MILESTONE INFRASTRUCTURE

A part of MGroupServices

Junction 15, Peterborough

Full Business Case

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Document Control

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Contents

Figures

Tables

Appendices

Appendix A:	Wider Policy Context
Appendix B:	Junction 15 Carbon Workshop
Appendix C:	BS5837 Tree Quality Guidance
Appendix D:	Footbridge Option Assessment
Appendix E:	RHDHV_ Arboricultural Implications Assessment Report
	RHDHV_ Landscape Proposal
Appendix F:	Project Risk Register
Appendix G:	Scheme Drawing_5080751-SKA-HGN-DR-CH-0003-Rev.C03 1o2
	Scheme Drawing_5080751-SKA-HGN-DR-CH-0003-Rev.C03 2o2
Appendix H:	Footbridge Scheme Drawing_5080751_155980_MIL_SBR_ZZ_DR_CB_1801 S3 P01
	Footbridge Scheme Drawing_5080751_155980_MIL_SBR_ZZ_DR_CB_1801 S3 P02
Appendix I:	A1260 Geological Importance
Appendix J:	Economic Case Cost Profile
	Economic Case Maintenance Cost Profile
Appendix K:	AST
Appendix L:	EIA Report
Appendix M:	Financial Case Cost Profile
Appendix N:	Construction Programme
	Construction Phasing Drawing 1o2
	Construction Phasing Drawing 2o2
Appendix O:	Construction Inflation Costs
Appendix P:	Construction Risk Register
Appendix Q:	Scheme Monitoring and Evaluation Plan

Executive Summary

This Full Business Case makes a strong case for the Junction 15 Improvement Scheme, which will return Very High Value for Money.

Construction of the scheme will address significant issues of congestion and delay at a crucial cornerstone of Peterborough's Parkway Network, providing much needed capacity for Peterborough City Council (PCC) and the Cambridgeshire and Peterborough Combined Authority (CPCA) to meet their agenda for growth in Peterborough.

In addition to the highway works and a new footbridge being delivered as part of Junction 15 Scheme, the Council have broader plans to improve the sustainable travel provisions within the employment area of Thorpe Wood, close to Junction 15. The Council's aspirations feature within the Local Cycling and Walking Infrastructure Plan (LCWIP) and new provisions are likely to include a fully LTN 1/20 compliant cycleway along Thorpe Wood, new pedestrian crossings and wider improvements to footpaths. It should be noted that these sustainable travel improvements are not within the scope of the current Junction 15 Project and Business Case, however DfT funding has been secured to begin developing these improvements and work has commenced.

The Full Business Case is set out in compliance with the DfT's Five Case Business Model.

Strategic Case

The Strategic Case has considered the policy context in which the scheme has been developed. As well as policy, the need for intervention is explained, which includes the following issues that compromise local growth aspirations:

- Extensive queuing on the A1260 Nene Parkway (northbound)
- Queuing on all approaches to the junction in the AM and PM peak periods
- Conflicts between dominant movements
- High accident statistic rate, particularly with rear end shunts
- Poor Pedestrian facilities and connectivity.

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

Primary objectives include:

- **Tackle congestion and improve journey time reliability:** Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)
- **Support Peterborough's Growth Agenda and encourage homes and jobs:** Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand
- **Create wider economic benefits:** Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space
- **Protect and improve the biodiversity value within the study area:** Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the study area.

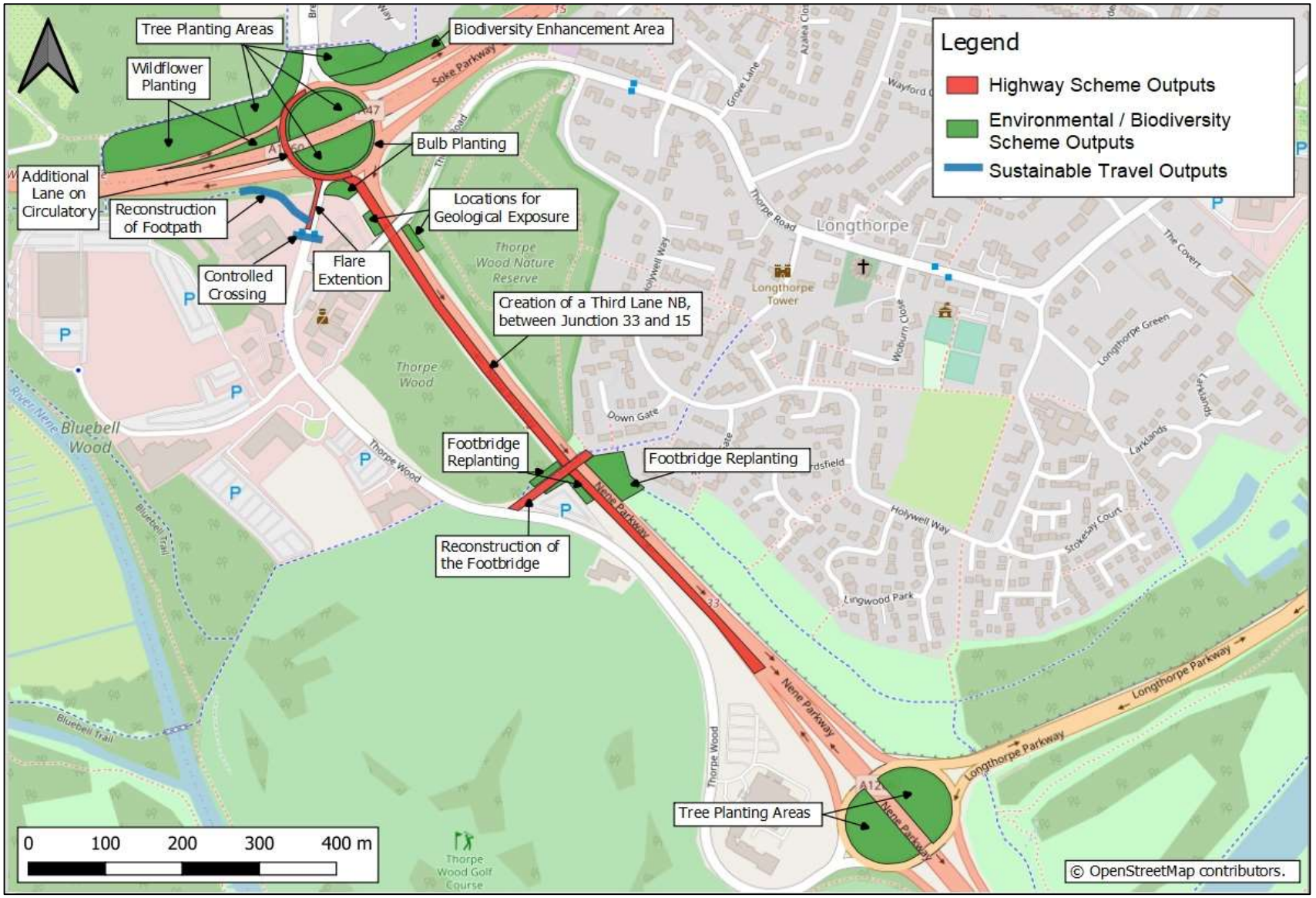
In addition to the above, several secondary objectives were identified as stated in the Strategic Case.

The Strategic Case concludes with details of the Preferred Option and documents how this has evolved since the previous OBC phase of work. Full details of the modelling and assessment work undertaken to identify the Preferred Option can be found in the Junction 15 Option Assessment Report (September 2019).

The Preferred Option ('the scheme') includes:

- Creation of a third lane (northbound) between Junction 33 and Junction 15 of the A1260 Nene Parkway, with a speed reduction to 60MPH implemented
- Creation of a three-lane circulatory on Junction 15 between the A1260 Nene Parkway approach and the Bretton Way exit
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement of the pedestrian footbridge over the A1260 Nene Parkway (to facilitate the creation of a third northbound lane and bring the footbridge to standard)
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton
- Environmental and biodiversity enhancements in the north-eastern and north-western corner of Junction 15
- The exposing of the geological profile of the A1260 Nene Parkway embankments near Thorpe Road Bridge and subsequent interpretation board.

The scheme outputs are shown in the Figure overleaf.



Economic Case

The Economic Case demonstrates the scheme achieves a Benefit to Cost Ratio of 7.269 and offers **Very High Value for Money** based on transport user benefits alone. A breakdown of the scheme BCR is provided in the table beneath.

Value (£'000s) 2010 prices, benefits discounted to 2010	
Benefits	
Greenhouse Gases	353
Consumer Users (commuting)	22,031
Consumer Users (Other)	16,139
Business Users/Providers	11,890
Indirect Taxes	- 813
Present Value of Benefits (PVB)	**49,600**
Costs	
Broad Transport Budget	6,823
Present Value of Costs (PVC)	**6,823**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**42,777**
Benefit/Cost Ratio (BCR)	**7.269**

The Present Value of Benefits used in the assessment have been derived from a custom built Aimsun Microsimulation model 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, 1.9.15) tool to calculate a scheme BCR. The Present Value of Benefits for the scheme are £49,600 in 2010 prices.

The present value of costs used in the Economic Assessment is based upon a robust scheme cost estimate and has been calculated in line with TAG guidance over a 60-year assessment period. The Present Value of Costs for the scheme are £6,823 in 2010 prices.

Sensitivity testing has been undertaken to determine whether or not the proposed scheme could still achieve value for money if the expected road traffic growth differs from current predictions. This testing has been undertaken by using figures from TEMPro (version 7.2b), to develop 'low' and 'high' growth scenarios. Traffic counts have been undertaken at Junction 15 over the last twelve months to monitor the impact of the COVID-19 pandemic on traffic volumes, and this monitoring has demonstrated that, as of June 2021, traffic levels have returned to a level higher than those assessed as part of the 'low' growth scenario. This confirms that the 'low' growth scenario is an appropriate assessment to understand the impact of the pandemic on the sensitivity of the schemes value for money.

The results from the sensitivity test are provided in the Table beneath and show that the scheme would still offer **Very High Value for Money** in both a 'low' and 'high' growth scenario.

BCR Component	Low Growth	Central Growth	High Growth
PVC (£)	6,823	6,823	6,823
PVB (£)	36,711	49,600	53,978
NPV (£)	29,888	42,777	47,155
BCR	5.380	7.269	7.911

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

- Arboriculture
- Landscape
- Ecology
- Archaeology and Heritage
- Air Quality
- Noise.

These assessments did not identify any significant concerns and the assessment results are included within the Appraisal Summary Table (AST).

Financial Case

The Financial Case demonstrates that the scheme has been robustly costed in line with TAG guidance (Unit A1.2).

The scheme cost estimates for the Financial Case have been prepared in line with TAG (August 2021) guidance as dictated in TAG Unit A1.2 Scheme Costs (DfT, July 2021). Each of the steps taken to produce the cost estimates are explained beneath. The estimate has been robustly costed based on Detailed Design information and extensive engagement with the construction team. It includes a risk allowance based on a Quantified Risk Assessment (QRA) and inflation.

Due to the current volatility in material costs, inflation has been specifically calculated for this scheme at commodity level using a combination of forecast increases and market knowledge. As a result of this, an inflation value of £343,452 has been calculated, which represents the expected increase in material and supply costs between the point of pricing (September 2021) and the realisation of these costs during construction (beginning in February 2022).

The scheme cost estimates are presented in the Table beneath.

Description of Cost Type	Cost (£) Total
Base Investment Cost	6,932,350
Risk Adjusted Base Cost	7,667,377
Risk Adjusted Base Cost with Construction Industry Inflation (**Outturn Cost**)	**8,013,642**
Inflated Risk Adjusted Costs incorporating Whole Life Costs (60 year assessment period)	11,546,731

This Scheme Outturn Cost (including risk and inflation) is £8,013,642. This represents the amount required by PCC to deliver the scheme, and it is anticipated that this will be funded by the CPCA.

The Whole Life Costs include future maintenance costs for the 60-year assessment period. Maintenance costs have only been included for the new infrastructure associated with the scheme (a new third lane on the A1260 Nene Parkway northbound). All maintenance costs associated with the existing infrastructure will continue to occur separate to the Junction 15 scheme, and so have not been included within the assessment. Note that funding for the maintenance costs is not requested as part of the scheme funding and will instead be funded from the Council's future highway maintenance budgets.

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.

Peterborough Highway Services (PHS) have delivered previous stages of planning and Preliminary Design as well as the current stage of Detailed Design. The 'in house' PHS skill set, existing relationships and extensive knowledge of the scheme will be used during the construction phase of the scheme.

The scheme will be procured using a Target Cost payment mechanism, which 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 PCC to appoint a contractor in an efficient manner. The use of PHS's in house delivery capabilities, 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 PCC, through the PHS Framework, has the necessary experience and governance structure to successfully manage the delivery of the scheme.

The Council, through PHS, have successfully delivered the following highway improvement schemes in recent years. As with Junction 15, both of these schemes are located on the Parkway Network at strategically sensitive locations and demonstrate PHS' ability to successfully manage and deliver highway schemes of this scale.

- Junction 20 Improvement Scheme (A47 Soke Parkway / A15 Paston Parkway) - £5.7m (2016 / 2017)
- Junction 17 – Junction 2 Improvement Scheme (A1139 Fletton Parkway) - £18m (2014 / 2015).

To date the delivery of the scheme has been managed by a Project Team, led by a PCC Project Manager. The Project Team consisted of all the key project delivery partners. The Project Team has been responsible for the daily running of the project, key activities including coordinating with all key stakeholders and managing the delivery programme.

The existing PHS Project Board has overseen the continued development and delivery of the scheme to date by the Project Team, and has made key decisions relating to the delivery of the project. The Project Board has been supported by technical specialists, with key stakeholders invited to attend as necessary.

Every month the Project Manager submitted a Highlight Report to the CPCA recording what progress has been made and whether there were any new risks that could impact the scheme.

Key project milestones for progressing to scheme delivery are outlined in the table beneath:

Timescale	Milestone Activity
August 2020 – September 2021	Detailed Design undertaken and Full Business Case produced.
September 2021 – November 2021	Full Business Case reviewed by CPCA (including Steers Independent Review), and CPCA Board approval sought for construction funding.
November 2021 – March 2022	Completion of bridge design and procurement
January 2022 – February 2022	Mobilisation begins onsite, Site Clearance undertaken
February 2022 – December 2022	Highway construction begins, includes 6 phases as detailed below
February 2022 – April 2022	Phase 1 of construction programme, includes site clearance, removal of VRS system and evacuation centred on the A1260 Nene Parkway
April 2022 – July 2022	Phase 2 of construction programme, includes elements of exposing the geological profile, A1260 Nene Parkway lane gain and the required maintenance bay
May 2022 – October 2022	Bridge construction commences, including site clearance, demolition of the existing structure, piling and foundations and installation of new bridge
July 2022 – August 2022	Phase 3 of construction programme, includes the realignment of the A47 WB off slip and new VRS system
August 2022 – October 2022	Phase 4 of construction programme, includes the additional lane on the circulatory and signals on the A47 EB off slip
October 2022 – November 2022	Phase 5 of construction programme, includes the Thorpe Wood flare, zebra crossing and reconstructed footpath
November 2022 – December 2022	Phase 6 of construction programme, includes surfacing across the site with works spilt into phases A through to F
December 2022 – January 2023	Demobilisation

Stakeholder consultations was undertaken by the Project Team following the approval of the OBC and in line with the timings of the public consultation (21st October - 4th December 2020). All key stakeholders were consulted via email or letter for comments on the scheme prior to completion of Detailed Design.

Feedback from the consultation has shown that all stakeholders support the scheme at Junction 15 and that no conflicts between stakeholders are present. The two predominant elements featured within communication with stakeholders has centred on environment and biodiversity net gain as well as sustainable travel.

Public perceptions of the Preferred scheme were also assessed following the approval of the OBC and prior to the completion of Detailed Design. The online consultation which featured on the PCC website and social media for a six-week period (between the 21st October – 4th December 2020), received no objections from members of the public.

It should be noted that six residential properties located within the immediate vicinity of the footbridge over the A1260 Nene Parkway will be contacted via letter in advance of any works, to inform them of the scheme details, including the construction schedule, soft landscaping plans and biodiversity improvements.

All communication with key stakeholders and the public during the construction phase of the project, 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 had a detrimental effect on the project. The Risk Register is a live document and has been 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 attached Scheme Evaluation Plan. The Scheme Evaluation Plan details the expected outcomes of the study and the quantitative and qualitative data collection methods that will be undertaken at one, three- and five-years post scheme opening.

Summary

This Full Business Case demonstrates that the Junction 15 Improvement Scheme will return **Very High Value for Money**.

This document demonstrates that the scheme has been robustly costed, can be efficiently procured through existing commercial channels whilst proving value for money, and that the necessary mechanisms are in place to ensure that the delivery of the scheme can be successfully managed on behalf of the CPCA.

1. Introduction

1.1.1 This document sets out the Full Business Case for the Junction 15 Improvement Scheme in Peterborough.

1.1.2 The Scheme will address severe levels of congestion and delay that compromise the operational efficiency of the surrounding road network, including a cornerstone section of Peterborough's strategic Parkway Network. By addressing existing issues, and building in additional capacity, the scheme will assist with delivering growth aspirations across Peterborough.

1.1.3 This Full Business Case is the final stage in the decision-making process using the format as set out in "The Transport Business Cases" document published by the Department for Transport (DfT) in January 2013.

1.1.4 The level of detail provided within the Business Case continually builds as the project progresses from Strategic Outline Case (SOC) 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, and a Preferred Scheme is identified.

1.1.5 A SOC and an Optional Appraisal Report (OAR) were completed in October 2019, followed by the approval by the Cambridgeshire and Peterborough Combined Authority (CPCA) for the OBC based upon Preliminary Designs in July 2020. This paved the way for Detailed Design work to be undertaken on the Preferred Scheme, and for this FBC to be produced.

1.1.6 The primary purpose of the FBC is to:

- Confirm the need for change and the policy fit of a scheme at this location, as established in the OBC
- Demonstrate that the Preferred Option meets the scheme objectives and offers value for money, and has been robustly costed based on all information available
- Detail the proposed contract management resourcing and benefit realisation plans
- Provide details of the projects overall balance of benefits and costs, showing how the return would justify the overall investment of time and money.

Study Area

1.1.7 The extent of the study is shown beneath in Figure 1.1 beneath. This includes Junction 15 and nearby elements of the Principal Road Network which are directly linked to the operation of the junction.

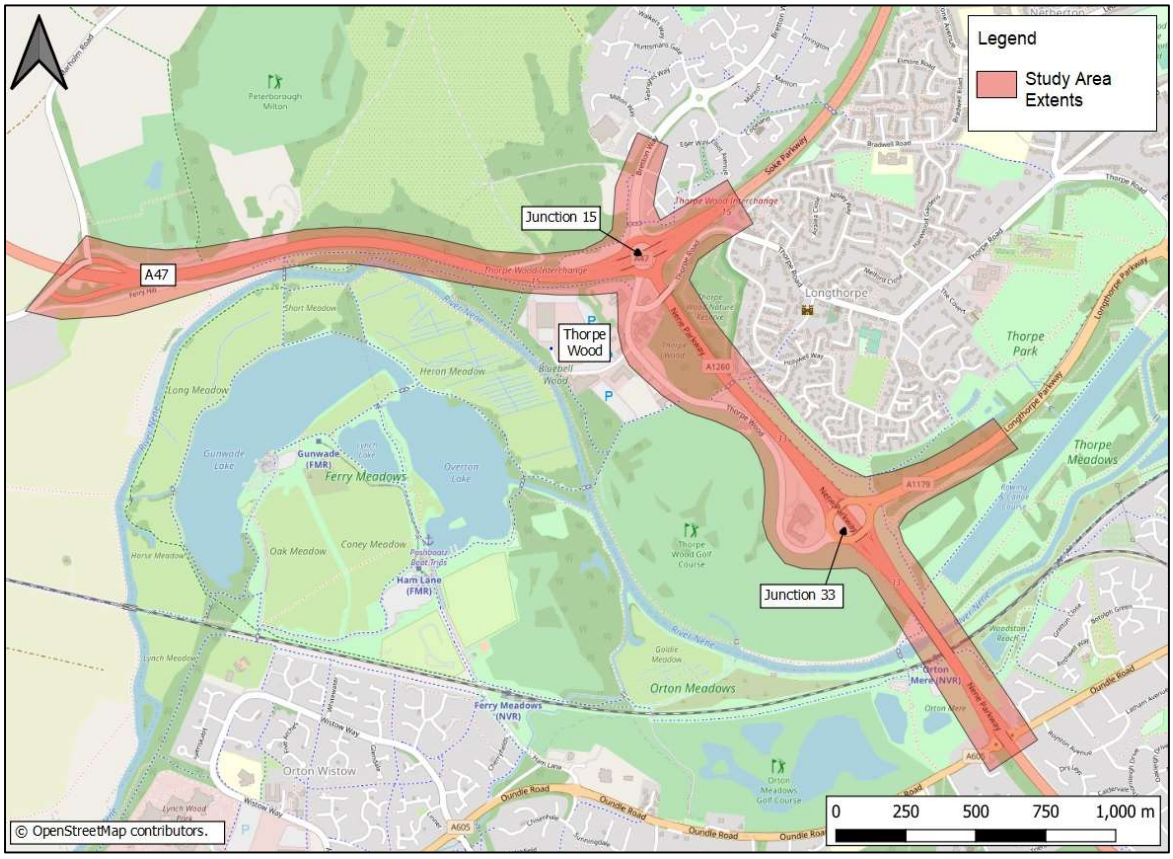


Figure 1.1: Study Area Extents

Location

1.1.8 Junction 15 is a large grade separated junction serving two of Peterborough's busiest strategic roads (the A47 Soke Parkway and the A1260 Nene Parkway). The junction is a crucial cornerstone of the Parkway Network and provides access to one of the city's three road river crossings (Nene Thorpe Bridge).

1.1.9 The junction provides access to the A1260 Nene Parkway, Bretton Way, Thorpe Wood and the A47 Soke Parkway. The junction also provides direct access to a major employment centre (Thorpe Wood) and accommodates a large number of peak hour commuter trips to / from this location.

1.1.10 Figure 1.2 beneath highlights the location of Junction 15 in relation to the Parkway Network and Peterborough City Centre.

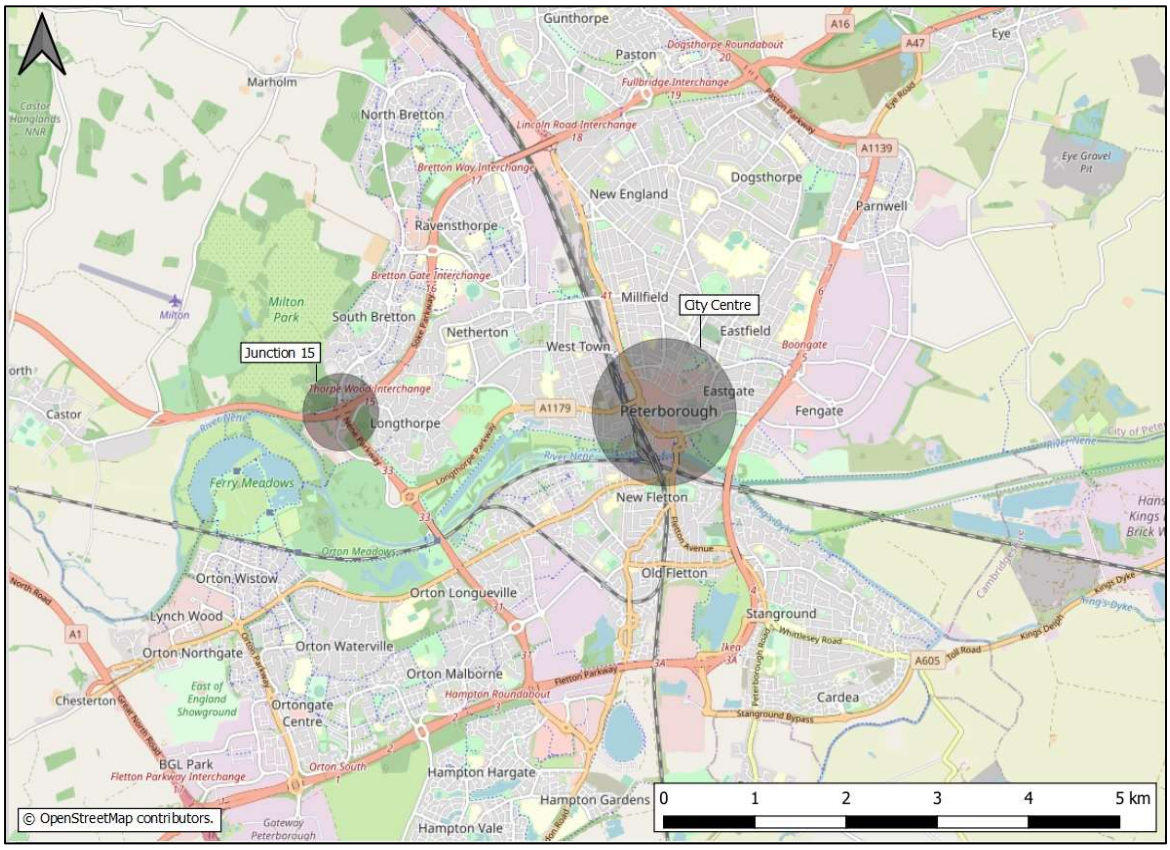


Figure 1.2: Junction 15 Location Plan

Background Context

1.1.11 Junction 15 is a partially signalised grade separated roundabout (positioned beneath the A47 Trunk Road), which is situated on the western edge of Peterborough's urban area.

1.1.12 On average 46,000 vehicles pass through Junction 15 on a typical weekday, of which 13% are classified as commercial vehicles[1].

1.1.13 The junction is used by trips from all over the Peterborough area, and experiences significant peak hour congestion, particularly northbound on the A1260 Nene Parkway where queues regularly exceed a mile during the PM peak hour, compromising the surrounding road network. Because of its strategic location, the junction is critical to Peterborough's growth aspirations.

1.1.14 Peterborough's Local Plan was adopted in July 2019 and sets out the overall vision, priorities and objectives for Peterborough for the period up to 2036. The updated strategy identifies the required delivery of approximately 21,315 new homes and 17,600 new jobs between 2016 and 2036[2].

[1] Manual Traffic Survey Data, 9th November 2017.
[2] Peterborough Local Plan, 24th July 2019

1.1.15 The population of Peterborough has grown considerably over recent years, increasing by 15% between 2007 and 2017 to approximately 200,000 residents (2019)[3]. This has made Peterborough the fastest growing district within the Combined Authority, as well as one of the UK's top ten cities for population growth.

1.1.16 To date Peterborough's transport network has served the city well, which was fundamentally redesigned in the 1970s to accommodate the then Peterborough New Town. However, because of recent and planned housing and employment growth, capacity issues are now emerging on the road network, resulting in congestion and delay. As congestion increases on the Parkway Network, and queues form at key junctions, the potential for delivering new homes and jobs in the area is becoming increasingly constrained. The Council are committed to addressing these highway constraints to ensure that its full growth aspirations can be realised.

1.1.17 This Business Case seeks to promote a scheme that will provide the necessary increase in highway capacity to unlock congestion and significantly reduce delay at Junction 15, which is a major pinch-point on the network. This will improve the capacity and operational performance of the Peterborough Parkway Network which is crucial to supporting further growth around the city.

1.1.18 Additionally, improvements at Junction 15 are expected to have wider network benefits beyond the Parkway Network, particularly to the A605 Oundle Road which experiences congestion as vehicles queue back from the northbound on-slip onto the A1260 Nene Parkway (towards Junction 15) during the PM peak hour.

1.1.19 The Junction 15 Improvement Scheme set out within this document has been developed with significant input from environmental specialists and will mitigate the environmental impacts associated with construction, as well as introduce elements that will help achieve biodiversity net gain.

Document Structure

1.1.20 The remainder of this document is structured as follows:

- Chapter 2: Strategic Case identifies the need for an improvement at this location, documents initial options and outlines the Preferred Scheme
- Chapter 3: Economic Case demonstrates the Preferred Scheme offers value for money
- Chapter 4: Financial Case shows how the scheme has been robustly costed, and how funding will be profiled
- Chapter 5: Commercial Case sets out how PCC 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

2.1.1 This chapter sets out the Strategic Case for the improvement of Junction 15 and demonstrates why improvements are needed at this location. It shows how a scheme will fit with local, regional and national policy, and enable Peterborough to deliver its planned growth.

2.2 Business Strategy

2.2.1 The Government's strategy for facilitating further economic growth requires the 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 Junction 15 Improvement Scheme will contribute to achieving these strategic aims and polices.

Department for Transport Single Departmental Plan

2.2.2 The Single Departmental Plan published in June 2019[4] sets out the DfT's objectives and the plans for achieving them.

2.2.3 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.

2.2.4 The scheme at Junction 15 will reduce congestion and improve journey time reliability and add further capacity into Peterborough's Parkway Network. The delivery of these benefits will support housing and economic growth which are aligned to the main objectives of DfT's single departmental plan.

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

Cambridgeshire and Peterborough Combined Authority

2.2.5 The CPCA was formed in 2017, as a Mayoral Combined Authority. It is made of seven local authorities (Cambridgeshire County Council, Peterborough City Council (PCC), 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).

2.2.6 The focus of the CPCA is on strategic issues (such as housing, transport and infrastructure demand) which span council borders and 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.

2.2.7 To help achieve these ambitions and provide the requisite support, the CPCA has set out a short-term business plan[5] 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 at Junction 15 are listed. Figure 2.1 sets out the CPCA Policy Framework.

Figure 2.1: CPCA Policy Framework

Cambridgeshire and Peterborough Independent Economic Review (CPIER)

2.2.8 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 CPIER.

[5] https://cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/documents/key-documents/business-plan/current-business-plan/COMBINED-AUTHORITY-BUSINESS-PLAN.pdf.

2.2.9 The CPIER[6] 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.

2.2.10 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.

2.2.11 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.

2.2.12 The Junction 15 Scheme will help achieve the ambition set out within the CPIER for 'Peterborough to become a leading place to live, learn and work' by 2030. The Improvement Scheme will address issues of delay and poor journey times at Junction 15 and the connecting Thorpe Wood, which hosts a key business park to the north-west of the City. By addressing existing highway issues, increasing accessibility and enhancing the local area, the attractiveness of Thorpe Wood will increase helping to retain existing businesses and support future investment in the area.

Local Industrial Strategy (LIS)

2.2.13 The LIS[7] 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 LIS is focussed around five key foundations of productivity established in the UK Industrial Strategy:

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

[6] https://www.cpier.org.uk/media/1671/cpier-report-151118-download.pdf.
[7] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/818886/Cambridge_SINGLE_PAGE.pdf.

2.2.14 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.

2.2.15 The CPCA Assurance Framework[8] states that investments will only be made if they can demonstrate that they will support the delivery of the Growth Ambitions Statement and the LIS, as well as the more detailed place and sector strategies.

2.2.16 This has a direct implication for the Junction 15 Scheme, with a need to ensure it supports CPCA growth ambitions and align with the Local Industrial Strategy. As stated above Peterborough is identified as one of the three sub-economies and providing an efficient and reliable local transport network within the City is crucial to ensuring the continued success of the local economy in line with the CPCA Growth Ambition Statement. The Junction 15 Scheme will provide improvements to journey times and delay on a key cornerstone stone junction to the west of the City.

Local Transport Plan (LTP)

2.2.17 In January 2020, the CPCA adopted a Local Transport Plan for Cambridgeshire and Peterborough[9] 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.

2.2.18 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.

2.2.19 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'.

[8]. https://cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/documents/combined-authority-board/committee-papers-and-minutes/Cambridgeshire-and-Peterborough-Combined-Authority-Assurance-Frameworkv3final-002.pdf
[9] https://cambridgeshirepeterborough-ca.gov.uk/assets/Transport/Draft-LTP.pdf.

2.2.20 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 accessible transport systems to ensure everyone can thrive and be healthy
- **Environment** – Protect and enhance our environment and tackle climate change.

2.2.21 The objectives of the Local Transport Plan underpin the delivery of the goals for an improvement at Junction 15, and form the basis against which schemes, initiatives and policies will be assessed. The initial scheme objectives for a Junction 15 Improvement Scheme were devised at the beginning of the study and pre-date the objectives of the Local Transport Plan.

2.2.22 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 are set out later in this chapter.

2.2.23 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 system approach 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 a 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.

2.2.24 Junction 15 is identified within the Local Transport Plan as a congestion pinch point on the Peterborough Parkway Network where improvements are necessary to improve journey time reliability, and enable the growth identified within the Local Plan to emerge[10].

Mayoral Ambition

2.2.25 The CPCA Mayoral Election on the 6th May 2021 resulted in a new Labour Mayor being elected, replacing the incumbent Conservative Mayor who had held office since 2017. At the time of producing this FBC, the content of the CPCA Policy Framework focused on Growth, Industrial and Transport Strategies, as illustrated in Figure 2.1 and detailed in the subsequent text above, remain the same.

2.2.26 The new Mayor vision is that future policies and actions will be driven by inclusivity and the '3 C's' of Compassion, Co-operation and Community, and have a stronger 'greenprint' running through strategy aiding the acceleration in carbon reduction by 2050[11].

2.2.27 In July 2021, the Combined Authority Board agreed to produce an updated Local Transport Plan. In September 2021, it was announced that the Local Transport Plan would become the Local Transport and Connectivity Plan (LCTP), to reflect the growing dependence on digital infrastructure. The LCTP will be finalised in Spring 2022.

2.2.28 Despite the Junction 15 Scheme being developed before the new Mayors visions and publication of the LCTP, the Scheme does provide strong connections to the 3'Cs:

- **Compassion:** The Scheme will address existing at Junction 15 helping to improve the operational efficiency of the wider network including Thorpe Wood and the A605 (key employment corridors), whilst the upgrade of the footbridge increases accessibility from the residential area of Longthorpe to the Thorpe Wood Business Park
- **Co-Operation:** Strong engagement with key stakeholders has been maintained through the progression of the scheme and Business Case process, helping to create a Scheme which recognises the interests of all partners
- **Community:** The upgrading of the footbridge to current design standards will increase accessibility and the attraction of the nearby Ferry Meadows Country Park, which in turn draws upon health and wellbeing. Environmental and biodiversity elements included within the scheme also show the dedication of the Project Team to minimise impact and safeguard the environment.

[10] Peterborough Long Term Transport Strategy, 2010.
[11] https://cambridgeshirepeterborough-ca.gov.uk/news/putting-compassion-co-operation-and-community-at-the-heart-of-reinvented-transport-masterplan/.

Gear Change / Local Transport Note (LTN) 1/20 Policy

2.2.29 In October 2020, The Council adopted the Local Transport Note 1 / 20: Cycle Infrastructure Design (LTN 1/20) guidance. The guidance sets out five core principles[12] for which new cycle infrastructure implemented by local authorities should comply to secure funding from government. Core principles set out within the guidance include routes that are:

- Coherent
- Direct
- Safe
- Comfortable
- Attractive.

2.2.30 The above LTN 1/20 core principles are embedded within the wider DfT Gear Change Policy, adopted in 2020[13], which sets out the vision to transform our future transport systems to a point where active travel becomes the 'natural first choice' for journeys by 2030, and is prioritised within policy and local transport schemes.

2.2.31 The themes of the Gear Change policy outlines how the vision can be achieved under the secured £2bn funding dedicated to active travel over the period of 2020 - 2025. The four themes are summarised below:

- **Theme 1 - Better streets for cycling and people:** Create higher standards for infrastructure including safe, continuous and direct routes for cycling, which are physically separated from pedestrians and high volumes of traffic
- **Theme 2 - Putting cycling and walking at the heart of transport, place and policy:** For local governments to receive funding for local highway investment, the presumption is that all new schemes will deliver or improve cycle infrastructure to the standards outlined in guidance
- **Theme 3 - Empowering and encouraging local authorities:** A new commissioning body 'Active Travel England', led by a walking and cycling commissioner will be established, awarding funding to schemes which adhere to standards and that can be delivered within the tighter delivery timescale controls
- **Theme 4 - Enabling and protecting those who choose cycling and walking:** Use established funding to roll out cycle training, to combat bike theft, introduce legal changes and support all users to cycle safely.

[12] Cycle Infrastructure Design (publishing.service.gov.uk)
[13] Gear change: a bold vision for cycling and walking (publishing.service.gov.uk)

2.2.32 The Junction 15 Scheme will adhere to the LTN 1/20 guidance by upgrading the footbridge over the A1260 Nene Parkway to current design standards, making the structure more accessible for all active mode users. The design of the footbridge will be 4m wide, offering a shared use space for both cyclists and pedestrians. As per the LTN 1/20 guidance (section 5.53) shared use is considered adequate when the needs of cycle traffic, such as width, alignment and treatment at connections to the wider network have been addressed.

2.2.33 Additionally, the broader Thorpe Wood sustainable travel aspirations from The Council included within the LCWIP, will further enhance the Thorpe Wood Business area in cycle design standards, with it being likely to offer an off-road bi-directional segregated cycleway to both traffic and pedestrians. The direct cycle route would likely connect to the upgraded footbridge in the south, and address a missing cycle link on the network to the business development and residential areas to the north of Thorpe Wood.

2.2.34 The Junction 15 Scheme coupled with the Cycleway and wider sustainable improvements included within the LCWIP, would make this area of Peterborough Gear Change compliant.

2.3 Fit with the Wider Policy Context

2.3.1 The wider policy context is set out in Table 2.1 below. Each policy document is set out alongside its objectives and a description of how the proposed scheme will support and facilitate those objectives.

2.3.2 Appendix A details other local policies that are relevant to improvements at Junction 15.

Table 2.1: Wider Policy Context and Impact of the Scheme

Policy Framework	Policy Function	Objectives	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 at Junction 15 will: • Support the housing and economic growth ambitions of the city • 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 into 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 at Junction 15 will: • Support the housing and economic growth ambitions of the city • Improve journey time reliability for drivers on this section of the city's road network • Reduce the number of accidents at the junction
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 Environmental 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 at Junction 15 will: • Support the housing and economic growth ambitions of the city • Improve journey time reliability for drivers on this section of the city's road network • Reduce the number of accidents at the junction
Peterborough City Council Local Plan	Updates the 2011 Core Strategy and looks to deliver 20,112 homes and 17,600 jobs by 2036		

Fit Within Wider Environmental Policy

2.3.3 Alongside the overarching policies outlined in Table 2.1, local policy has strong emphasis upon the environment, particularly integrating environmental improvements into the development of new infrastructure at an early stage to minimise disruption on the environment during scheme design, construction, and ongoing operation.

2.3.4 By factoring in the environment into scheme development from the offset, it better ensures the protection and enhancement of biodiversity at a minimum of 10% and meets aspirations set out within the various policies.

2.3.5 Table 2.2 below outlines the policy context in relation to the environment, documenting policy objectives and how the proposed scheme will support and facilitate each objective. Environmental considerations within the scheme will be explored further within the latter stages of this chapter.

Table 2.2: Environmental Policy Context and Impact of the Scheme

Policy Framework	Policy Description / Function	Objectives	Study Supports and Facilitates the Policy Objectives
Cambridgeshire and Peterborough Combined Authority Local Transport Plan	Objective 9: Deliver a transport network that protects and enhances our natural, historic and built environment. Ensuring scheme improve rather than damage the environment based on DEFRA, Environment Agency and Natural England guidance.	• Protection and enhancement of the natural environment • Improving sustainable access to the natural environment • Delivering green infrastructure	Improvements at Junction 15 will: • Enhance the transport network incorporating environmental enhancements into the final scheme • Will achieve Biodiversity Net Gain • Undergo extensive surveys, ensuring the protection of species • Improve / introduce sustainable transport measures, providing links to the natural environment and encouraging modal shift
Peterborough City Council Local Plan	Policy LP29: Any development should be prepared based on the overriding principle that; the existing tree and woodland cover is maintained, improved and expanded; and opportunities for expanding woodland are actively considered, and implemented where practical and appropriate to do so.	• Where the proposal will result in the loss of tree or woodland the Council will expect the retainment of trees that make a significant contribution to the landscape or biodiversity value of the area, provided this can be done without compromising the achievement of good design for the site. • Where it is appropriate for higher value tree(s) (category A or B trees) and/or woodland to be lost, then appropriate mitigation via compensatory tree planting will be required. Such planting should meet the five Tree Planting Principles • Where appropriate and practical, opportunities for new tree planting should be explored as part of all development (in addition to any necessary compensatory tree provision).	Improvements at Junction 15 will: • Undergo extensive surveys, gaining understanding of the species and value of trees located within the study area • Provide substantial evidence during option development where tree loss is identified • Implement compensatory tree planting for loss in tree coverage • Actively explore / implement additional planting areas within the study area following guidance on replanting principles
Peterborough City Council – Trees and Woodland Strategy (2018)	The strategy sets out the benfits provided by trees and woodlands, how the Council aim to maintain, improve and expand tree cover, as well as the wider management of the City's tree stock in regards to development.	• To maintain and enhance the tree population of the city • To increase the tree canopy cover across the city with particular reference to areas with low canopy cover. • To maintain and maximise the ecosystem services provided by the Council's trees. • To promote biodiversity and conserve tree and woodland ecosystems. • To conserve and protect ancient woodland and ancient trees with significant ecological, historical and amenity value. • To work with partners to expand the woodland cover through sustainable external funding.	Improvements at Junction 15 will: • Include environmental elements within the final scheme design, enhancing the local environment and biodiversity within the study area • Actively explore / implement additional planting areas within the study area following guidance on replanting principles whilst working with partners Aragon • Protect the Thorpe Wood Ancient Woodland within design and construction • Undergo extensive surveys, ensuring high value trees are retained where possible • Undergo extensive surveys, gaining understanding of the species / habitats, and possible impact to these within the study area and identify mitigations

DfT proposed Environment Bill (Nature and Conservation Covenants) 2020	The Environment Bill will use a localised action approach to help contribute to the recovery of our natural environment, improving biodiversity and protecting urban street trees.	• 10% biodiversity net gain requirement on new development / schemes • A strengthened biodiversity duty on public authorities • Local Nature Recovery Strategies (LNRSs) • Species Conservation Strategies and Protected Sites Strategies • Targeted measures to protect existing trees	Improvements at Junction 15 will: • Achieve Biodiversity Net Gian at a minimum of 10% • Provide substantial evidence during option development with regard to tree loss, accounting for species type, maturity and ecological value. • Provide mitigations for tree protection during construction
CPCA / PCC endorsed Natural Cambridgeshire Doubling Nature Vision	By doubling the area of rich wildlife habitats and natural green-space, Cambridgeshire and Peterborough will become a world-class environment where nature and people thrive, and businesses prosper.	• Access to green space for communities • Air Quality, quality of life and public health • Long term financial gains • Ownership of the vision and growth agenda by local communities through an enhanced 'sense of place' • Increasing tree cover and the network of woodlands, hedgerows, within and around our towns and cities • Expanding the flower-rich grasslands on the limestone plateau west of Peterborough • Ensuring that at least 90% of our richest wildlife areas are in good ecological condition	Improvements at Junction 15 will: • Include environmental elements within the final scheme design, enhancing the local environment and biodiversity within the study area – creating a welcoming route into the city from the west • Implement compensation tree planting where necessary and achieve Biodiversity Net Gian at a minimum of 10% • Learn from the recent successes of PCC environmental projects and implement trails at Junction 15 • Explore / implement environmental elements within the design, ensuring the enhancement of biodiversity and ecological conditions of flora and fauna • Explore low maintenance environmental options for long -term gain for the Council

2.4 The Need for Change

2.4.1 This section discusses the need for change which set the requirement for the Junction 15 improvement scheme.

2.4.2 It should be noted that the following section outlining the problems identified at Junction 15 and the justification for improvements are based on pre-COVID-19 conditions. The impact of COVID-19 on highway usage across Peterborough and more specifically Junction 15, is however discussed in section 2.12 'Key Risks'.

