
Outcomes							
Tackle congestion	Average AM and PM peak journey time	Trafficmaster / Satellite Navigation data	Planned for Spring 2021		Spring 2023	PCC	£500 cost to process the data
Address journey time reliability on routes throughout the Scheme area	Queue Length Data	Automatic Traffic Counters Video survey footage	Planned for Spring 2021		Spring 2023	PCC	£1000 cost of surveys and processing data
Improve journey time reliability for public transport users	Bus punctuality data	Local bus companies	Planned for Spring 2021		Spring 2023	PCC	
Improved Road Safety	Number of KSI incidents	Peterborough database of road traffic records	Planned for Spring 2021		Spring 2023	PCC	£250 cost to process the data
Improving Air Quality	Air quality data	PCC air quality monitoring	Available at PCC		Spring 2023	PCC	£250 cost to process the data
Support Growth Agenda encouraging new homes and jobs Create Wider Economic Benefits	Local economic growth and development figures post scheme opening. Completion of Red Brick Farm Development Area	PCC Planning Portal Local and regional economic reports Site visit of Red Brick Farm Development	Available on-line		Spring 2026	PCC/CPCA	£250 cost to process the data
Reporting							
Baseline and Year 1 reports summarising the outcomes of the monitoring and evaluation work			2021		2023	PCC	£3,000
Year 5 report summarising local economic growth, scheme impacts and development figures prior and post opening of the scheme					2027	PCC	£3,000
Total Monitoring and Evaluation Budget							**£8,750**

Scheme Logic Mapping

The logic map detailed in Figure 6.4 highlights the links between context, inputs, outputs, outcomes and impacts of the scheme and gives a visual representation of where Monitoring and Evaluation should be focused. The logic model outlines the causal chain of events that represent the process by which the desired outcomes and scheme objectives are to be achieved. The logic model has informed the approach proposed in this M&E plan and will help ensure monitoring resources are targeted appropriately through the timeline of scheme development and provide effective measurement of objectives and outcomes.

The implementation of the Monitoring and Evaluation Plan will help provide an understanding of the following:

- Inputs (did we apply the money and resources that we said we would?)
- Outputs (how much did we build / provide?)
- Outcomes (what changes in behaviour came about as a result?)
- Impacts (what effect did the outcomes have on the economy, society and environment?).

The logic model also incorporates the use of bounding objectives which represent positions beyond which it is not proposed to attribute effects resulting from the scheme. However, the outcomes of the Monitoring and Evaluation plan will help understand the potential for wider impacts resulting from the scheme as outlined in the Logic Map.