Problems Identified

2.4.3 Junction 15 is heavily congested during peak hours, which creates the following specific issues:

- Extensive queuing on the A1260 Nene Parkway (northbound)
- Queuing on all approaches to the junction in the AM and PM peak periods
- Conflicts between dominant movements
- High accident statistic rate, particularly with rear end shunts
- Poor Pedestrian facilities and connectivity.

2.4.4 If not resolved, these issues will compromise the City's growth aspirations, as well as The Council's objectives to remain a pleasant place to live and work.

Extensive Queue Lengths on the A1260 Nene Parkway

2.4.5 During both the AM and PM peak period, extensive queuing occurs on the A1260 Nene Parkway northbound approach to Junction 15. Figure 2.2 beneath shows the queues stretching back over a mile to Junction 32 (A605 Oundle Road) during the PM peak period.

2.4.6 The queuing that occurs along A1260 Nene Parkway northbound approach would seem to indicate a link capacity issue as cars are slowing down early to join the queue but as they near the stop line vehicle speeds increase slightly and roll through the junction.

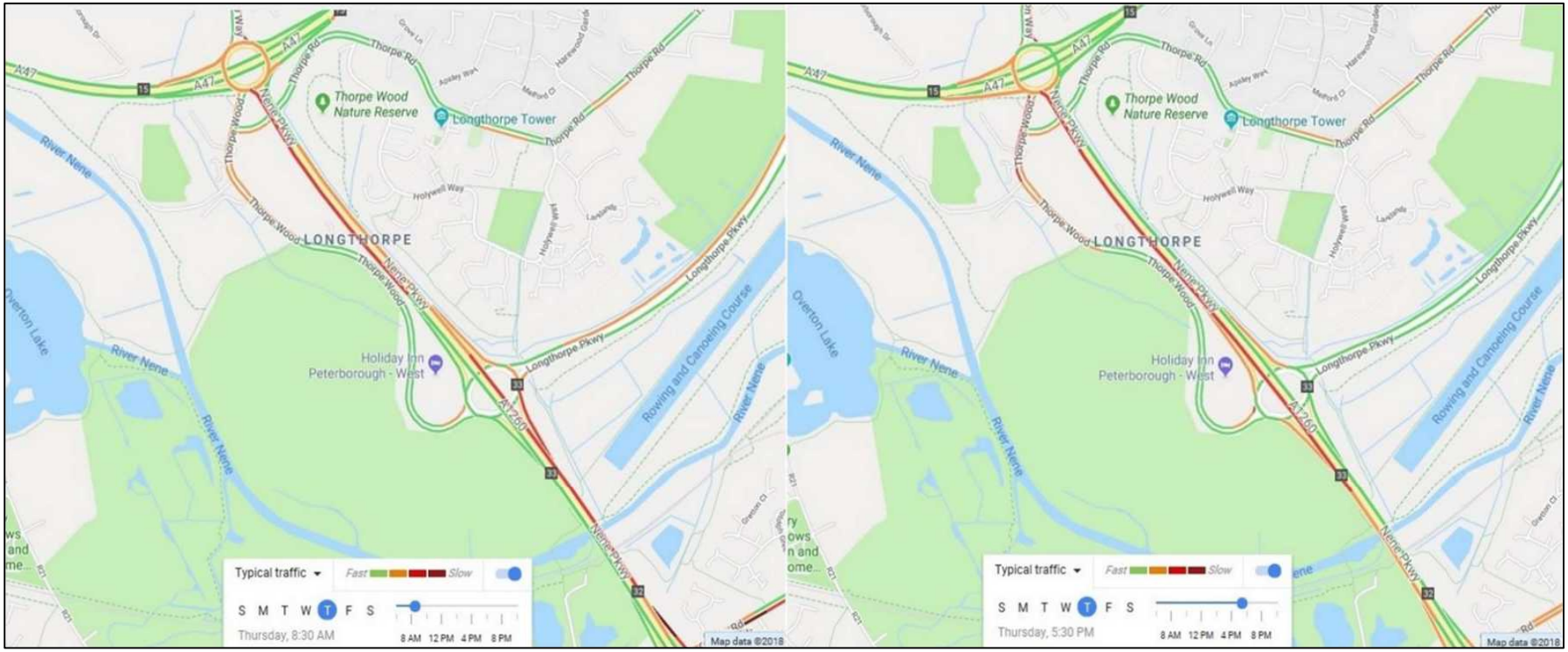


Figure 2.2:Typical AM and PM Peak Hour Congestion, Junction 15 A1260 Nene Parkway

2.4.7 Figure 2.3 beneath shows queues observed along the A1260 Nene Parkway during the site visits. These pictures reiterate the northbound queuing (right side of the road) back from Junction 15 during the peak hours.

Figure 2.3: PM Peak Queues Observed along A1260 Nene Parkway

Queuing on Other Approaches in the AM and PM Peaks

2.4.8 During the AM peak period, traffic queues on the A47 eastbound off-slip approach to the junction. It was noted during the site visits that occasionally the queues extend back to the mainline, having the potential to reduce the performance of the A47 mainline in the future. It should be noted that queues on this approach tend to clear within the traffic signal cycle. This queuing and clearing pattern is shown in Figure 2.4.

Figure 2.4: AM Peak Hour Congestion at A47 Eastbound Off slip

Conflicts Between Movements

2.4.9 The primary conflict between movements at Junction 15 is between vehicles originating from the A1260 Nene Parkway and vehicles on the circulatory heading for Thorpe Wood. This conflict is shown to result in limited gap availability for motorists joining the circulatory from Nene Parkway and introduces an element of driver uncertainty when approaching or stationary at the stop line of this approach.

2.4.10 As a consequence of this conflict in movement, driver behaviour on Nene Parkway is impacted, with motorists shown to leave larger gaps (1 – 2 vehicle lengths) from the vehicle in front when approaching the stop line, resulting in the ability to reach greater speeds when joining the circulatory. This results in the majority of traffic on Nene Parkway being able to roll over the stop line, rather than having to stop.

2.4.11 Figure 2.5 highlights this driver behaviour. The screenshots below show the circled car provides a marker for the change in behaviour.

Image 1: Queues start to form on Nene Parkway. Gaps between vehicles can be seen.

Image 2: Queues disperse when approaching the stop line. Gaps between vehicles are seen to increase, which allows speeds when crossing the stop line to increase also.

Figure 2.5: Change in Driver Behaviour at the A1260 Nene Parkway Stop line

Accident Data

2.4.12 Accident data was collected for a five-year period between 2015 and 2020, during which time there were ninety accidents recorded within the study area. Figure 2.6 highlights the locations where the majority of accidents occurred, these being positioned on the southern half of the circulatory of Junction 15 and the A1260 Nene Parkway approach, the northeast corner and southbound off slip of Junction 33 and the northbound on-slip of Junction 32.

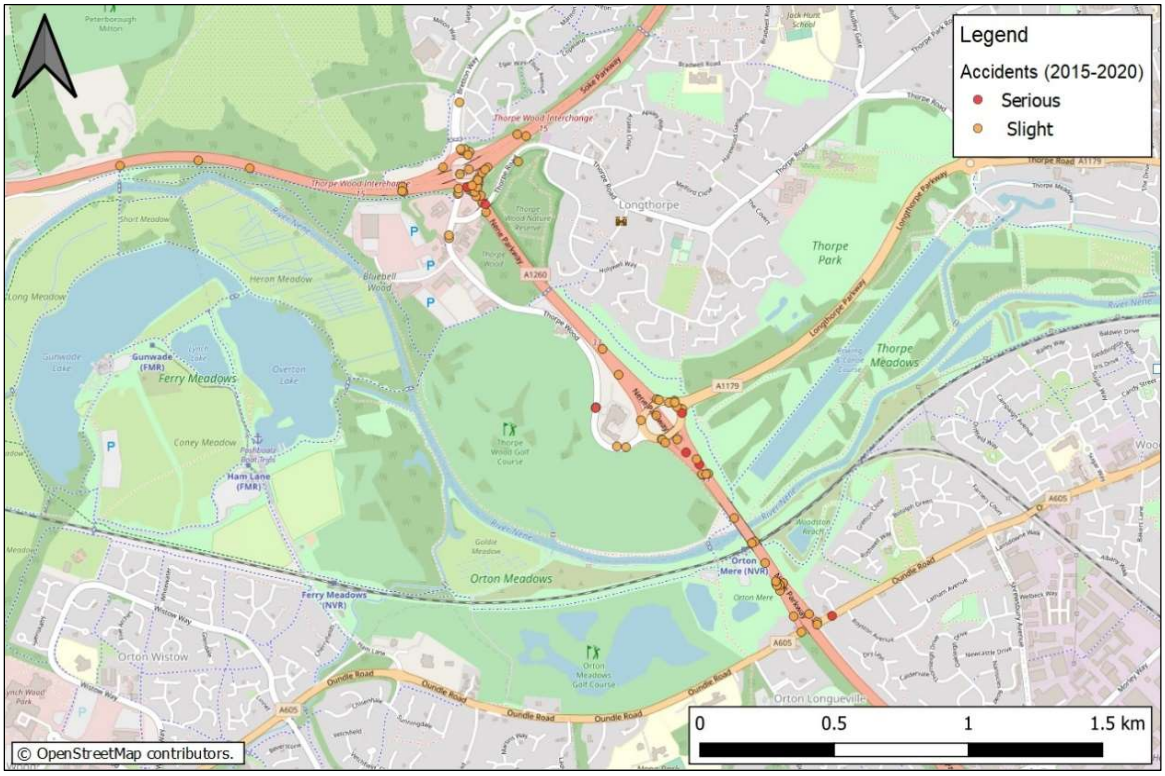


Figure 2.6: Accident Locations, 2015 – 2020

2.4.13 Table 2.3 shows the accident severity by year. The accident rates at these locations within the study area remain consistent between 2015 and 2019, with the majority of accidents being classified as 'slight'. The drop in accidents recorded for 2020, is reflective of the COVID-19 pandemic and the introduction of several national lockdowns throughout the year, which resulted in reduced travel and therefore less congestion across the study area shown above. There have been no fatal accidents recorded within the study area over the five-year period.

Table 2.3: Accident Data by Severity and Year

Junction 15 Study Area Accident Analysis		Year					
		2015	2016	2017	2018	2019	2020
Junction 15	Slight	8	9	5	11	3	1
	Serious				1		1
	Fatal						
	Total	8	9	5	12	3	2
Junction 33	Slight	5	4	2	5	3	
	Serious			1		1	
	Fatal						
	Total	5	4	3	5	4	0
Junction 32	Slight	3		3	1	3	1
	Serious		1	1			
	Fatal						
	Total	3	1	4	1	3	1
Grand Total		16	14	12	18	10	3

2.4.14 Accidents at Junction 15 equate to 43% of the total accidents within the study area. Accident data for the A1260 Nene Parkway shows a high number of rear end shunts on its approach to the junction. This type of accident could reflect the driving nature of the circulatory, with motorists on A1260 Nene Parkway having limited gap availability at times to join the circulatory.

2.4.15 Analysis into the time of accidents has shown that of 38% of accidents within the vicinity of Junction 15 have occurred during peak periods (AM 08:00 – 09:00, IP 14:00 – 15:00, PM 17:00 – 18:00).

Poor Pedestrian Facilities and Connectivity

2.4.16 Pedestrian and cycle facilities at Junction 15 are primarily situated in the northwest corner or to the west of the Junction, with pathways, footbridges and an underpass connecting the residential area of Bretton to Thorpe Wood and Longthorpe via Thorpe Road.

2.4.17 The two bus tops that serve Thorpe Wood are located just north of its junction with Thorpe Road.

2.4.18 Figure 2.7 beneath shows the location of these facilities.

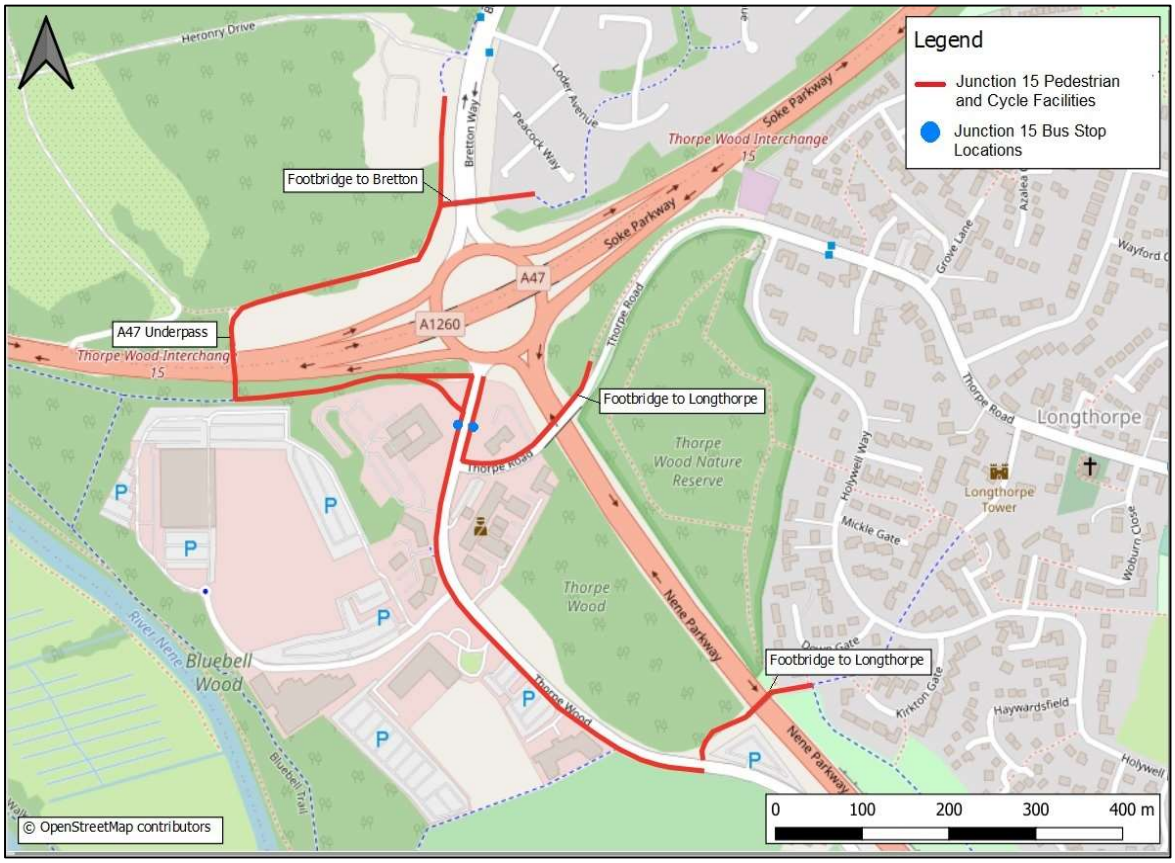


Figure 2.7: Location of Walking and Cycling Infrastructure

2.4.19 A non-motorised user audit (NMU) was conducted to inform the Preliminary Designs. The audit assessed the area highlighted in Figure 2.7 to review the quality of the walking and cycling facilities present at the junction, and to identify any improvements that could be made alongside construction of a scheme at Junction 15. During the audit, the following points were considered:

- Quality of the pedestrian / cycle footpaths
- Location of crossing points (Thorpe Wood only), and the ease of crossing
- Extent of street lighting
- Perceived safety of the underpass.

2.4.20 In response to the findings of the NMU audit, the Preferred Scheme design will include the following improvements to the network in the vicinity of Junction 15:

- Provision of a zebra crossing across Thorpe Wood, close to the existing bus stops
- A new footpath linking the existing bus stops to the off-road walking and cycling route between Thorpe Wood Business Park and Bretton

2.4.21 Additional findings of the NMU which could be incorporated into the wider sustainable aspirations for the area include:

- Reconstruction of the footpath between Thorpe Road bridge and Longthorpe
- A new cycle lane to be introduced along Thorpe Wood, between the footbridge over the parkway and Thorpe Road.

2.4.22 It should again be noted that the implementation for wider sustainable provisions are outside the scope of this project, and is subject to funding approval for a separate bid.

2.5 Impact of Not Changing

2.5.1 The impact of not progressing this scheme would be:

- Worsening of congestion, delay and journey times
- Likelihood of accidents will rise
- Attractiveness of Thorpe Wood Business Park (and Peterborough) will decrease
- Attractiveness of Peterborough as a place to live, work and travel will decrease
- Sustainable transport network does not serve users' needs in this area, discouraging active travel to and from the business park.

Congestion, Delay and Poor Journey Times

2.5.2 The existing issues of congestion, delay and poor journey times will continue to worsen, impacting the operational performance of Junction 15 and the wider area of the A1260 Nene Parkway and A605 Oundle Road. Table 2.4 beneath compares the delay and total travel time through the junction in 2017 (Base scenario) and in 2026 (Do Minimum scenario). The data highlights the operation of Junction 15 will deteriorate if nothing is implemented.

Table 2.4: Comparison of 2017 Base Model and 2026 Do-Nothing Model (Seconds)

Approach	Exit	Delay Time				Travel Time			
		2017 AM	2026 AM	2017 PM	2026 PM	2017 AM	2026 AM	2017 PM	2026 PM
Bretton Way	A47 East	17.40	49.07	21.92	26.79	45.57	77.21	50.56	55.82
	A1260 Nene Parkway	28.38	182.59	33.88	57.95	59.63	213.70	65.39	89.38
	Thorpe Wood	22.08	43.81	27.28	28.49	73.61	91.02	77.86	79.04
	A47 West	21.88	47.47	31.17	32.21	65.01	90.66	75.09	76.03
	Bretton Way	-	-	-	-	-	-	-	-
	Total	**89.74**	**322.94**	**114.25**	**145.44**	**243.82**	**472.59**	**268.90**	**300.27**
A47 East	A1260 Nene Parkway	3.12	12.99	4.96	7.11	25.25	35.78	25.91	28.84
	Thorpe Wood	18.13	27.06	12.44	16.36	52.26	61.33	48.26	52.21
	A47 West	-	-	-	-	-	-	-	-
	Bretton Way	40.62	55.19	29.62	34.00	92.26	110.59	86.25	90.51
	A47 East	-	-	-	-	-	-	-	-
	Total	**61.87**	**95.24**	**47.02**	**57.47**	**169.77**	**207.70**	**160.42**	**171.56**
A1260 Nene Parkway	Thorpe Wood	23.17	156.31	122.82	267.67	59.29	192.26	158.69	303.76
	A47 West	27.40	172.94	130.11	295.94	67.11	213.32	168.26	334.00
	Bretton Way	47.24	211.03	149.15	327.51	106.32	270.87	207.95	386.31
	A47 East	42.07	172.96	115.80	287.51	93.41	224.60	166.79	338.57
	A1260 Nene Parkway	-	208.45	137.30	-	-	264.47	187.20	-
	Total	**139.88**	**921.69**	**655.18**	**1178.63**	**326.13**	**1165.52**	**888.89**	**1362.64**
Thorpe Wood	A47 West	15.04	35.35	120.83	277.47	43.01	63.76	148.53	304.84
	Bretton Way	38.75	70.73	142.82	290.92	86.48	118.91	190.56	338.00
	A47 East	38.71	63.71	135.91	281.30	78.35	104.29	175.97	321.03
	A1260 Nene Parkway	46.37	61.79	139.03	307.28	90.51	106.50	182.23	350.51
	Thorpe Wood	-	-	-	-	-	-	-	-
	Total	**138.87**	**231.58**	**538.59**	**1156.97**	**298.35**	**393.46**	**697.29**	**1314.38**
A47 West	Bretton Way	15.59	38.04	23.49	22.03	54.86	77.60	63.41	61.75
	A47 East	-	-	-		-	-	-	-
	A1260 Nene Parkway	30.21	79.31	30.68	30.29	65.54	114.55	66.14	65.64
	Thorpe Wood	29.37	82.26	28.27	31.49	74.23	126.91	72.95	73.35
	A47 West	-	-	34.05	35.69	-	-	90.31	91.96
	Total	**75.17**	**199.61**	**116.49**	**119.50**	**194.63**	**319.06**	**292.81**	**292.70**
Junction Total		**505.53**	**1771.06**	**1471.53**	**2658.01**	**1232.70**	**2558.33**	**2308.31**	**3441.55**

2.5.3 The total delay time for the Junction in the 2017 AM peak is 505 seconds and the PM peak is 1,471 seconds, in 2026 this rises to 1,771 seconds and 2,558 seconds respectively.

2.5.4 There would also be increased queuing delay on the A47 eastbound off-slip particularly in the AM peak period. In 2017 the total delay in the AM peak is 61 seconds, however in 2026 this is expected to increase to 95 seconds. This increased delay may result in vehicles queuing back on to the carriageway which poses a significant safety risk and jeopardises National Highways aspirations to improve the A47 Trunk Road.

2.5.5 Bretton Way is also expected to suffer from increased delays in the AM peak period, this is assumed to be due to the increased number of vehicles turning right on to the A47 eastbound from A1260 Nene Parkway. In 2017 AM peak, the total delay is 89, but has increased to 322 in the 2026 AM Peak.

2.5.6 Table 2.4 shows a significant increase in delays on the A1260 Nene Parkway approach to Junction 15. In 2017, the total delay in the AM peak period is 139 seconds and in the PM peak 655 seconds. In 2026, this rises to 921 seconds and 1,178 seconds respectively.

Likelihood Accidents Will Increase

2.5.7 It is likely that accidents will increase at Junction 15 in line with traffic growth if nothing is done, particularly accidents such as rear end shunts. As shown above, the forecast increase in delay and travel time is expected to rise which will entail more stopping and starting on approach to the junction.

Attractiveness of Thorpe Wood (and Peterborough) as a Place of Work will Decrease

2.5.8 There are two access points for Thorpe Wood Business Park, one is via Junction 33 and the other is via Junction 15. As traffic and queues increase the area will become gridlocked, particularly in peak times, due to the operational breakdown of Junction 15 and Junction 33. This will increase the likelihood of businesses and employees relocating elsewhere (and possibly beyond Peterborough).

2.5.9 Table 2.4 shows that the increase in delay time at Thorpe Wood in the PM peak is forecast to rise significantly from 538 seconds in 2017, to 1,156 seconds in 2026.

2.5.10 This will also have a detrimental impact on the Council's objective for Peterborough to be an attractive place to live and work as residents and employees spend longer stuck in congestion when trying to access employment opportunities.

Sustainable transport network does not serve users' needs in this area

2.5.11 It is likely that a requirement for improved sustainable transport provisions within the area will continue to increase, as the quality and connectivity of existing routes is of poor standard. As a result of the poor provisions for sustainable users, the attractiveness of Thorpe Wood as an employment hub for the City will decrease and the Council's aspiration to encourage modal shift is weakened.

2.6 Internal Drivers for Change

2.6.1 Internal drivers for change are the factors which 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 the CPCA and Peterborough City Council.

2.6.2 The internal drivers for improvements at Junction 15 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

2.6.3 Peterborough is forecast to experience significant employment and population growth over the next few decades, reflecting a continuation of past trends. The Peterborough Local Plan (adopted July 2019) sets out the overall vision, priorities and objectives for Peterborough for the period up to 2036. The updated strategy identifies the required delivery of 19,440 new homes and 17,600 new jobs by 2036[14]. 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.

2.6.4 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 change at Junction 15.

2.6.5 It is acknowledged that if no changes are made to existing congestion and journey time issues on major routes across the city, then growth aspirations will be compromised. The Local Transport Plan identifies infrastructure requirements that are needed to address existing capacity constraints on the network and those that are required to cater for the travel demand arising from the growth ambitions of the city. Junction 15 Improvements are identified as a key scheme.

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

Combined Authority Support

2.6.6 The CPCA has identified a number of strategic projects which it believes will provide transformational benefits for the area. This feasibility study for Junction 15 Improvements was one of the studies shortlisted as a priority, beginning in 2017.

2.6.7 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.

2.6.8 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.

2.6.9 In October 2017 the CPCA methodology for prioritising investment was based on the criteria shown in Table 2.5 below.

Table 2.5: 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

2.6.10 Junction 15 was prioritised for investment by the CPCA, and the CPCA's 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

2.7.1 External drivers for change come from outside of the scheme promoter's organisation, and include factors such as public opinion, legislative changes or as a response to other events.

2.7.2 There are no direct external drivers for change behind the Junction 15 improvement, however there are several other initiatives relating to the A47 trunk road that support the case for investment at Junction 15. These are discussed beneath.

The A47 Alliance

2.7.3 The A47 Alliance is a campaign group comprised of nineteen organisations including Local Authorities, MPs, Local Enterprise Partnerships, Chambers of Commerce and the RAC Foundation, with wider support from business groups and other stakeholders along the A47 trunk road in East Anglia. The Alliance's primary objective is the dualling of the entire 115 mile stretch of the A47 between Peterborough and Lowestoft by 2030 which will:

- Boost the regional economy as a result of new employment
- Unlock housing developments planned along the route
- Reduce additional costs to businesses from as a result of delays along the A47
- Improve productivity.

2.7.4 Junction 15 is already a grade separated junction located along a section of the A47 that is already dualled, and so the A47 Alliance are not directly an external driver for change at this particular location. However, should the Alliance be successful in their campaign, then traffic demand along the A47 corridor is likely to increase, which would put further pressure on Junction 15.

A47 Wansford to Sutton Daulling

2.7.5 Approximately 3.5 miles to the west of Junction 15, the section of the A47 between Wansford and Sutton is currently single carriageway. As part of National Highways Road Investment Strategy (RIS) this section of the trunk road, which stretches 1.6 miles, has been identified for dualling within the next couple of years (construction expected in 2022 with projections of the new road being open to the public in 2024)[15]. This scheme features within the A47 Alliance's campaigns.

2.7.6 As with improvements along other sections of the A47, this scheme may alter travel demand into (or through) Peterborough via the A47 and would potentially provide an alternative to vehicles currently travelling via the A1 and A1139 further to the south. An increase in traffic at Junction 15 as a result of this improvement would be another indirect driver for change.

[15] https://highwaysengland.co.uk/our-work/east/a47-wansford-to-sutton-dualling/.

2.8 Scheme Objectives

2.8.1 A transport scheme can have both primary and secondary objectives. The primary objectives are the fundamental outputs required from the scheme and therefore must be achieved. Secondary objectives are other outputs that are achieved along the way but are not necessary for the success of the scheme. The secondary objectives tend to be delivered as a consequence of delivering the primary objectives.

2.8.2 The objectives for the Junction 15 scheme were developed ahead of the option development workshop to provide a framework for participants of the workshop, through which the relative benefits and disadvantages of the proposed options could be discussed. The objectives are based on the goals and outcomes from local policy documents such as the Peterborough Local Plan.

2.8.3 Although these objectives pre-date those of the CPCA as previously discussed in this chapter, work has been undertaken to build upon the objectives and ensure they align with those of the CPCA. The primary and secondary objectives for a Junction 15 scheme are listed beneath.

2.8.4 The Primary objectives include:

1. **Tackle congestion and improve journey time reliability:** Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)
2. **Support Peterborough's Growth Agenda and encourage homes and jobs**: Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand
3. **Create wider economic benefits:** Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space
4. **Protect and improve the biodiversity value within the study area:** Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the study area.

2.8.5 The Secondary objectives include:

5. **Positively impact traffic conditions on the wider network:** Positively impact the performance of local routes impacted by the traffic and congestion in and around Junction 15, and specifically on the A605 Oundle Road approach to Junction 32 of the A1260 Nene Parkway
6. **Improve road safety:** Reduce personal injury accidents and improve personal security amongst all travellers around the junction
7. **Mitigate the impact of air quality on the local environment**: Maintain or improve air quality within the study area as a result of minimising stationary / queuing traffic

2.8.6 It should be noted that Objective 4 'Protect and improve the biodiversity value within the study area' was originally classed as a secondary objective, however following the strong emphasis within local policy on environmental enhancement it is now classed as a primary objective.

2.8.7 The Junction 15 scheme will satisfy all of the primary objectives, and as many of the secondary objectives as possible.

2.9 Carbon Assessment

2.9.1 'In line with the CPCA and PCC's commitment to combating climate change and PCC's aim to achieve 'Net Zero' carbon emissions by 2030', the Junction 15 scheme has undergone a Carbon Impact Assessment prior to gaining formal approval for the final design and construction, fulfilling the following commitment stated within The Council's Carbon Management Action Plan (Council CMAP) 2021[16].

'Develop detailed carbon assessments for major highway projects and use the information to influence the final design'

2.9.2 The purpose of the Carbon Assessment is to baseline the carbon cost of a scheme early in the design process, and to then identify opportunities to reduce the carbon cost of the scheme through innovation, or changes to design and construction proposals, using a similar approach to Value Engineering.

2.9.3 A carbon assessment workshop was held for the Junction 15 scheme in May 2021 to baseline the schemes carbon cost and identify design decisions and construction activities contributing towards this. The purpose of the workshop was to identify opportunities to reduce the carbon cost of the scheme from the pre-workshop baseline.

2.9.4 The baseline carbon cost of the scheme was 840.61 tCO2e. This was calculated using the Preliminary Design and the corresponding Bill of Quantities. Figure 2.8 overleaf shows the baseline carbon cost generated for Junction 15, highlighting areas where higher levels of carbon were identified.

[16] https://www.peterborough.gov.uk/asset-library/council-carbon-management-action-plan-2021.pdf.

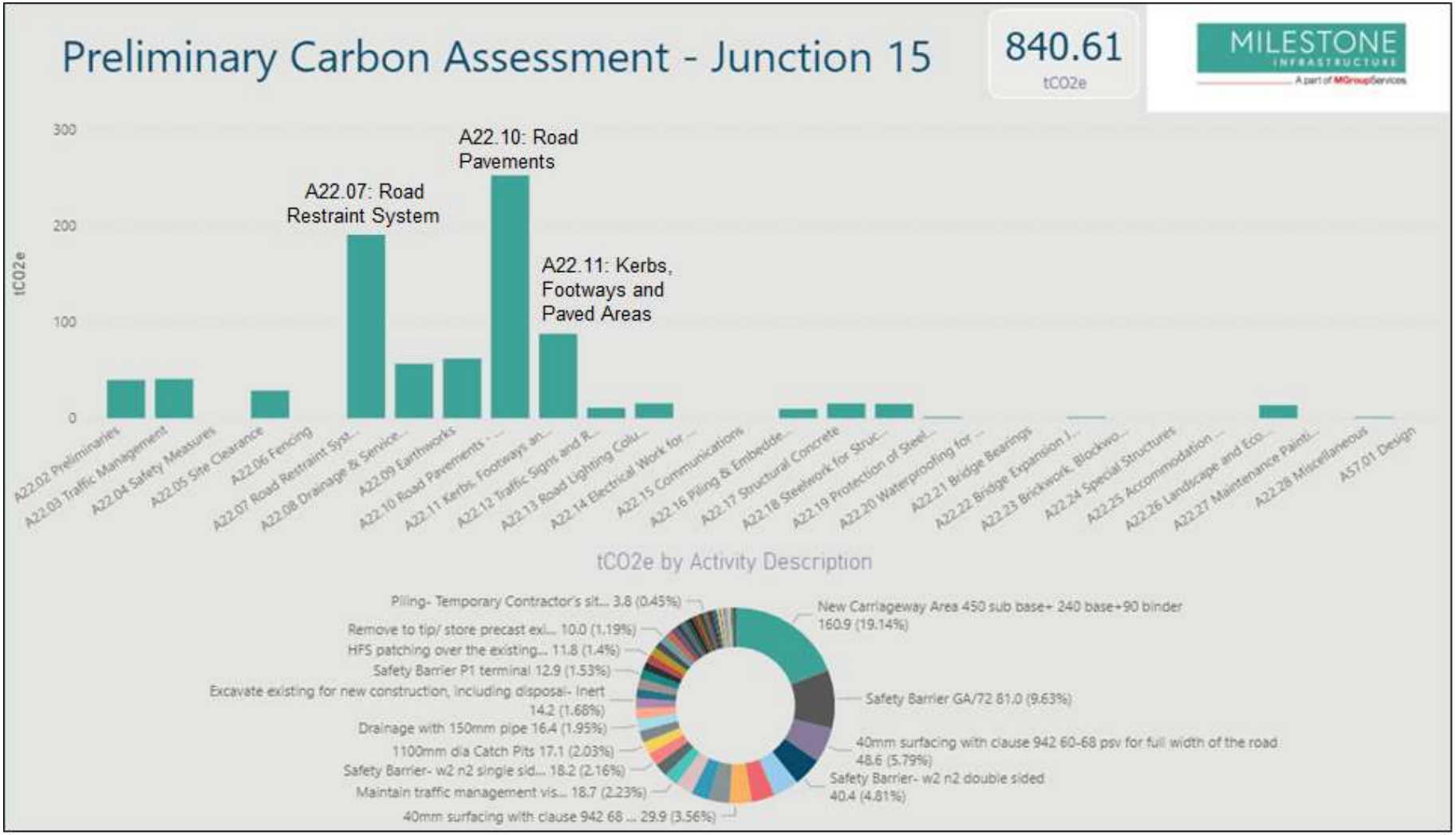


Figure 2.8: Junction 15 Preliminary Carbon Assessment

2.9.5 Figure 2.8 demonstrates that the highest carbon contributors identified in the Preliminary Designs were:

- Road Pavement - 252.17 tCO2e (29%)
- Road Restraint System - 191.07 tCO2e (22%)
- Kerbs, Footways and Paved Areas - 87.67 tCO2e. (10%)

2.9.6 Further analysis of these carbon contributors suggests hotspot areas for Junction 15 can be broken down into materials of steel, asphalt / aggregate and concrete.

2.9.7 Suggestions for carbon reductions were captured within the workshop (detailed in Appendix B) and have been categorised into the following areas:

- Highway Design
- Structural Design
- Compound and Lighting
- Plant and Fuel
- Contractors.

2.9.8 The carbon footprint of the project will be measured during construction through the monitoring of material and energy use.

2.9.9 As a result of the carbon assessment workshop the following carbon initiatives have been identified and will be adopted where possible during the schemes construction:

- Energy use controls including early transfer to mains electricity, minimising the use of generators and use of LED lights
- Use of low carbon concrete replacements where feasible
- Use of electric powered service vehicles during construction
- Use of low carbon fuels such as HVO.

2.9.10 In addition to the above-mentioned initiatives, workshops will be held with sub-contractors to identify and promote awareness of good housekeeping measures, as well as utilising their experiences to identify further opportunities to reduce energy and carbon emissions throughout the construction phase.

2.9.11 Construction will prioritise non-hazardous, reused, refurbished, recycled, and recyclable equipment and materials, and those made from renewable sources with low(er) embodied energy, carbon footprint and water footprint. In compliance with the relevant legislation and, where specifications allow, the scheme will use:

- Low-embodied-carbon materials
- Construction materials with reused and recycled content
- Minimal primary aggregate by selecting recycled aggregates where possible

2.9.12 Through thorough monitoring and reporting throughout construction, a final carbon footprint value for the Junction 15 scheme will be produced which will provide insight into which carbon initiatives work well and identify opportunities for improvement on future PCC and CPCA projects.

2.10 Measures of Success

2.10.1 Table 2.6 beneath sets out the measures for success which the scheme should be monitored against. The primary objectives are shown in white, and the secondary objectives are highlighted in green. These measures have been incorporated into the Benefits Realisation Plan which is discussed within the Management Case (Chapter 6).

Table 2.6: Study Objectives and Measures of Assessment

Objective	Scheme Outcome	Measure of Assessment
Tackle congestion and improve journey time reliability	• To reduce delay and journey times on the approaches of Junction 15, particularly the A1260 Nene Parkway NB	• Traffic surveys to be conducted within the study area • Comparison of existing and future journey times for key approaches of Junction 15
Support the growth agenda and encourage the development of homes and jobs	• To increase capacity at junction 15 in order to cater for existing and future traffic demand	• Preferred scheme to be assessed against future traffic growth
Create wider economic benefits	• To increase the attractiveness of Thorpe Wood as a location to businesses by improving traffic conditions at Junction 15	• Comparison of existing and future journey times for the Thorpe Wood approach • Gather business perceptions of traffic conditions post scheme
Protect and Improve the biodiversity value of the study area	• Enhance geological features within the scheme through the exposure of embankments • Increase biodiversity through planting and landscaping within the scheme	• Post scheme review of biodiversity gain compared to pre-scheme situation
Positively impact traffic conditions on the wider network	• Reduction in delay and journey times along the A605 Oundle Road towards Junction 32 of the A1260 Nene Parkway	• Traffic surveys to be conducted within the study area • Comparison of existing and future journey times for Junction 32 and the slips of the A1260 Nene Parkway
Improve Road Safety	• Reduce personal injury accidents and improve personal security amongst all modes of transport at Junction 15	• Review the existing accident statistics for the study area, then compare this against future data post construction
Mitigate the impact of Air Quality on the local environment	• To reduce air quality caused by stationary traffic across the study area	• Compare traffic modelling and satellite navigation data on key approaches within the study area

2.11 Constraints

2.11.1 Scheme constraints are set out in Table 2.7 beneath, including proposed mitigations.

Table 2.7: Constraints and Measures of Mitigation

Constraint	Detail of Constraint	Response / Mitigation Measure
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	Dialogue with the CPCA to ensure the scheme is identified within its financial programme, and that the scheme is included within all necessary funding decisions.
Environmental / Ecology	Land to the east of Nene Parkway is protected (Thorpe Wood Nature Reserve), supporting ancient woodland and rare species. The grass bank located in the north-east corner of Junction 15 qualifies for consideration as a County Wildlife Site, following the identification of rare vascular plants and populations of nationally rare or nationally scarce species. The footbridge over the A1260 Nene Parkway is located close to ancient woodlands and tree loss associated with demolition of the existing bridge and replacement ramp design is a high constraint.	Will be managed through ecological / arboriculture surveys to inform design and identify measures necessary to protect vulnerable species and plants during construction. Offset any loss of trees associated with the demolition / reconstruction of the footbridge by replanting across the study area and the inclusion of proposed landscaping elements.
Topographical	There are significant level differences around Junction 15, which is approximately 10m – 15m beneath the level of the surrounding ground The underlying geology of the A1260 Nene Parkway consists of Limestone and clay, condition / stability is vital to construction.	Topographical surveys will be undertaken at an early stage to identify any issues which could impact scheme designs. Trial holes to be undertaken to understand the geological profile and the condition under the highway
Funding / Budget	Improvements will need to be achievable within budgets available, but options should not be constrained by current funding as other funding sources may be found to compliment CPCA budgets	Dialogue with the CPCA to ensure the scheme is included within all funding decisions.
Highway Boundary	Improvements will need to be achievable within the land available.	Early identification of land ownership within the highway boundary and wider identification of Peterborough City Council land such as CRA Land.
Structural Design	The study area is constrained by a number of existing bridges. The footbridge over the A1260 Nene Parkway is currently substandard due to its arched soffit formation. Relocation of the footbridge is necessary to accommodate the lane gain along the highway beneath and ensure that the bridge meets design standards CD 127 and is Equalities Act 2010 compliant (necessitating longer approach ramps). Landownership under PCC lease hold agreement (on the western side) and potential feedback from adjacent properties near the footbridge (eastern side) are considered constraints.	Regular engagement with the stakeholder (Nene Park Trust) has occurred regarding the land surrounding the footbridge which they lease from PCC. Comments from NPT have been gathered and incorporated into scheme design where appropriate. The adjacent properties whose gardens back onto the footbridge (eastern) approach ramp will be provided with detailed information regarding the footbridge relocation, final design and the replanting measures for the embankment. The selected residents will be engaged directly by the PCC Project Manager in the first instance. Regular communication will be undertaken with the residents throughout the construction of the footbridge to ensure that residents are kept informed of the construction programme and temporary impacts. Feedback from the selected properties will be handled via the Project Liaison Officer (PLO) and the PCC Project Manager. Where feedback is provided, both the PLO and PCC Project Manager will work closely to mitigate any issues, including options to further soften any visual impacts of the new footbridge through tree planting in residents' gardens where appropriate. Residents will be communicated with no less than five months before the construction phase of the footbridge begins, which will provide sufficient time for feedback to be received, and arrangements for additional landscaping to be made where appropriate. Landscaping plans to compensate for the tree loss will include the planting of 59 trees that will range in species and maturity. The long-term impact of the relocation of the footbridge on the embankment tree line is considered minimal.
Disapproval from the public or stakeholders	The scheme has been capable of gaining support during stakeholder and public consultation. The A1260 Nene Parkway footbridge is considered controversial and objections from residents within this location are likely.	Early stakeholder engagement taken place with comments and feedback worked into scheme designs where appropriate. Separate information leaflets will be sent out to three residential properties near the footbridge following the identification of the Preferred Option and landscaping plans (see row above).
COVID–19	The long-term impact COVID-19 will have on travel and transport systems moving forward is unknown, and any assumptions made on future traffic growth will need to be tested rigorously through sensitivity tests. Further constraints onsite to consider as a result of COVID-19 include social distancing, the need to travel in separate vehicles, possible delays to construction / surveys if people are required to isolate and the difficulty in procuring materials.	A specific COVID-19 sensitivity test has been undertaken to understand the impact that a lower than forecast traffic growth would have on the scheme's viability, and this has demonstrated that the scheme would still offer very high value for money. Routine monitoring of traffic throughout the pandemic undertaken to help determine how flows compare to baseline traffic levels collected at the start of the project. Frequent communication between the project team regarding programme timings, risks and subsequent mitigations.

2.12 Scope

2.12.1 The project scope is to construct a scheme at Junction 15, which achieves the primary objectives of:

- Reducing traffic delay and congestion around Junction 15
- Improving the reliability of journey times for users of Junction 15
- Create wider economic benefit and support the growth agenda
- Protect and enhance the biodiversity within the study area, and to offer a net gain.

2.13 Interdependencies

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

2.13.2 The scheme is self-contained within the highway boundary and CRA land available and does not require the completion of any other highway works to progress.

2.13.3 It should be noted that the Golf Course Carpark situated along Thorpe Wood has been identified as the primary location for the site compound during construction. Despite this being PCC asset land, due to its lease hold with Nene Park Trust, an agreement between both parties and the tenants of the Thorpe Wood Golf Course and The Woodman pub / restaurant is required. Necessary discussions regarding the use of the land and permissions are underway.

2.14 Key Risks

2.14.1 The scheme is relatively low risk in construction terms, however the key risks that have been identified and monitored throughout the Detailed Design phase include:

- The environmental impact associated with the footbridge: Following the decision to relocate the footbridge, a risk of significant impact on landscape, habitat and biodiversity was identified. Extensive option development, arboricultural and ecological surveys and involvement with key stakeholders has helped mitigate this risk, ensuring that all environment stakeholders approve of the scheme and a biodiversity net gain can be achieved.
- COVID-19 and the impact on highway usage: During the pandemic highway usage decreased because of government guidelines or the implementation of national lockdowns. Despite not knowing the long-term impact of the pandemic and how the public will interact with transport systems moving forward, it should be noted that monitoring undertaken within the study area has demonstrated that highway usage does recover to near pre-pandemic levels in line with the easing of restrictions.

2.14.2 Each of these risks are discussed in greater detail beneath.

Environmental Impact

2.14.3 There has been an increase in the footprint associated with the structure and proposed construction work area for the new footbridge following the decision to relocate it further to the south based on information identified during Detailed Design. This meant that the impact of the footbridge on the environment increased notably, particularly on tree loss and the landscape. Following this, a significant amount of work has been undertaken to mitigate this impact and produce a design solution that has the relevant stakeholder support.

2.14.4 This design work which focused on mitigating the impact of the relocated footbridge was informed by consultations with stakeholders and environmental specialists, Ecological and Arboriculture surveys, an Arboriculture Implication Assessment (AIA), as well as the 'BS5837: Trees in relation to Design, Demolition and Construction' guidance[17].

2.14.5 Under the BS5837 guidance the following factors were considered whilst different options for the ramps were reviewed:

- Total number of trees lost
- Quality of the trees under the BS5837 grading system (see Appendix C)
- Area of the trees and habitat type.

2.14.6 Four potential ramps designs were assessed and of these, Option 1 was selected as the Preferred Option based on the assessment undertaken. Whilst this option proposes a higher number of trees to be lost (53 trees total) compared to the other three options, the quality of trees that will be lost are of a lower standard (Category C and U). This option also enables a higher number of Category B trees to be retained when compared to the other options.

2.14.7 Of the 53 trees that will be lost under the Preferred Option, nine are Category B. To mitigate against the loss of trees within the vicinity of the footbridge, the Preferred Option is accompanied by a landscaping design, where 59 trees alongside under storey shrubs will be planted as part of the scheme. This will ensure the both the environmental and visual impact of constructing the footbridge is minimised.

[17] British Standards Institution 2012: BS5837 Guidance: https://beta.bathnes.gov.uk/sites/default/files/2020-01/BS5837%202012%20Trees.pdf

2.14.8 An overview of the footbridge option assessment, including arboriculture survey results, is provided in Appendix D, whilst the Impact Assessment and Landscaping Design for the Preferred footbridge are shown In Appendix E.

2.14.9 In addition to steps taken to reduce the environmental impact during the development and design of the footbridge, a Construction Environment Management Plan (CEMP) will be produced prior to mobilisation and construction. This framework will ensure considerations and specific mitigations regarding protected species, habitat and wildlife conservation are taken into account during the works.

2.14.10 The CEMP will be produced in conjunction with the following documents:

- A Tree Protection Plan describing how trees retained will be protected during implementation of the new structure
- An Arboriculture Method Statement detailing considerations of proposed alterations to ground levels, proposed excavation and foundation construction where relevant to retained trees and hedgerows as well as consideration of construction staging and site routes.

COVID-19 Monitoring - Peterborough Wide

2.14.11 Constant monitoring has been in place on the A1260 Nene Parkway (Junction 3) throughout the COVID-19 pandemic and has been used to assess the impact of the pandemic on traffic levels on Peterborough's strategic parkway network.

2.14.12 Junction 3 is located 2.2 miles south of Junction 15 and is connected to Junction 15 by the A1260 Nene Parkway (see Figure 2.9 beneath). Monitoring at this location is representative of a Strategic Parkway route within the City.

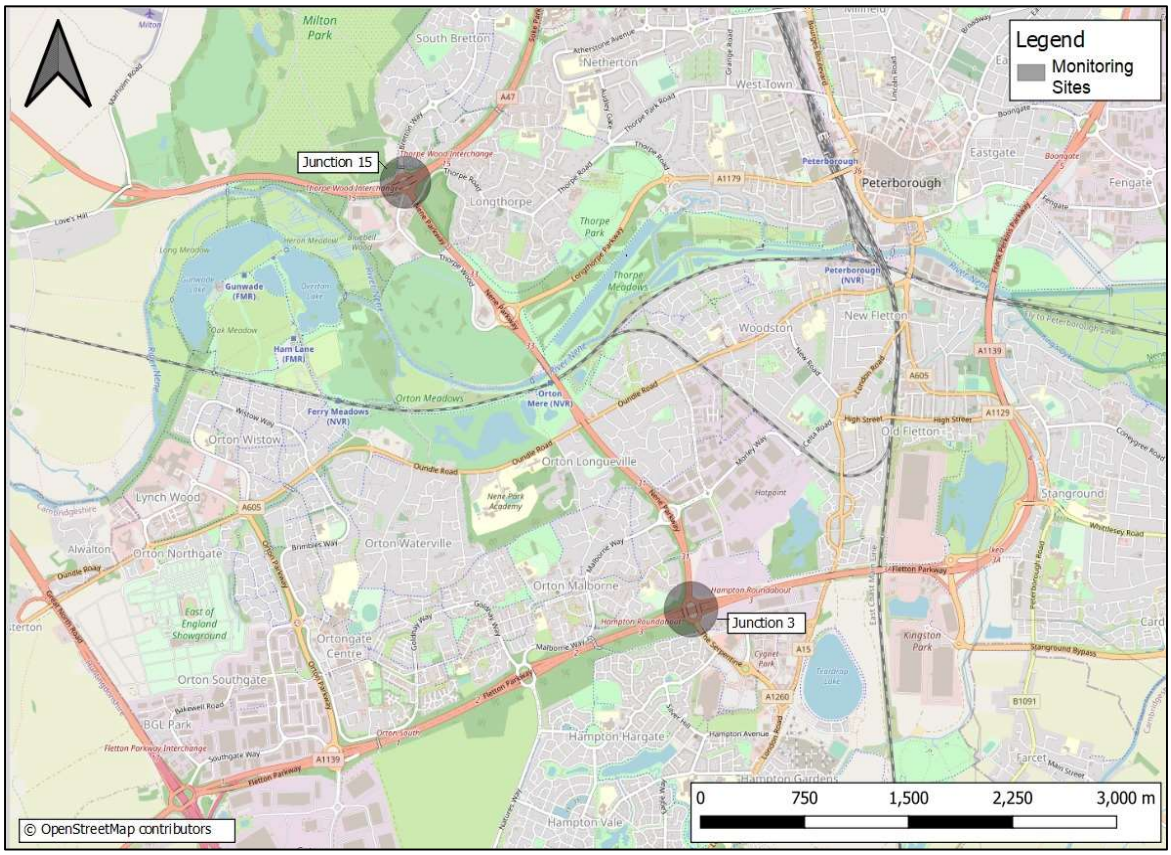


Figure 2.9: Peterborough COVID-19 Monitoring Sites

2.14.13 Figure 2.10 overleaf shows the varying daily traffic rates recorded between March 2020 and August 2021 in relation to key milestones within the pandemic. Data shown is representative of the A1260 Nene Parkway southbound approach to Junction 3 and is inclusive of Monday to Thursday traffic levels covering a 24-hour period.

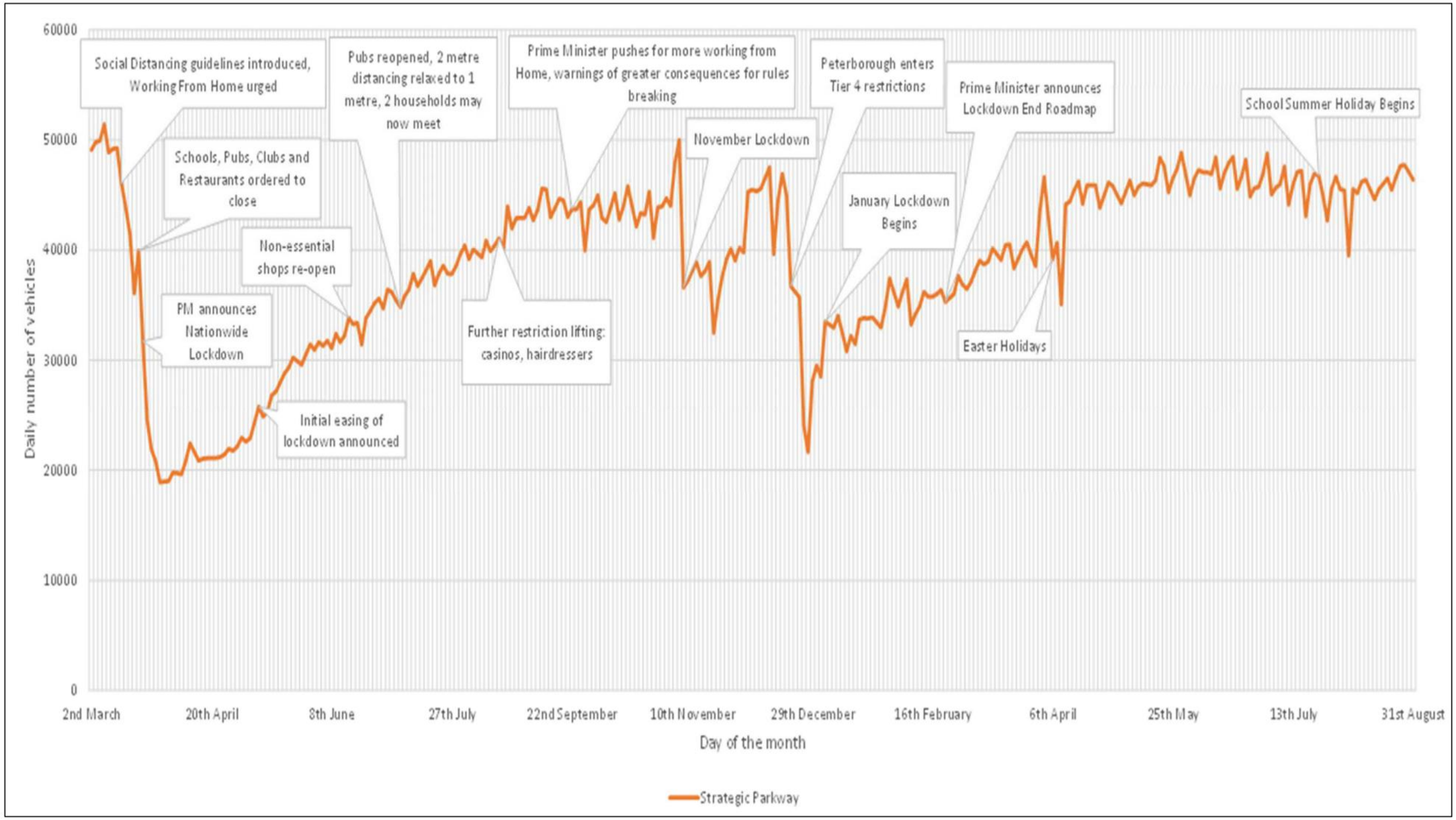


Figure 2.10: Peterborough COVID-19 Monitoring

2.14.14 Figure 2.10 shows that as of March 2020 traffic demand on the Strategic Parkway route has remained consistently below pre-COVID-19 levels (approximately 52,000 vehicles), with the lowest recording being in April 2020 when daily traffic flows fell by 63% to approximately 19,000 vehicles. This coincides with the announcement of the first national lockdown.

2.14.15 Traffic flows on the Strategic Parkway route are shown to slowly recover between April 2020 and November 2020 where daily traffic flows peaked at approximately 50,000 vehicles. Further analysis into this pre-November lockdown spike in traffic flows, has shown that the average AM peak demand reached 82% of pre-COVID-19 levels over a week period, whilst the PM peak hour exceeded pre-COVID-19 levels with the weekly average traffic flow reaching 103%. Whilst the PM peak hour exceeds pre-COVID traffic demands, it should be noted that the 'rush to get out' before the start of the November lockdown may have contributed to these levels.

2.14.16 A second significant drop in highway usage to approximately 22,000 vehicles a day, which equates to 42% of pre-COVID-19 levels, was recorded in December 2020 following the second national lockdown and introduction of tier 4 restrictions in Peterborough. Peak hour traffic levels over the winter months fell to 55% for the AM peak hour and 66% for the PM peak hour. It should be noted that these peak hour demands may have been lower than usual over the Christmas period where commuting and travel is generally reduced.

2.14.17 Following on from the government's 'roadmap' announcement in February 2021, traffic flows on the Strategic Parkway route are shown to steadily increase, with peaks plateauing at approximately 49,000 vehicles a day between May and July 2021, which equates to 95% of pre-COVID-19 levels. Peak hour traffic levels within these months averaged at 89% in the AM peak hour and 91% in the PM peak hour. Larger reductions since the roadmap announcement, which occurred in April 2021 and August 2021, are in line with the expected decrease associated with the Easter and school summer holidays.

2.14.18 There is a clear indication from the data shown in Figure 2.10, that traffic levels within the City are very close to pre-pandemic levels.

COVID-19 Monitoring - Junction 15

2.14.19 Monitoring at Junction 15 has shown a similar pattern to the data collected for the Strategic Parkway route at Junction 3, with highway usage decreasing and then recovering in direct response to the introduction and easing of government restrictions.

2.14.20 Data shown in Figure 2.11 shows traffic levels during the pandemic on the A1260 Nene Parkway approach to Junction 15. Monitoring for this approach included both the northbound and southbound carriageways and was conducted on a monthly basis between September 2020 and August 2021, focusing on the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours. The 2018 baseline for each peak is shown by the bar at the top of the graph. It should be noted that monitoring was not conducted for December 2020 due to the Christmas break.

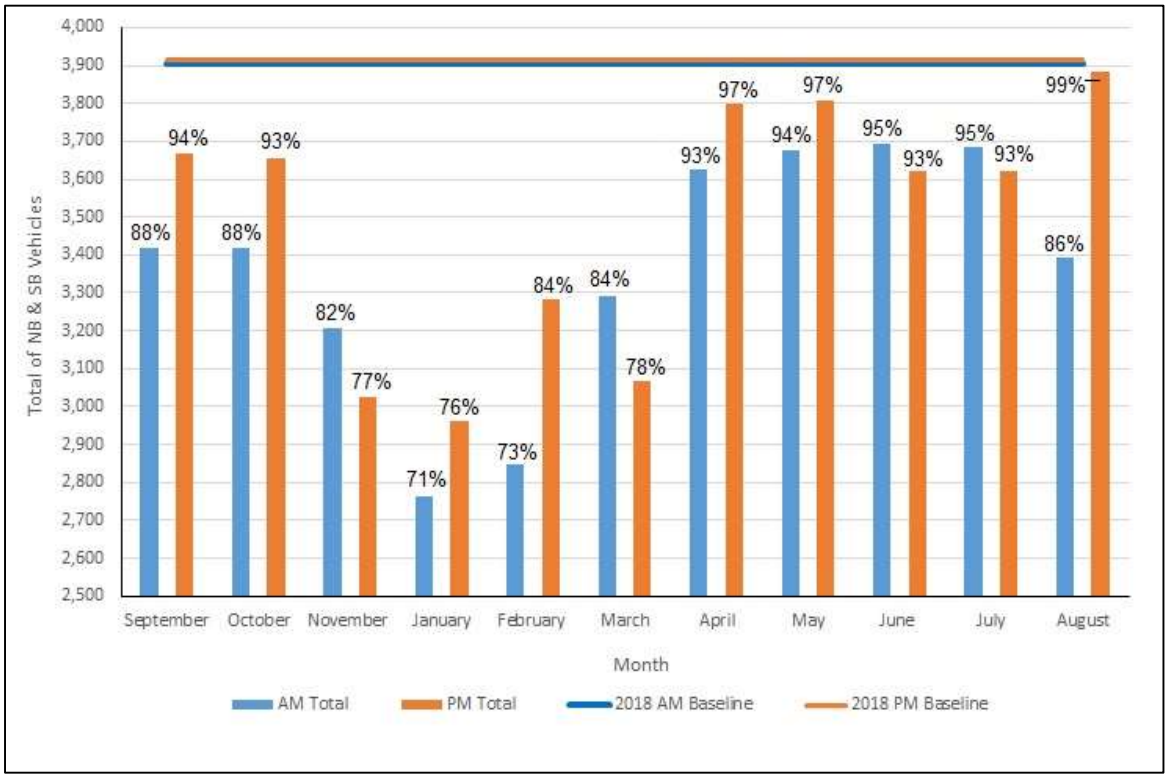


Figure 2.11: Junction 15 COVID-19 Monitoring, A1260 Nene Parkway

2.14.21 As shown in Figure 2.11 traffic levels on the A1260 Nene Parkway approach to Junction 15 have remained below pre-COVID-19 levels of 3,903 vehicles during the AM peak hour and 3,913 vehicles in the PM peak hour.

2.14.22 Data recorded in September and October 2020, a time when fewer restrictions were in place, shows traffic levels had recovered to 88% (AM) and 94% (PM) respectively, following the easing of the first national lockdown in April 2020. During these months traffic levels during both the AM and PM peak hours are shown to plateau at a steady demand. It should also be noted that a higher PM peak hour demand is reflective of the general conditions observed on this approach prior to the pandemic.

2.14.23 The greatest drop in highway usage was seen to occur in January 2021 (third lockdown), particularly during the AM peak period when traffic flows on the A1260 Nene Parkway decreased to 71% at approximately 2,730 vehicles. This reduction in demand is reflective of patterns shown in Figure 2.10, however it should be noted that school closures associated with the January lockdown may have had a greater impact on highway usage at this time. As a result of decreased traffic demand and therefore congestion, no visible queuing was seen onsite whilst undertaking traffic counts during January.

2.14.24 Following the governments 'roadmap' announcement for the gradual easing of restrictions (February 2021), traffic flows between April 2021 and July 2021 significantly recovered towards pre-COVID-19 levels, with observed traffic across the months of 95% in the AM peak hour and 97% in the PM peak hour. This increase in traffic flows saw the return of heavy congestion, particularly during the PM peak hour, as shown in Figure 2.12.

2.14.25 Figure 2.12 beneath shows the northbound queuing on the A1260 Nene Parkway back from Junction 15 as it reached the on-slip of Junction 33. This image was captured from the footbridge over the parkway, during the first 15 minutes of the June 2021 PM count[18]. Note the left image is looking northbound towards Junction 15, whilst the second is looking southbound toward Junction 33.

Figure 2.12: Junction 15, A1260 Nene Parkway Northbound Queuing (June 2021)

[18] Junction 15 COVID-19 Monitoring_29th June 2021 Data Findings.

2.14.26 The data in Figure 2.11 shows traffic demand during the PM peak hour has recovered to that of the baseline dataset, with 99% reached in August 2021. With increased traffic demand, steady rolling queues were observed for the northbound carriageway of the A1260 Nene Parkway for the first 30 minutes of the PM count during the August 2021 count. This observation is consistent with conditions originally observed in 2018 as detailed in earlier sections of this chapter. It should be noted that the reduced traffic demand in the AM peak hour of 86% for August 2021, could be due to the school summer holidays as well as flexi working hours associated with the pandemic.

2.14.27 Despite PM peak hour traffic flows on the A1260 Nene Parkway having recovered to levels nearing the baseline data in recent months, uncertainty of the long-term impact of the pandemic on travel still remains. As a result of this uncertainty, a COVID-19 specific sensitivity test has been undertaken using the data reported here to measure the scheme benefits against a scenario where future traffic growth does not match that forecast prior to the emergence of pre-COVID-19. The results of this sensitivity test are detailed in the Economic Case (Chapter 3).

Additional Risks

2.14.28 Other strategic risks to delivery of the scheme identified include:

- Project progress put on hold / delay to project programme
- Programme delay as a result of the information document provided to residents on the environmental impact and mitigation of the footbridge
- Delay in obtaining approval to commence with construction
- Delay in sign off of the grant agreement.

2.14.29 Appendix F contains the Project Key Risk Register which identifies each of these risks and considers mitigation measures. The Risk Register is a live document which is managed by Peterborough City Council and is reviewed regularly by the CPCA in monthly Project Board meetings.

2.15 Stakeholders

2.15.1 The key stakeholders for the Junction 15 scheme are:

- CPCA as the Local Transport Authority and funding body for the scheme
- The Council as the Local Highway Authority
- National Highways as the organisation responsible for the A47 Trunk Road and on / off slips
- Peterborough City Cabinet Member, Bretton Ward Councillors, and parish clerks of Bretton North, Bretton South, Orton Waterville and Orton Longueville
- Cambridgeshire Constabulary which are based in Thorpe Wood
- Local businesses based in Thorpe Wood affected by changes to the transport network
- Aragon Direct Services as the Local Authority Trading Company responsible for the future maintenance of the cities tree stock and green spaces across Peterborough
- The Nene Park Trust as landowners / lease holders of land within the studies footprint
- The Wildlife Trust (Cambridgeshire) as the organisation responsible for Thorpe Wood Nature Reserve located directly East of the A1260 Nene Parkway carriageway
- Natural England in regard to Ecological / Biodiversity assessments within the studies footprint
- Historic England in regard to Archelogy / Cultural Heritage assessments within the studies footprint
- PCC representatives for the natural and historic environment, Wildlife, Archelogy and Heritage, Water and Drainage and Environmental Health
- Homeowners of properties located near the footbridge over the A1260 Nene Parkway
- Local Cycle Forums
- Local Natural Environmental Group GeoPeterborough
- Peterborough City Hospital, Northwest Anglia NHS Foundation and Ambulance Service
- Cambridgeshire Fire and Rescue Service
- Stagecoach who operates the Citi 2 service which provides access to Bretton, Thorpe Wood, Longthorpe and the City Centre

2.15.2 Engagement and communication with key stakeholders is an essential element in the planning process for major transport schemes. Stakeholder's needs and requirements have been taken into account for the final scheme design for Junction 15, following the completion of stakeholder consultation.

Stakeholder Consultation

2.15.3 Stakeholder consultations were undertaken by the Project Team following the approval of the OBC and in line with the timings of the public consultation (21st October - 4th December 2020). All key stakeholders were consulted via email or letter for comments on the Preferred Option prior to commencement of Detailed Design.

2.15.4 Feedback from the consultation has shown that all stakeholders support the scheme at Junction 15 and that no conflicts between stakeholders are present. The two predominant elements featured within communication with stakeholders has centred on the environment and biodiversity net gain as well as sustainable travel.

2.15.5 Both PCC's Natural and Historic Environment Manager and Wildlife Manager have been continually consulted throughout the progression of Detailed Design with regard to the likely environmental impact of the scheme and the mitigation of this (as discussed in Section 2.14). Both stakeholders were consulted on the footbridge design and wider environmental elements included across the study area aiding the achievement of biodiversity net gain. Feedback from PCC focused on minimising tree loss and accounting for the value of trees within the vicinity of the footbridge, as well as advising on species for replanting. The feedback provided from PCC's stakeholders has been included within the final scheme design.

2.15.6 Consultation feedback regarding sustainable travel was received from the Peterborough Cycle Forum. The Peterborough Cycle Forum work in partnership with The Council to promote cycling within the City and influence policies and plans for future cycle facilities. At the time of the consultation the Cycle Forum were consulted on the concept of a cycle lane along Thorpe Wood. Feedback received focused on the core principles outlined in the recently adopted LTN 1/20 cycle design guidance, which led to the decision to make the cycleway an on road segregated cycle lane.

2.15.7 The Thorpe Wood cycleway featured as part of the project at the time of the consultation, however funding has now been secured to deliver these improvements as a separate project. These improvements are now included within Peterborough's Local Cycling and Walking Infrastructure Plan (LCWIP). Work undertaken for the LCWIP has shown cycle improvements within this area will provide good value for money and DfT funding has been secured to begin developing these improvements and work has commenced.

Public Consultation

2.15.8 Public consultation on the concept of a scheme at Junction 15 was initially undertaken in the summer of 2019, as part of the CPCA Local Transport Plan[19] that was adopted in January 2020. This consultation made residents of the City aware that Junction 15 had been identified as a location for improvements. It should be noted that no details on the form of the scheme were provided at the time of the consultation and that no objections relating to the principle of an improvements to Junction 15 were received.

2.15.9 Public perceptions of the Preferred Scheme were then assessed following the approval of the OBC (July 2020) and prior to the commencement of Detailed Design. The online consultation which featured on the PCC website and social media for a six-week period (between the 21st October – 4th December 2020), highlighted elements of the scheme identified at OBC and Preliminary Design. No comments from members of the public were received during the consultation period.

2.15.10 It should be noted that the public consultation described above did not include the final footbridge design as the revised location and design were not developed until later phases of the design work. Residents that live directly adjacent to the footbridge will be contacted by letter and given the opportunity to meet in person with the PCC Project Manager to discuss the details, including the scheme design, landscaping designs and biodiversity net gain incorporated being delivered. Regular communication will be undertaken with these residents throughout the construction phase of the footbridge to ensure that they remain informed of the construction programme and any temporary impacts.

2.15.11 Where feedback is provided, both the PLO and PCC Project Manager will work closely to mitigate any issues, including options to further soften any visual impacts of the new footbridge through tree planting in residents' gardens where appropriate.

2.15.12 Residents will be communicated with no less than five months before the construction phase of the footbridge begins, which will provide sufficient time for feedback to be received, and arrangements for additional landscaping to be made where appropriate.

2.15.13 Information regarding the final Junction 15 scheme design will be made available to the public prior to the CPCA Board meeting scheduled in November 2021.

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

2.16 Scheme Development

2.16.1 This section discusses the process followed for developing options and shortlisting those against the scheme objectives using the DfT's Early Assessment and Sifting Tool (EAST) assessment. This section also explains the technical work undertaken to assess the shortlisted options and identify a preferred option. Further information on this is included within the Junction 15 Option Assessment Report (OAR), which was submitted along with the Strategic Outline Business Case in October 2019.

2.16.2 An option development workshop was held on the 19th of December 2017 and attended by representatives from various disciplines within PHS and National Highways. The workshop reviewed the existing conditions and future issues at Junction 15, explored its relationship with the surrounding road network and discussed the various constraints at the site. The purpose of the workshop was to develop a long list of potential improvement options to be considered by this study.

2.16.3 A total of nineteen options were considered in the workshop, with potential schemes ranging widely in estimated cost and level of impact on the network. These nineteen options formed the Long List which is shown Table 2.8 beneath.

Table 2.8: Junction 15 Long List of Options

A1260 Nene Parkway
Widen northbound carriageway to 3 lanes from Thorpe Bridge to Junction 15
Widen northbound carriageway to 3 lanes from Junction 33 to Junction 15
Widen Southbound carriageway to 3 lanes from Junction 15 to Junction 33
Create a hamburger style arrangement between A1260 Nene Parkway Northbound and A47 Eastbound
Create a tunnel from A1260 Nene Parkway Northbound to A47 eastbound
Signalise Nene Parkway approach and remove signals on west side of circulatory
Create a left dedicated lane from A1260 Nene Parkway northbound to the A47 westbound, additional 3rd lane required as well as the circulatory
Thorpe Wood
Complete closure of entrance/exit
Inbound traffic only
Outbound traffic only
A47 Eastbound
Widen off slip to 3 lanes and circulatory to 3 lanes
Install a Type E/F merge on to A47 eastbound slip
Grade separate A47 eastbound flow to A1260 Nene Parkway southbound
Create new A47 eastbound off slip using old A47 alignment
A47 Westbound
Remove left dedicated lane from A47 Westbound to A1260 Nene Parkway and signalise A47 westbound off slip
Increase the dedicate left turn lane on the A47 westbound to two lanes, and a Type E/F merge on A1260 Nene Parkway southbound to Junction 33
Widen off slips to 3 lanes and circulatory to 3 lanes
Circulatory Carriageway
Create a 3-lane circulatory at Junction 15 only
Improve lane markings on the roundabout circulatory and reduce circulatory speeds

EAST Assessment

2.16.4 The EAST assessment was used to assess the Long List of options against the scheme objectives identified in the Strategic Case, and to refine this to a Short List of options that were taken forward for technical assessment as described within the OAR.

2.16.5 The options were scored against the following CPCA and PCC objectives using the EAST framework. Scores were based on the discussion and collective opinion of the workshop delegates. The objectives against which the options were scored are shown in Table 2.9 beneath.

Table 2.9: 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

Shortlisting Summary

2.16.6 A summary of the EAST assessment is shown in Table 2.10 on the following page along with the options that were shortlisted for technical assessment.

2.16.7 Note that Options 1 and 3a / 3b both scored negatively in the EAST assessment but were progressed for technical assessment as these are options that had been previously considered by PCC but never assessed. The workshop unanimously agreed that it was necessary to understand how these options performed to conduct a fully informed consultation exercise.

Table 2.10: Option Shortlisting Summary

Option	Option Description	EAST Score	EAST Comments	Additional Comments (where applicable)	Shortlisted
1	The removal of the left dedicated lane from A47 westbound to A1260 Nene Parkway southbound, and signalisation of the A47 westbound off slip.	- 4	Low costing / risk option predicted to slightly improve performance of Nene Parkway and Thorpe Wood. Stakeholder and public support is highly likely.		✓
2	The widening of the A47 off slips (both east and westbound) and the circulatory of Junction 15 to 3 lanes.	7	Widening the A47 off slips is predicted to add capacity to the junction, likely to reduce congestion and improve journey times.		✓
3a	Complete Closure of Thorpe Wood.	- 2	Low costing option which would improve Thorpe Wood, however, have marginal improvement on the wider study area.	This option will be taken forward and assessed based on the scores of the remaining two variations of option 3.	✓
3b	Thorpe Wood access to become inbound only from the roundabout.	- 4	Low costing option likely to improve performance of Nene Parkway, however stakeholder support is unlikely.		✓
3c	Thorpe Wood to become outbound only at the roundabout.	9	Low costing option likely to improve Nene Parkway and remove conflicts between movements on the roundabout.		✓
4a	Widen Nene Parkway northbound to 3 lanes up to Thorpe Road Bridge.	12	Option likely to significantly improve Nene Parkway, however costing and viability is dependent on bridge structure.	Structural information provided confirms that three lanes can be accommodated along Nene Parkway.	✓
4b	Widen Nene Parkway northbound to 3 lanes to Junction 33.	6	Option likely to significantly improve Nene Parkway, however costing and viability is dependent on bridge structures.	See above.	✓
4c	Widen Nene parkway southbound to 3 lanes, between Junction 15 and Junction 33.	8	Option likely to significantly improve Nene Parkway, remaining approaches at Junction 15 and wider study area. Structures may alter costing and viability of this option.	See above.	✓
5	Create a Hamburger roundabout design between A1260 Nene parkway northbound and the A47 eastbound.	-8	High costing option which would only benefit Nene Parkway. Additional conflicts would be introduced to the junction.	Structural information discussed suggests support for the A47 is a constraint for this option.	
6	To install a Type E/F merge onto A47 eastbound on slip.	5	Low costing option which would increase the safety on the slip road.		✓
7	To create a 3-lane circulatory at Junction 15 only.	6	Low costing option that would increase capacity on the circulatory and is predicted to offer benefit on all approaches.	Structural information provided suggests three lanes on the circulatory can be accommodated.	✓

Option	Option Description	EAST Score	EAST Comments	Additional Comments (where applicable)	Shortlisted
8	To grade separate A47 eastbound flow onto A1260 Nene Parkway southbound.	- 1	High costing option which only benefits two approaches. Stakeholder and public support is unlikely.	Structural information highlights the size of Junction cannot accommodate the required bridge and ramp structures required within this option.	
9	To signalise A1260 Nene Parkway approach and remove existing signals on the western side of circulatory.	1	Low costing option which would flush more vehicles out of Nene Parkway at a time, however, moves signal congestion to this approach and eastern side of circulatory.		✓
10	To create a tunnel beneath Junction 15, from Nene Parkway northbound to the A47 eastbound.	- 4	High costing option which would cater for the dominant movement from Nene Parkway, however, requires significant junction re-modelling and structural changes.	Structural information highlights the size of Junction 15 is a constraint for this option. The creation of a tunnel provides multiple issues which would significantly increase cost and disruption to the network, undoing any benefits discussed within the workshop.	
11	To increase the dedicate left turn lane on the A47 westbound to two lanes, as well as creating a Type E/F merge on A1260 Nene Parkway southbound to Junction 33.	3	Low costing option which would marginally benefit junction 15's performance.		✓
12	To improve lane markings on the roundabout circulatory and reduce circulatory speeds.	8	The highest scoring option devised. Option will be included into any scheme implemented.		
13	To create a new A47 eastbound off-slip using the old A47 alignment.	- 6	High costing option which would cater for the dominant movement from A47 eastbound, however requires significant junction re-modelling and structural changes.	Structural information highlights topography and the condition of the limiting space available from the old A47 Alignment would be issues for this option.	
14	To create a left dedicated lane from A1260 Nene Parkway northbound to the A47 westbound, additional 3rd lane on this arm required as well as the circulatory. Closure of Thorpe Wood.	6	Low costing option which would benefit Nene Parkway, however improvement on remaining approaches is minimal.		✓

Technical Assessment

2.16.8 The shortlisted options were assessed using an Aimsun Next microsimulation model. The 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. These peak periods were defined from the traffic surveys undertaken at the site in 2017.

2.16.9 A 2017 base model was built to using current traffic flows at the junction. The model was then validated and calibrated to ensure it represented the traffic conditions experienced by drivers on this part of the network.

2.16.10 To understand traffic conditions in future years, growth factors were derived from the DfT's Trip End Model Presentation Program (TEMPro). Future year models were built using these growth factors for 2021, 2026 and 2031 scenarios.

2.16.11 The results from the modelling show that the worst delays and longest travel time in both the AM and PM peak period for the forecast years occur along the A1260 Nene Parkway approach to Junction 15. This is consistent with the existing issues observed on site and reported within the early sections of this chapter.

2.16.12 The modelling then assessed each of the shortlisted options to determine which were the best performing and most appropriate to select as the Preferred Option. Full details of the modelling can be found in the OAR and the LMVR.

Preferred Option

2.16.13 Option 4b was identified as the Preferred Option, which comprises of widening the A1260 Nene Parkway northbound approach to three lanes from Junction 33, and the associated widening of the Junction 15 circulatory between Nene Parkway and Bretton Way.

2.16.14 At OBC stage, the scheme included:

- Creation of a third lane northbound on the A1260 Nene Parkway
- Creation of a three-lane circulatory on Junction 15 between the Nene Parkway and Bretton Way
- Replacement of the pedestrian footbridge over the Nene Parkway (to facilitate the creation of a third northbound lane)
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Reconstruction of the footpath between Thorpe Road Bridge and Longthorpe.

2.17 Preferred Option Development

2.17.1 Adjustments have been made to the Preferred Option since the OBC and Preliminary Design stage, following new information received from ground investigations, structural engineers and ecologists as well as stakeholders.

2.17.2 The following section explains the amendments to the scheme design and provides justification for their inclusion..Further detail on these is provided beneath Table 2.11.

Table 2.11: Preferred Option Adjustments Since Preliminary Design

	Change to Scheme Design (since Preliminary Design)	Requirement for Change
Highway and Structures	Speed reduction to 60 mph on the A1260 Northbound carriageway from Junction 33 to Junction 15	Reduction in speed necessary to enable the omission of 1m hard strips in accordance with current DMRB standards. Speed limit signing required onsite. Associated Traffic Regulation Order to be managed by PCC.
	Relocation of the footbridge over the A1260 Nene Parkway, with new landings, ramps, and stairs to the approaches, making the structure DDA compliant	The relocation and erection of the footbridge 38m south of the existing position will make use of PCC CRA land. PCC to lead on any exchange of land ownership / management. Demolition of the existing bridge structure to be conducted to above ground elements only.
Sustainable Travel	Footpath Creation	Creation of a new footpath alignment on Nene Park Trust land. The disused vehicle access, that is currently used as an NMU link from Thorpe Wood to the shared-use footpath to the south of the A47, is to become the new formalised NMU link. This replaces the removed footway / crossing link near the stop line. Signing and resurfacing works are required in this location.
Environmental and Landscaping	Exposing the geological profile of A1260 Nene Parkway Embankments and adding an interpretation board for the public on Thorpe Road bridge, adjacent to the rockface.	Removal of overgrown vegetation and bramble in order to expose the rock face composed of Blisworth Limestone, Blisworth Clay and overlying Cornbrash at two locations. Subsequent information board to be situated on Thorpe Road bridge stating the significance and history of this now local geological site of interest.
	Wildflower Planting Trial to be implemented on the grass verges either side of the A47 EB off slip.	Removal of existing vegetation / soil stripping of chosen areas, followed by the introduction of low fertile soil and a calcareous wildflower seed mix.
	Clearing of Northeast corner embankment to enhance biodiversity at the location, particularly nationally rare species	Removal of the overgrown vegetation including invasive bramble and Elm shrubs. Additionally, the selective removal or trimming of some trees to the western end of this area, allowing ground habitats to re-establish.
	Mass Bulb Planting Trial to be implemented on the lower section of the circulatory, as well as the verge between the A1260 Nene Parkway and Thorpe Wood	Removal of existing vegetation followed by the sowing of Daffodil and Snowdrop bulbs,
	General Tree Planting / Soft Landscaping around the vicinity of the Footbridge	Planting of 59. trees within the vicinity of the footbridge as compensation for those lost due to bridge relocation and construction. Planting to include Field Maple, Wild Cherry, Hornbeam and Hazel. Supporting shrub and understorey planting will incorporate species of Dogwood, Hawthorn, Hazel, Guelder Rose, Privet and Snowberry. Other general planting areas to include the Circulatory of both Junction 15 and 33 and Northern embankment corners of Junction 15. Planting at these locations to be a continuation of species already established within the area.

2.18 Changes to Highway and Structure's Design Since OBC

2.18.1 The progression of the Detailed Design has introduced several design adjustments, namely the reduction in speed limit on a northbound section of the A1260 Nene Parkway and the relocation of the footbridge along the A1260 Nene Parkway. The following section provides justification as to why these scheme elements have been altered and discusses the impact of such changes where necessary.

Operational Impact of the A1260 Nene Parkway Speed Reduction

2.18.2 Operational modelling undertaken to date shows that Option 4b (the preferred option) has a positive impact on the overall delay and travel times experienced at Junction 15 in the future years assessed. Thegreatest level of benefit is present on the A1260 Nene Parkway approach. The original modelling results (Table 2.4) show a reduction in delay from 1,178 seconds in the Do Minimum to 125 seconds in the Do Something scenario for the 2026 PM peak.

2.18.3 The Detailed Design has identified the need to reduce the speed limit along the A1260 Nene Parkway northbound between Junction 33 and Junction 15 from 70MPH to 60MPH in order to enable the omission of 1m hard strips in accordance with the current DMRB standards. Further traffic modelling highlights the required change in speed has a negligible impact on the overall operation of Junction 15, as shown in Table 2.12.

Table 2.12: Modelling Speed Reduction Comparison_2026 Do-Something Scenario

Approach	AM Delay Time (secs)			PM Delay Time (secs)		
	2017 Base	Without Change - 70 MPH	With Change - 60 MPH	2017 Base	Without Change - 70 MPH	With Change - 60 MPH
Bretton Way	250.7	302.2	303.2	52.1	88.4	88.7
A47 East	19.1	23.2	23.2	7.1	7.9	7.4
A1260 Nene Parkway	43.6	15.9	15.0	29.9	8.1	8.0
Thorpe Wood	43.1	7.6	7.4	146.3	16.3	16.2
A47 West	22.6	24.1	24.4	24.4	20.1	20.4
Total	**379.1**	**372.9**	**373.2**	**259.7**	**140.8**	**140.7**

2.18.4 It's clear from results that the change in speed to 60 MPH has minimal impact on the delay of Junction 15, introducing a difference in delay of 0.3 and 0.1 respectively across the peak hours. The approach which sees the greatest change is Bretton Way, where the reduction in speed adds 1 second of delay. This change will have no impact on the queuing of this approach and the overall operation of the Junction.

2.18.5 Figure 2.13 shows the design for the northern section of the scheme. Full scheme drawings are provided in Appendix G.