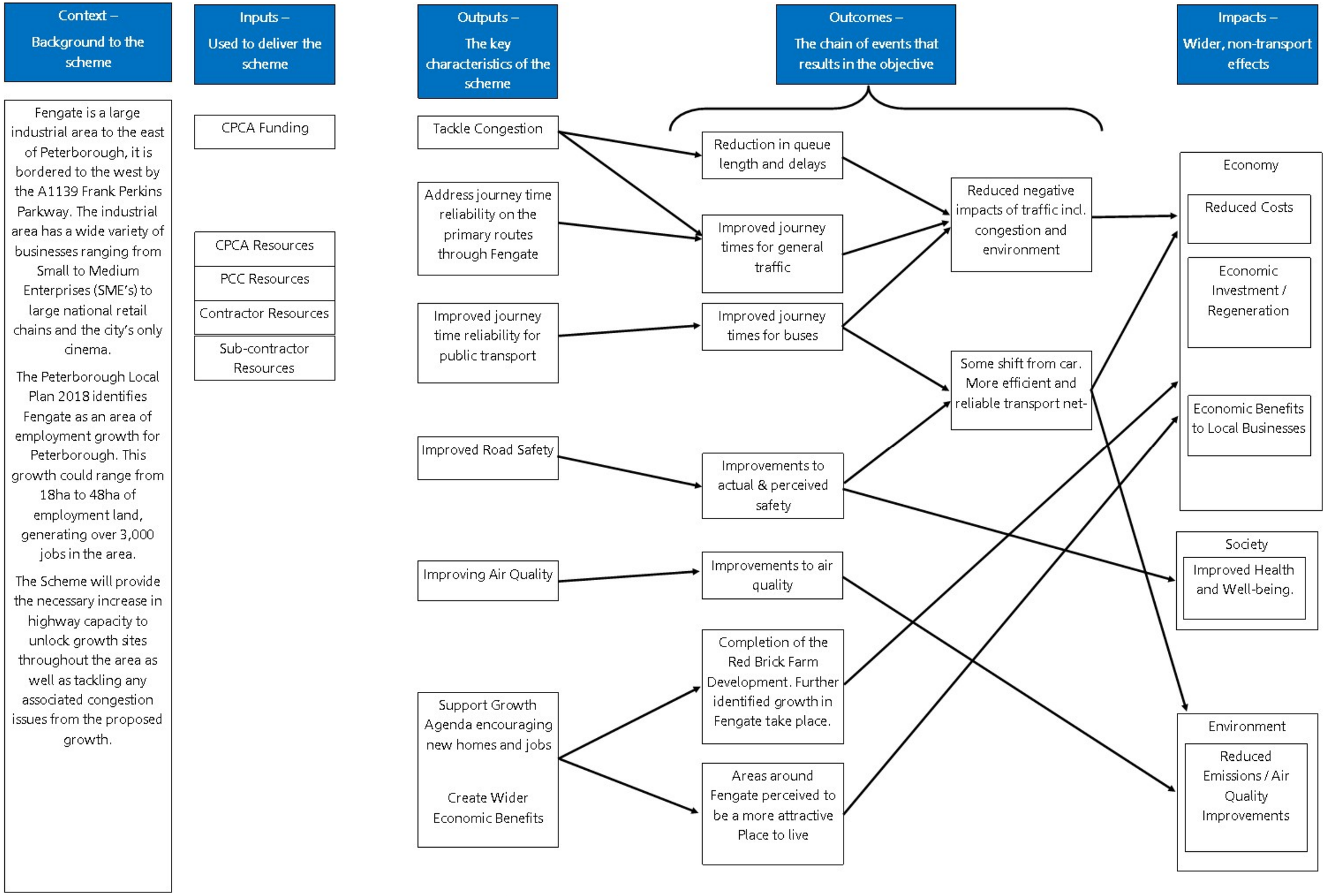

Figure 6.5: Fengate Access Study Monitoring and Evaluation Logic Map

Evaluation Timescale

Monitoring and Evaluation will be required both during development and construction, as well as in the years following implementation of the road improvement scheme in order to meet the stated evaluation objectives and effectively assess any scheme outcomes and impacts. Monitoring and Evaluation is expected to take place over the following timescale:

- Prior to scheme build (baseline): 2021
- During development and construction: June 2021 to October 2022
- Post scheme implementation:
  - One Year After Report: 2023
  - Final Evaluation (Five Years After) Report: 2027.

7. Strategic Outline Business Case Summary

The **Strategic Case** sets out the context and purpose for the Fengate Access Study and demonstrates why improvements are needed at this location. The section reviews local policy and strategy and the associated objectives for each of these documents, and also identifies the current issues at the junction by reviewing existing evidence and the need for change. Congestion, delay and poor journey times as well as the aspiration for residential and employment growth across Peterborough provide the main drivers for Fengate Access Improvements.

The strategic objectives for the scheme are identified, and these objectives form the basis for ensuring that the option identified meets the problems identified and will also be used within the scheme monitoring process after the scheme is delivered. The Strategic Case also outlines the option development process and identifies the shortlisted options taken forward for further assessment within the Option Assessment Report.

The **Economic Case** has used observed delay data to model the potential road user benefits available for the proposed scheme(s) to improve access to Fengate. This assessment has demonstrated that the preferred scheme returns a BCR of 2.7, offering **High Value for Money**. The assessment undertaken is considered conservative, and does not include the expected developer contributions currently being negotiated which is expected to increase the BCR to 3.2. The benefits also do not include accident reduction or environmental benefits, which have not yet been quantified.

The **Financial Case** has outlined how the preferred option will be costed. In addition the potential funding streams for the construction of a scheme have been considered and it is concluded that the most viable option for funding a scheme will be via the CPCA in conjunction with a developer contribution from Red Brick Farm.

The **Commercial Case** provides evidence that the proposed investment can be procured, implemented and operated in a viable and sustainable way. The chapter outlines the outcomes which the procurement strategy must deliver and also discusses the potential procurement routes and options for the preferred scheme. It identifies that at this stage, the likely procurement route would be to use the PHS highways contract which is an ECI Two-stage design and build contract, and the most widely used form of contract in construction.

The **Management Case** outlines how the proposed scheme and its intended outcomes will be delivered successfully, and sets out the processes to be used by the Council and its partners. The chapter identifies key organisational roles, and the use of a project board and project team to manage the overarching delivery and day to day delivery of the preferred scheme respectively. This chapter also makes reference to the benefits realisation plan for the preferred scheme which will plan for and monitor the benefits that are expected to be accrued over the lifetime of the scheme.