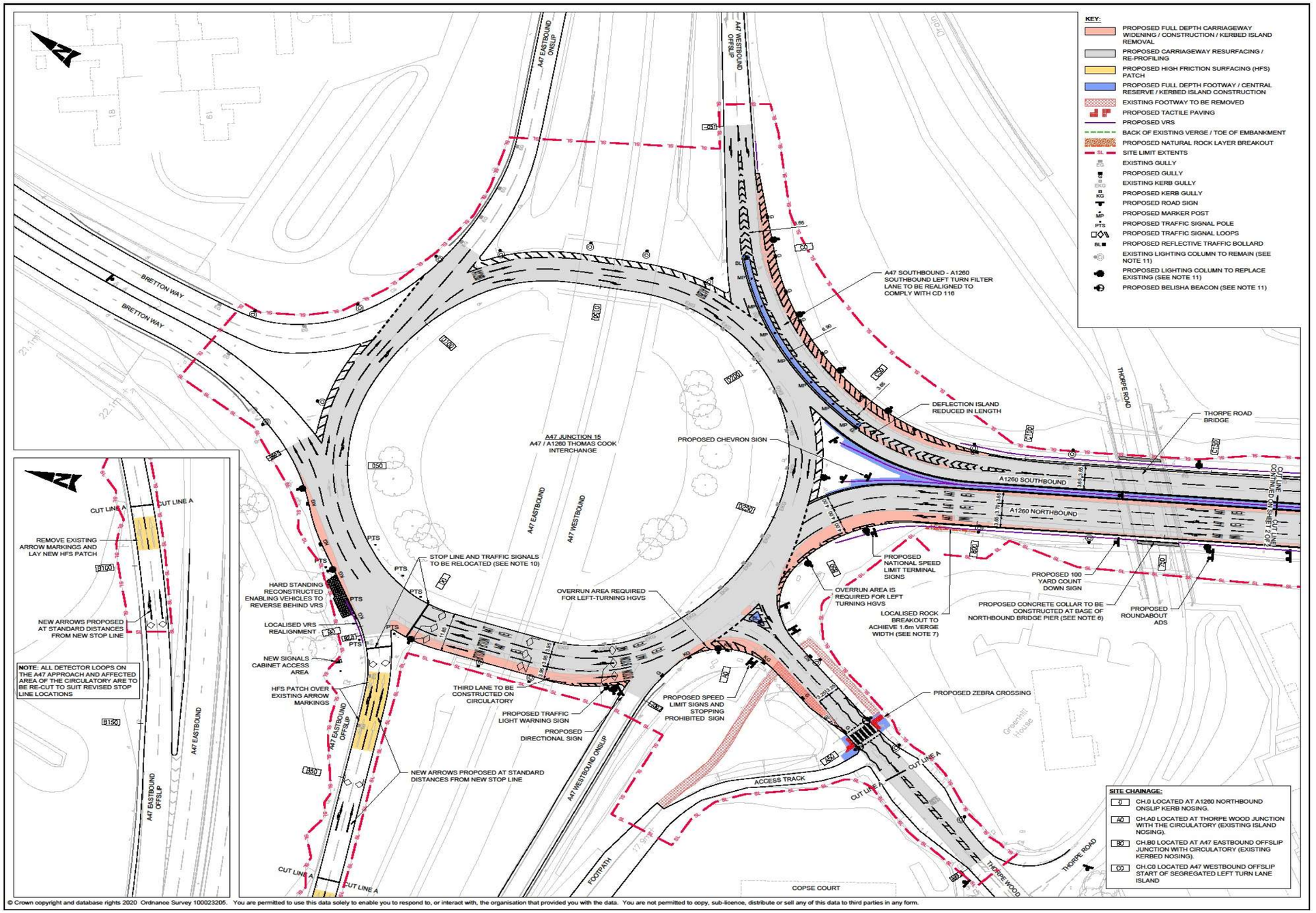


Figure 2.13: Final Design of the Northern Section of the Junction 15 Scheme

Relocation of the A1260 Nene Parkway Footbridge

2.18.6 The requirement to relocate the A1260 Nene Parkway footbridge to the south of its current position has been identified as part of Detailed Design process. The relocation will enable the structure to become DDA and CD-127 compliant in relation to both headroom and ramp gradients, whilst mitigating the impact of a higher structure on adjacent properties.

2.18.7 Options for the footbridge design and ramp configuration were extensively assessed by the Project Team, and the final design was selected based on results from the ecological and arboricultural surveys and the subsequent recommendations stated by PCC's Natural and Historic Environment Manager.

2.18.8 The repositioning of the bridge has allowed the following issues to be mitigated against:

- Land Requirements – The western ramps in the Preliminary Design were partly positioned within the land of the Thorpe Wood Golf Course carpark. Despite this being PCC asset land, a lease agreement between The Council and Nene Park Trust is in place. Due to time constraints associated with negotiations or land purchase, it was thought to be unviable at FBC stage. The repositioning of the footbridge eliminates the need for land take and avoids negotiations which could have significantly altered programme for delivery.
- Encroachment on Property Boundaries – In order to comply with current design standards, the new bridge is required to sit higher than the existing structure. If this was to occur in the current bridge location it would have resulted in an invasion of privacy for residential properties closest to the existing footbridge ramps. Objections from these properties would have been likely, introducing lengthy negotiations and had a direct impact on scheme programme and budget. The repositioning of the bridge to the south mitigates these issues.
- Encroachment on Ancient Woodlands – Under the Preliminary Design the footpath alignment would have required the modification to grounds hosting Ancient Woodlands. The repositioning of the footbridge means the structural requirements for ramp, landings and step access can be achieved without affecting the grounds of nearby Ancient Woodland.

- Pedestrian / Cycle Movement – The Preliminary Design of the footbridge required the demolition of the bridge and its foundations to be completed before the construction of the new bridge. Pedestrian / cycle access across the parkway would have been immediately severed once construction started, introducing a minimum diversion of 0.9 miles. It is likely that access over the parkway can remain for a short period during construction.

2.18.9 The final footbridge design is shown in Figure 2.14 and full drawing can be found in Appendix H.

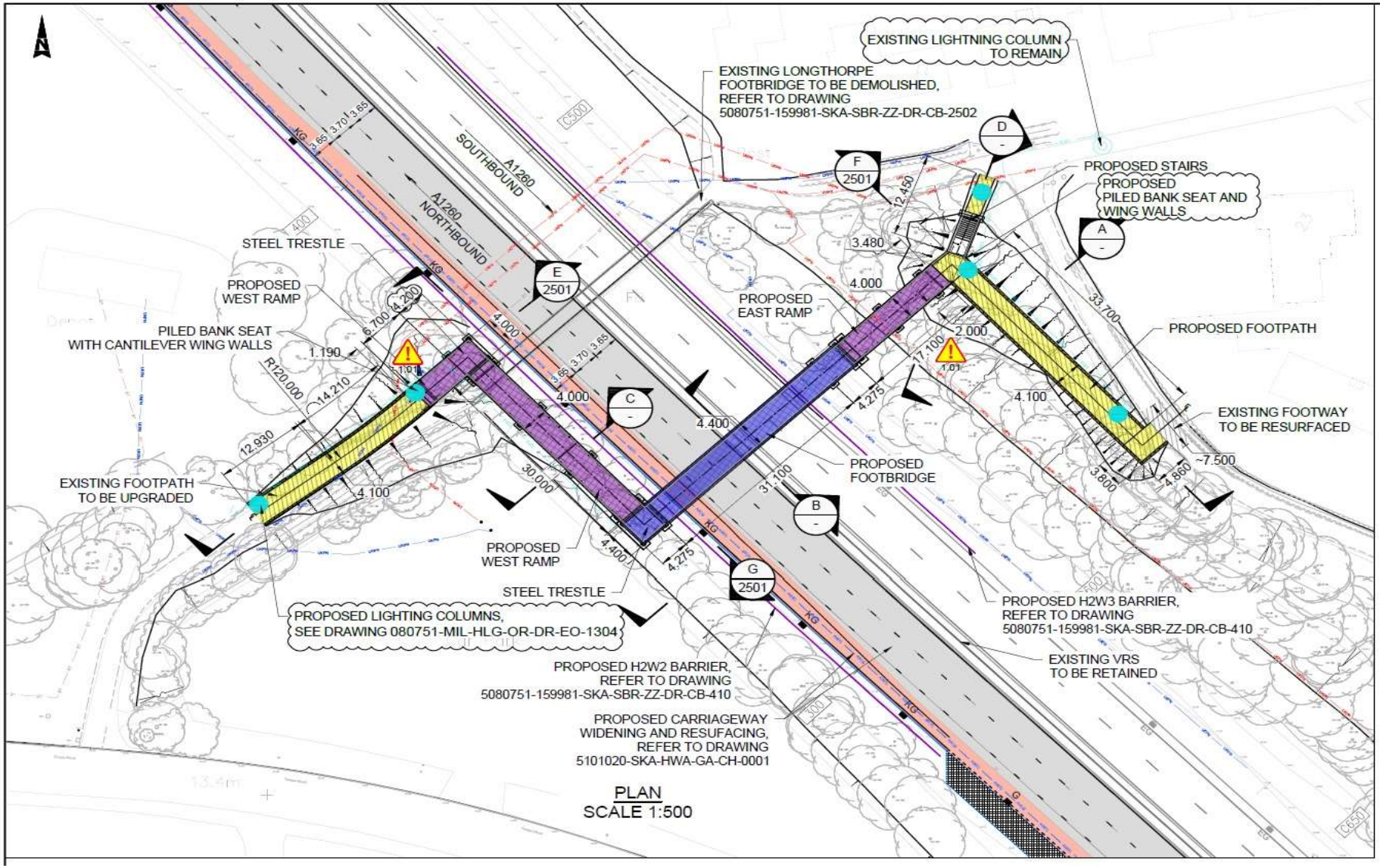


Figure 2.14: Final Design of the A1260 Nene Parkway Footbridge

2.19 Additional Environment and Landscape Works

2.19.1 Multiple opportunities to improve biodiversity and the landscape around Junction 15 have been identified during Detailed Design. The following sections highlight how communication with key stakeholders and the exploration of the local geological profile, has resulted in additional environmental improvements being incorporated into the final scheme design.

2.19.2 Environmental elements included within the Junction 15 scheme to help achieve biodiversity net gain include:

- Biodiversity enhancement area
- Wildflower planting
- Areas of mass bulb planting
- Geological exposure of historic rockface
- Tree planting (Compensation Planting and Net Gain).

2.19.3 The introduction of the above elements within the Junction 15 scheme demonstrates the underlying commitment made by the Council to integrate environmental considerations and measures into the scheme design and to ensure biodiversity net gain is achieved[20], therefore ensuring the natural environment is left in a measurably better state following the completion of the scheme.

Biodiversity Enhancement Area

2.19.4 The north-eastern corner of Junction 15 between Bretton Way and the A47 eastbound on-slip has also identified as a priority for biodiversity enhancement by PCC.

2.19.5 The north-eastern grass bank is of high importance hosting around 90 varieties of vascular plants and approximately 260 species of invertebrates. Of those identified, one plant species and eighteen invertebrates are listed within the 'Red Data Book', as nationally rare or endangered and therefore hold formal conservation status. It should be noted that this location is the only one across Peterborough to host 'Torilis arvensis' (the rare plant identified) and is the first record for the district since 1947.

2.19.6 At present this area is of poor quality and dominated by dense tree cover, comprised of partially dead Alder and young Elm as well as invasive bramble. The rate of spreading of these species is the greatest threat to existing flora within this location. Actions to improve the biodiversity as part of the Junction 15 scheme within this area include:

[20] PCC Biodiversity Strategy - https://drive.google.com/file/d/10YF973xzsXDqyT4zjPEYNC6RMgkMJNtj/view.

- Remove overgrown vegetation and invasive bramble
- Remove leaf litter within the area
- Remove self-setting trees – opening up the canopy

2.19.7 Figure 2.15 below highlights the area in which the removal of invasive species will be focused, which is primarily the western edge of the A47 Eastbound on-slip.

Figure 2.15: Environmental Proposal for the Junction 15 Biodiversity Enhancement Area

2.19.8 By managing this area, the existing habitats can recover and thrive, qualifying the site for consideration as a County Wildlife Site.

Wildflower Planting

2.19.9 Following discussions with PCC's Natural and Historic Environment Manager and Aragon Direct Services, the north-western corner of Junction 15 between Bretton Way and the A47 eastbound off-slip was identified as a poorly maintained area, which currently detracts from the area being a welcoming gateway into the City from the west. This is therefore considered an opportunity to increase biodiversity as part of the scheme and a wildflower planting scheme has been devised.

2.19.10 As indicated in Figure 2.16 the wildflower planting will include both the land west of the off-slip and the embankment to the east of the slip road, spanning a total area of approximately 0.3 ha.

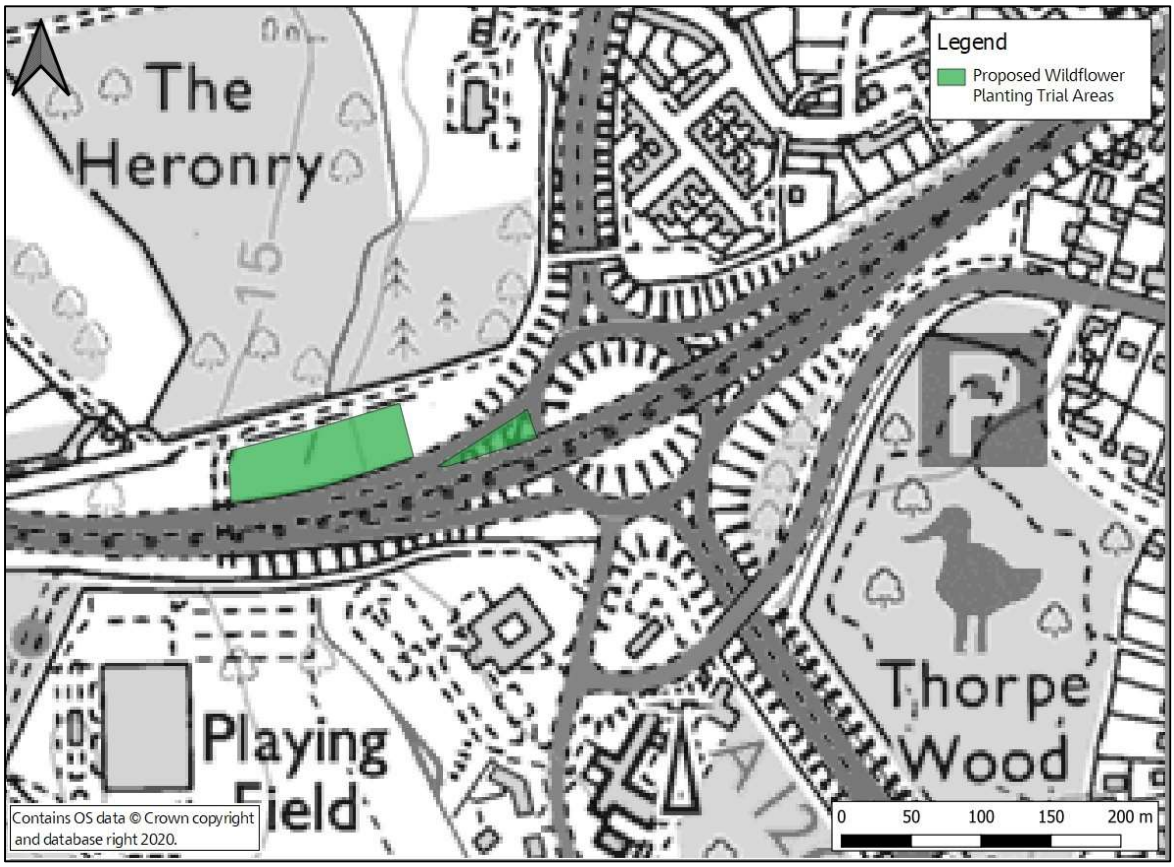


Figure 2.16: Environmental Proposals for the Junction 15 Wildflower Planting

2.19.11 At present the area is covered by coarse grass and shrub vegetation. Under the proposal the areas will be stripped back to bare ground with the excavated waste collected, then replaced with a nutrient poor topsoil and sown with a calcareous wildflower seed mix.

2.19.12 The introduction of a low fertility environment will enable flora to thrive and competitor plants such as coarse grasses and thistle shrubs to remain depleted. Under this treatment with establishment planned between late autumn and early spring, it is expected that wildflowers will germinate quickly with the full potential reached within 18 months of sowing seed.

2.19.13 Under correct maintenance regimes the wildflower has the basis to offer strong biodiversity gains long-term, offering species rich greenspace that will enhance the local and visual character of Junction 15.

Mass Bulb Planting

2.19.14 Following the recent success seen from the mass bulb planting conducted across the City by PCC and Aragon Direct Services in the autumn of 2020, the decision was made to incorporate similar planting as part of the Junction 15 Improvement Scheme.

2.19.15 As shown in Figure 2.17, two areas have been selected for mass bulb planting, which centre on the lower sections of Junction 15's circulatory as well as the grass verge located between the A1260 Nene Parkway and Thorpe Wood.

2.19.16 Both areas will be planted with planted with Daffodil and Snowdrop bulbs, which will improve the appearance of Junction 15 and improve biodiversity whilst having minimal impact onl annual revenue costs associated with maintenance.

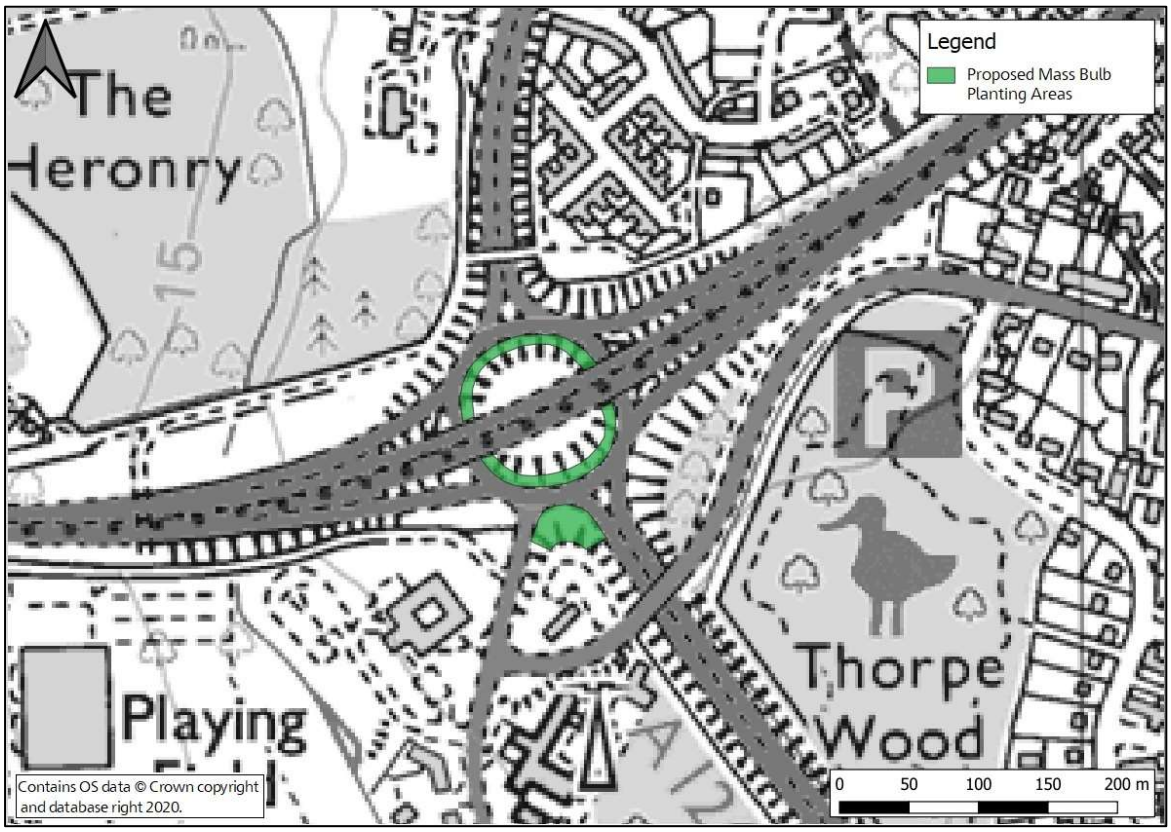


Figure 2.17: Proposals for the Junction 15 Wildflower Planting

Geological Exposure of Historic Rockface

2.19.18 The A1260 Nene Parkway is set in a cutting as it approaches Junction 15's circulatory with embankments on either side. The embankments are of geological importance being compiled of Middle Jurassic limestone and clays, namely formations of Blisworth Limestone, Blisworth Clay and overlying Cornbrash[21].

2.19.19 Figure 2.18 below shows the original excavation and construction of the A1260 Nene Parkway in 1972 and makes reference to the geological layering at this location. Further information regarding the geological importance of the embankments is reported within Appendix I.

Figure 2.18: Geological Profile During the 1972 A1260 Nene Parkway Construction

2.19.20 Following engagement with stakeholders, including the local geological group GeoPeterborough, two areas of the embankment have been identified for exposure as shown in Figure 2.19. Both areas will be approximately 30 - 50m each long and form a geological feature for the public viewing.

[21] Horton, A., 1989. The geology of the Peterborough District. Memoir for 1:50,000 sheet 158 (England and Wales). British Geological Survey, 44pp.

2.19.21 The rockface exposure will be around Thorpe Road bridge to enable passers-by to take interest and gain an understanding of the geological importance via the interpretation board that will be installed as part of the project. In addition to documenting the geological importance, the interpretation board will also detail the biodiversity value of the road cutting for wildlife, provide illustrations of the original Nene Parkway construction and state wider links to other geological sites across Peterborough.

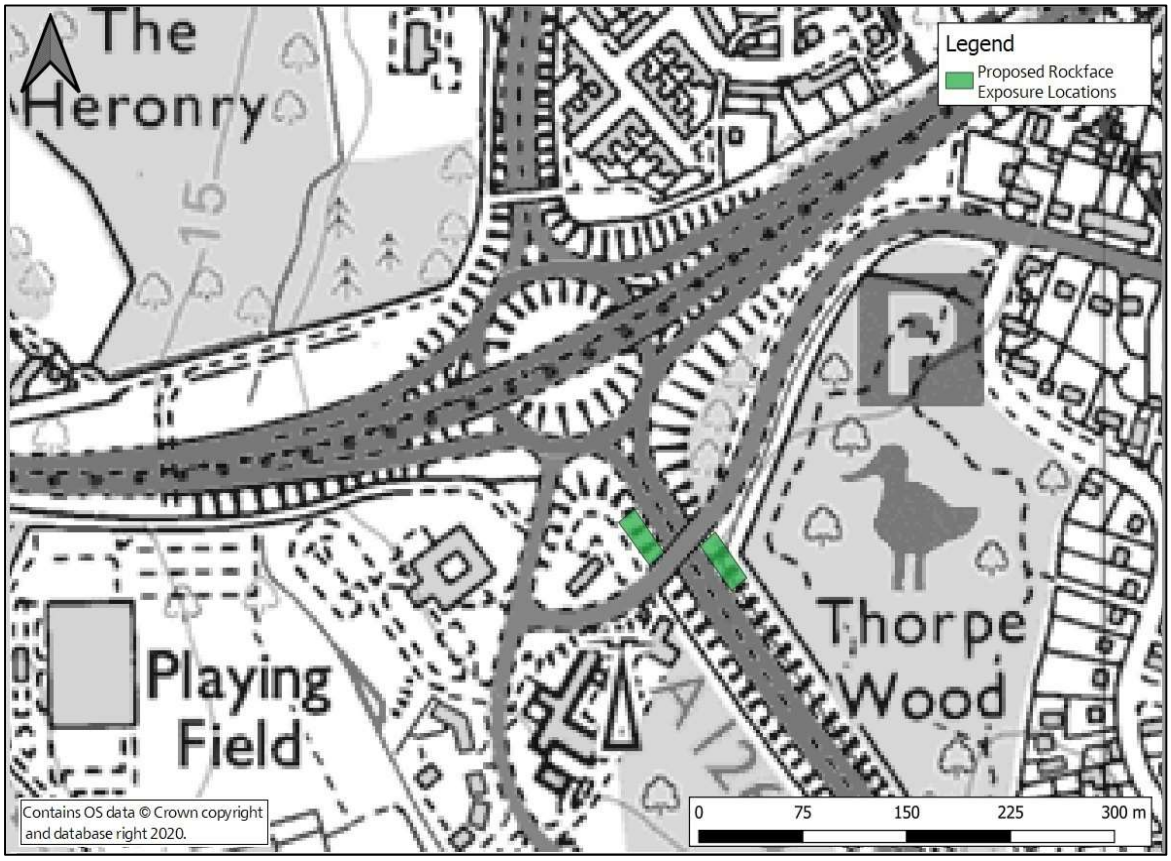


Figure 2.19: Geological Exposure of the A1260 Nene Parkway

2.19.22 The visibility of the underlying geology is currently disjointed and largely obscured by vegetation. Site visits conducted by GeoPeterborough confirm that pockets of Blisworth Limestone and Clay are exposed where a natural ledge has formed along the base of both the eastern and western embankments, however the overlying Cornbrash formation is completely covered with overgrown bramble and shrubs.

2.19.23 Proposed measures for enhancing these conservation areas includes:

- Area on the southbound carriageway– Vegetation clearance and scraping of Blisworth Limestone and lower part of the overlying Blisworth Clay
- Area on the northbound carriageway – Vegetation clearance and scraping of slope to expose a vertical and lateral section displaying the Blisworth Limestone, Blisworth Clay and Cornbrash.

2.19.24 Vegetation clearance and light mechanical scraping in these areas will refresh the embankment and the clearing of scree and soil build-up on the limestone ledges will extend the area of visible Blisworth Clay for all road users. With continued exposure, this area would be eligible for the classification of a 'Local Geological Site of Interest' for Peterborough and across Cambridgeshire.

Tree Planting (Compensation Planting)

2.19.25 Measures have been taken to mitigate against any tree loss or impact on ecology and biodiversity within the study area as a result of the scheme design and / or construction.

2.19.26 In order to offset the identified loss in tree coverage (53 trees) associated with the relocation of the footbridge, compensation planting proposals have been developed for the woodland area surrounding the structure.

2.19.27 As demonstrated within Figure 2.20 the proposed plan will introduce 59 trees to the vicinity of the footbridge, including species of Field Maple, Wild Cherry, Hornbeam and Hazel. Supporting shrub and understorey planting will incorporate species of Dogwood, Hawthorn, Hazel, Guelder Rose, Privet and Snowberry.

2.19.28 Following the completion of construction, landscaping for the footbridge will be undertaken in the first available planting season which is between November and March. It should be noted that trees planted within this area will be monitored under Aragon Direct Services, and that any trees that fail to establish will be replanted.

2.19.29 Further details of the landscaping and the mitigation methods that will be followed during construction and during the implementation of the landscaping, can be found within the Arboricultural Implications Plan Report, detailed in Appendix E.

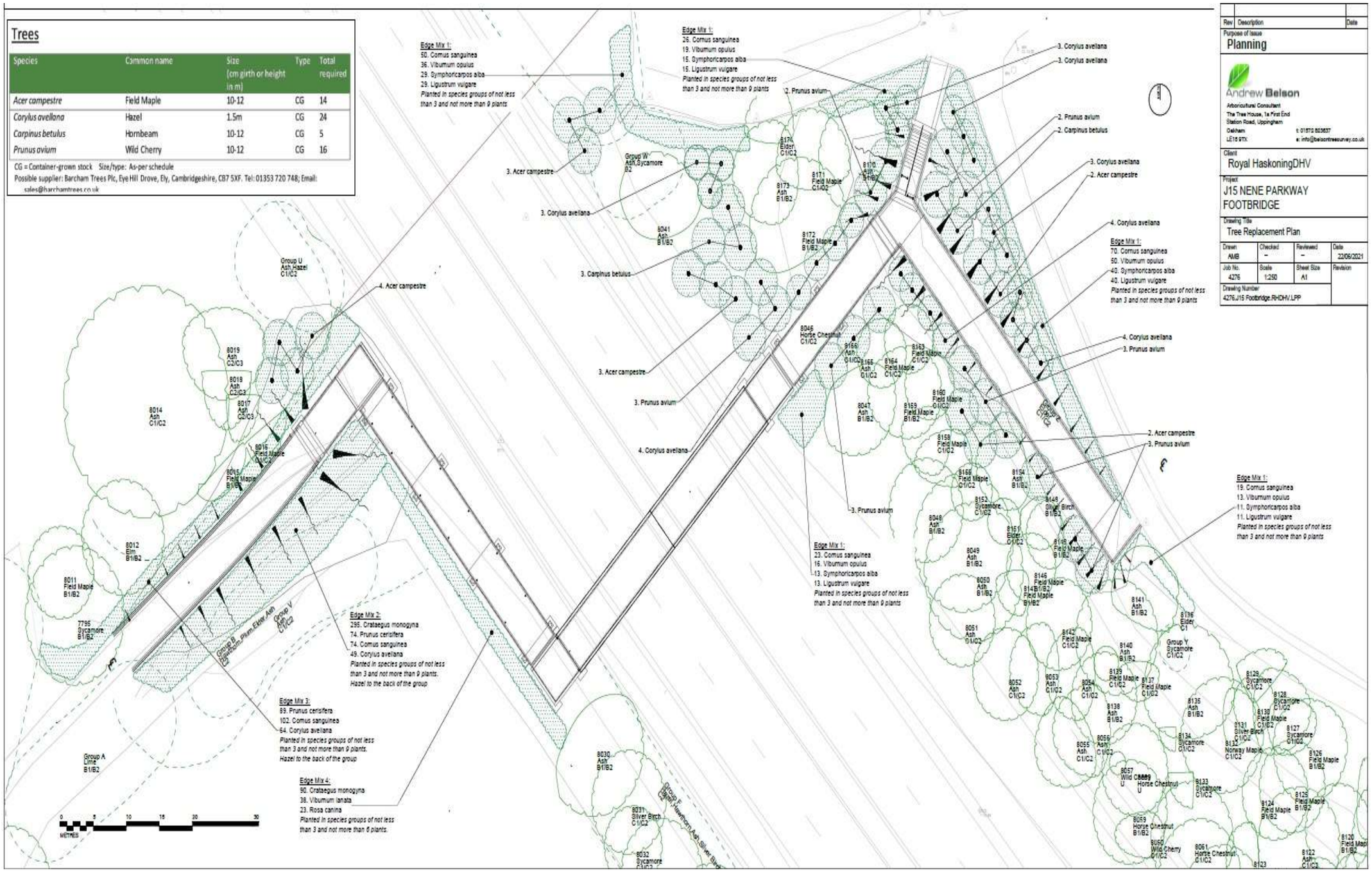


Figure 2.20: Compensation Tree Planting Associated with the A1260 Nene Parkway Footbridge

Tree Planting (Net Gain)

2.19.30 In addition to the compensation planting identified for the area surrounding the footbridge, further planting areas within the study area have been identified for the scheme. This wider tree planting will help ensure a biodiversity net gain for the study at a minimum rate of 10%. As demonstrated in Figure 2.21 these areas include:

- The upper section of the north-east grass bank, located between Bretton Way and the A47 Eastbound on-slip
- Area south of Peacock Way footpath to the north-west corner of Junction 15
- The northern and southern sections of the Junction 15 circulatory
- Both the eastern and western inner grass banks of Junction 33 Longthorpe / Nene Parkway roundabout.

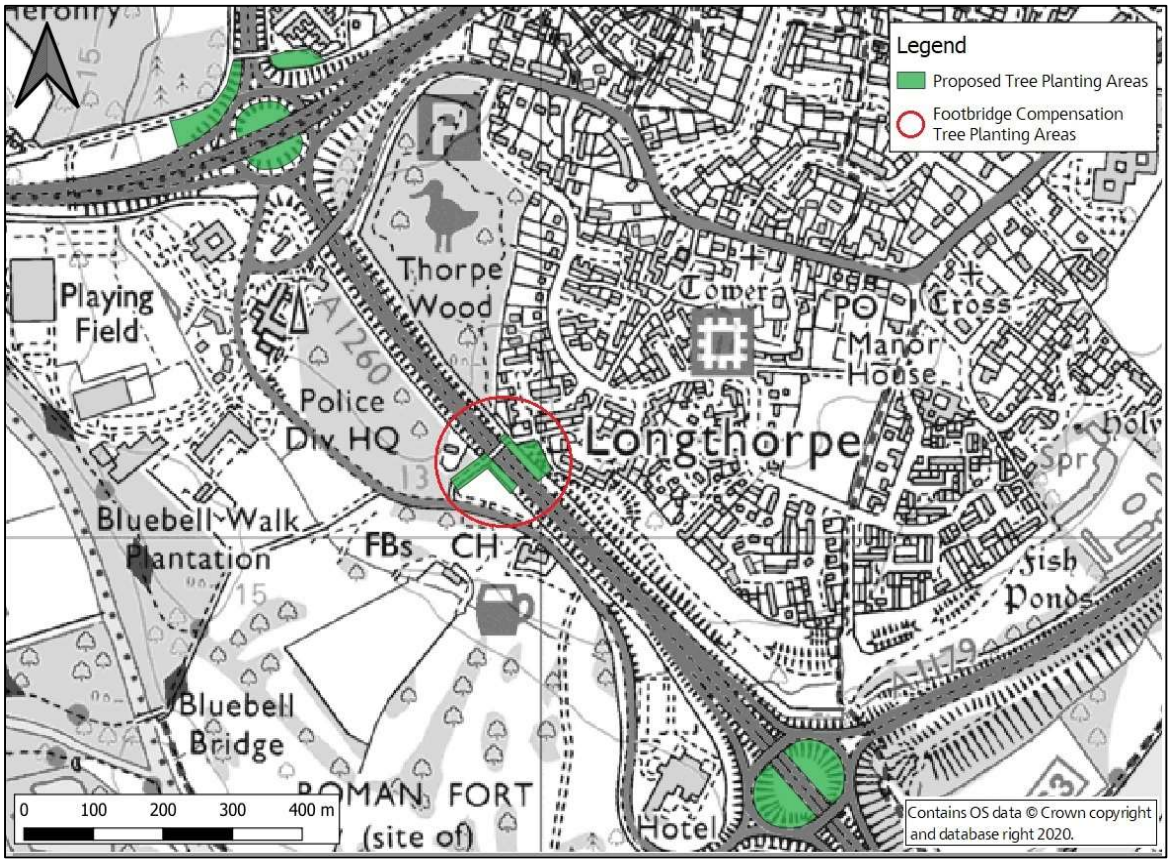


Figure 2.21: Tree Planting Areas for the Junction 15 Improvement Scheme

2.19.31 Tree planting in these areas will provide a continuation of the vegetation already present, with the quantity, species and location being agreed with PCC and Aragon Direct Services, in line with the 'Five Tree Planting Principles' set out with the Peterborough Local Plan, policy LP29[22].

2.19.32 Additionally, tree planting within the study area will also adhere to the CPCA supported 'Doubling Nature' vision[23]. The use of the vision within the scheme will help enhance and invest in the natural environment, helping to increase the net gain of wildlife rich greenspaces within the region.

Environmental and Landscape Summary

2.19.33 The environmental impact associated with the footbridge has been identified early on in Detailed Design. Through site investigation and thorough option development work, the highest value trees within the vicinity of the footbridge have been retained where possible, and appropriate mitigation measures identified. Where trees have been selected for removal, the grading of the trees are lower adhering to the BS8537 guidance and a replacement tree planting scheme has been developed..

2.19.34 Tree removal surrounding the footbridge will be compensated for through tree replacement, with additional environmental improvements contributing to the biodiversity net gain of the project. In line with National Planning Policy Framework (2021)[24] and Peterborough City Councils Biodiversity Strategy (2018)[25] a Biodiversity Net Gain report will be produced, in order to inform and further enhance the ecological value of the site as compensation for the local communities affected.

2.19.35 Figure 2.22 overleaf shows all the elements included within the final scheme.

[22] https://drive.google.com/file/d/1NMAZKc0AcA8ibplwB_2raMVjtVojH6r0/view.
[23] https://mk0cpcamainsitehdbtm.kinstacdn.com/wp-content/uploads/documents/key-documents/business-plan/current-business-plan/COMBINED-AUTHORITY-BUSINESS-PLAN.pdf.
[24] National Planning Policy Framework (publishing.service.gov.uk)
[25] Peterborough Biodiversity Strategy https://drive.google.com/file/d/10YF973xzsXDqyT4zjPEYNC6RMgkMJNtj/view.

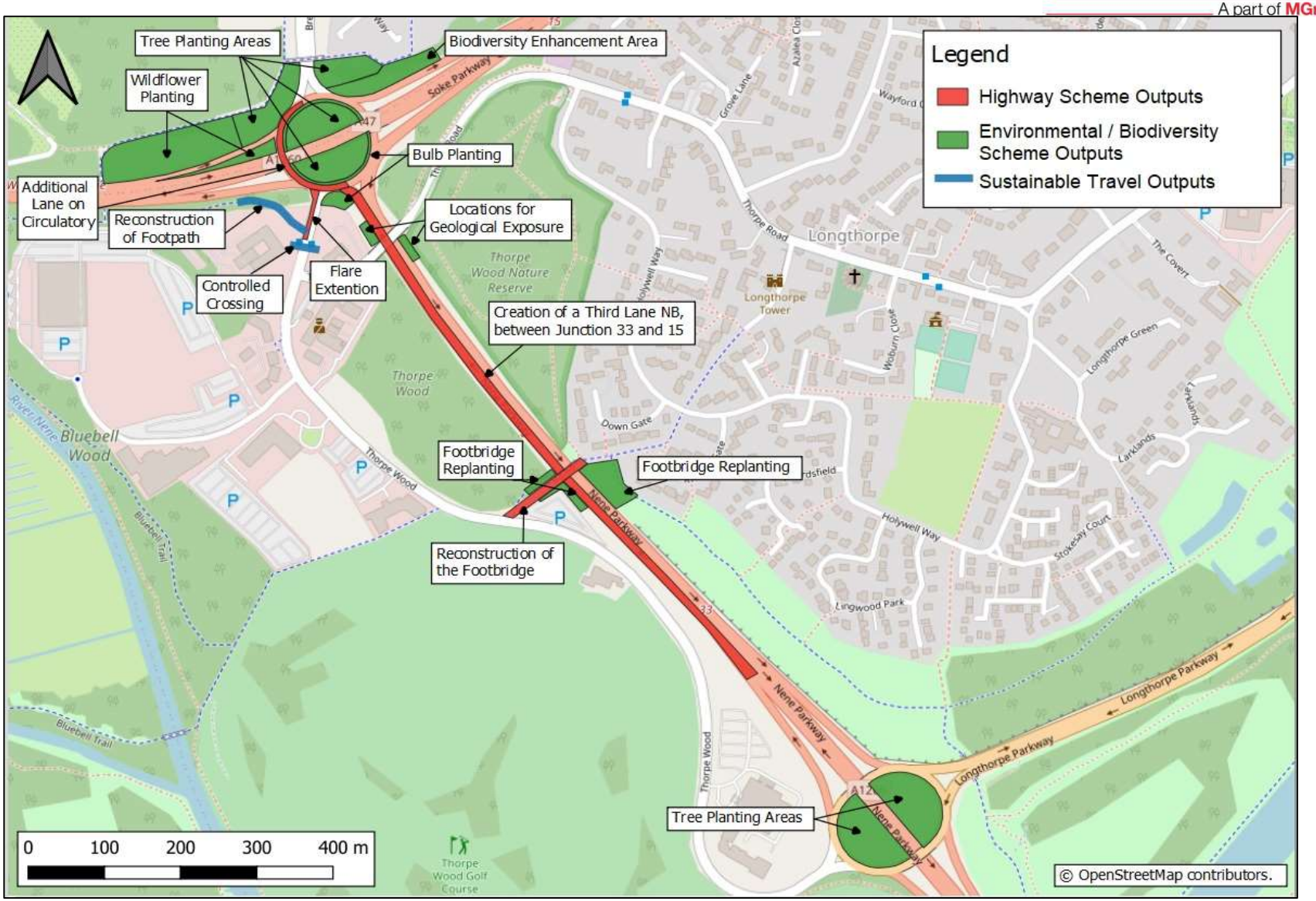


Figure 2.22: Final Scheme Improvements at Junction 15

2.20 Sustainable Transport Improvements

2.20.1 The Junction 15 Scheme includes the following components which will improve active travel provisions within the study area:

- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement and upgrade of the pedestrian footbridge over the A1260 Nene Parkway
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton

Thorpe Wood Segregated Cycle Lane

2.20.2 As discussed earlier, PCC are making improvements to sustainable transport infrastructure within the vicinity of Junction 15, particularly along Thorpe Wood. These improvements support The Council's commitment to active travel and the recent adoption of the DfT's LTN 1 / 20 'Cycle Infrastructure Design' guidance in October 2020[26].

2.20.3 Although outside the scope of the Junction 15 scheme, these sustainable travel improvements will complement the Junction 15 scheme, particularly the footbridge improvements, and will include:

- Creation of a new segregated cycle lane along Thorpe Wood
- The resurfacing of the footpath between Thorpe Road bridge and Longthorpe.

2.20.4 Stakeholder engagement between PCC, CPCA and the Peterborough Cycle Forum (key stakeholder) was held as part of the consultation exercise undertaken between October and December 2020. During the consultation period the concept of a cycle lane along Thorpe Wood was shared with the Cycle Forum, with discussions primarily focusing on the options to provide on-road or off-road facilities. With the higher standards and core principle incorporated into the recently adopted LTN 1/20 guidance, the decision was made that any cycle way in the area should be an on-road segregated cycleway, and this led to the adoption of an on road bi-directional segregated cycleway (3m in width, with a 1m separation buffer) situated on the northbound carriageway of Thorpe Wood.

2.20.5 The Thorpe Wood cycleway featured as part of the project at the time of the consultation, however funding has now been secured to deliver these improvements as a separate project. These improvements are now included within Peterborough's Local Cycling and Walking Infrastructure Plan (LCWIP).

26 https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/951074/cycle-infrastructure-design-ltn-1-20.pdf.

2.20.6 Work undertaken for the LCWIP has shown cycle improvements within this area will provide good value for money and DfT funding has been secured to begin developing these improvements and work has commenced. As part of this independent project, there will be a further consultation exercise with stakeholder groups and the public at the appropriate design phase.

2.20.7 Figure 2.23 shows the option generated as part of the Junction 15 consultation.

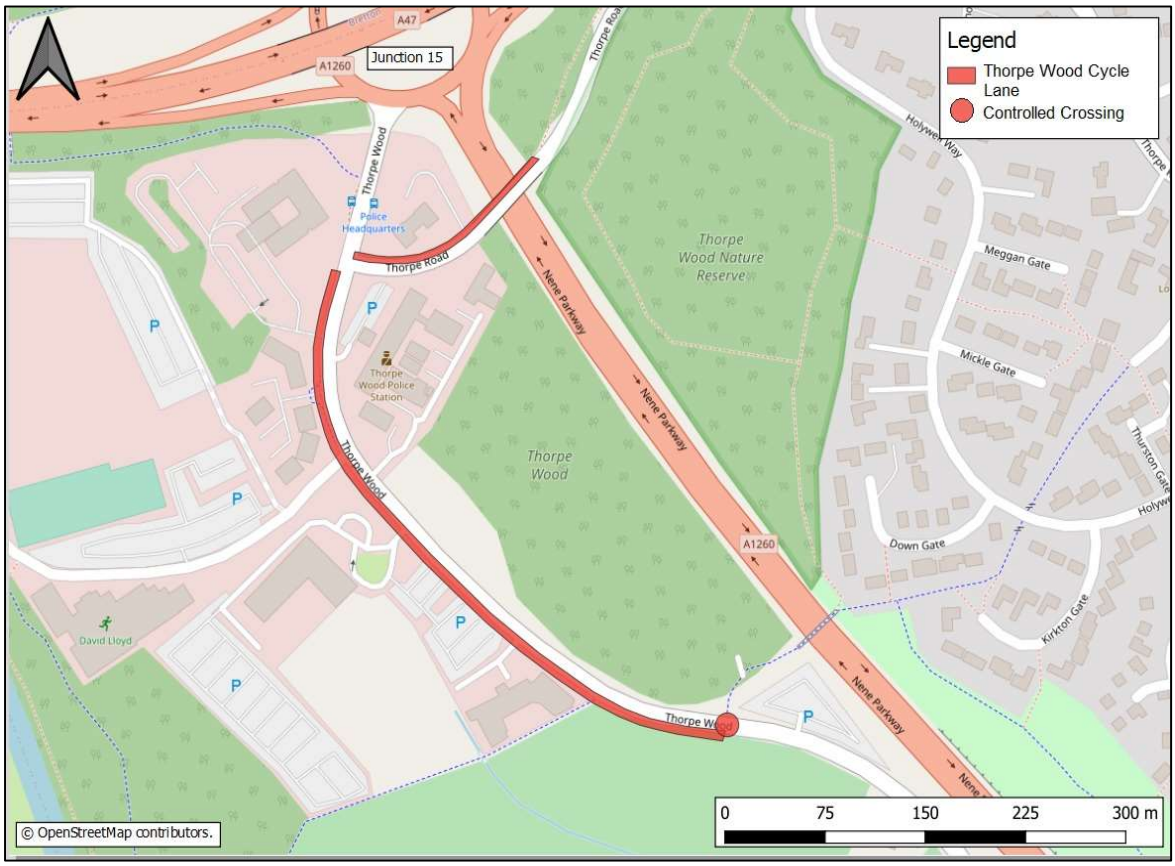


Figure 2.23: Provisional Design Concept for the Thorpe Wood Cycle Lane

2.20.8 The cycleway will be one of the first LTN 1/20 compliant pieces of infrastructure within the City once built, and will increase the accessibility of the Thorpe Wood Business Park and create a more attractive route into Ferry Meadows Country Park, which is a popular destination in the area. The Council's commitment to install LTN 1 /20 infrastructure supports plans to improve sustainable travel infrastructure across the City.

2.21 Strategic Case Summary

2.21.1 The Strategic Case has outlined the wider policy context for the proposed scheme, including the policy framework of the CPCA, including the Local Industrial Strategy, CPIER, Growth Ambition Strategy and the Local Transport Plan.

2.21.2 Junction 15 is identified within the Local Transport Plan as a pinch-point on the Peterborough Parkway Network, where improvements are necessary to improve journey time reliability and enable the growth identified with the Peterborough Local Plan.

2.21.3 The following (pre-COVID-19) issues have been identified at Jucntion 15:

- Extensive queue lengths on A1260 Nene Parkway (northbound): Extensive queues occur in both the AM and PM peak periods, however in the PM peak queues can stretch back over a mile impacting the surrounding road network
- Queuing on other approach in the AM and PM peak periods: During the AM peak traffic queues on the A47 eastbound off-slip when approaching the junction, with site observations showing this occasionally reaches back to the A47 main line
- Conflicts between dominant movements: The primary conflict between movements is vehicles originating from A1260 Nene Parkway and vehicles on the circulatory heading for Thorpe Wood. This results in limited gap availability for vehicles on Nene Parkway to join the circulatory
- High accident statistic rate particularly with rear end shunts: Between 2015 and 2020, there were 90 accidents recorded within the study area, of which 84 were classified as ‘slight’, which indicates a high number of rear-end shunts on the approach to the junction.
- Poor pedestrian facilities and connectivity: An NMU audit was undertaken to identify any improvements to the walking and cycling routes close to Junction 15. A number of improvements were identified, and these have been included within the final designs of the scheme at Junction 15.

2.21.4 If no intervention were to take place at Junction 15 the existing issues of congestion, delay and poor journey times will continue to worsen, impacting the operational performance of the junction and the wider area of A1260 Nene Parkway and A605 Oundle Road. A comparison of the delay through the junction in 2017 (Base Scenario) and in 2026 (Do Minimum Scenario) showed that there was an increase in delay of 1,265 seconds in the AM peak hour and 1,186 seconds in the PM peak hour.

2.21.5 The scheme objectives were developed by considering the existing and future issues at Junction 15, as well as the wider policy objectives.

2.21.6 Primary objectives include:

- Tackle congestion and improve journey time reliability: Tackle congestion and address journey time reliability on the primary approaches
- Support Peterborough's Growth Agenda and encourage homes and jobs: Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand
- Create wider economic benefits: Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space
- Protect and improve the biodiversity value within the study area: Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the study area.

2.21.7 The Junction 15 Improvement Scheme will satisfy all of the primary objectives, and as many of the secondary objectives stated within the Strategic Case as possible.

2.21.8 There are not considered to be any interdependencies beyond the typical highway scheme risks and the scheme is self-contained and does not require the completion of any other highway works to progress.

2.21.9 Discussions between PCC and the lease holder of The Nene Park Trust are underway for use of the Thorpe Wood golf course as the site compound.

2.21.10 The COVID-19 pandemic continues to cause some uncertainty as to how the general public will interact with transport systems in future.

2.21.11 Since March 2020, traffic flows on the monitored City Strategic Route (Junction 3) have been considerably below the pre-COVID-19 daily average of approximately 52,000 vehicles. However, the numbers are shown to increase and decrease in line with the introduction and easing of restrictions.

2.21.12 Monitoring specifically on the A1260 Nene Parkway approach of Junction 15 has shown a similar pattern to the Strategic Parkway route, with traffic steadily recovering from the multiple lockdowns experienced. Since April 2021, traffic levels on the A1260 Nene Parkway had recovered to 95% of pre-COVID-19 levels in the AM peak hour and 99% in the PM peak hour. This steady recovery to baseline traffic levels, has seen the return of conditions such as rolling queues northbound, which were present before the COVID-19 pandemic and will be addressed by the Jucntion 15 improvement scheme.

2.21.14 The option development and assessment process has been reported within this chapter and in greater detail within the Option Assessment Report (OAR) (October 2019). An option identification workshop was held to identify options, which were then scored using an EAST assessment to shortlist options to take forward for further assessment. The shortlisted options were assessed using a purpose built Aimsun Next microsimulation model to determine which were the best performing and most appropriate to select as the Preferred Option.

2.21.15 Option 4b was identified as the Preferred Option and comprises of the widening of the A1260 Nene Parkway northbound approach to three lanes from Junction 33, and the associated widening of the Junction 15 circulatory between A1260 Nene Parkway and Bretton Way approaches.

2.21.16 There are a high number of stakeholders associated with the scheme, all of which have been consulted on the preferred scheme design following the approval of the OBC. The scheme has full support from all stakeholders, with feedback from PCC's Natural and Historic Manger, The Cycle Forum and GeoPeterborough incorporated into the final scheme design, enhancing active travel provision and biodivesity..

2.21.17 National Highways have also been consulted throughout all stages of the schemes development, and their support is vital to the success of the scheme.

2.21.18 The public consultation for the scheme was undertaken online for a 6-week period, prior to the completion of Detailed Design. No objections were raised from members of the public during the consultation period.

2.21.19 It should be noted that residents located within the immediate vicinity of the footbridge over the A1260 Nene Parkway will be contacted via letter in advance of any works, to inform them of the scheme details, including the construction schedule, soft landscaping plans and biodiversity improvements. Communication will then be maintained throughout the construction phase of the footbridge.

2.21.20 Adjustments have been made to the Preferred Option since the OBC and Preliminary Design stageas more detailed information has become available and stakeholder feedback received.

2.21.21 These adjustment include environment enhancements to allow for biodiversity net gain and the relocation of the footbridge to the south of the existing structure location to ensure a compliant facility.

2.21.22 The Preferred Option ('the scheme'), will include:

- Creation of a third lane (northbound) between Junction 33 and Junction 15 of the A1260 Nene Parkway, with a speed reduction to 60MPH implemented
- Creation of a three-lane circulatory on Junction 15 between the A1260 Nene Parkway approach and the Bretton Way exit
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement of the pedestrian footbridge over the A1260 Nene Parkway (to facilitate the creation of a third northbound lane and bring the footbridge to standard)
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton
- Environmental and biodiversity enhancements in the north-eastern corner of Junction 15 between Bretton Way and A47 eastbound on-slip
- Wildflower Planting Trial centred on the grass verges either side of the A47 eastbound off-slip
- Areas of mass bulb planting located on the lower ledge of the Junction 15 circulatory as well as the grass verge between the A1260 Nene Parkway and Thorpe Wood
- Tree planting at several locations across the study area as compensation for tree loss at the footbridge and helping to achieve biodiversity net gain.
- The exposing of the geological profile of the A1260 Nene Parkway embankments near Thorpe Road Bridge and subsequent interpretation board, including 30-50m on the eastern embankment and approximately 50m on the western embankment

2.21.23 The carbon cost of 840.61 tCO2e was calculated for the based on the Preliminary Design. In order to reduce the carbon cost of the final scheme design, a carbon assessment workshop was held in May 2021, and the following mitigations will be used within construction where possible to reduce the carbon cost:

- Energy use controls including early transfer to mains electricity, minimising the use of generators and use of LED lights
- Use of low carbon concrete replacements where feasible
- Use of electric powered service vehicles during construction
- Use of low carbon fuels such as HVO.

2.21.24 By monitoring and reporting throughout construction, a final carbon footprint value for Junction 15 can be produced. This will provide insight into what carbon initiatives work well and areas for improvement on future PCC and CPCA projects.

2.21.25 The final scheme is shown to deliver improvements to the delay and travel times expected at the roundabout, as well as enhance the active travel network and local environment, whilst meeting all of the wider policy objectives, and there is considered to be a very strong strategic case for investment in the Jucntion 15 improvement scheme.

3. The Economic Case

3.1 Introduction

3.1.1 This chapter sets out the approach taken to assess the Economic Case for the Junction 15 Improvement Scheme and demonstrates that the scheme offers Very High Value for Money.

3.1.2 The scheme appraisal focuses on the aspects of scheme performance that are relevant to the nature of the intervention and uses the latest TAG 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

3.2.1 The technical assessment documented in the OAR (September 2019) identified Option 4b as the Preferred Option. Option 4b was progressed within the OBC and developed further within this FBC. The Economic Assessment has been undertaken on the design of Option 4b.

3.2.2 The components included in Option 4b are listed overleaf:

- Creation of a third lane (northbound) between Junction 33 and Junction 15 of the A1260 Nene Parkway, with a speed reduction to 60MPH implemented
- Creation of a three-lane circulatory on Junction 15 between the A1260 Nene Parkway approach and the Bretton Way exit
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement of the pedestrian footbridge over the A1260 Nene Parkway (to facilitate the creation of a third northbound lane and bring the footbridge to standard)
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton
- Environmental and biodiversity enhancements in the north-eastern corner of Junction 15 between Bretton Way and A47 EB on-slip
- Wildflower Planting Trial on the grass verges either side of the A47 eastbound off-slip
- Areas of mass bulb planting located on the lower ledge of the Junction 15 circulatory as well as the grass verge between the A1260 Nene Parkway and Thorpe Wood
- Tree planting at several locations across the study area as compensation for tree loss at the footbridge and helping to achieve biodiversity net gain.
- The exposing of the geological profile of the A1260 Nene Parkway embankments near Thorpe Road Bridge and subsequent interpretation board, including 30-50m on the eastern embankment and approximately 50m on the western embankment

3.2.3 The Detailed Design for this scheme is provided in Appendix G and H. Option 4b is referred to as 'the scheme' for the remainder of the document.

3.3 Approach to Appraisal

3.3.1 The Economic Case for the scheme is focused on the following assumptions:

- 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.

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

3.3.3 Transport benefits of the scheme were assessed within the Aimsun Next model. The forecast years developed within the model are 2021, 2026, and 2031, which have been used to appraise the impacts of the scheme.

3.3.4 The Aimsun Next traffic model has been used to assess the scheme, and model outputs along with scheme costs have been assessed using the DfT's Transport User Benefit Appraisal (TUBA) tool, in order to calculate a BCR for the Preferred scheme.

3.4 Economic Assessment

Present Value Costs

3.4.1 A scheme cost estimate has been produced based on the Detailed Design information. 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.

3.4.2 The Economic Assessment has undertaken for a 60-year assessment period (2021 to 2081).

3.4.3 The Base Investment Cost is the capital cost required to construct the scheme in current year (2021) prices, without a risk allowance. This is derived from the scheme cost estimate based on the Detailed Design produced by Highway and Structural Engineers.

3.4.4 Table 3.1 shows the Base Investment Cost profiled over the next three calendar years, and broken down into Construction, Land, Design and Supervision costs. Note that Construction Cost has been divided into Highways and Structures elements to enable the application of different rates of Optimism Bias within the Economic Assessment.

Table 3.1: Base Investment Cost (2021 Prices)

Calendar Year	Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation / Supervision Costs	Other	Total
2022	4,179,817	1,040,829	54,750	987,615	538,960	**6,801,971**
2023			4,563	50,903	44,913	**100,379**
2024					30,000	**30,000**
2025						
Total	**4,179,817**	**1,040,829**	**59,313**	**1,038,518**	**613,873**	**6,932,350**

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

- Real Cost increases were applied to the Base Investment Cost spend profile. Due to the current volatility in material costs, inflation has been specifically calculated for this scheme at commodity level using a combination of forecast increases and market knowledge. As a result of this, an inflation value of £343,452 has been calculated, which represents the expected increase in material and supply costs between the point of pricing (September 2021) and the realisation of these costs during construction (beginning in February 2022). Further information on this is provided in the Financial Case (Chapter 4).
- A Risk allowance of £735,027 was then applied during the construction period based on the QRA contained within the Risk Register. This includes risks associated with post-COVID-19 working practices and social distancing requirements, for example additional welfare facilities on site and increased site compound size.
- Optimism Bias was then applied in line with TAG guidance (Unit A1.2). The Construction Costs were separated into highway and structures elements and had different levels of Optimism Bias applied to reflect the maturity of the design (Stage 3 – Detailed Design). An Optimism Bias of 21% was applied to highway costs, and 28% was applied to structures costs. The total Optimism Bias applied was £1,795,474.
- Costs were then rebased back to 2010 using factors derived from the TAG Databook (July 2021) GDP Deflator.
- Costs were then discounted to 2010 in line with guidance provided in TAG unit A1.2.
- Finally, costs were converted to 2010 Market Prices using a factor of 1.19.

3.4.6 Table 3.3 beneath shows the costs described above, split into construction costs and maintenance costs.

3.4.7 Maintenance costs have been calculated based on the maintenance spend for the A1260 Nene Parkway over the last ten years. The process used for this is further explained within the Financial Case (Chapter 4).

Table 3.2: Economic Case Scheme Cost Estimate

Description of Cost Type	Construction Cost (£)	Maintenance Cost Over 60 Years (£)
Base Investment Cost	6,932,350	1,651,594
Base Cost with Real Cost Increases	7,274,498	3,533,089
Risk Adjusted Base Cost with Real Cost Increases	8,009,525	3,533,089
Risk Adjusted Base Cost with Real Cost Increases and Optimism Bias	9,804,999	3,533,089
Rebased to 2010 Price Year	7,797,934	2,724,539
Discounted to 2010 Prices	5,154,232	705,719
Adjusted to Market Prices	6,133,536	839,806

3.4.8 A full profile for these costs is provided within Appendix J.

Present Value Benefits

3.4.9 The transport benefits of the scheme were assessed using an Aimsun Next microsimulation model (Aimsun Next software Version 8.4).

3.4.10 Validation of the model was undertaken using Manual Classified Turning Counts (MCCs) and Automatic Traffic Counts (ATCs) against modelled demand, and modelled Journey times assessed against TomTom data. Full details relating to the calibration and validation of the model can be found in the Local Model Validation Report (LMVR) which is available upon request.

3.4.11 Forecast traffic flows were then produced using information from TEMPro (version 7.2b), following the methodology as set out by the DfT's TAG guidance Unit M4. Three forecast years of 2021, 2026, and 2031 were produced to reflect the years used within PCC's Local Plan and to remain consistent with other transport scheme assessments within Peterborough. The purpose of modelling these forecast years was to ensure that the preferred scheme is able to perform with additional traffic that can be reasonably expected in the future, and to understand the level of benefit that the scheme could generate within the sixty year assessment period.

3.4.12 Once a forecast model was created, two core network scenarios were developed, 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 scheme within the model network (with scheme) with the same level of future traffic growth.

3.4.13 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.

3.4.14 The Model output files are then entered into the Transport User Benefits Appraisal (TUBA, 1.9.15) software to undertake the Economic Assessment and calculate a BCR.

3.4.15 The annualisation factors shown below in Table 3.3 were used within TUBA to calculate the likely annual transport user benefits for the AM and PM peak hours. The figures have been derived using data from nearby National Highways (formerly Highways England) ATC sites and then compared against the survey data. None of the factors exceed the average number of 253 working days per year.

Table 3.3: TUBA Annualisation Factors

Time Slice	Time Period	Estimated Annualisation Factor	Description
1	AM Peak Hour	233	08:00 – 09:00
2	PM Peak Hour	245	17:00 – 18:00

3.4.16 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 due to the improvements, which reduces the money the government receives in taxes.

3.4.17 This identifies the Present Value Benefits (PVB) to be £49,600,000. A breakdown of these benefits are shown in Table 3.4 beneath.

Benefit Cost Ratio

3.4.18 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	353
Consumer Users (Commuting)	22,031
Consumer Users (Other)	16,139
Business Users / Providers	11,890
Indirect Taxes	- 813
Present Value of Benefits (PVB)	**49,600**
Costs	
Broad Transport Budget	6,823
Present Value of Costs (PVC)	**6,823**
Net Benefit / BCR Impact	
Net Present Value (NPV)	**42,777**
Benefit / Cost Ratio (BCR)	**7.269**

3.4.19 The breakdown of benefits demonstrates that the scheme is anticipated to have a positive impact on greenhouse gas emissions (£353,000) with the majority of benefits being realised by commuting trips. A signficant proportion of benefit is also experienced by 'Other' and Business trips. There is a disbenefit of - £813,000 to indirect taxation as a result of improved journey times reducing fuel consumption which is directly taxed by central government.

3.4.20 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.

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

TUBA Benefit Breakdown

3.4.22 As well as providing a BCR, TUBA also provides data on where the benefits of the scheme are found including but not limited to; benefits by time saving and benefits by distance. These benefits are broken down by vehicle type and journey purpose to best understand who benefits from the scheme. Table 3.5 below shows the time benefits saving by vehicle.

Table 3.5: Non-Monetised Time Benefits by Time Saving

Non Monetised Time Benefits By Time Saving							
Time benefits (thousands of person hrs) by size of time saving							
Vehicle Type	Purpose	< -5 mins	-5 to -2 mins	-2 to 0 mins	0 to 2 mins	2 to 5 mins	>5 mins
Car	Business	-2	-41	-43	117	203	804
Car	Commuting	0	-192	-259	632	911	3689
Car	Other	0	-335	-331	888	1426	5907
LGV Freight	Business	0	-22	-29	104	66	875
LGV Freight	Commuting	0	0	0	0	0	0
LGV Freight	Other	0	0	0	0	0	0
OGV1	Business	-3	-4	-11	20	7	146
OGV1	Commuting	0	0	0	0	0	0
OGV1	Other	0	0	0	0	0	0

3.4.23 The table shows that car users experience the greatest time benefit from the implementation of this scheme and that within car users, those that are undertaking other journeys (not for business or commuting) experience the greatest impact.

3.4.24 Table 3.6 below shows the time benefits by distance.

Table 3.6: Non-Monetised Time Benefits by Distance

Non Monetised Time Benefits By Distance					
Time benefits (thousands of person hrs) by distance					
Vehicle Type	Purpose	< 1 kms	1 to 5 kms	5 to 10 kms	10 to 25 kms
Car	Business	69	522	448	0
Car	Commuting	206	2294	2280	0
Car	Other	335	3626	3594	0
LGV Freight	Business	8	934	52	0
LGV Freight	Commuting	0	0	0	0
LGV Freight	Other	0	0	0	0
OGV1	Business	-3	30	128	0
OGV1	Commuting	0	0	0	0
OGV1	Other	0	0	0	0

3.4.25 The table shows that those making localised trips (1-5km) benefit most from the proposed scheme, although those making slightly longer trips (5-10km) also benefit significantly from the scheme. As with the time savings, car users experience the greatest benefits, mostly those who commute or travel for other purposes.

3.4.26 It should be noted that as this is a microsimulation model with a small network, it is limited in its ability to report longer distance trips. Therefore, the current outputs are skewed towards shorter distance trips. As Junction 15 is an intersection between major strategic routes, improvements here are likely to have benefits for medium to long distance trips that are not reported within Table 3.6.

3.4.27 Table 3.7 below shows that the scheme benefits are greater in the PM than the AM peak, but both peaks have significant benefits.

Table 3.7: User Benefits by Time Period

User Benefits and changes in revenues £000s.	
Period	**User Time**
AM	16,743
PM	29,962

3.5 Scheme Risks, Sensitivities and Uncertainties

3.5.1 The scheme is considered to be low risk in construction terms, especially since the required land is within ownership of PCC. However, sensitivity tests have been undertaken to confirm the robustness of the business case in a lower-growth scenario.

3.5.2 The COVID-19 pandemic has seen a significant drop in highway usage as part of the national lock-down, as no-one knows what overall impact this will have on highway usage and growth moving forward, the low-growth sensitivity test is a way to measure the scheme benefits against a scenario where traffic growth doesn't match pre-COVID-19 levels.

3.5.3 As the benefits of the scheme largely relate 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 sensitivity tests, and their impact on the business case, are detailed later in this chapter.

3.5.4 As part of the scheme design and costing process, a Risk Register and a Quantified Risk Assessment (QRA) have been produced and the risk allowance is incorporated into the scheme costs used within the Economic Assessment. Further details on these costs are provided beneath.

3.5.5 The objective of the scheme is to unlock congestion and significantly reduce delay at a key interchange on the parkway system, positively improving the operational performance of other major routes and junctions on the city network, particularly Nene Parkway and Oundle Road. As described in the Peterborough LTTS, these improvements will help facilitate the identified growth aspirations set for the city.

3.6 Sensitivity Testing

Growth Scenario

3.6.1 Sensitivity testing has been undertaken to determine whether or not the proposed scheme could still achieve a high Value for Money if the expected road traffic growth differs from current predictions. This testing has been undertaken by using figures from TEMPro (version 7.2b) to develop low and high growth scenarios. This is done by adjusting the increase in trips in the forecast matrices.

3.6.2 The low growth scenario has been used to assess the impact of the COVID-19 pandemic on traffic levels. Traffic counts have been undertaken at Junction 15 over the last twelve months to monitor the impact of the COVID-19 pandemic on traffic volumes, and this monitoring has demonstrated that, as of June 2021, traffic levels have returned to a level higher than those assessed as part of the low growth scenario. This confirms that the low growth scenario is an appropriate assessment to understand the impact of the pandemic on the sensitivity of the schemes value for money.

3.6.3 Table 3.8 below shows the AM and PM peak hour matrix sizes for the 2031 central and low growth scenarios compared to the equivalent matrix size based on the observed traffic levels in June 2021 (following the lifting of restrictions on June 21st). Further information on the traffic monitoring undertaken at Junction 15 during the pandemic is provided in the Strategic Case (Section 2.14) and the data used to calculate the 'Covid observed' matrix size is provided in Figure 2.11.

Table 3.8: Number of Trips in Low, Central and High Growth Scenarios

2031 Matrix size (vehicles)	AM	AM (% of Core)	PM	PM (% of Core)
Central Growth Matrix	10,918	100	10,792	100
Low Growth Matrix	10,041	92	9,929	92
COVID-19 Observed Matrix	10,372	95	10,037	93

3.6.4 The trip matrix totals used for the low and high growth sensitivity tests are displayed in Table 3.9 below, and represented graphically in Figure 3.1 and Figure 3.2 below.

Table 3.9: Number of Trips in Low, Central and High Growth Scenarios

Total Number of Trips by Scenario			
AM	**Low**	**Central**	**High**
2017	9,376	9,376	9,376
2021	9,472	9,940	10,409
2026	9,744	10,447	11,150
2031	10,041	10,918	11,795
PM	**Low**	**Central**	**High**
2017	9,234	9,234	9,234
2021	9,331	9,792	10,254
2026	9,616	10,309	11,001
2031	9,929	10,793	11,656

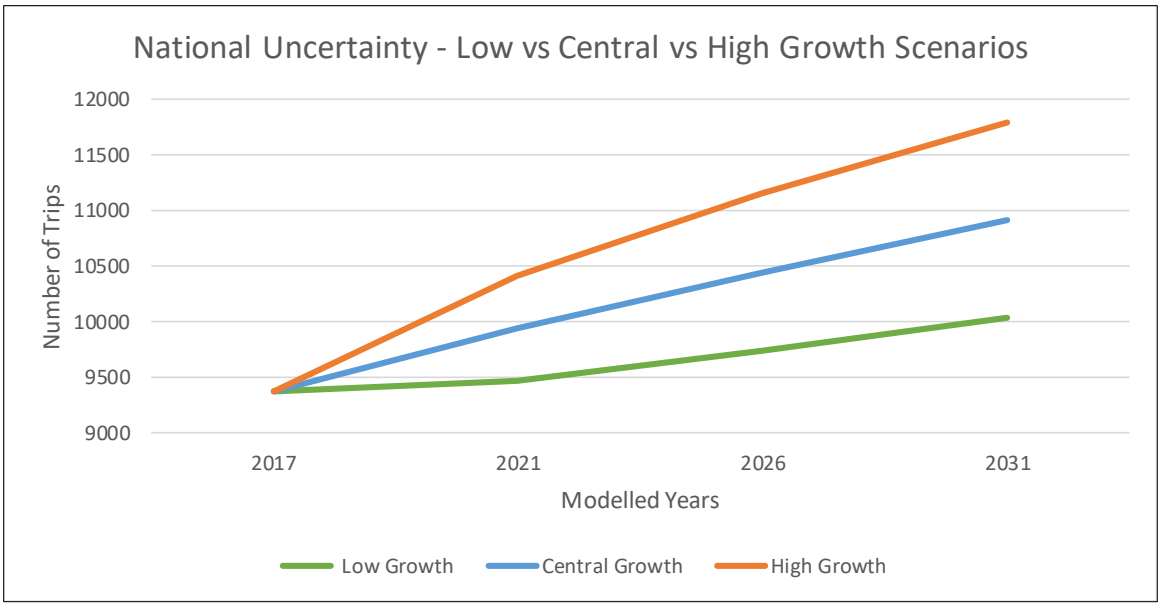


Figure 3.1: AM Peak Hour: Total Number of Trips in Model

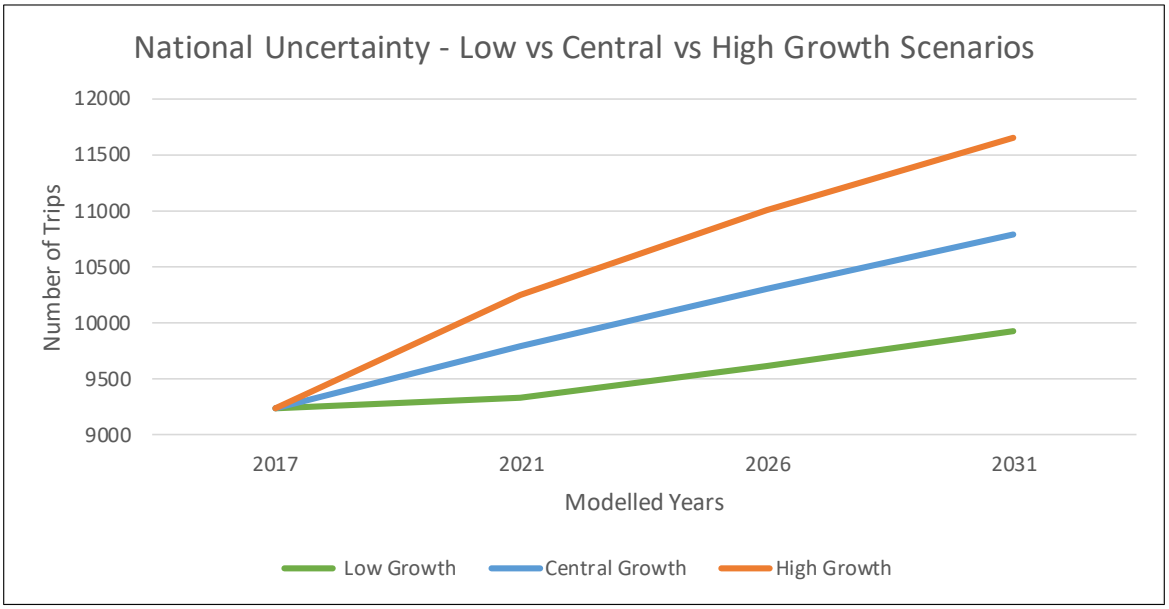


Figure 3.2: PM Peak Hour: Total Number of Trips in Model

3.6.5 Once the low and high growth scenarios had been assigned within the Aimsun model, the outputs were used within the Economic Assessment to determine if the scheme would still operate well and offer value for money if lower or higher than anticipated traffic growth occurred.

3.6.6 A summary of the BCR for each of the growth ranges used in the sensitivity test is presented in Table 3.10 beneath.

Table 3.10: Changes in Benefits under Different Growth Scenarios

BCR Component	Low Growth	Central Growth	High Growth
PVC (£)	6,823	6,823	6,823
PVB (£)	36,711	49,600	53,978
NPV (£)	29,888	42,777	47,155
BCR	5.38	7.269	7.911

3.6.7 The results from the sensitivity test show that the scheme would still offer Very High Value for Money in both a low and high growth scenario.

Appraisal Period

3.6.8 An additional sensitivity test has been undertaken to demonstrate how robust the BCR is against a reduced appraisal period. Microsimulation modelling only considers a limited study area and does not consider the potential impact of re-routing as a result of changes in traffic volumes and congestion levels. It is not expected that strategic re-routing would happen in the short-term due to existing network constraints on alternative routes, however reducing the appraisal period limits the influence of potential re-routing in the medium and long-term on the economic performance of the scheme.

3.6.9 Table 3.11 below demonstrates how the benefits and costs change over reduced appraisal periods of 40 and 20 years. Maintenance costs have also been limited to the length of the updated appraisal period.

Table 3.11: Financial Case Scheme Cost Estimates

BCR Component	60 Year Appraisal Period	40 Year Appraisal Period	20 Year Appraisal Period
PVC (£)	6,823	6,700	6,500
PVB (£)	49,600	37,883	21,812
NPV (£)	42,777	31,183	15,312
BCR	7.269	5.654	3.356

3.6.10 The test demonstrates that the scheme would still provide at least high value for money in the short-term with a BCR of 3.356.

Journey Time Sensitivity Test

3.6.11 A sensitivity test has been undertaken to understand the impact of reducing or increasing the modelled journey times. Factors were applied in TUBA to the time skim matrices for both the DM and DS scenarios.

Table 3.12: Financial Case Scheme Cost Estimates

	Reduced Journey Time	Core Journey Time	Increased Journey Time
Factor applied	90%	100%	110%
PVC (£)	6,823	6,823	6,823
PVB (£)	44,695	49,600	54,470
NPV (£)	37,872	42,777	47,647
BCR	6.551	7.269	7.983

3.6.12 This test demonstrates that should the journey times be slower or faster than modelled, a Very High value for money BCR would still be achieved. Reducing the journey time per vehicle in both the DM and DS scenarios shows there would be a reduction in overall benefits. If the journey times are slower than the core DM and DS scenarios, then the scheme would provide greater value for money.

Cost Sensitivity Test

3.6.13 Table 3.13 below demonstrates the VFM category that various PVCs would result in. The current core scenario PVC of £6,823 falls well into the ”Very High” category, and could almost double before it falls into the ”High” Value for Money Category.

Table 3.13: Value for Money Categories and the associated Present Value of Costs

Category	Description	PVB	PVC required to achieve VfM statement
Poor	BCR between 0 and 1	£49,600.00	>= £49,600
Low	BCR between 1 and 1.5	£49,600.00	£49,600 to £33,067
Medium	BCR between 1.5 and 2	£49,600.00	£33,067 to £24,800
High	BCR between 2 and 4	£49,600.00	£24,800 to £12,400
Very High	BCR greater than or equal to 4	£49,600.00	<= £12,400

3.7 Additional Qualitative Assessments

3.7.1 Due to the nature of the scheme, the appraisal and Value for Money assessment has focused on transport user benefits.

3.7.2 However, qualitative analysis has been undertaken for the environmental, social and distributional impacts of the Junction 15 scheme where appropriate. These are summarised beneath, and included within the Appraisal Summary Table (AST) contained within Appendix K.

3.7.3 Note that these qualitative assessments have not been included within an Adjusted BCR, and that the scheme BCR and Value for Money statement are based purely on transport user benefits.

Arboriculture

3.7.4 The A1260 Nene Parkway is enclosed by man-made embankments and linear groups of screening trees, with planted species typically comprising of Ash, Hawthorn, Field Maple and Sycamore.

3.7.5 Tree cover surrounding the footbridge are comprised of Category B, Category C and Category U trees. No category A trees have been Identified within the proposed footbridge site.

3.7.6 The final structural design for the footbridge requires 53 trees to be lost, in order to accommodate the implementation of the new footbridge as well as the demolition of the existing structure. While the selected design results in a loss of 53 trees, in comparison to other footbridge proposals assessed, fewer 'Category B' trees are lost, and a higher quality stock of trees are retrained with the final design. It should be noted the proposed footbridge design and ramp configuration alongside tree removal plans were reviewed by PCC's, Natural & Historic Environment Manager, as a key stakeholder for the scheme.

3.7.7 Due to known sensitivities surrounding the footbridge element of the scheme, the environmental impact will be minimised through careful planning, the production of an Arboricultural Impact Assessment (AIA), an Arboricultural Method Statement and the on-site involvement of an Arboricultural Clerk during works. In addition, a Biodiversity Net Gain Report will be produced in line with Local Plans, and any impact due to tree removal will be compensated through tree and planting measures.

Landscape

3.7.8 The proposed scheme is not expected to alter the landscape character of the study area once complete, with the enclosed character of the highway retained by the flanking vegetation along the embankments.

3.7.9 The removal of selected trees, 53 total, associated with the footbridge design has the potential to cause a visual impact to the nearby residential area during and short-term post construction.

3.7.10 To mitigate the loss of tree cover around the vicinity of the footbridge a landscaping design has been developed and will be implemented as part of the scheme. The landscape design includes planting 59 trees including species of Field Maple, Wild Cherry, Hornbeam and Hazel. Supporting shrub and understorey planting will incorporate species of Dogwood, Hawthorn, Hazel, Guelder Rose, Privet and Snowberry. This will ensure all affected areas are reinstated and address ecological recommendations from PCC stakeholders as well as fulfil opportunities for biodiversity net gain in line with local plans.

3.7.11 The physical presence of construction works will give the visual appearance of construction plant and machinery, movement of heavy vehicles, and other activities associated with the works. However, any landscape and visual effects associated with the works are anticipated to be limited, localised, and temporary.

Ecology

3.7.12 The closest designated site to the proposed scheme is Thorpe Wood Ancient Woodland which is classified as a County Wildlife Site (CWS). At the closest point the woodland area is approximately 40m from where works will be undertaken, this being largely focused on the footbridge. Based on the scope of works for the footbridge and distance from the site, it is unlikely the scheme would cause any significant adverse effect on this designation.

3.7.13 The Wildlife Trust for Cambridgeshire who are responsible for Thorpe Wood have been consulted as well as Natural England, both of which have no objections to the proposed works.

3.7.14 Ecological surveys undertaken within the vicinity of the footbridge have resulted in the following findings:

- Trees within the area are likely to support breeding birds.
- Trees adjacent to the footbridge area were noted to provide low to moderate potential for roosting bats
- Two holes / burrows were noted at the time of the survey for potential badger sets.

3.7.15 To avoid adverse effect on breeding birds any clearance works related to the footbridge will be completed outside of the bird breeding season (March-September). Further mitigation will be included within the Construction Environment Management Plan (CEMP).

3.7.16 To avoid any adverse effect on potential bats in the area surrounding the footbridge, lighting used on the footbridge structure as well as during construction will kept to a minimum, being carefully designed to prevent light spilling onto features including the tree line along the embankment. Handrail lighting will be used for the footbridge as agreed by PCC stakeholders and ecologists.

3.7.17 Camera traps were installed prior to construction of the scheme, with findings suggesting no presence of badgers within the vicinity of the footbridge. Further assessments will be made prior to mobilisation and if holes / burrows be confirmed to be in use by badgers, where possible all works associated with the construction of the new footbridge will be undertaken at least 30m from each hole entrance. If this is not possible, and works are required to be within this 30m buffer area, a badger mitigation licence (for disturbance or destruction) from Natural England would be required. If such a licence is required, works would be reprogrammed to ensure they are undertaken and completed within the licensing period (between 1st July and 30th November).

Archaeology and Heritage

3.7.18 An appraisal of the historic environment has identified that the area has high archaeological potential, due to the known buried archaeological remains nearby from the prehistoric period onwards.

3.7.19 The potential impact identified for the proposed scheme would be a direct, physical, impact to buried archaeological remains, if present in undisturbed pockets of land. This potential impact would occur as a result of the new infrastructure such as the additional third lane on the parkway or the relocation of the footbridge.

3.7.20 Consultation has been undertaken with Historic England and PCC's Principal Archaeologist, in order to determine the likely impact of the scheme upon the below-ground archaeological remains. It has been agreed that given the history of land use and the anticipated degree of historic disturbance, the works are unlikely to give rise to significant environmental effects. It should be noted that potential impact on archaeological remains if uncovered will be mitigated against, through the implementation of an archaeological programme of work (e.g., watching brief of all new ground disturbance / strip, map and record methodology to be followed).

3.7.21 In addition to the study area being of high archaeological potential, local heritage assets which have been considered within assessments include the presence of the Scheduled Monument (Longthorpe Roman Fort and Settlement) located close to the footbridge as well as the Grade II* Registered Park and Garden associated with Milton Hall as the closest designated asset to Junction 15. No impact to the setting of heritage assets has been identified as a result of the proposed works.

Air Quality

3.7.22 The site is not located within an Air Quality Management Area (AQMA). The operation of Junction 15 following implementation of the scheme is unlikely to affect air quality at this location.

3.7.23 The construction phase has potential to impact air quality due to the generation of dust and additional emissions generated from plant vehicles and machinery. These construction activities will be short term effects and will be suitably reduced through the implementation of best practice mitigation measures approved by the Institute of Air Quality Management.

3.7.24 Based on the above information the scheme is unlikely to significantly impact air quality in the local area.

Noise

3.7.25 Noise impact assessments have been assessed using the TAG Unit A3 Environmental Impact Appraisal (July 2021).

3.7.26 The main sources of noise at the site are likely to arise from road traffic. Noise levels due to road traffic were calculated at properties within 600m of the principal routes identified as having significant changes in traffic / alignment due to the proposed scheme. This included a total of 553 properties.

3.7.27 During the operational phase, it is not considered the proposed development will result in a significant long-term change in the existing noise climate. Compliance with the relevant criteria will ensure impacts are avoided or appropriately mitigated.

3.7.28 During construction, works have the potential to cause ‘disruption due to construction’ resulting from the demolition of the existing footbridge, piling, the use of heavy plant and other noisy activities on site.

3.7.29 A Construction Noise Assessment will be produced in accordance with BS 5228 -1:2009 ‘Code of practice for noise and vibration control on construction and open sites – Part: Noise’. The assessment will detail best practice noise mitigation and management measures that should be employed during the construction phase, in order to minimise impacts on nearby noise sensitive receptors such as residential properties to the east. The assessment will include details of Best Practicable Means (BPM) control measures, proposed monitoring and surveys and the communication strategy for the works.

3.7.30 It is unlikely that total noise (pre-construction ambient noise plus construction noise) will exceed the pre-construction ambient noise by 5dB or more. Therefore, in accordance with BS 5228 guidance, noise levels generated by construction activities are not expected to be significant. No adverse significant effects are likely due to the operation of the parkway or footbridge.

3.7.31 Further information regarding the categories included within the qualitative assessment is provided within the EIA report found in Appendix L.

3.8 Summary of Benefits and Costs

3.8.1 The Junction 15 Improvement Scheme has a Present Value of Cost of £6,823,000 and a Present Value of Benefit of £49,600,000 resulting in a Net Present Value of £42,777,000 and a BCR of 7.269, offering **Very High Value for Money**.

3.8.2 Sensitivity testing has demonstrated that the scheme would still offer Very High Value for Money in the event of a low growth scenario, below levels recently observed during the pandemic.

4. The Financial Case

4.1 Introduction

4.1.1 This section presents the Financial Case for the Junction 15 Improvement Scheme. It concentrates on the affordability of the proposal and its funding arrangements.

4.2 Scheme Costing

4.2.1 The scheme cost estimates for the Financial Case have been prepared in line with TAG (August 2021) guidance as dictated in TAG Unit A1.2 Scheme Costs (DfT, July 2021). Each of the steps taken to produce the cost estimates are explained beneath. The estimate has been robustly costed based on Detailed Design information and extensive engagement with the construction team. It includes a risk allowance based on a Quantified Risk Assessment (QRA) and inflation.

4.2.2 The scheme cost estimates are presented in Table 4.1 beneath, and each is explained in further detail beneath.

Table 4.1: Financial Case Scheme Cost Estimates

Description of Cost Type	Cost (£) Total
Base Investment Cost	6,932,350
Risk Adjusted Base Cost	7,667,377
Risk Adjusted Base Cost with Construction Industry Inflation (**Outturn Cost**)	**8,013,642**
Inflated Risk Adjusted Costs incorporating Whole Life Costs (60 year assessment period)	11,546,731

4.2.3 Note that the costs calculated for use within the Economic Assessment are presented in the Economic Case (Chapter 3).

4.2.4 A full 60-year schedule showing how the costs have been calculated is presented in Appendix M.

Base Investment Cost

4.2.5 The Base Investment Cost is the capital cost required to construct the scheme in current year (2021) prices, before the application of risk or inflation. This is the scheme cost estimate based on Detailed Designs produced by Highway and Structural Engineers and built from the bill of quantities and construction programme. The Base Investment Cost has been informed by a target costing exercise, and supply chain contractors have reviewed the design information and provided input into the costing exercise.