Subject to CPCA approval, the aspiration is to move the Fengate Access Study straight to Full Business Case and Detailed Design. This is in recognition of the significant design work that has already been undertaken on several of the schemes, and the anticipated programme for the Red Brick Farm development site which will unlock further employment within Peterborough.

8. Appendices

Appendix A: Wider Policy Context

Appendix A: Wider Policy Context

National Planning Policy Framework

The National Planning Policy Framework (NPPF) sets out the Government's planning policies for England and should be considered in the preparation of development plans. Proposed development that accords with an up to date Local Plan should be approved unless other material considerations indicate otherwise.

The NPPF states that all plans are expected to be based upon and to reflect the presumption in favour of sustainable development with clear policies that will guide how the presumption should be applied locally.

The scheme will contribution to delivering the following NPPF objectives:

- **Delivering a sufficient supply of homes.** The scheme will provide crucial transport capacity along the Parkway network which will support the housing growth set out for Peterborough within the Local Plan.
- **Building a strong, competitive economy.** The NPPF states that development proposals should support economic growth and productivity. The scheme will provide essential network capacity at a crucial location to enable Peterborough to deliver the jobs set out in the Local Plan.
- **Promoting healthy and safe communities and sustainable transport.** The NPPF stipulates that communities should be safe, accessible and supportive of a healthy lifestyle through the provision of cycling and walking facilities. The scheme not only provides highway capacity for strategic Parkway trips, but also includes local sustainable transport infrastructure improvements to upgrade access to Cygnet Park Business Park and the Hamptons residential area from the east, west and the north.

Department for Transport Single Departmental Plan

The single departmental plan for the Department for Transport sets out the strategic objectives to 2020 and the plans for achieving them. The DfT's overall mission is to create a safe, secure, efficient and reliable transport system that works for the people who depend on it; supporting a strong productive economy and the jobs and homes people need.

The objectives outlined in the plan are:

- Support the creation of a stronger, cleaner more productive economy
- Help to connect people and places, balancing investment across the country
- Make journeys easier, modern and reliable
- Make sure transport is safe, secure and sustainable
- Prepare the transport system for technological progress, and a prosperous future outside the EU
- Promote a culture of efficiency and productivity in everything we do.

Peterborough City Council's Vision and Strategic Priorities

The Council's vision is to

'Create a bigger and better Peterborough that grows the right way and through truly sustainable development and growth:

- *Improves the quality of life of all its people and communities, and ensures that all communities benefit from the growth and the opportunities is brings*
- *Creates a truly sustainable Peterborough, the urban centre of a thriving sub-regional community of villages and market towns, a healthy, safe and exciting place to live, work and visit, famous as the environmental capital of the UK'.*

The strategic priorities for the Council are:

- Drive growth, regeneration and economic development
- Improve education attainment and skills
- Safeguard vulnerable children and adults
- Implement the Environment Capital agenda
- Support Peterborough's culture and leisure trust Vivacity
- Keep all our communities safe, cohesive and healthy
- Achieve the best health and wellbeing for the city

Peterborough City Council Local Plan

The Local Plan (adopted July 2019) updates the 2011 Core Strategy and looks to deliver 21,315 new homes between 2017 and 2036, and 17,600 jobs between 2015 and 2036. The development strategy for the new Local Plan is to focus the majority of new housing development in, around and close to the urban area of the city of Peterborough. Only a small percentage of residential development is allocated to the villages and rural area. Similarly, employment development will be focussed on the city centre, urban area or urban extensions.

The Local Plan will deliver the council's corporate priorities (listed below) which aim to improve the quality of life for all residents and communities.

- Drive growth, regeneration and economic development
- Improve education attainment and skills
- Safeguard vulnerable children and adults
- Implement the Environment Capital agenda
- Support Peterborough's culture and leisure trust Vivacity
- Keep all our communities safe, cohesive and healthy
- Achieve the best health and wellbeing for the City.

Policy LP13: Transport states that the impact of growth on the city's transport infrastructure will require careful planning and that new development must ensure that appropriate provision is made for the transport need that it will create.

Policy LP14: Infrastructure identifies that the major growth and expansion of Peterborough will be supported by necessary infrastructure such as roads, schools and health and community facilities is in place to help the creation of sustainable communities.