4.2.6 Table 4.2 shows the Base Investment Cost broken down into Construction, Land, Design, Supervision, and 'Other' costs.

Table 4.2: Base Investment Cost (2021 Prices)

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Total Base Investment Cost (£)
2022	5,220,647	54,750	987,615	538,960	6,801,971
2023		4,563	50,903	44,913	100,379
2024				30,000	30,000
Total	**5,220,647**	**59,313**	**1,038,518**	**613,873**	**6,932,350**

4.2.7 The scheme Base Investment Cost is £6,932,350, this includes £5,220,647 of Construction related costs and £1,038,518 of Preparation and Supervision costs (£409,960 Design / £628,558 Supervision). There are also £613,873 of 'Other' costs, which are broken down beneath.

4.2.8 The Preparation costs relate to the remaining design tasks associated the footbridge, stakeholder costs such as NH licenses and design support throughout the construction phase. The Supervision costs include site supervision during mobilisation, construction and demobilisation, as well as environmental and archaeological monitoring throughout the programme.

4.2.9 The 'Other' costs refer to procurement and Project Management fees. Please note that Land costs are temporary during the construction phase, and that no land acquisition is required to build the scheme as all the required land is within PCC's ownership. A value of £30,000 is included in 2024 for post scheme monitoring which is to be undertaken at one and five year intervals following completion of the scheme in 2023. Further details of the post scheme monitoring are provided in the Monitoring and Evaluation Plan detailed in the Management Case (Chapter 6).

4.2.10 The cost profile is based upon the Construction Programme shown in Appendix N and assumes that mobilisation and occurs in January 2022 and Construction begins in February 2022, lasting until December 2022, with demobilisation happening in January 2023.

Risk Adjusted Base Cost

4.2.11 The Risk Adjusted Base Cost includes a component for risk based upon the QRA. The risk allowance made for this scheme is £735,027, which represents 10.6% of the base investment cost. This consists of three risk components, which are:

- Contractor Risk (£105,515) – owned by Milestone Infrastructure (as set out in the PHS contract)
- Client Risk (£234,793) – owned by Peterborough City Council (as set out in the PHS contract)
- Design / Scheme Development Contingency (£394,719) – a contingency to cover alterations to the scheme (and design) that may occur during the construction phase of works.

4.2.12 The Risk Register demonstrates how the Contractor and Client Risk values have been calculated and is included in Appendix F. Table 4.3 beneath shows the inclusion of the QRA within the scheme costs.

Table 4.3: Risk Adjusted Base Cost (2021 Prices)

Calendar Year	Construction Costs (£)	Land & Property Costs (£)	Preparation and Supervision Costs (£)	Other Costs (£)	Risk Allowance (£)	Risk Adjusted Base Cost (£)
2022	5,220,647	54,750	987,615	538,960	678,486	**7,480,457**
2023		4,563	50,903	44,913	56,541	**156,919**
2024				30,000		**30,000**
Total	**5,220,647**	**59,313**	**1,038,518**	**613,873**	**735,027**	**7,667,377**

4.2.13 The addition of the risk allowance takes the Risk Adjusted Base Cost to £7,667,377.

Inflated Risk Adjusted Cost (Outturn Cost)

4.2.14 The Inflated Risk Adjusted Cost, or Outturn Cost, is the Risk Adjusted Base Cost with inflation applied.

4.2.15 Due to the current volatility in material costs, inflation has been specifically calculated for this scheme at commodity level using a combination of forecast increases and market knowledge. As a result of this, an inflation value of £332,027 has been calculated for scheme construction, which represents the expected increase in material and supply costs between the point of pricing (September 2021) and the realisation of these costs during construction (beginning in February 2022). A breakdown of how this has been calculated is provided in Appendix O.

4.2.16 In addition to the inflation construction, a further inflation cost of £14,238 has been calculated to activities occurring in 2023 and 2024 (de-mobilisation and post scheme monitoring), bring the total inflation value to £343,452.

4.2.17 This value is higher than the value produced using the traditional uplifts based on GDP values and construction industry forecasts alone (which is £313,516.57) and is therefore considered robust and appropriate for use in calculating the scheme Outturn cost.

4.2.18 Inflation has been applied in line with the Construction Programme (Appendix N), and the cost of this is presented beneath in Table 4.4.

Table 4.4: Inflated Risk Adjusted Cost (2021 Prices)

Calendar Year	Risk Adjusted Base Cost (£)	Cost of Inflation (£)	Total with Inflation (£)
2022	7,480,457	332,027	7,812,484
2023	156,919	11,425	168,345
2024	30,000	2,812	32,812
Total	**7,667,377**	**346,265**	**8,013,642**

4.2.19 The cost of inflation is £343,452 which is primarily occurs during 2022 during the main phase of construction, with a small amount of inflation in 2023 which relates to the demobilisation programmed to take place during January of that year, and in 2024 which relates to the costs associated with post scheme monitoring.

4.2.20 The application of inflation brings the Scheme Outturn Cost to £8,013,642. The Outturn Cost represents the amount required to deliver the scheme.

4.2.21 This represents an increase in the scheme Outturn Cost from the Outline Business Case when it was reported as £4,537,272. There are two primary factors for the cost increase which are discussed beneath.

4.2.22 The largest cost increase since the Preliminary Design phase relates to the design changes for the creation of the third lane. The main design change leading to increased costs relates to the depth of construction for the new carriageway. The costs at OBC assumed that a sizeable portion of the new road surface could be overlaid on the existing subbase, however the core samples collected during Detailed Design identified that the subbase material was not robust enough to support this, and consequently full depth re-construction is required across a much larger area. The deeper construction across increases construction costs, material costs and excavation and disposal costs.

4.2.23 Another notable cost increase has resulted from the requirement to relocate the footbridge to ensure that is compliant with the Equality Act 2010. This was identified early in the Detailed Design process as additional survey information was collected on the approaches to the footbridge. Further design work on the footbridge also identified concerns with the increased ramp heights at the existing footbridge location, and specifically regarding privacy for nearby properties, further supporting the case for relocating the approach ramps.

4.2.24 Relocation of the footbridge has increased the construction costs, as well as the design costs, and costs associated with the necessary environmental work supporting the relocation (such as tree felling and landscaping works).

4.2.25 The Outturn cost of £8,013,642 closely matches the original project budget of £8m (without realising the potential saving identified at OBC), and it has been indicated that this funding is available subject to approval of the CPCA Transport and Infrastructure Board.

Inflated Risk Adjusted Cost Including Whole Life Costs

4.2.26 Maintenance costs have been calculated for the 60-year assessment period taking account of construction industry inflation. The application of standard construction industry inflation rates has been used for the longer-term maintenance costs as current forecasts indicate that material prices and supply chain challenges will settle within 18 to 24 months[27].

4.2.27 Maintenance costs have only been included for the new infrastructure associated with the scheme (a new third lane on the A1260 Nene Parkway northbound). All maintenance costs associated with the existing infrastructure will continue to occur separate to the Junction 15 scheme, and so have not been included within the assessment. Note that funding for the maintenance costs is not requested as part of the scheme funding and will instead be funded from the Council's future highway maintenance budgets.

4.2.28 The annual maintenance cost used to calculate the Whole Life Cost is £28,478.

4.2.29 Maintenance costs have been calculated using records of all maintenance, repair and capital renewal costs for the A1260 Nene Parkway for the then year period for 2010 to 2020. Costs relating to repairs following Road Traffic Collisions (RTCs) and correction work to the Vehicle Restraint System (VRS) have been removed from the total maintenance costs. Note that capital renewal costs have not been separated from the routine maintenance costs and profiled separately.

[27] Construction Output Price Indices (OPIs) & BCIS General Civil Engineering Cost Index

4.2.30 The costs for the ten-year period were then used to calculate an average per year. As the costs supplied were for the entire 3.5km length of the A1260 Nene Parkway, they have been factored by 0.22 to provide a cost for the 800m length section covered by the scheme (800m / 3,500m = 0.22). This cost was then factored by 0.25 to convert it from a cost for dual carriageway to a cost for a single lane. The steps taken to calculate the annual maintenance cost are shown in Table 4.5 beneath.

Table 4.5: Calculation of Annual Maintenance Costs

A1260 Nene Parkway Annual Maintenance Costs (2010 - 2020)	Cost (£)
Total Maintenance Cost	5,177,412
Average Maintenance Cost per year	517,741
Average Maintenance Cost per year for J33 - J15 (22% of total road length)	113,903
Average Maintenance Cost per year for one lane (25% of dual carriageway)	28,476

4.2.31 The annual maintenance costs have then been calculated for the 60-year assessment period and inflated using a construction industry inflation rate of 3.72%.

4.2.32 This longer-term construction industry inflation rate has been calculated using forecast indices from the BCIS General Civil Engineering Cost Index (June 2021) and the Construction Output Price Index (Infrastructure, June 2021). The inflation forecasts for both indices vary between 3.14% and 3.87% over the next three years, with the Construction Output Price Index forecasting the highest average inflation rate of 3.72% which has been used for calculating the Inflated Risk Adjusted Base Cost.

4.2.33 Table 4.6 below shows the inflation forecasts for each index.

Table 4.6: Construction Industry Inflation Forecasts (June 2021)

Data Source	Forecast Indices				% Inflation			
	Jan-21	Jan-22	Jan-23	Jan-24	21 -> 22	22 -> 23	23 -> 24	Average
BCIS General Civil Engineering Cost Index	164.5	169.9	175.3	180.8	3.28%	3.18%	3.14%	3.20%
Construction Output Price Index - Infrastructure	103.5	107.2	111.2	115.5	3.57%	3.73%	3.87%	3.72%

4.2.34 The build-up of Whole Life Maintenance Costs is shown beneath in Table 4.7.

Table 4.7: Calculation of Whole Life Maintenance Costs

Description of Cost Type	Cost (£)
Maintenance Cost incurred every ten years (2036 onwards)	28,476
Maintenance Cost for 60 Year Assessment Period (without inflation)	1,651,594
Maintenance Cost for 60 Year Assessment Period (with inflation)	3,533,089

4.2.35 Table 4.8 beneath shows the total Inflated Risk Adjusted Cost Including Whole Life Costs.

Table 4.8: Inflated Risk Adjusted Cost Including Whole Life Costs

Inflated Risk Adjusted Cost Including Whole Life Costs	Calendar Years of Cost	Cost (£)
Risk Adjusted Base Cost with Construction Industry Inflation **(Outturn Cost)**	2021 - 2023	8,013,642
Inflated Whole Life Costs	2024 - 2081	3,533,089
Inflated Risk Adjusted Cost Including Whole Life Costs	2024 - 2081	11,546,731

4.2.36 The Inflated Risk Adjusted Cost Including Whole Life Costs over the 60-year assessment period is £11,546,731. The Outturn Cost required by PCC to deliver the scheme is £8,013,642.

4.2.37 The full 60-year schedule showing how the maintenance costs have been calculated is included within Appendix J.

4.3 Budgets and Funding Cover

Funding Cover

4.3.1 It is anticipated that the full scheme Outturn Cost of £8,013,642 will be funded by the CPCA.

4.3.2 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.

4.3.3 Funding from the CPCA's Single Investment Fund has been allocated for the Junction 15 Improvement Scheme, however additional funding from alternative CPCA budgets may be required to supplement this.

5. The Commercial Case

5.1 Introduction

5.1.1 This chapter demonstrates the commercial viability of the scheme, outlining the procurement strategy and how the scheme can be reliability implemented through existing channels whilst ensuring value for money in its delivery.

5.2 Output Based Specification

5.2.1 The final scheme design has been produced following stakeholder engagement and Detailed Design. Delivery of the scheme will include the following outputs:

- Creation of a third lane (northbound) between Junction 33 and Junction 15 of the A1260 Nene Parkway, with a speed reduction to 60MPH implemented
- Creation of a three-lane circulatory on Junction 15 between the A1260 Nene Parkway approach and the Bretton Way exit
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement of the pedestrian footbridge over the A1260 Nene Parkway (to facilitate the creation of a third northbound lane and bring the footbridge to standard)
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton
- Environmental and biodiversity enhancements in the north-eastern corner of Junction 15 between Bretton Way and A47 EB on-slip
- Wildflower Planting Trial centred on the grass verges either side of the A47 eastbound off-slip
- Areas of mass bulb planting located on the lower ledge of the Junction 15 circulatory as well as the grass verge between the A1260 Nene Parkway and Thorpe Wood
- Tree planting at several locations across the study area as compensation for tree loss at the footbridge and helping to achieve biodiversity net gain
- The exposing of the geological profile of the A1260 Nene Parkway embankments near Thorpe Road Bridge and subsequent interpretation board

5.2.2 As well as the scheme outputs, delivery of the scheme will also ensure that the primary scheme objectives outlined in the Strategic Case are realised, including.

- **Tackle congestion and improve journey time reliability:** Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)
- **Support Peterborough's Growth Agenda and encourage homes and jobs:** Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand
- **Create wider economic benefits:** Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space
- **Protect and improve the biodiversity value within the study area:** Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the study area.

5.2.3 Details of how the scheme will be measured against these objectives are provided in the Scheme Evaluation Plan (Appendix Q) as discussed within the Management Case.

5.2.4 In order to deliver the above scheme outcomes, the procurement strategy will be required to deliver the following outputs:

- **Cost certainty:** Achieve cost certainty, ensuring Junction 15 can be delivered within the agreed budget.
- **Programme Certainty:** Achieve an efficient delivery that ensures that the scheme is delivered to programme and operational in 2023.
- **Quality:** Ensure an appropriate level of in the final scheme delivery, matching the scheme promoters' expectations.
- **Continuity of Knowledge:** Maintain project knowledge to support scheme construction and the successful rebuttal of any project challenge. Scheme knowledge generated through the FBC development, is an asset and will help enhance quality of delivery and achievement of programme.

5.3 Procurement Strategy

5.3.1 Delivery and supervision of the Junction 15 Improvement Scheme will be delivered in house by Peterborough Highway Services (PHS), building upon all of the development and design work that has been undertaken to date.

5.3.2 PHS is a ten-year NEC3 Term Service Contract between Peterborough City Council and Milestone Infrastructure, with responsibility for improving and maintaining Peterborough's highway network. The collaboration begun in 2013 and runs until 2023. A five-year extension to the contract has been agreed between both parties, extending the contract to September 2028.

5.3.3 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.

5.3.4 The existing subcontractor supply chain is appropriate for undertaking the work associated with the Junction 15 scheme, and the scheme will be delivered within the contract's lifespan (before 2028).

5.3.5 Procuring the scheme directly through the PHS contract enables PCC to appoint a contractor to construct the scheme (Milestone Infrastructure) 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.

5.3.6 There are also risks associated with using the PHS contract for delivery, including:

- **Price comparisons cannot be made at a scheme level:** although direct price comparisons cannot be made on individual basis at the scheme delivery level, all work packages within the scheme will be competitively tendered to sub-contractors, ensuring value for money and allowing for price comparisons to be made at a work package level.
- **Different approaches to delivery and risk are not available**: the delivery and risk models are fixed by the contract, meaning that there is no scope to vary these within the context of the PHS contract. However, these models have been used successfully on previous schemes delivered by PHS and all involved are familiar and comfortable operating with them, making scheme delivery more efficient.

5.4 Market Maturity

5.4.1 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 Junction 15 scheme to date. All skills and competencies to deliver this scheme are available within the PHS contract.

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

5.5 Sourcing Options

5.5.1 The scheme will be delivered by PHS, using sub-contractors to assist with the delivery of the scheme.

5.5.2 A pool of pre-qualified sub-contractors for the provision of key work streams will be selected based on a considered selection criteria including:

- Technical Competence
- Financial Health
- Robustness of HSEQ Management and Risk Management Systems
- Previous Performance
- Ethical Standards
- Collaborative Behaviours
- Commitment to Inclusion
- Diversity and Equality
- Commitment to Community Investment and Social Value.

5.5.3 These providers / disciplines are regularly reviewed, including the undertaking of joint KPI performance reviews, to ensure that PHS has the right supply chain in place to provide healthy competition and delivery resilience for our forward pipeline of work.

5.5.4 For larger projects, individual packages of work are competitively tendered, and quotations are obtained from a minimum of 3 sub-contractors. These quotations are then subjected to a structured tender adjudication with a balanced assessment including, but not limited to, cost, programme, quality, experience and performance to inform selection.

5.5.5 Sub-contracts are let on a NEC Framework contract and individual packages of work awarded under Task Orders. All effort will be made to avoid any sub-subcontracting of works. In any case, the use of sub-subcontractors must be approved prior to their appointment.

5.5.6 This process has been used on a number of major scheme projects over recent years and has enabled major schemes to de delivered successfully and to a high standard in Peterborough.

5.6 Contract and Payment Mechanisms

5.6.1 The scheme will be procured through the existing PHS NEC3 contract. The NEC is an industry-leading suite of contracts which is widely used in the construction sector. The benefits of the NEC3 contract are:

- It provides a stimulus to good project management
- It promotes collaborative working between partners
- It is relatively easy to use
- It provides flexibility.

5.6.2 The following Payment Mechanisms associated with the NEC3 contract will be used:

- Option A (Schedule of Rates) will be used for the completion of the Full Business Case and Detailed Design
- Option C (Target Cost) will be used for construction of the scheme. This incentivises both parties (PCC and M Group Services) to work together to reduce cost through a pain / gain mechanism, which is tapered to ensure that neither party experiences excessive pain nor gain.

5.6.3 Under these commercial arrangements, payment would be monthly based on work done to date. In the case of Option C, closure of the final account would include the proportioning of any pain / gain amount.

5.7 Pricing Framework / Charging Mechanisms

5.7.1 Under the NEC3 contract framework there are performance based KPI's that Milestone Infrastructure are required to achieve. If work is priced as a Target Cost, savings generated from the contract are shared using the contract pain / gain mechanism. All changes to projects (including Risk) are recorded, monitored and communicated promptly using contractual procedures in place.

5.7.2 Under the operation of Milestone Infrastructure's Service's fully transparent 'Open Book System', all incurred costs and supporting information such as invoices and applications associated with projects, are validated, and presented to the client for review on a monthly basis. All costs are periodically audited, and no cost is processed to client unless its genuine and not disallowable costs. Forecast end costs and programmes are also updated periodically, in order to ensure the client is updated in relation to the expected scheme final spend.

5.7.3 Milestone Infrastructure will actively be involved in the value engineering workshop and ECI process during the design and construction phases of the scheme, with full commitment to deliver best value to the client.

5.8 Risk Allocation and Management

5.8.1 Because the PHS contract is already established there is limited opportunity to modify the allocation of risk, however the contract does include inherent features that encourage effective risk management and mitigation, such as:

- Each party is required notify each other of any matter which could affect the cost, completion, progress or quality of the project through Early Warning Notices. This is to promote early intervention which could reduce the impact of any potential risk.
- In the case of Option C (Target Price) both parties are incentivised to reduced cost through the pain / gain mechanism.

5.8.2 The above will also be supplemented with good project management practices during the delivery of the scheme. Both parties will maintain a shared Risk Register (Appendix F), which will be reviewed regularly at project progress meetings. Further details on the management of risk are provided in the Management Case.

5.8.3 Detail about the allocation of project risk between the CPCA and PCC, and the responsibilities for managing this, can be found within Chapter 6 of the CPCA's Assurance Framework[28]

[28] https://cambridgeshirepeterborough-ca.gov.uk/wp-content/uploads/documents/combined-authority-board/committee-papers-and-minutes/Cambridgeshire-and-Peterborough-Combined-Authority-Assurance-Frameworkv3final-002.pdf

5.8.4 However, in summary, risk is allocated to the CPCA by default, but the CPCA reserve the right to reallocate this risk to PCC in the event that the risk has not been managed appropriately. The signed Funding Agreement, and Project Initiation Document, will be used to determine whether PCC has managed the project risk appropriately, and therefore where the risk should be allocated.

5.9 Contract Length

5.9.1 The original PHS contract runs until 2023, and a five-year extension has recently been agreed, prolonging the contract until 2028. The PHS contract has the relevant skills and competencies to deliver this scheme, and its delivery of Junction 15 will be fully completed within the contract lifespan.

5.9.2 The Construction Programme detailed in Appendix N sets out a twelve-month programme for the scheme, split into six phases. Construction work onsite is set to begin in February 2022 and end in January 2023.

5.9.3 An overview of the project timescales is provided in Table 5.1 beneath. Note that timescales for construction assume CPCA approval and the availability of funding.

Table 5.1: Project Implementation Timescales

Timescale	Milestone Activity
August 2020 – September 2021	Detailed Design undertaken and Full Business Case produced.
September 2021 – November 2021	Full Business Case reviewed by CPCA (including Steers Independent Review), and CPCA Board approval sought for construction funding.
November 2021 – March 2022	Completion of bridge design
January 2022 – February 2022	Mobilisation begins onsite, Site Clearance undertaken
February 2022 – December 2022	Highway construction begins, includes 6 phases as detailed below
February 2022 – April 2022	Phase 1 of construction programme, includes site clearance, removal of VRS system and evacuation centred on the A1260 Nene Parkway
April 2022 – July 2022	Phase 2 of construction programme, includes elements of exposing the geological profile, A1260 Nene Parkway lane gain and the required maintenance bay
May 2022 – October 2022	Bridge construction commences, including site clearance, demolition of the existing structure, piling and foundations and installation of new bridge
July 2022 – August 2022	Phase 3 of construction programme, includes the realignment of the A47 WB off slip and new VRS system
August 2022 – October 2022	Phase 4 of construction programme, includes the additional lane on the circulatory and signals on the A47 EB off slip
October 2022 – November 2022	Phase 5 of construction programme, includes the Thorpe Wood flare, zebra crossing and reconstructed footpath
November 2022 – December 2022	Phase 6 of construction programme, includes surfacing across the site with works spilt into phases A through to F
December 2022 – January 2023	Demobilisation

5.10 Contract Management

5.10.1 Project progress meetings and existing governance arrangements such as the Peterborough Highways Project Board have been used to date and has monitored the delivery of the scheme and all commercial arrangements relating to this. The PHS Project Board meets on a monthly basis to discuss progress and matters relating to live and upcoming schemes.

5.10.2 A Project Manager has been appointed by PCC, to oversee the project and take responsibility of the delivery of the scheme. This individual will work closely with the delivery team during the construction of the scheme.

5.10.3 Governance between PCC and the CPCA will be managed through progress meetings and monthly Highlight Reports in line with the CPCA's Assurance Framework. Further details of how PHS will manage the contract are set out within the Management Case (Chapter 6).

6. The Management Case

6.1 Introduction

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

6.2 Evidence of Similar Projects

6.2.1 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 highway infrastructure projects.

6.2.2 The Council, through PHS, has completed the following highway improvement schemes in recent years. As with Junction 15, both of these schemes are located on the Parkway Network at strategically sensitive locations and demonstrate PHS' ability to successfully manage and deliver highway schemes of this scale.

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

6.2.3 This scheme was constructed between summer 2016 and spring 2017 and involved fully signalising a grade separated roundabout and adding significant capacity, through the creation of additional lanes on approaches and the circulatory of the roundabout. The scheme was required to address an existing congestion pinch point and to enable nearby housing growth.

6.2.4 Since completion, the scheme has met its objectives and reduced congestion and journey times at a crucial section of the network. It has also provided additional network capacity, enabling the developments of Norwood and Paston Reserve to be progressed.

6.2.5 Junction 20 is a major interchange on Peterborough's network, and at the time of construction up to 4,500 vehicles an hour passed through it. With such a high traffic demand, the careful planning and implementation of the traffic management required to construct the scheme was crucial. Close collaboration between all delivery partners meant that this was achieved with limited disruption to the highway network.

6.2.6 As with Junction 15, Junction 20 is located on the strategic A47 route linking the A1 and Midlands with Norfolk and East Anglia. The Council and its partners worked closely with HE to successfully plan and manage the delivery of the scheme.

6.2.7 The Junction 20 scheme was completed on time and within the £5.7m budget. Funding for the scheme was secured from the Greater Cambridgeshire and Greater Peterborough Local Enterprise Partnership.

Figure 6.1: Junction 20 Improvement (Post Scheme)

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

6.2.8 This scheme was constructed between spring 2014 and summer 2015 and involved 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 it was funded through the Greater Cambridgeshire and Greater Peterborough Local Enterprise Partnership, Developer Funding and Council Capital Funding.

6.2.9 The scheme successfully delivered a major upgrade to Peterborough's Parkway network. Despite extensive ground investigations during the design phase, abnormally high levels of soil contamination were discovered during construction throughout the site, and significant volumes of soil had to be sent for specialist treatment and disposal. However, through careful management and collaborative working amongst all partners, there was 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 Scheme Section of the A1139 Fletton Parkway

6.3 Programme / Project Dependencies

6.3.1 The scheme programme considers the following key dependencies:

- **National Highways Consents** – Delivery of the scheme will be dependent on consent from HE to work on sections of their network in and around Junction 15. This specifically includes the A47 WB off slip down to the roundabout circulatory, and the traffic signals positioned at the bottom of A47 EB off slip. Other space may be needed within their boundary for the positioning of equipment and the deployment of traffic management. HE are aware of the scheme and were an active stakeholder during option development, with continued communication throughout the progression of the project. The Council have a successful track record of working with HE on schemes along the A47, and they will be included within the scheme delivery planning phase.
- **Nene Park Trust (NPT)** – The delivery of particular outputs of the scheme will be dependent on consent from NPT to work on sections of their land. This specifically relates to the parcel of land located approximately 45 m back from the Thorpe Wood stop line at Junction 15 where a gated access is located. Other space under their responsibility including the Golf Course Car Park, is identified as the preferred location for the site compound, therefore agreement to use the area for the positioning of equipment, plant or the deployment of traffic management is being sought. As a key stakeholder, NPT have been consulted throughout the project, are fully supportive of it, and will be included within the scheme delivery planning phase.
- **Programme Constraints** – The construction programme will need to carefully consider any other infrastructure works that may be underway on the highway network during the same period. The programme will be planned to avoid works that may compound the disruption caused to road users as a result of the Junction 15 scheme, although this will be limited through the careful planning of traffic management arrangements.
- **Construction Disruption** – The Council have significant recent experience of undertaking maintenance and delivering improvements on its highway network, particularly on the Parkway Network, and is proficient in mitigating the impact of this.
- **Utility Diversions** – Initial stats searches have identified some utilities within the area of the proposed scheme that will be impacted by the works. The design has taken account of these utilities, and any necessary diversions have been included within the scheme cost estimates and Risk Register. Early engagement with the relevant utility companies will begin during the Detailed Design phase to ensure that these diversions are factored into the construction programme to mitigate any delay to the delivery of the scheme.

6.4 Governance, Organisational Structures and Roles

6.4.1 The CPCA are the organisation ultimately responsible for the delivery of the Junction 15 scheme, and PCC are nominated as the delivery partner.

6.4.2 Delivery of the scheme to date has been managed by the PCC Project Manager and wider Project Team, consisting of key project delivery partners. The Project Team have been responsible for the daily running of the project, coordinating with all key stakeholders, and managing the delivery programme.

6.4.3 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

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

6.4.5 The Project Team have been responsible for the day-to-day management of the scheme and the coordination of 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
- Scheme delivery.

6.4.6 The key roles and lines of accountability for the development and delivery of the scheme are shown beneath in Figure 6.3.

6.4.7 The team 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 Junction 15 scheme to date. All skills and competencies to deliver this scheme are available within the local PHS contract.

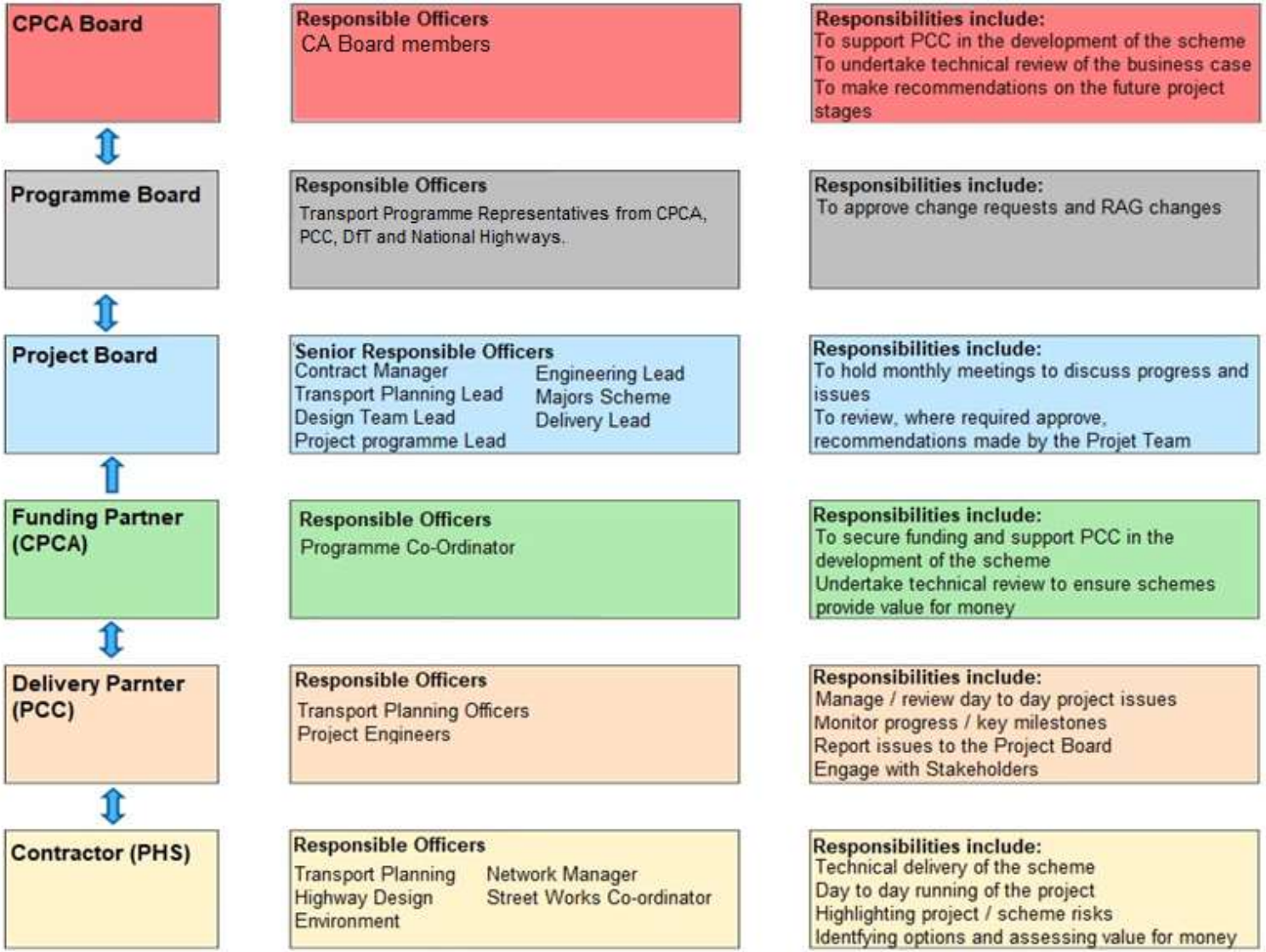


Figure 6.3:Key Project Roles and Responsibilities

6.5 Programme / Project Reporting

6.5.1 The Project Manager is responsible for reporting how the project is performing against the project objectives and key milestones, using established finance and programme management tools such as Verto, with updates reported on a regular basis to the Project Board.

6.5.2 Every month the Project Manager will also submit a Highlight Report alongside Finance Management Reports to the CPCA, recording what progress has been made and whether there are any new risks that could impact the scheme.

6.5.3 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.

6.5.4 Regular Project Progress Meetings have been 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 Programme / Project Plan

6.6.1 Key project milestones for progressing to scheme delivery are outlined in Table 6.1 overleaf.

Table 6.1:Key Project Milestones

Timescale	Milestone Activity
August 2020 – September 2021	Detailed Design undertaken and Full Business Case produced.
September 2021 – November 2021	Full Business Case reviewed by CPCA (including Steers Independent Review), and CPCA Board approval sought for construction funding.
November 2021 – March 2022	Completion of bridge design
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February 2022 – April 2022	Phase 1 of construction programme, includes site clearance, removal of VRS system and evacuation centred on the A1260 Nene Parkway
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May 2022 – October 2022	Bridge construction commences, including site clearance, demolition of the existing structure, piling and foundations and installation of new bridge
July 2022 – August 2022	Phase 3 of construction programme, includes the realignment of the A47 WB off slip and new VRS system
August 2022 – October 2022	Phase 4 of construction programme, includes the additional lane on the circulatory and signals on the A47 EB off slip
October 2022 – November 2022	Phase 5 of construction programme, includes the Thorpe Wood flare, zebra crossing and reconstructed footpath
November 2022 – December 2022	Phase 6 of construction programme, includes surfacing across the site with works spilt into phases A through to F
December 2022 – January 2023	Demobilisation

6.6.2 It should be noted that the dates for construction are indicative and assumes that the approval will be available to progress to the final stage by late November 2021 (following the CPCA's November Transport and Infrastructure Board).

6.6.3 In addition to the project programme, a detailed Construction Programme is included within Appendix N. The programme shows that the scheme will take twelve months to construct.

6.7 Assurance and Approvals

6.7.1 The project has been managed by The Council in line with their existing assurance and approvals process. The daily running of the project has been under the responsibility of the Project Manager, and any approvals required have been provided by the Project Board.

6.7.2 The Cambridgeshire and Peterborough Combined Authority Assurance Framework sets out the fundamental principles in relation to the use and administration of the Cambridgeshire and Peterborough Investment and outlines a culture underpinned by processes, practices and procedures. The Assurance Framework sits alongside a number of other Cambridgeshire and Peterborough Combined Authority documents including the Constitution and Devolution Deal.

6.7.3 Further to the above, the Combined Authority has developed the 10 Point Guide which outlines project management governance requirements which should be followed throughout the life cycle of the project. It details the requirements at project initiation including, establishing a Project Board with the Combined Authority and delivery partners. The purpose of the Project Board is to provide oversight to the project, ensure appropriate governance, risk management and to provide assurance in accordance with the scope, budget and programme. The Project Board should be attended by the Combined Authority's head of Transport and Transport Programme Manager, PCC's Project Manager and by the Group Manager for Highways and Transport. The Project Board is responsible for escalating risks or changes up to the Programme Board. The Project Board should also establish a RACI chart, a copy of the RACI template is in the Combined Authority's 10 Point Guide.

6.7.4 Technical Assurance has also been provided by the CPCA's Assurance Framework, with each stage of the project being 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.

6.7.5 Based on the assurance and approvals guidance detailed above, Table 6.2 overleaf highlights the CPCA gateway approval process for this phase of the project (White), and the approvals required post funding award (Green).

Table 6.2:Project Approvals Pathway

Date	Approvals
July 2020	**Gateway 2:** OBC CPCA Board approval / release of FBC funding. Chief Finance Officer (CFO) sign off.
August 2020 – September 2021 March 2021 – June 2021 September 2021 October 2021	**Gateway 3: FBC Phase of Work, approvals to date have included:** • Monthly CPCA Project Board approvals • Design Approvals – Issue of Detailed Design Drawings / RSA / PCC Technical Review • Target Cost approval • Compound Agreement
October 2021 November 2021 December 2021	**Gateway 3: FBC Phase of Work, approvals outstanding:** • Steers Independent Technical Review sign off • CPCA Board approval / release of construction funding. CFO sign off. • National Highways Independent Review sign off and Section 6 Legal Agreement
January 2022 December 2022 December 2022 – March 2022 December 2022	**Gateway 4: Construction and Delivery** • Construction Order Raised • CPCA Project Close Out / Written confirmation to CPCA director • Prepare/ Agree Final Accounts • Final Highlight Report
2024 2024 2028	**Gateway 5: Monitoring and Evaluation** • CPCA Road Safety Audit to be conducted 1 year after construction • Project Monitoring 1 Year After Construction Report – PCC / CPCA report approval • Project Monitoring 5 Year After Construction Report – PCC / CPCA report approval

6.8 Communications and Stakeholder Management

6.8.1 Communication and Stakeholder engagement has consisted of:

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

Project Liaison Officer

6.8.2 A designated Project Liaison Officer (PLO) was assigned to the scheme throughout the public consultation period and will be present during construction. The PLO will act as a single point of contact for outgoing and incoming communication and will be attached to the scheme delivery team. It is the responsibility of the PLO to issue progress updates via email and social media in the lead up to, and during construction, and coordinate responses to members of the public and key stakeholders when queries are received.

Stakeholders

6.8.3 The key stakeholders for the Junction 15 scheme are:

- CPCA as the Local Transport Authority and funding body for the scheme
- The Council as the Local Highway Authority
- NH as the organisation responsible for the A47 Trunk Road and on / off slips
- Peterborough City Cabinet Member, Bretton Ward Councillors, and parish clerks of Bretton North, Bretton South, Orton Waterville and Orton Longueville
- Cambridgeshire Constabulary which are based in Thorpe Wood
- Local businesses based in Thorpe Wood affected by changes to the transport network
- Aragon Direct Services as the Local Authority Trading Company responsible for the future maintenance of the cities tree stock and green spaces across Peterborough
- The Nene Park Trust as landowners / lease holders of land within the studies footprint
- The Wildlife Trust (Cambridgeshire) as the organisation responsible for Thorpe Wood Nature Reserve located directly East of the A1260 Nene Parkway carriageway
- Natural England in regard to Ecological / Biodiversity assessments within the studies footprint

- Historic England in regard to Archelogy / Cultural Heritage assessments within the studies footprint
- PCC representatives for the natural and historic environment, Archelogy and Heritage, Water and Drainage and Environmental Health
- Homeowners of properties located near the footbridge over the A1260 Nene Parkway
- Local Cycle Forums
- Local Natural Environmental Group GeoPeterborough
- Peterborough City Hospital, Northwest Anglia NHS Foundation and Ambulance Service
- Stagecoach who operates the Citi 2 service which provides access to Bretton, Thorpe Wood, Longthorpe and the City Centre.

6.8.4 Stakeholder consultations were undertaken by the Project Team following approval of the OBC and were in line with the timings of the Public Consultation (21st October - 4th December 2020). All stakeholders were consulted via email or letter for comments on the Preferred scheme prior to the completion of Detailed Design.

6.8.5 Communication with stakeholders was maintained throughout the project and no objections to the scheme presented. Feedback from stakeholders which aided the progression of the Detailed Design largely centred on the environment and biodiversity alongside sustainable travel elements of the scheme.

6.8.6 PCC's Natural and Historic Environment Manager and Wildlife Manager were continually consulted throughout the project with regard to the likely environmental impact of the footbridge. Evidence collated within the option development of the footbridge design was reviewed by both stakeholders. Feedback from PCC centred on minimising tree loss and accounting for the value of trees within the vicinity of the footbridge, as well as advising on species for replanting. The feedback provided from PCC's stakeholders have been included within the Final Design of the scheme.

6.8.7 The Peterborough Cycle Forum work in partnership with The Council to promote cycling within the City and influence policies and plans for future cycle facilities and were consulted on the concept of a cycleway along Thorpe Wood. Consultation focused on the needs of cyclists within the City and the core principles outlined in the recently adopted LTN 1 / 20 cycle design guidance. It was these factors which influenced the decision for an on road segregated cycle lane.

6.8.8 As previously mentioned throughout this report, the Thorpe Wood cycleway features within The Council's broader sustainable transport plans and has been incorporated into the LCWIP. Separate DfT funding has been secured for an independent cycle scheme project, and work has begun developing this.

Public Consultation

6.8.9 Public consultation on the concept of a scheme at Junction 15 was initially undertaken in the summer of 2019, as part of the CPCA Local Transport Plan[29] that was adopted in January 2020. This consultation made residents aware that Junction 15 had been identified as a location for improvements. It should be noted that no details on the form of the scheme were provided at the time of the consultation and that no objections relating to the principle of an improvements to Junction 15 were received.

6.8.10 Public perceptions of the Preferred Scheme were then assessed following the approval of the OBC (July 2020) and prior to the commencement of Detailed Design. The online consultation which featured on the PCC website and social media for a six-week period (between the 21st October – 4th December 2020), highlighted elements of the scheme identified at OBC and Preliminary Design. No comments from members of the public were received during the consultation period.

6.8.11 It should be noted that the public consultation described above did not include the final footbridge design as the revised location and design were not developed until later phases of the design work. Residents that live directly adjacent to the footbridge will be contacted by letter and given the opportunity to meet in person with the PCC Project Manager to discuss the details, including the scheme design, landscaping designs and biodiversity net gain incorporated being delivered. Regular communication will be undertaken with these residents throughout the construction phase of the footbridge to ensure that they remain informed of the construction programme and any temporary impacts.

6.8.12 Where feedback is provided, both the PLO and PCC Project Manager will work closely to mitigate any issues, including options to further soften any visual impacts of the new footbridge through tree planting in residents' gardens where appropriate.

6.8.13 Residents will be communicated with no less than five months before the construction phase of the footbridge begins, which will provide sufficient time for feedback to be received, and arrangements for additional landscaping to be made where appropriate.

6.8.14 Information regarding the final Junction 15 scheme design will be made available to the public prior to the CPCA Board meeting scheduled in November 2021.

6.9 Key Issues for Implementation

6.9.1 The following table assesses the complexity of delivering the Junction 15 Improvement Scheme, taking into account buildability, potential disruption during construction, likely delivery agents (complexity of partnership arrangements), stakeholder acceptability and public acceptability / support.

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

Table 6.3:Key Issues Associated with Scheme Delivery

Implementation Issue	Description and Comment
Buildability	Moderate significance with buildability issues
	Issues with NRSWA Statutory Diversionary Works possible following findings of high-level communication network onsite. Must provide sufficient lead in time for diversion / slewing of existing assets. Potential links to Police Headquarters networks within assets.
Approvals Prior to Construction	Low risk with approvals
	A Permanent Traffic Regulation Order (PTRO) is required for the reduction in speed limit to 60MPH on the A1260 Nene Parkway NB carriageway. This PTRO application and supporting documents needs to be submitted and approved prior to construction, ensuring the request has had sufficient time for the consultation period and the Order to be approved.
Disruption During Construction	Moderate disruption to construction
	COVID-19 poses a continued risk during construction. Prior planning to programme adequately allowing for safe COVID practices including adequate welfare provisions alongside the prior procurement of long lead items/ materials is vital to minimise disruption whilst onsite.
Complexity of Partnerships	Low complexity with Partners
	A Section 6 Agreement is required between PCC and National Highways, to allow works to be conducted on parts of National Highways Strategic Road Network. The Section 6 Agreement is subject to design drawings being formally issued to the National Highways Project Manager and then comments being integrated into the Final Design. Non agreement from National Highways is unlikely as the organisation is a key stakeholder and communication has been continued throughout the progression of Detailed Design.
Environment / Habitat Mitigation	Moderate complexity for environmental issues
	Areas of vegetation and tree clearance are to be carried out outside of seasons which would impact species (I.E bird nesting season). Works on the footbridge are close to Ancient Woodland, although no impact is proposed, careful management of work areas is required. Assessments of species / habitats at the footbridge have been undertaken, trees for felling identified and the mitigation / protection of trees retained agreed.
Stakeholder Acceptability	Low impact of stakeholder acceptability
	Stakeholders are in support of the Preferred Option and the Final Detailed Design Drawings. Communication with stakeholders has been consistent throughout the Detailed Design with comments incorporated into the design where necessary.
Public Acceptability	Moderate risk associated with public acceptability
	No objections were proposed within the online consultation open to the public. Higher risk / objections associated with residents located close to the footbridge output of the scheme. Newsletter and noticeboards to be used once the works are operational within this area.

6.10 Risk Management Strategy

6.10.1 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.

6.10.2 The Risk Register has been a live document throughout the project and has been used to identify and catalogue any potential risks, consider the impact they may have, the likelihood of them occurring and the measures that can be taken to provide mitigation.

6.10.3 The Risk Register has been reviewed regularly during progress meetings, with updates reported to the CPCA through the monthly Highlight Reports. A copy of the Risk Register has been provided within Appendix F.

6.10.4 In addition to the project Risk Register a construction Risk Register has been produced as shown in Appendix P. This Risk Register is also a live document and will be regularly updated throughout the eleven-month construction period.

6.11 Scheme Evaluation

6.11.1 The Scheme Evaluation Plan is detailed in Appendix Q. This has been prepared in line with the CPCA Assurance Framework and DfT guidance and will follow 'standard monitoring'[30] principles.

6.11.2 The Scheme Evaluation Report has been prepared prior to construction and comprises of both the Benefits Realisation Plan and the Monitoring and Evaluation Plan to avoid any duplication of information.

6.11.3 The purpose of the Scheme Evaluation Plan is to determine whether the scheme has been delivered as planned, provides the expected benefits and therefore justifies its investment. Where outcomes are seen to differ from those expected, data collected during the monitoring and evaluation phases will provide an evidence base that will assist in understanding the reasons for this and the lessons that can be learnt.

Benefits Realisation Plan

6.11.4 The objectives and expected outcomes of the scheme are outlined in the Strategic Case of this document. Table 6.4 overleaf summarises how the anticipated benefits will be planned for, tracked and realised. It sets out the key activities needed to manage the successful realisation of the benefits in the short, medium and long term, together with the timescales and who is responsible for each activity.

[30] Major Scheme Business Cases: Evaluation Guidance for Local Authority Major Schemes (publishing.service.gov.uk).

Table 6.4: Benefits Realisation Plan Summary

Scheme Objective	Enabling Changes	Benefits Experienced	Key Beneficiaries	Benefit Owners	Benefit Enablers
1. Tackle congestion and improve journey time reliability: Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)	• Create additional 3rd lane NB on the A1260 Nene Parkway • Create 3rd lane on the circulatory between Nene Parkway and Bretton Way • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased operational efficiency of the Junction and wider network • Reduction in stationary / rolling traffic resulting in air quality improvement • More attractive entrance to the City from the west	• Commuters / Business trips • Local residents • Visitors to the City	CPCA / PCC	• Completion of the scheme • Monitoring of network performance
2. Support Peterborough's Growth Agenda and encourage homes and jobs: Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased network capacity and operational efficiency • Increased attraction of the Thorpe Wood Business park	• PCC in regard to fulfilment of the Local Plan • Business at Thorpe Wood • Residents / Local Community	CPCA / PCC	• Completion of the scheme • Promotion of Thorpe Wood Business Park and wider City Area
3. Create wider economic benefits: Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space	• Create additional 3rd lane NB on the A1260 Nene Parkway • Create 3rd lane on the circulatory between Nene Parkway and Bretton Way • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased attraction of the Thorpe Wood Business park • Increased accessibility to Ferry Meadows, as key attraction of the area	• PCC in regard to fulfilment of the Local Plan • Business at Thorpe Wood • Residents / Local Community	CPCA / PCC	• Completion of the scheme • Promotion of Thorpe Wood Business Park and wider City Area
4. Protect and improve the biodiversity value within the study area: Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the Study Area	• Implementation of environmental / biodiversity scheme elements • Additional planting / compensation planting mitigating the loss known at the footbridge	• Achievement of minimum 10% biodiversity net gain • Gaining of new statuses across the study area – County Wildlife Site on north-eastern grass bank and Site of Local Interest with geological exposure • More attractive entrance to the City from the west	• PCC / CPCA in regard to environment and biodiversity • Commuters • Local residents • Visitors to the City	CPCA / PCC	• Completion of the scheme / soft landscaping designs of the footbridge • Biodiversity Net Gain Calculation

5. Positively impact traffic conditions on the wider network: Positively impact the performance of local routes impacted by the traffic and congestion in and around Junction 15	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased operational efficiency of the Junction and wider network	• Commuters / Business trips • Local residents • Bus Operators	CPCA / PCC	• Completion of the scheme • Monitoring of network performance
6. Improve road safety: Reduce personal injury accidents and improve personal security amongst all travellers around the junction	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15 • Creation of controlled crossings along Thorpe Wood, particularly near the Bus stops • Upgrading of the Nene Parkway footbridge	• Fewer accidents involving rear end shunts on main approaches • Fewer causalities • Safer environment for cyclists and pedestrians walking to businesses / residential areas • Increased sense of safety and security on footpaths / bridge at night	• Commuters / Business trips • Local residents • Visitors to the City • Active Mode users • Visitors to Ferry Meadows	CPCA / PCC	• Completion of the scheme including walking and cycling elements • Road safety audit • Monitoring / investigation of accidents • Monitoring of footbridge users upon completion
7. Mitigate the impact of air quality on the local environment: Maintain or improve air quality within the study area as a result of minimising stationary / queuing traffic	• Create additional 3rd lane NB on the A1260 Nene Parkway	• Reduced peak hour congestion for motorists leading to more reliable journey times • Reduced stationary / queuing traffic	• Local residents / wider community • PCC / CPCA in regard to air quality control and policy goals	CPCA / PCC	• Completion of the scheme • Air quality monitoring

Monitoring and Evaluation Delivery

6.11.5 The monitoring and evaluation of the scheme will be completed at the following stages:

- Pre-construction and during delivery (monitoring)
- One-year after (Monitoring and Evaluation)
- Five-years after (Monitoring and Evaluation)

6.11.6 Based on the above stages, the monitoring and evaluation timescales for the Junction scheme 15 are:

Table 6.5: Monitoring and Evaluation Timescales

Monitoring Activity	Timescale
Prior to scheme build (Baseline)	2018
During Construction	2022
Scheme Opening	2023
One year post scheme opening	2024
Five years post scheme opening	2028

6.11.7 Table 6.6 overleaf summaries the monitoring and evaluation approach for the Junction 15 Scheme, detailing how the objectives will be measured, the data sources to be collected and the timescales for when monitoring and evaluation of the scheme will be reported.

6.11.8 Full details of the Monitoring and Evaluation Plan are provided in Appendix Q.

Table 6.6: Benefits / Realisation Monitoring Summary

	Measure	Measure of Success	Data Source	Data Collection / Reporting Programme			Ownership	Indicative Cost Estimate
				Baseline	Delivery	Post Completion		
Inputs-	Scheme Costs	CPCA Funding	CPCA Funding submission Final Scheme Cost Data	Planned	January 2022 – September 2022	-	CPCA / PCC	-
Outputs	Scheme Build / Delivered Scheme	Infrastructure delivered as part of the scheme	Inspection On-Site	December 2021	January 2022 – September 2022	2023	CPCA / PCC	£1500
Objectives	**Outcomes**							
1 / 4 / 5	Travel Time and Reliability	Enhanced Network Performance, particularly during Peak Hours	Satellite Navigation Data / Travel Time data / Site Visits / Survey Footage	November 2018	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1500
		Enhanced Network Performance for Public Transport, namely for the Citi 2 Service	Local Bus Company Punctuality Data	2018 / 2021	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
		New Infrastructure for Sustainable Modes	Site Inspection / Usage Data	2021 / 2022	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
		Reduce the number of KSI incidents at Junction 15	Peterborough Database of Road Traffic Records	Dataset 2015 - 2020	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
4	Travel Demand	Enhanced Network Performance, on A1260 Nene Parkway and wider network of Junction 33 and A605 Oundle Road	Manual Classified Counts / Site Visits / Video Survey Footage	November 2018	-	November 2024 / November 2028	CPCA / PCC	£6000 for MCC surveys and £500 for data analysis at both 1 year and 5 year reporting Total = £13,000
2 / 3	Impact on Economy	Realisation of Local Housing and Employment Growth Ambitions	PCC Planning Portal - Local and Regional Economic Reports / Development Figures Post scheme opening	2018	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
7	Impact on the Local Environment	Ensure a Net Gian of Biodiversity across the Study Area	Biodiversity Calculation / Site Survey and Desk Based Assessment	July 2021	-	November 2024 / November 2028	CPCA / PCC	£1000 for site inspections and data analysis at both 1 year and 5 year reporting Total = £2000
6	Carbon	Improvement to Air Quality in Future Years	FBC Calculations for Carbon assessment / PCC Air Quality Monitoring Sites / Future traffic demand data	May 2021	-	November 2024 / November 2028	CPCA / PCC	£1000 data analysis at both 1 year and 5 year reporting Total = £2000
Reporting	Year 1 reports summarising the outcomes of the monitoring and evaluation work			-	-	2024	CPCA / PCC	£3,000
	Year 5 report summarising local economic growth, scheme impacts and development figures prior and post opening of the scheme			-	-	2028	CPCA / PCC	£3,000
	Total Monitoring and Evaluation Budget							**£30,000**

6.12 Scheme Management Summary

6.12.1 The CPCA are the organisation ultimately responsible for the delivery of the Junction 15 scheme, and PCC are nominated as the delivery partner.

6.12.2 The project has been managed in accordance with the Combined Authority Assurance Framework and will be presented to the PHS Project Board and the CPCA Board.

6.12.3 Highlight Reports, Finance Management Reports alongside Risk Registers (project and construction) are submitted to the CPCA on a monthly basis. The Construction Risk Register will be a live document and reviewed regularly throughout the timeframe of the construction programme.

6.12.4 A Monitoring and Evaluation plan has been produced for the Junction 15 scheme, and findings of the study in relation to the objectives set will be reported one year and five years after the completion of the scheme in 2023.

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Appendices

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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 Thorpe Wood Business Park from the east and the south.

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 20,112 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. The Local Plan identifies Thorpe Wood as a strategic employment location for the city and additional B1 use is allocated within the area.

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.

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Appendix B:

Junction 15 Carbon Workshop

Junction 15 Carbon Workshop – May 2021

Focus areas	Ease of implementation (RAG)
Compound, Lighting, Plant & Fuel	
- SMART meters in cabins to accurately record energy usage	
- Electric vehicle charging points	
- LED lighting	
- Solar panels & installation of other renewable energy	
- Connect to mains electric and water	
- Renewable energy supplier	
- Electric hand tool trials (vegetation tool trials done in Hampshire & Oxfordshire)	
- HVO fuel	
- Zero Carbon compound	
- Hydrogen fuel trials	
- Small vehicles <3t to be EV or hybrid	
- Electric vs gas/fuel powered	
- Car sharing from depots	
Highways Design	
- Sustainable drainage designs – SUDS, soakaway, habitats	
- Use of plastic kerbs, roads, cycleways	
- Use warm mix asphalt or carbon neutral asphalt	
- Use plastic roads – Dutch example and other plastic alternative, such as kerbs (Macrebur example)	
- Use of insitu & exsitu recycling	
- Trial Cemfree and other lower carbon concrete options	
- Earth friendly concrete (geopolymer) e.g. Wagners EFC – SCS Railways are using on HS2	
- Increase use of recycled aggregates & lightweight aggregates (Change in spec for trench fill to use on Site type 1 material)	
- Increase use of cold binder	
- Reduce the amount of dig out material	
- Reduce construction thickness	
- Use of recycled subbase from site won material	
- Reuse of footbridge demolition materials	
- Reuse of crash barriers (BS 1317)	
Structures	
- Use of low carbon concrete	
- Not over specifying concrete grade	
- Minimum size of concrete members	
- Reduce the amount of steelwork	
- Demolition waste to be recycled and not sent to landfill	
- Using a paint which reduces maintenance of bridge	
- Recycled material on the highways and ramp embankments	
- Solar/LED lighting on the footbridge	
- Motor sensing lighting	
- Nene Thorpe footbridge material reuse	
- Carbon reduction in piling methods	
- Reuse of piling platform material in embankment	
- Use of basalt fibre reinforcement rather than steel rebar	
- Carbon neutral steel/concrete without offsetting	

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Appendix C:

BS5837 Tree Quality Guidance

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*		
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**
Trees to be considered for retention			
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

[1]

[1] British Standards Institution 2012: BS5837 Guidance: https://beta.bathnes.gov.uk/sites/default/files/2020-01/BS5837%202012%20Trees.pdf.

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Appendix D:

Footbridge Option Assessment

A1260 Nene Parkway Footbridge

Option Development

| Delivering what we **promise**

Document Control

Job Number: 5080892						
Document ref:					Authorisation	
Rev	Purpose	Originated	Checked	Reviewed	Milestone	Date
1.0	First Issue	HP	TH	RMJ	RMJ	23.09.21

Contents

Figures

Tables

1. Introduction

1.1.1 The purpose of this report is to determine the preferred footbridge design for the inclusion within the overall Junction 15 Improvement Scheme.

1.1.2 An option assessment has been undertaken to determine the best alignment and structural formation of the footbridge, in order to minimise the impact on the environment, ecology and biodiversity whilst still achieving value for money within the overall scheme BCR.

1.2 Footbridge Context

1.2.1 As shown in Figure 1.1 the footbridge is centrally located between Junction 15 to the north and Junction 33 to the south, and is the only dedicated footbridge over the A1260 Nene Parkway for pedestrians and cyclists in the area.

1.2.2 The footbridge is heavily used by sustainable modes and provides access to residential areas of Longthorpe and the Thorpe Wood / Bluebell Nature Trail to the east, and the Thorpe Wood business park, Ferry Meadows and the golf course to the west.

1.2.3 The footbridge is currently a concrete structure and is substandard in parts due to the arched soffit foundations. The required upgrade of the footbridge to meet current DDA standards has been aligned with the Junction 15 study and scheme proposal to add a third lane northbound along the A1260 Nene Parkway between Junction 33 and Junction 15.

1.2.4 Without alterations to the structure of the footbridge, bridge strikes are highly likely and the additional lane along Nene Parkway becomes unviable, therefore impacting the overall success of the Junction 15 study.

Figure 1.1: A1260 Nene Parkway Footbridge Location

Environment

1.2.5 At present the A1260 Nene Parkway has a continuous tree belt along both the eastern and western embankments, which is perceived to offer visual and acoustic screening for residential properties located within the vicinity of the footbridge.

1.2.6 As indicated in Figure 1.2, the impact of the footbridge on breaking this tree belt is minimal, with little to no gap evident as the bridge ramps cut through the tree line.

Figure 1.2: A1260 Nene Parkway Embankment Tree Belt

1.2.7 It should be noted that the majority of the tree belt surrounding the footbridge is made up of Deciduous Woodland, with an area of Ancient Woodland situated to the north (on both sides of the carriageway) which forms part of the Thorpe Wood Nature Reserve. As shown in Figure 1.3, the closest point of the footbridge to the boundary of the Ancient Woodland is on the western side where the ramp runs parallel to the boundary line. Despite a gap of approximately 8m (at closest point) between the ramp footpath and the woodland boundary, any works in this area will need to be mindful of the protected woodland and mitigate against any adverse impact.

Figure 1.3: A1260 Nene Parkway Woodland Boundary

2. Option Development

Preliminary Design

2.1.1 The Preliminary Design for the A1260 Nene Parkway footbridge included the demolition of the existing structure and the relocation of the bridge approximately 35m to the south of the current position. The bridge proposal is a single span bridge in a Howe Truss design.

2.1.2 As shown in Figure 2.1, the design at Preliminary stage had the eastern ramp starting at the landing platform east of the main bridge span, where a steel bridge deck runs parallel to the southbound carriageway for 28m, before winding in a north-eastern direction to connect with the existing footpath. The foundation for the eastern ramp consists of steel piles and reinforced concrete abutments on piled foundations for the upper sections and reprofiled earthwork embankments for the lower section. A staircase is introduced on the eastern side of the design for direct access to the bridge.

2.1.3 The upper steel bridge deck of the western ramp is shown to run parallel to the northbound carriageway for approximately 31m, before following the existing ramp alignment of the footpath adjacent to the Golf Course carpark. The foundations on the western side are consistent with the eastern side consisting of steel piles and reinforced concrete abutments alongside reprofiled earthwork embankments.

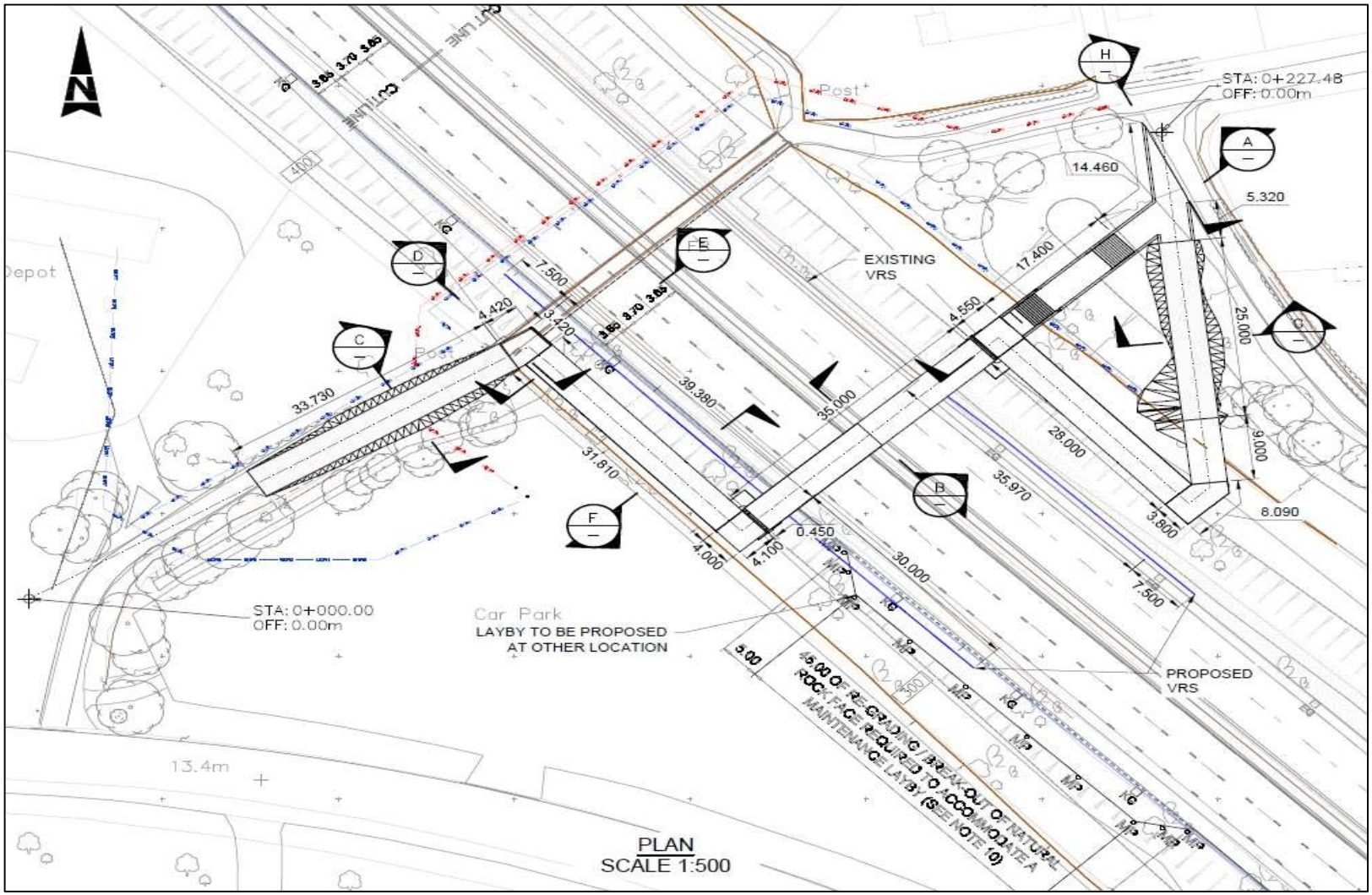

Figure 2.1: A1260 Nene Parkway Footbridge Preliminary Design

2.1.4 It should be noted that in order for the footbridge to comply with current standards, the footbridge structure itself is required to sit higher offering greater headroom over the carriageway. This creates the need for longer and softer gradient changes within the ramps, which in turn generates a larger footprint associated with the structure.

2.1.5 Through the progression from Preliminary Design to Detailed Design concerns were raised by environmental specialists over the severity of tree loss associated with the longer ramp design, particularly on the eastern embankment which is most heavily vegetated.

2.1.6 Concerns raised were in relation to the arboricultural value of the embankment and the consequential impact on visual / acoustic screening between the carriageway and the surrounding residential areas, if the tree belt coverage were to be severely impacted.

2.1.7 In order to mitigate the concerns raised, an Option Assessment exercise was undertaken whereby variations of the Preliminary Design were produced and discussed within a workshop setting.

2.2 Option Development

2.2.1 An option assessment workshop was held in February 2021 which was attended by representatives from Peterborough Highway Services (PHS). The workshop discussed the various constraints of the footbridge and surrounding area and reviewed a series of bridge designs provided by structural engineers.

2.2.2 The purpose of the workshop was to determine the most viable footbridge alignment and ramp configuration that mitigates against severe tree loss, whilst balancing social and economic factors in order to progress with a preferred design for the footbridge element of the Junction 15 Scheme.

2.2.3 A total of seven options were discussed within the workshop as summarised below:

- Option A: Demolition of the existing bridge with no replacement bridge provided
- Option B: The Preliminary Design as detailed above
- Option C1: Variation of Option B with the eastern ramp reconfigured
- Option C2: Variation of Option B a minimised structural requirement on the eastern ramp
- Option C3: Variation of Option B with an alternative eastern ramp configuration
- Option C4: Variation of Option B with alternative configurations on both eastern and western ramps
- Option D: Demolition of the existing footbridge and relocation of the structure approximately 200m to the south on Nene Parkway.

2.2.4 As mentioned above variations of the Preliminary Design were included in the option assessment workshop, in order to explore designs which would potentially reduce the environmental impact of the ramps and make better use of the existing topography onsite, therefore aiming to minimise cost and the footprint required during construction.

2.2.5 In principle, all four variation designs keep the main span arrangement of the original Preliminary proposal (Option B), however the position of the main span varies according to the varying ramp configurations. Options C1 through to C4 and Option D are shown in more detail on beneath.

Option C1

2.2.6 As shown in Figure 2.2, the alteration for this option concerns the eastern ramp configuration and the effect this has on the embankment tree belt. The upper steel decks follow the same direction of the main bridge span and dives directly behind the tree line. From the landing platform behind the tree line the lower ramp section heads south for approximately 30m utilising the existing ridge of the embankment before switching in a northward direction for 16m to connect with the existing footpath.

2.2.7 The use of the embankment topography for the ramp configuration in this option offers both an environmental benefit and cost saving, by reducing the length of steelworks required for the option. Additionally, the with the embankment tree belt retained, the visual and acoustic screening associated with the vegetation cover in this area is maintained.

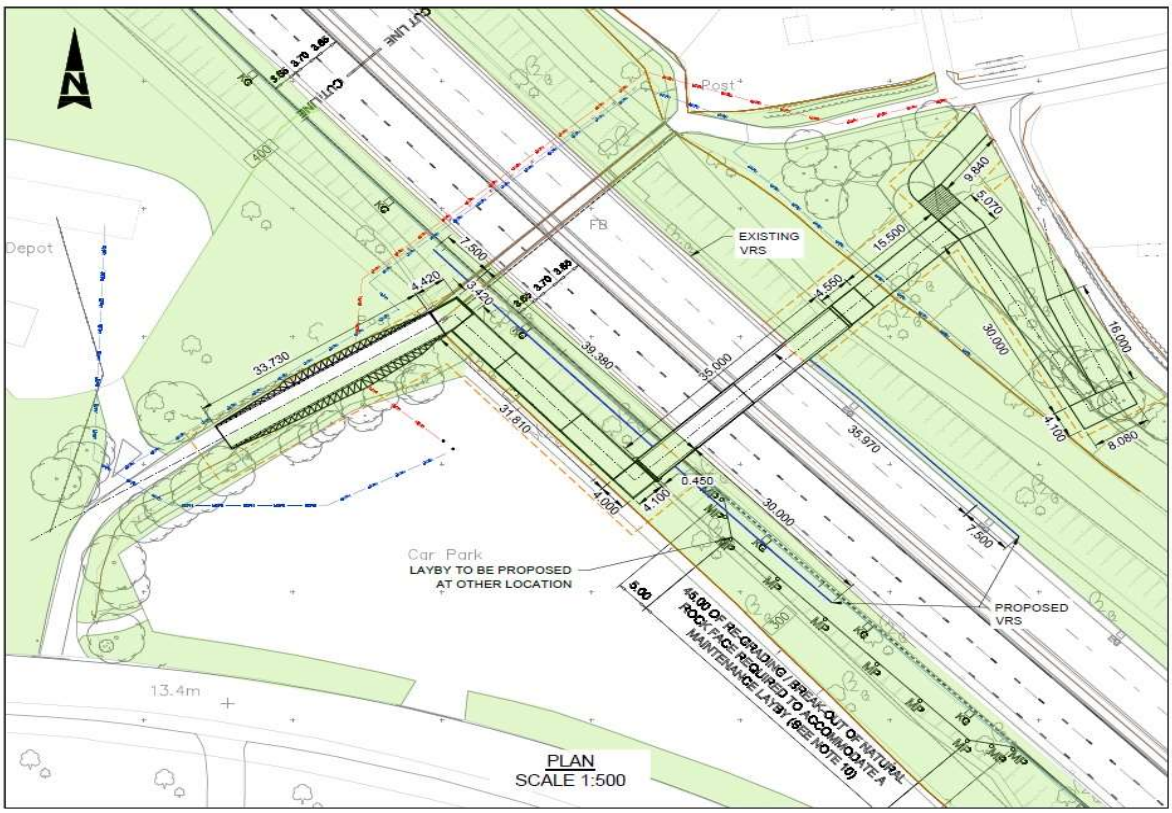

Figure 2.2: Footbridge Design C1

2.2.8 Like within Option C1 the upper ramp within this option follows the same direction as the main bridge span and dives behind the embankment tree line for approximately 15m. However, in optimising this option the steelwork required for the upper ramp is reduced, due to landing the structure on the existing ridge within the embankment topography. Once behind the tree line, the lower ramp turns right (south) for 37m onto a reprofiled earthworks embankment, before intersecting with the existing footpath.

2.2.9 Like Option C1 this option retains the existing tree belt along the carriageway and in doing so maintains the visual and acoustic benefits for residents of Longthorpe. The use of the existing topography in reducing steelworks is significantly improved within this option.

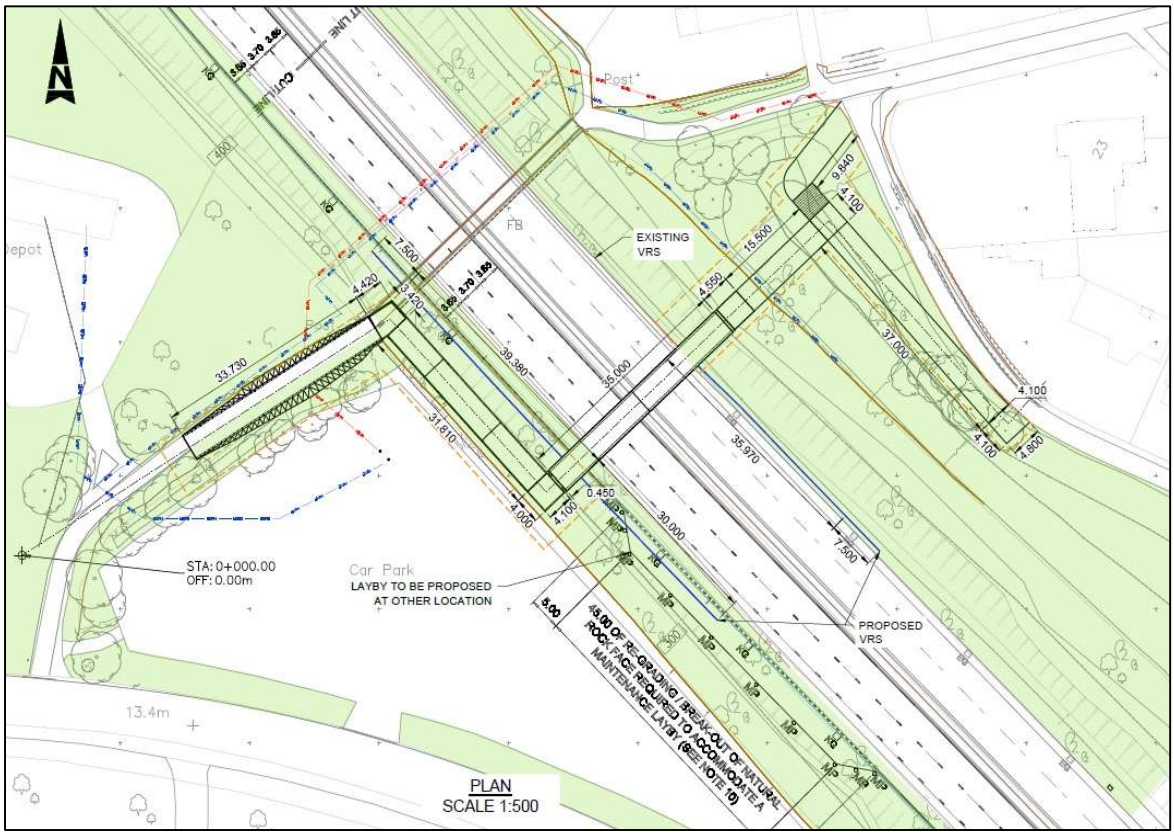

Figure 2.3: Footbridge Design C2

Option C3

2.2.10 As per previous options the upper section of the eastern ramp follows the direction of the main bridge span and dives directly into the tree line. As shown in Figure 2.4, the upper section of the eastern ramp extends into the embankment area for 21m reaching the edge of the footpath. Once adjacent to the footpath the ramp diverts to the right (south) with the ramp elevation gradually decreasing until it meets the footpath. The point at which the ramp intersects the footpath is furthest south when compared to other options.

2.2.11 It should be noted that due to the close proximity to the existing footpath and the difference is height between the inclining ramp and footpath, a structural solution is required for this option, whether it be a continuation of the steel ramp or a retaining wall solution. This required structural solution may introduce new environmental impacts as well as increase costs.

2.2.12 Like Option C1 and C2 this option retains the existing tree belt along the carriageway and in doing so maintains the visual and acoustic benefits of the wooded area. With the main bridge span and ramps extending further into the wooded area and being positioned closer to the footpath, there is a potential privacy issues associated with users of the bridge overlooking into private gardens.

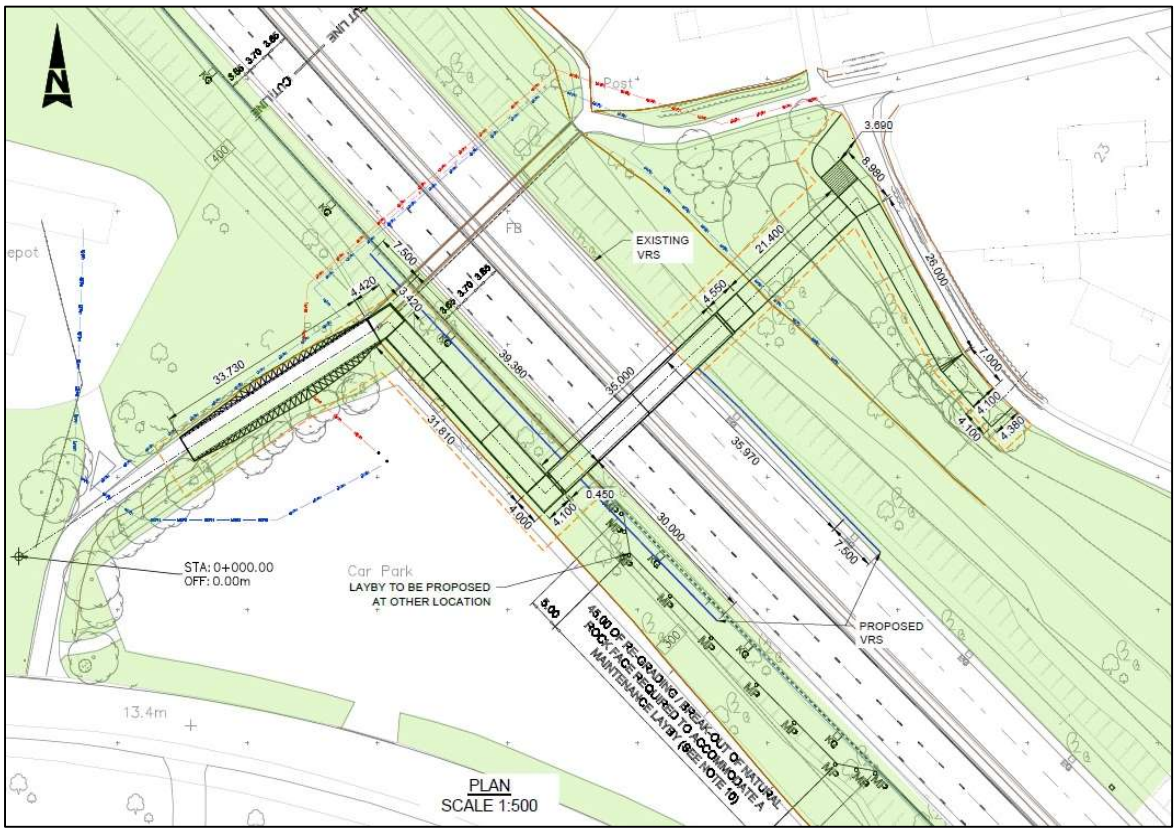

Figure 2.4: Footbridge Design C3

Option C4

2.2.13 As shown in Figure 2.5 this option moves the main bridge span closer to the existing structure and reconfigures both the eastern and western ramps. Within this design the upper section of the western ramp runs parallel to the carriageway for 11m, resulting in a larger area of the embankment tree belt being retained on the western side when compared to other options. However, as a consequence of providing a shorter ramp off the main bridge, the lower ramp is longer at 57m enabling elevation changes to be in accordance with current standards. It should be noted that within this design the lower ramp would require a height increase of 1.7m above the existing footpath, resulting in the need for significantly more structural foundations or land take in order to build an earthwork embankment.

2.2.14 The eastern ramp within this option is shown to enter the embankment at an angle before diving behind the tree line, mitigating against impact on the footpath and also reducing potential privacy issues for adjacent properties to the north-east of the bridge. Once behind the tree line the ramps turn right (south) to follow the direction of the existing footpath until the levels of both converge.

2.2.15 This option provides a benefit in relation to retaining a greater proportion of the tree belt on the western side, however severe vegetation clearance is likely for the lower ramp section where a structural solution is required. Additionally, the use of the embankment topography on the eastern side is under used, which results in a greater level of steelworks and a greater extent of tree clearance required during construction when compared to other options.

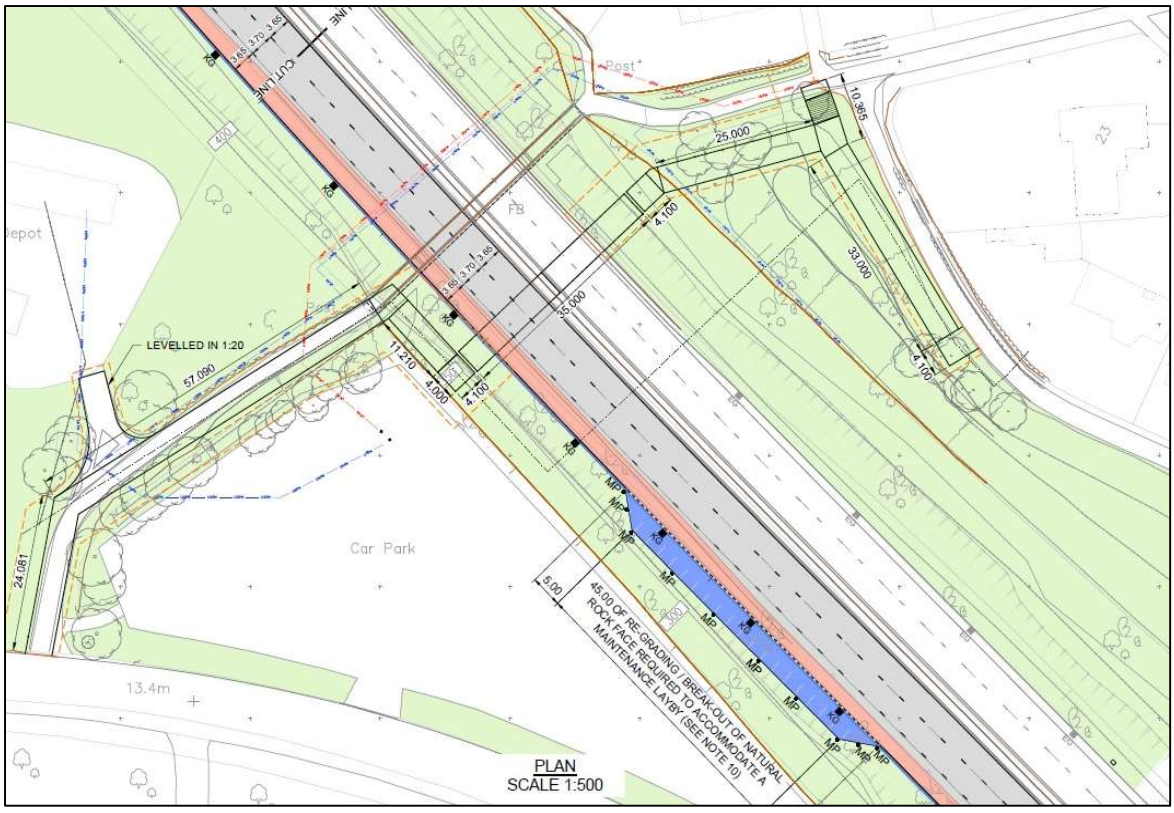

Figure 2.5: Footbridge Design C4

Option D

2.2.16 This option involves the demolition of the existing footbridge and the relocation of the structure approximately 200m south on the A1260 Nene Parkway. Figure 2.6 beneath shows an approximate bridge location.

2.2.17 The structural configuration of this option is unknown at this time however would largely follow elements included within the previous options. This option would aim to retain the embankment tree line along the carriageway whilst reducing tree loss on the eastern side.

2.2.18 The main disbenefit associated with this option is the greater distance required for pedestrians and cyclists as a result of the new route and deviation from the old bridge.

Figure 2.6: Footbridge Design D

2.3 Option Assessment

2.3.1 The assessment and sifting of options within the workshop followed principles set out within the DfT's Early Assessment and Sifting Tool (EAST), with designs being scored against a series of objectives relating to environmental, social and economic impact as well as management factors such as deliverability and stakeholder support. Scores were based on the discussion and collective opinion of the workshop delegates.

2.3.2 The objectives used are outlined in Table 2.1 overleaf.

Table 2.1: Workshop Objectives

Objectives Assessed	
Environmental	Severity of environmental Impact (bridge footprint and embankment tree belt)
Social	Accessibility of the bridge to sustainable modes
Economic	Affordability (Value for Money)
Management / Deliverability	Buildability
	Stakeholder support and public acceptability
	Impact on local residents

2.3.3 The scoring criteria shown below was used to score each of the options against the objectives.

Table 2.2: EAST Scoring Criteria

Score	Impact
+3	Major benefit associated with implementing a scheme
+2	Moderate benefit associated with implementing a scheme
+1	Slight benefit associated with implementing the scheme
0	Neutral, no change to criteria through implementing the scheme
-1	Sligth negative impact associated with implementing the scheme
-2	Moderate negative impact associated with implementing the scheme
-3	Major negative impact associated with implementing scheme

2.3.4 Table 2.3 below summarises the EAST scoring assessment

Table 2.3: EAST Scoring Outcomes

Option	Option Description	EAST Score
A	Complete closure of the bridge	-7
B	Original Pre-Liminary Design	-6
C1	Variation of Option B with the eastern ramps reconfigured	-4
C2	Variation of Option B with a minimised structural requirment on the eastern ramps	-3
C3	Variation of Option B with alternative eastern ramp reconfiguration	-6
C4	Variation 4 of Option B with change in bridge location and the eastern and western ramps reconfigured	2
D	Relocation of the Bridge to the south along Nene Parkway	-7

2.3.5 Despite the majority of scores being negatives, it should be noted that the options devised and explored within the workshop provide higher mitigation against tree loss when compared to the original Pre-Liminary Design.

2.3.6 Following the scores detailed above, Options C2 and C4 were seen as the most favourable options and shortlisted for further investigation in relation to tree loss. It was also agreed by delegates that a hybrid option incorporating elements of both shortlisted options should be developed and further explored.

2.4 Development of a Preferred Option

2.4.1 Further to the workshop a hybrid option incorporating design elements of Options C2 and C4 was designed.

2.4.2 To assess the environmental impact of the shortlisted options as well as the hybrid option developed, Arboriculture Impact Assessments (AIA) were undertaken. An AIA was also undertaken on the Preliminary Design, so a direct comparison on tree loss could be generated.