Appendix B: Appraisal Summary Table (AST)

Appendix E – Appraisal Summary Table

Impacts		Summary of key impacts	Assessment	
			Qualitative	Quantitative (Monetary)
Economy	Business Users & Transport Providers	Transport user benefits have been calculated using the Peterborough Transportation Model 3 (PTM3) and Transport User Benefits Appraisal (TUBA) tool. Benefits have been discounted to the 2010 base year and expressed in 2010 market prices. This identifies that the benefit to Business Users & Transport Providers is expected to be £9,955,000.	Not Assessed	**£ 9,955,000 (PVB)**
	Reliability Impact on Business Providers	Business users are expected to benefit from more reliable journey times because of congestion and delay reductions.	**Moderate Beneficial**	Not Assessed
	Regeneration	No regeneration proposals in the vicinity of the scheme	Not Assessed	Not Assessed
	Other impacts – impact on local business	The Study Area is a large employment area to the east of Peterborough. Any proposed measures to improve journey time reliability and reduce congestion should help to keep the employment area as an attractive location for businesses.	**Slight Beneficial**	Not Assessed
Environmental	Noise	The reduction in queueing, and therefore idling is anticipated that the overall impact will be neutral, however further noise assessment may be required as the scheme progresses.	**Neutral**	Not Assessed
	Air Quality	The reduction in queueing, and therefore idling, may have a beneficial impact on air quality at receptors near the scheme site. However, further assessments will be required as the scheme progresses.	**Slight Beneficial**	Not Assessed
	Greenhouse Gases	Due to the decrease in congestion, there it is likely a small positive impact on greenhouse gas emissions will be seen upon scheme completion. Further assessments will be undertaken as the scheme progresses	**Slight Beneficial**	**£253,000 (PVB)**
	Landscape	Most of the works are within the highway boundary and designs will be sensitive to local area – neutral impact	**Neutral**	Not Assessed
	Townscape	Most of the works are within the highway boundary and designs will be sensitive to local area – neutral impact	**Neutral**	Not Assessed
	Historic Environment	Most of the works are within the highway boundary and designs will be sensitive to local area – neutral impact	**Neutral**	Not Assessed
	Biodiversity	Biodiversity will be assessed as the scheme progresses and any mitigation measures identified.	**Neutral**	Not Assessed
	Water Environment	The eastern edge of the Study Area is within an area at risk of flooding (Env Agency Flood Map for Planning) Water environment will be assessed as the scheme progresses	**Neutral**	Not Assessed
Social	Commuting & Other Users	Transport user benefits have been calculated using the Peterborough Transportation Model 3 (PTM3) and Transport User Benefits Appraisal (TUBA) tool. Benefits have been discounted to the 2010 base year and expressed in 2010 market prices. This identifies that the benefit to Commuting & Other users is expected to be £16,571,000. Users are expected to benefit from improved journey times because of reduced congestion.	Not Assessed	**£ 16,571.000 (PVB)**
	Physical Activity	No improvements for pedestrians and cyclists will be considered as part of the scheme.	**Neutral**	Not Assessed
	Journey Quality	Driver's frustration caused by unreliable journey times is likely to be reduced significantly. Overall improvement in safety.	**Slight Beneficial**	Not Assessed
	Accidents	Scheme improvements at junctions is expected to have a slight benefit on road safety.	**Slight Beneficial**	Not Assessed
	Personal Security	No improvements yet identified for walking and cycling, but these will be included at FBC.	**Neutral**	Not Assessed
	Access to the transport system	No significant improvements in accessibility to the transport network, however journeys will be more reliable	**Slight Beneficial**	Not Assessed
	Affordability	No specific changes to the cost of travel (public transport fares, road user pricing or car parking increases	**Neutral**	Not Assessed
	Severance	Improvements in pedestrian facilities could ease severance,	**Neutral**	Not Assessed
	Option & Non-Use Values	Not Applicable	Not Assessed	Not Assessed

Appendix E – Appraisal Summary Table

Impacts		Summary of key impacts	Assessment	
			Qualitative	Quantitative (Monetary)
Public Accounts	Cost to Broad Transport Budget	The cost to the Broad Transport Budget (PVC) has been calculated as £5,609,000.	Not Assessed	£5,609,000 **(PVC)**
	Indirect Tax Revenues	Calculated to be - £440,000.	Not Assessed	- £440,000

SKANSKA

Skanska UK
www.skanska.co.uk

Maple Cross House
Denham Way
Maple Cross
Rickmansworth
Hertfordshire
WD3 9SW
Tel: +44 (0)1923 776666
skanska@skanska.co.uk