2.4.3 Within the AIA the guidance BS5837: Trees in relation to design, demolition and construction was used to assess the following factors:

- Total number of trees lost
- Area of the trees and habitat type
- Quality of the trees using BS5837 grading system

2.4.4 For the quality grading system used within the AIA please see Figure 2.8 below.

Category and definition	Criteria (including subcategories where appropriate)		
Trees unsuitable for retention (see Note)			
Category U Those in such a condition that they cannot realistically be retained as living trees in the context of the current land use for longer than 10 years	• Trees that have a serious, irremediable, structural defect, such that their early loss is expected due to collapse, including those that will become unviable after removal of other category U trees (e.g. where, for whatever reason, the loss of companion shelter cannot be mitigated by pruning) • Trees that are dead or are showing signs of significant, immediate, and irreversible overall decline • Trees infected with pathogens of significance to the health and/or safety of other trees nearby, or very low quality trees suppressing adjacent trees of better quality *NOTE Category U trees can have existing or potential conservation value which it might be desirable to preserve; see **4.5.7**.*		
	1 Mainly arboricultural qualities	**2 Mainly landscape qualities**	**3 Mainly cultural values, including conservation**
Trees to be considered for retention			
Category A **Trees of high quality** with an estimated remaining life expectancy of at least 40 years	Trees that are particularly good examples of their species, especially if rare or unusual; or those that are essential components of groups or formal or semi-formal arboricultural features (e.g. the dominant and/or principal trees within an avenue)	Trees, groups or woodlands of particular visual importance as arboricultural and/or landscape features	Trees, groups or woodlands of significant conservation, historical, commemorative or other value (e.g. veteran trees or wood-pasture)
Category B **Trees of moderate quality** with an estimated remaining life expectancy of at least 20 years	Trees that might be included in category A, but are downgraded because of impaired condition (e.g. presence of significant though remediable defects, including unsympathetic past management and storm damage), such that they are unlikely to be suitable for retention for beyond 40 years; or trees lacking the special quality necessary to merit the category A designation	Trees present in numbers, usually growing as groups or woodlands, such that they attract a higher collective rating than they might as individuals; or trees occurring as collectives but situated so as to make little visual contribution to the wider locality	Trees with material conservation or other cultural value
Category C **Trees of low quality** with an estimated remaining life expectancy of at least 10 years, or young trees with a stem diameter below 150 mm	Unremarkable trees of very limited merit or such impaired condition that they do not qualify in higher categories	Trees present in groups or woodlands, but without this conferring on them significantly greater collective landscape value; and/or trees offering low or only temporary/transient landscape benefits	Trees with no material conservation or other cultural value

Figure 2.7: BS5837 Tree Quality Guidance

2.4.5 Please note the following option descriptions are used when discussing the AIA results:

- Option 1: The original Preliminary Design
- Option 2: C2 Variation ADD2
- Option 3: C4 Variation ADD11
- Option 4: Hybrid option ADD5

2.4.6 A summary of the expected tree loss associated with the options assessed is provided in the table below, with full plans provided in Figures 2.9 to 2.12.

Table 2.4: AIA Results Summary

Option	Tree Loss Area	Quantity of Tree Loss	Quality of Trees
Option 1	Footpath at the western side	2	Grade C
	New ramp parallel to the A1260 Nene Parkway	7	Grade B
	Footpath, ramps and steps to the Eastern side	8 15 3	Grade B Grade C Grade U
	Further collateral tree loss due to construction	10	
	Total Tree Loss	**45**	
Option 2	Footpath at the western side	2	Grade C
	New ramp parallel to the A1260 Nene Parkway	7	Grade B
	Footpath, ramps and steps to the Eastern side	3 22 5	Grade B Grade C Grade U
	Further collateral tree loss due to construction	11	
	Total Tree Loss	**50**	
Option 3	Footpath at the western side	2 6	Grade B Grade C
	New ramp parallel to the A1260 Nene Parkway	5	Grade B
	Footpath, ramps and steps to the Eastern side	4 17 3	Grade B Grade C Grade U
	Further collateral tree loss due to construction	20	
	Total Tree Loss	**57**	
Option 4	Footpath at the western side	2	Grade C
	New ramp parallel to the A1260 Nene Parkway	6	Grade B
	Footpath, ramps and steps to the Eastern side	3 19 3	Grade B Grade C Grade U
	Further collateral tree loss due to construction	20	
	Total Tree Loss	**53**	

2.4.7 From discussions regarding the AIA survey results shown above, Option 4 was agreed by delegates (who attended the initial workshop) to be the 'most favourable' option. Whilst this option is expected to have a loss of 53 trees due to design and construction of the footbridge, it should be highlighted that the quality of Grade B trees retained is the lowest when compared to other options.

2.4.8 Figure 2.9 shows the Preferred Footbridge Design and trees impacted under this design. For a Full drawing please see Appendix E of the Junction 15 Full Business Case.

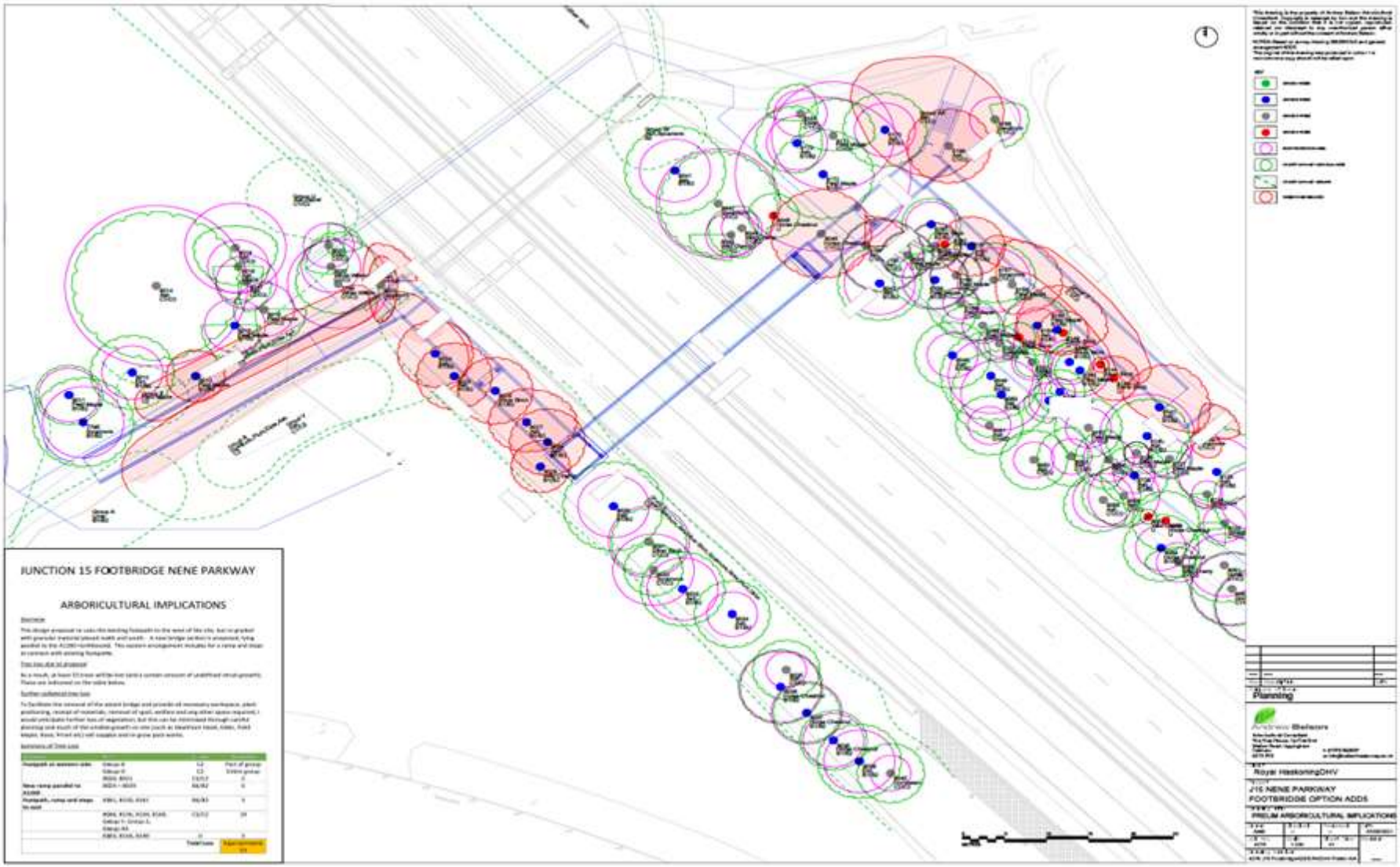

Figure 2.8: Preferred Footbridge Design and AIA Results

2.4.9 To mitigate any further environmental impact associated with the footbridge, the following mitigations will be implemented:

- A Tree Protection Plan will be produced describing how the retained trees will be protected during the implementation of the proposed design.
- An Arboricultural Method Statement will be produced to include consideration of proposed alterations to ground levels, proposed excavation and foundation construction where relevant to retained trees and hedgerows as well as consideration of construction staging and site routes.
- Design Plan to be produced highlighting trees to be removed, locations of barriers, trees requiring facilitation pruning to allow the movement of construction traffic, and areas where specific construction methods (e.g. no-dig) are recommended.
- A soft Landscape Proposal Plan to be produced showing quantities, species and positions of trees, shrubs and herbaceous plants. Proposal covering planting methodology and schedule and 5-year maintenance schedule.

2.4.10 In relation to the latter point above, a soft landscaping plan has been devised and is shown in Figure 2.10 overleaf. Compensation planting includes 59 trees of species of Field Maple, Wild Cherry, Hornbeam and Hazel. Supporting shrub and understorey planting will incorporate species of Dogwood, Hawthorn, Hazel, Guelder Rose, Privet and Snowberry.

2.4.11 For a Full drawing please see Appendix E of the Junction 15 Full Business Case.

Andrew Belson

NENE PARKWAY THORPE WOOD FOOTBRIDGE TREE REPLACEMENT AND ENHANCEMENT SCHEME

METHOD

General notes

Planting material and workmanship to minimum BS3936: Pt 1: 1992 and BS 8545: 2014.

Ground Preparation

Any areas that lie within the root protection areas of retained trees will not be stripped or excavated so far as is practical in accordance with the Approved engineering drawings for the development.

Where required, the sub-soil will be graded and any detritus removed

Areas for planting will receive a minimum of 300mm of topsoil.

Topsoil will be as-dug from site or imported to BS3882: 2015

Topsoil will be laid and lightly consolidated in layers 150mm thick to the required finished level

Setting-out

Trees: As-per the landscape proposal drawing, adjusted if necessary on site to take account of any site-specific restrictions.

Shrub/understorey mix 1-3: Planted in species groups of not less than 3 and not more than 9 plants.

Hazel to the back of the group in mix 2 and 3

Shrub mix 4: Planted in species groups of not less than 3 and not more than 6 plants.

Andrew Belson

Planting

The project arboriculturalist will attend site at the start of the first day's planting to check on site conditions and advise on any changes to the planting specification.

The minimum tree pit size will be:

- to the depth of the container or root spread plus 150mm in all dimensions.

Contractors will allow for the time it may take to increase planting pit size.

Holes will be dug by hand.

Shrub/understorey planting: To be planted in holes dug by hand to the depth and diameter of the container plus 150mm in each dimension.

Backfilling: Un-amended material as dug from tree pit or shrub hole, compressed around roots in layers no more than 150mm thick

Tree support (Field Maple, Cherry and Hornbeam)

Stakes: Softwood, free from projections and large or edge knots and with pointed lower end.

One stakes will be driven vertically into the bottom of the tree pit on the south eastern side of the tree pit before planting.

Soil will be consolidated around the stake during backfilling.

Stakes will be cut off to 1500mm above ground level and trees tied to the stake with a single belt and buckle tree tie.

Tree support (Hazel)

Stakes: Softwood, free from projections and large or edge knots and with pointed lower end.

One stake will be driven diagonally into the side of the tree pit so that at least one stem of the tree lies nearly adjacent.

Soil will be consolidated around the stake during backfilling.

The stake will be cut off 100mm beyond the point where it crosses the tree stem.

The trees will be secured to the stake using 'Toms belt buckle ties'.

Shrub and understorey support

Each plant will be tape tied to a single bamboo cane 1.2m long, driven into the ground 300mm.

Andrew Belson

Season

Planting to be carried out in the first planting season (Mid November – end of March approx.) after construction is completed.

Planting will not be carried out during frosty weather or when the ground is waterlogged.

PLANTING SCHEDULE

Trees

Species	Common name	Size (cm girth or height x girth)	Type	Total required
Acer campestre	Field Maple	10-12	CG	14
Corylus avellana	Hazel	1.5m	CG	24
Carpinus betulus	Hornbeam	10-12	CG	5
Prunus avium	Wild Cherry	10-12	CG	16

CG = Container-grown stock Size/type: As-per schedule
Possible supplier: Bonhams Trees Plc, Eye Hill Drove, Dry, Cambridgeshire, CB7 5XF. Tel: 01353 720 748, Email: sales@bonhamstrees.co.uk

Edge Mix 1

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	198
Viburnum opulus	Guelder Rose	45-60	BR	134
Ligustrum vulgare	Privet	45-60	BR	108
Symphoricarpos alba	Snowberry	45-60	BR	106

CG = Container-grown stock Size/type: As-per schedule

Edge Mix 2

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	74
Crataegus monogyna	Hawthorn	45-60	BR	295
Corylus avellana	Hazel	45-60	BR	40
Prunus cerasifera	Myrobalan Plum	45-60	BR	74

CG = Container-grown stock Size/type: As-per schedule

Andrew Belson

Edge Mix 3

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	102
Corylus avellana	Hazel	45-60	BR	64
Prunus cerasifera	Myrobalan Plum	45-60	BR	89

CG = Container-grown stock Size/type: As-per schedule

Edge Mix 4

Species	Common Name	Size (cm height)	Type	Total required
Crataegus monogyna	Hawthorn	45-60	BR	90
Rosa canina	Dog Rose	45-60	BR	23
Viburnum lantata	Wayfaring Tree	45-60	BR	33

CG = Container-grown stock Size/type: As-per schedule

Andrew Belson

MAINTENANCE

Trees and shrubs will be maintained for a period of five years in accordance with the following table:

Year/ Operation	1	2	3	4	5
Watering	Every three weeks from May to August	Every three weeks from May to August	Only if drought conditions persist	Only if drought conditions persist	Only if drought conditions persist
Weeding	Every three weeks from May to August	Every three weeks from May to August	Three visits	Three visits	Three visits
Pruning	None	Lift crowns of trees to 2m	Lift crowns of trees to 3m. Remove tree stakes	Lift crowns of trees to 2m	Lift crowns of trees to 2m
Check	September	September	September	September	September

Definitions

Watering means bringing the ground to field capacity.

Do not water if waterlogging or anaerobic conditions are suspected.

Weeding means the removal of all competing plants to a radius of 1m from the centre of the tree or plant.

Pruning will be to the minimum standard of BS3998: 2010 'Treework' and all arisings will be removed from site and recycled or sent to an approved tip.

Check will include the security of support, the presence of pests or disease, crown dieback, vandalism, accidental damage or death. Any findings will be noted and appropriate action taken following advice from a horticultural professional.

Replacement

At the end of year 1, the Project Arboriculturalist will assess the site for tree losses and write a schedule for replacement tree planting.

Trees and shrubs will be replaced in accordance with the original specification.

Any further trees or plants that fail within 5 years of planting will be replaced and maintained in accordance with the original specification.

NOTES: Based on survey drawing 300/BNOLS and general arrangement 5080751-159980-MIL-SBR-ZZ-DR-CB-2500-S3-P01
The original of this drawing was produced in colour – a monochrome copy should not be relied upon

KEY

Proposed Tree

Proposed Planting

Existing/Retained tree

Rev	Description	Date

Purpose of Issue: **Planning**

Andrew Belson
Arboricultural Consultant
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Station Road, Uppingham
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LE15 9TX
t: 01572 823637
e: info@belsontreesurvey.co.uk

Client: Royal HaskoningDHV

Project: J15 NENE PARKWAY FOOTBRIDGE

Drawing Title: Tree Replacement Plan

Drawn	Checked	Reviewed	Date
AMB	–	–	22/06/2021
Job No. 4276	Scale 1:250	Sheet Size A1	Revision

Drawing Number: 4276_J15 Footbridge.RHDHV.LPP

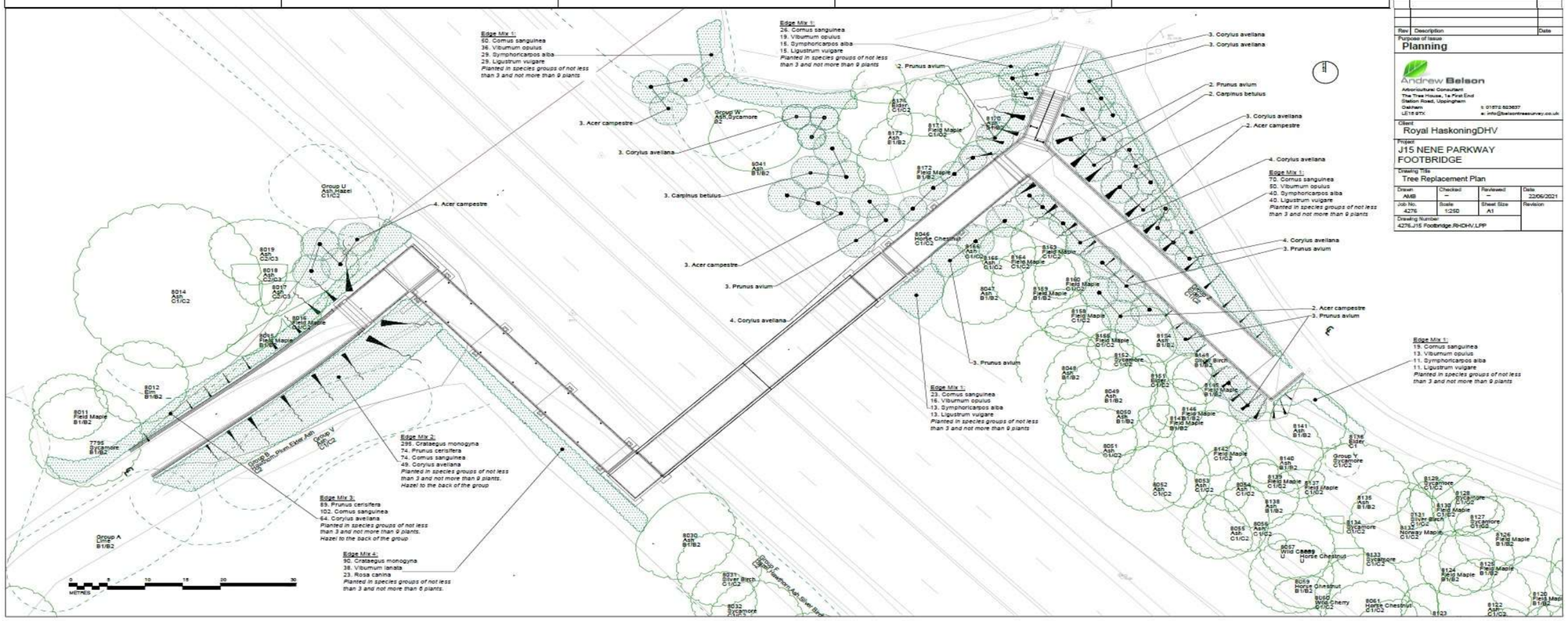

Figure 2.9: Preferred Footbridge Landscaping Design

MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix E:

RHDHV_ Arboricultural Implications Assessment Report &

RHDHV_ Landscape Proposal

Andrew Belson
Arboricultural Consultant

Arboricultural Implications Assessment

18th June 2021

Nene Parkway Footbridge

The erection of a footbridge over the Nene Parkway

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DOCUMENT HISTORY

Revision	Layout Assessed	Author	Reviewer	Date
O	5080751-159980-MIL-SBR-ZZ-DR-CB-2500-S3-PO1	AMB	TC	18/06/21

FILE REFERENCES:

This Report File Ref: 4277.J15 Footbridge.RHDHV.AIA

Arboricultural Implications Plan: 4277.J15 Footbridge.RHDHV.AIP

Contents

SUMMARY

This report, read in conjunction with drawing 4277.J15 Footbridge.RHDHV.AIP, describes the arboricultural implications of the replacement of the footbridge over the Nene Parkway at Thorpe Wood.

It is my opinion that although some facilitative and collateral tree loss is implicated, the bridge can be replaced within minimal effect on the visual amenity of the area.

A scheme of replacement tree planting is proposed, which will improve the overall tree cover in the vicinity of the footpaths to the southwest of Downgate, Longthorpe.

Protection of the retained trees has been detailed in an Arboricultural Method Statement, issued alongside this Assessment.

Signed:

A M Belson
Dip.Arb.RFS, M.Arbor.A, Tech.Cert.Arbor.A

1 INTRODUCTION

1.1 Instructions

1.1.1 This assessment was commissioned by Royal HaskoningDHV on behalf of our mutual client because trees are a material consideration and this report is required to support the Client's planning application.

1.1.2 The first instruction was to survey the trees on or adjoining the site in line with the recommendations of BS5837: 2012 and to provide a plan of arboricultural constraints in the first instance to inform design. This data has been used to inform the design of the footbridge which was chosen out of several options.

1.1.3 The results of that survey are found at Appendix B.

1.1.4 The next instruction was to draw a plan showing the tree constraints overlaid to the planning drawing so that the implications could be assessed, and to write an Arboricultural Implications Assessment report for the proposed development.

1.2 Source documents

1.2.1 The drawings that have been used to inform this assessment are:

- Topographical survey: 30028NOLS
- Proposed site plan: 5080751-159980-MIL-SBR-ZZ-DR-CB-2500-S3-PO1

Note: This assessment is specific to the drawings listed above and cannot be generalised.

1.3 Assessment elements

1.3.1 This assessment provides the elements recommended by BS5837: 2012 'Trees in relation to design, demolition and construction':

- Consideration of any statutory protection affecting the site. (BS5837 section 5.2.3) (this document, section 2.4)
- Evidence of a tree survey conducted to BS5837:2012, including tree categorization (BS5837 section 4.4 and 4.5) (see Appendix A for explanatory notes on method, and Appendix B for the Survey Data Table)
- An impact assessment of the relationship between the trees and the proposed layout (see section 4; see also Appendix C for explanatory notes). Including:
  - A discussion of proposed tree losses (BS5837 section 5.2.3 and 5.4.3)
  - The potential impact of RPA incursions (BS5837 section 5.3.1 and 5.3.2)
  - Future growth and/or pressures for removal or pruning (BS5837 section 5.3.4)
  - Factors that may affect foundation design (BS5837 Annex A)
  - Foreseeable issues with the planned demolition/construction of the proposed layout such as working space and access. (BS5837 section 5.4.2)
- An Arboricultural Implications Plan showing the trees and their RPAs overlaid to the proposed layout, indicating trees for retention and removal. (BS5837 section 4.5 and 4.6) (provided with this report, see also Appendix D)

2 THE SITE

2.1 Setting

2.1.1 The site currently comprises a concrete footbridge spanning the Nene Parkway to the South of Junction 15, emerging on either side from between mature planting either present as part of the bisected Thorpe Wood or part of the landscaping of Nene Parkway.

2.1.2 The trees inspected are growing on the side and top of embankments; at the edge of Thorpe Wood; adjacent the footpath which leads from the golf course car park to the footbridge site; adjacent to the footpaths to the south west of the residential street 'Downgate' and where the un-made path known as Bluebell Woods Nature Trail meets the site from the northwest.

2.1.3 The topography of the site is complex and reference must be made to the full topographical survey for more details. Most of the topographical survey information is not shown on the drawings appended to this document for clarity of the information presented.

2.2 Soil and Geology

2.2.1 With reference to Figure 4.3, Volume 1 'Tree Root Damage to Buildings' (P G Biddle), some soils can have shrinkable characteristics and this can affect the depth or type of foundations needed for both current and future planting.

2.2.2 The British Geological Survey of England and Wales identifies the bedrock geology at this location as Blisworth Limestone Formation - Limestone.

2.2.3 No superficial deposits were noted.

2.2.4 Limestone provides a fine-grain soil which is fairly resistant to compaction. This information has been used to inform an Arboricultural Method Statement which is provided with this application.

2.3 Statutory protection

2.3.1 This site does not lie within a Conservation Area.

2.3.2 None of the trees surveyed are included in a Tree Preservation Order.

2.3.3 Appropriate advice regarding the protection of wildlife and other ecological matters has been provided in separate documentation.

3 SURVEY FINDINGS

3.1 Overview

3.1.1 The trees were inspected in line with the recommendations of BS5837: 2012 on 22nd March and 7th May 2021.

3.1.2 Along the embankment, long shelterbelts of mature trees serving a screening function are typical of the roadside landscape in Peterborough.

3.1.1 Thorpe Wood is designated within the category of Ancient and Semi-Natural Woodland (see GOV.UK, 2019b). This means that the woodland has existed since at least 1600 AD and comprises a complex and unique ecosystem relatively undisturbed by human development. It represents an irreplaceable resource of trees and other flora that provide broad and niche habitats, and a visual amenity that cannot be replicated through plantation.

3.1.2 The footbridge site does not intrude upon the older parts of the wood but the more recent planting to the south that abuts the site could reasonably be considered to be part of the wood aerodynamically, visually and functionally (to a lesser degree).

3.2 Specific notes

3.2.1 The full table of survey data can be found in Appendix B. The survey was extended much further south than shown on the drawings because the information was used to assist in design progression.

3.2.2 The condition of the trees at the west of the site is reasonable, with mostly higher grading.

3.2.3 At the east of the site, the quality is much more variable, with several dead trees. This has not affected the overall visual quality of the group as adjacent trees are generally growing into space vacated by lower quality plants.

3.2.4 The following trees are recommended for felling as a result of their health or condition, and regardless of the development proposals:

- Hawthorn 8020
- Ash 8021
- Silver Birch 8031
- Hornbeam 8040
- Horse Chestnut 8045
- Ash 8054
- Wild Cherry 8057
- Horse Chestnut 8058

4 ANALYSIS OF THE PROPOSAL

4.1 Removal of Existing Bridge

4.1.1 It is hoped that the bridge can be lifted out during a road closure with lifting equipment situated within the carriageway of Nene Parkway.

4.1.2 At the western side of the bridge, it would be necessary to cut back White Willow 7796, Hawthorn 8020 and Ash 8021 but these trees would be lost in any case in the construction of the new bridge support.

4.1.3 At the eastern end of the bridge, the trees in Group R and Group W overhang the site but tree removal can be avoided through appropriate pruning or coppicing.

4.1.4 The foundation for the bridge support is to be broken out but this can be done without any tree loss through the use of ground protection and barriers.

4.2 New Structure - Enabling Works

4.2.1 In order to install the piled foundations, a suitable ramp and pad must be constructed.

4.2.2 At the western side of the site, this can be facilitated within the verge area with some edge clearance of the embankment growth from Group F. This can be replaced in the proposed re-planting scheme.

4.2.3 At the eastern side of the site, this can be facilitated through the removal of the following trees:

- Sycamore 8042 (C12/C2)
- Wild Cherry 8043 (C1/C2)
- Wild Cherry 8044 (C1/C2)
- Horse Chestnut 8045 (U)

Within the verge area, some plants on Group S must be cleared. This tree and vegetation loss can be replaced in the proposed re-planting scheme.

4.3 New Structure - Installation

4.3.1 The implications of the proposed development are as-per the following table:

Tree reference	Species	Grade	Implications
Group E	Field Maple	C2	Must be removed to construct new footpath to the required falls and profile and to accommodate the re-profiled bank at the footpath edge
8013	Field Maple	B1/B2	Must be removed to construct new footpath to the required falls and profile and to accommodate the re-profiled bank at the footpath edge
Group D	Hawthorn, Plum, Elder, Ash	C2	Must be removed to construct new footpath to the required falls and profile and to accommodate the re-profiled bank at the footpath edge
Group B (part)	Hawthorn, Plum, Elder, Ash	C2	Must be removed to construct new footpath to the required falls and profile and to accommodate the re-profiled bank at the footpath edge
8015	Field Maple	B1/B2	Must be pruned to facilitate works
8016	Field Maple	B1/B2	Must be pruned to facilitate works
7796	White Willow	C1/C2	Within footprint of new bridge structure – fell and replace
8020	Hawthorn	C1/C2	Within footprint of new bridge structure – fell and replace
8021	Ash	C1/C2	Within footprint of new bridge structure – fell and replace
8022	White Willow	C1/C2	Within footprint of new bridge structure – fell and replace
8023	Elder	C1/C2	Low quality plant near footprint of new bridge structure - fell and replace
8024	Ash	B1/B2	Within footprint of new bridge structure – fell and replace
8025	Ash	B1/B2	Within footprint of new bridge structure – fell and replace
8026	Silver Birch	B1/B2	Within footprint of new bridge structure – fell and replace
8027	Ash	B1/B2	Within footprint of new bridge structure – fell and replace
8028	Ash	B1/B2	Within footprint of new bridge structure – fell and replace
8029	Wild Cherry	B1/B2	Within footprint of new bridge structure – fell and replace
8168	Hawthorn	C1/C2	Near work site but low quality. Fell and replace
8169	Ash	C1/C2	Within footprint of new step structure – fell and replace

Tree reference	Species	Grade	Implications
Group AA	Ash	C1/C2	Within footprint of new step and footpath structure - fell and replace
8046	Horse Chestnut	C1/C2	Within footprint of new bridge structure - fell and replace
8166	Ash	C1/C2	Within footprint of new bridge structure - fell and replace
8165	Ash	C1/C2	Too close to new bridge structure to retain - fell and replace
8167	Silver Birch	B1/B2	Too close to new bridge structure to retain - fell and replace
8161	Ash	B1/B2	Too close to new bridge structure to retain - fell and replace
8157	Sycamore	C1/C2	Too close to new bridge structure to retain - fell and replace
8156	Field Maple	C1/C2	Too close to new bridge structure to retain - fell and replace
Group Z	Elder	C1/C2	Within footprint of new bridge structure - fell and replace
8150	Field Maple	B1/B2	Too close to new bridge structure to retain - fell and replace
8154	Ash	B1/B2	Must be pruned to facilitate works
8149	Silver Birch	U	Too close to new bridge structure to retain - fell and replace
8144	Silver Birch	U	Too close to new bridge structure to retain - fell and replace
8143	Silver Birch	U	Too close to new bridge structure to retain - fell and replace
8141	Ash	B1/B2	Must be pruned to facilitate works

4.3.2 At the western side of the site, seven Grade B trees must be lost to accommodate the new structure. The remaining six individual and two groups of trees and other plants are all Grade C.

4.3.3 On the eastern side of the site, only three Grade B trees must be removed, with the remaining 15 trees being either Grade C or U.

4.3.4 The scheme has been designed to minimise the loss of higher-quality trees. The trees will be replaced regardless of their quality; dead, dangerous or poorly formed trees will be replaced where they lie near the project site.

4.4 Engineering and Design

4.4.1 Subject to the soil type found on site and an engineer's appraisal, the trees (whether retained or removed) may influence foundation design. The bridge supports will be formed using a number of piles with concrete pile caps. These will be deeper than the influence of any trees.

4.5 Services

4.5.1 The existing services are shown on the topographical survey. Any necessary changes or additions can be accommodated within the worksite without affecting any trees.

4.6 Screening

4.6.1 At the western side of the site, despite the tree loss there will be minimal loss of screening (when viewing from the east) because the land is mainly used as a car park and there are trees to the North (Thorpe Wood) and trees on the golf course beyond.

4.6.2 Despite the greater number of trees being removed, the retained trees will still offer a high level of screening between the Nene Parkway and the residential areas.

4.6.3 The proposed replacement planting will reinforce the lower-level screening.

5 ASSESSMENT CONCLUSIONS

5.1 Tree work

5.1.1 The proposed development will result in the loss of several trees; however, the quality and condition of most of the trees means their value is restricted to site and eight are recommended for removal as a result of their health or condition. These trees are indicated on the Arboricultural Implications Plan (see Appendix D) by way of a red canopy outline with red hatch.

5.1.2 The following trees are recommended for removal as a result of their health or condition, regardless of any layout:

REF.	SPECIES	GRADE
West side		
8020	Hawthorn	C1/C2
8021	Ash	C1/C2
8031	Silver Birch	C1/C2
8040	Hornbeam	C1/C2
East side		
8045	Horse Chestnut	U
8054	Ash	C1/C2
8057	Wild Cherry	U
8058	Horse Chestnut	U

5.1.3 In addition, the following trees are implicated for removal as a result of the proposed development:

REF.	SPECIES	GRADE
West side		
Group E	Field Maple	C2
8013	Field Maple	B1/B2
Group D	Hawthorn, Plum, Elder, Ash	C2
7796	White Willow	C1/C2
8022	White Willow	C1/C2
8023	Elder	C1/C2
8024	Ash	B1/B2
8025	Ash	B1/B2
8026	Silver Birch	B1/B2
8027	Ash	B1/B2
8028	Ash	B1/B2
8029	Wild Cherry	B1/B2
East side		
8168	Hawthorn	C1/C2
8169	Ash	C1/C2
Group AA	Ash	C1/C2
8042	Sycamore	C1/C2
8043	Wild Cherry	C1/C2
8044	Wild Cherry	C1/C2
8046	Horse Chestnut	C1/C2
8166	Ash	C1/C2
8165	Ash	C1/C2

8167	Silver Birch	B1/B2
8161	Ash	B1/B2
8157	Sycamore	C1/C2
8156	Field Maple	C1/C2
Group Z	Elder	C1/C2
8150	Field Maple	B1/B2
8153	Silver Birch	U
8149	Silver Birch	U
8144	Silver Birch	U
8143	Silver Birch	U

5.1.4 Pruning required:

Ref	**Species**	**Details**
West side		
8030	Ash	Prune to give a 3m working space over the piling site
8015	Field Maple	Prune to provide clearance over the footpath site for machine clearance.
8016	Field Maple	Prune to provide clearance over the footpath site for machine clearance.
East side		
Group R	Ash, Sycamore, Hawthorn, Elm, Silver Birch	Either prune overhanging growth to provide clearance for equipment lift old bridge sections out or coppice to ground level
Group W	Ash, Sycamore	Prune overhanging growth to provide clearance for equipment lift old bridge sections out
8041	Ash	Prune to provide clearance over the footpath site for machine clearance.
8172	Field Maple	Prune to give a 3m working space over the piling site
8170	Ash	Prune to give a 3m working space over the piling site
8047	Ash	Prune to give a 3m working space over the piling site
8154	Ash	Prune to provide clearance over the footpath site for machine clearance.
8148	Silver Birch	Prune to provide clearance over the footpath site for machine clearance.
8145	Field Maple	Prune to provide clearance over the footpath site for machine clearance.
8141	Ash	Prune to provide clearance over the footpath site for machine clearance.

5.2 Design

5.2.1 The current layout has been achieved through an informed design process. The scheme shown achieves the objectives within minimal tree loss.

5.3 Construction

5.3.1 Some facilitation pruning will be required.

5.3.2 The demolition of the existing bridge involves work close to the retained trees. Therefore, the methods of demolition must be controlled through site management, and the plant, equipment and staff involved.

5.3.3 Space will be at a premium for the receipt, storage and handling of materials and for the movement of plant and machinery. Therefore, in order to avoid accidental damage, a suitable tree protection scheme must be implemented before development begins.

5.3.4 Full details of a tree protection methodology have been provided in an Arboricultural Method Statement and Tree Protection Plan accompanying this application.

5.4 Protection

5.4.1 Barriers and ground protection will be required before any work commences on site.

5.4.2 The order in which the works are implemented will need to be carefully considered in order to provide the most successful tree protection scheme.

5.4.3 A high standard of site management will be essential to avoid damage to retained trees.

5.4.4 The retention of an Arboricultural Clerk of Works is recommended to enable works near trees to progress without damaging retained trees.

5.5 Replacement

5.5.1 The detail of the tree replacement scheme and how it will be maintained can be secured by Condition of any Consent.

Andrew Belson
Arboricultural Consultant

Appendices

Appendix A – Tree Survey Explanatory Notes

Identification

All significant trees within and adjoining the site were surveyed. Most of the significant individual trees within the site were tagged with numbered aluminium tags, attached to the tree with two nails at around head height. Inaccessible or neighbouring trees have been designated the prefix 'NT' and numbered. Groups of trees were identified and designated a letter. Reference to the trees' locations can be made using the plans appended to this report.

Limitations

The tree survey was carried out for the purpose of informing the planning process. Relevant structural defects and aspects of tree condition are noted in the tree survey table in Appendix B; however, a full hazard assessment has not been carried out.

As trees and shrubs are living organisms whose health and condition can change rapidly, conclusions and recommendations are only valid for one year. The health, condition and safety of trees should be checked regularly, preferably annually.

It may have been necessary to estimate some measurements when assessing trees on neighbouring land. This will not generally affect the conclusions of this report.

No invasive investigations were carried out to assess the internal condition of the trees. Should this be required, it will be highlighted in the report.

The soil was not examined and no soil samples were taken. Should soil analysis be indicated, this will be recommended in the report.

Assessment

The trees were assessed in accordance with British Standard 5837.

Appendix B – Tree Survey Data

Key to Survey

Height	Measured with a clinometer or estimated where not considered critical (m)	
Crown spread	At cardinal points (m)	
Remaining Contribution	Estimated number of years the tree may make a safe useful contribution	
Main Stem Diameter	Measured at 1.5 metres above ground or in accordance BS5837 Annex C and D	
Condition	Good:	No visible defects seen
	Reasonable:	Some defects seen but none that contribute significantly to the overall health and safety of the tree
	Poor:	Defects or health issues that contribute significantly to the overall health and safety of the tree
Age Class	Y	= Young (Less than 1/3 of normal expected life)
	SM	= Semi-mature (1/3 – 2/3 of normal expected life)
	M	= Mature
	OM	= Over-mature or in decline
	V	= Veteran
Root Protection Area (Radius)	Distance in metres from centre of tree to achieve a circular Root Protection Area	
Root Protection Area (Area)	Root Protection Area in square metres.	
Recommendations	Recommendations based on the findings of the survey. These are intended to help guide the site layout; appropriate tree retention; tree management and generally inform site design. These are irrespective of proposed site layout and DO NOT form part of the Arboricultural Implications Assessment.	

Condensed Notes from Table 1 BS5837

U	Trees in poor condition offering less than 10 years safe useful life due to irreversible decline; containing serious defects; infected with pathogens significant to health of other trees nearby; or dead.
A1	Trees of high quality and value offering at least 40 years' contribution; particularly good example of species
A2	Trees of high quality and value; offering at least 40 years' contribution; a group or woodland or particular visual importance
A3	Trees of high quality and value; offering at least 40 years' contribution with conservation, historical or other value
B1	Trees of moderate value; offering at least 20 years' contribution; slightly impaired condition but remediable
B2	Trees of moderate value; offering at least 20 years' contribution; distinct landscape feature as a group or woodland.
B3	Trees of moderate value; offering at least 20 years' contribution; trees with clearly identifiable conservation or other cultural benefits.
C1	Trees of low quality and value; at least 10 years' contribution; unremarkable trees of very limited merit
C2	Trees of low quality and value; at least 10 years' contribution; groups or woodlands without significant landscape value, trees of low or temporary landscape value
C3	Trees of low quality and value; at least 10 years' contribution; trees with limited conservation or other value

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
7793	Lime	SM	350	12	2	16	B1/B2	4	4	4	4	4.2	55.42	40+	Good	No visible defects seen. Unable to inspect stem due to Ivy.	No work required.
7794	Horse Chestnut	SM	500	14	2	14	C1/C2	5	5	5	5	6	113.11	10+	Poor	Early infection with Horse Chestnut Bleeding Canker. Decay in wound at base of main stem	Could be retained in the short-term.
Group A	Lime	SM	350	12	2	16	B1/B2	5	5	5	5	4.2	55.42	40+	Good	No visible defects seen.	No work required.
Group B	Hawthorn, Plum, Elder, Ash	SM	350	10	2	16	C2	5	5	5	5	4.2	55.42	40+	Good	No visible defects seen. Lapsed hedge with spread towards carpark	No work required.
Group C	Sycamore, Hawthorn, Elder	SM	350	15	2	18	C2	6	6	6	6	4.2	55.42	10+	Poor	New generation beyond woodland edge. Generally poor condition	No work required.
7795	Sycamore	SM	400	15	2	16	B1/B2	6	6	6	6	4.8	72.39	40+	Good	No visible defects seen.	No work required.
Group D	Hawthorn, Plum, Elder, Ash	SM	100	5	2	5	C2	2.5	2.5	2.5	2.5	1.2	4.52	10+	Reasonable	Suppressed. Lapsed hedge	No work required.
Group E	Field Maple	SM	300	10	2	18	C2	3.5	3.5	3.5	3.5	3.6	40.72	40+	Reasonable	Suppressed. Multi-stemmed growth at woodland edge. Variable form.	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
7796	White Willow	M	500	15	3.5	15	C1/C2	7	4	5	5	6	113.11	10+	Poor	Low vigour.	No work required.
Group F	Hazel, Hawthorn, Ash, Silver Birch, Sycamore, Rose, Plum, Osier	Y	150	10	0	18	C2	2.5	2.5	2.5	2.5	1.8	10.18	40+	Reasonable	No visible defects seen. Plantation and natural generation on highway embankment. Key tree tagged and individually noted	Could be retained. No work required.
Group G	Ash, Oak	M	800	25	0	25	B3	8	8	8	8	9.6	289.57	40+	Reasonable	No visible defects seen. Retained western section of Thorpe Wood. Natural generation of mainly Ash seedlings beyond boundary fence to shoulder of embankment	Could be retained. No work required.
Group H	Ash, Norway Maple	Y	50	8	0	18	C2	1.5	1.5	1.5	1.5	0.6	1.13	40+	Reasonable	No visible defects seen. Unlikely to be considered suitable for retention. Seedling growth on embankment	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
Group J	Ash, Elm, Hazel, Cherry, Hawthorn, Blackthorn, Horse Chestnut	Y	300	12	0	18	B2	4	4	4	4	3.6	40.72	40+	Reasonable	No visible defects seen. Maturing plantation on embankment	Could be retained. No work required.
Group K	Sycamore, Norway Maple, Cherry, Ash	SM	400	15	0	18	B2	5	5	5	5	4.8	72.39	40+	Reasonable	No visible defects seen. Maturing plantation on embankment	No work required.
Group L	Norway Maple, Ash	Y	300	10	1	18	B2	3.5	3.5	3.5	3.5	3.6	40.72	40+	Reasonable	No visible defects seen. Young trees on embankment	No work required.
Group M	Norway Maple, Ash	Y	300	12	1	18	B2	4	4	4	4	3.6	40.72	40+	Reasonable	No visible defects seen. Young trees on embankment	No work required.
Group N	Hawthorn, Goat Willow, Hornbeam, Lime, Hazel	SM	250	10	1	14	B2	3.5	3.5	3.5	3.5	3	28.28	20+	Reasonable	No visible defects seen. Maturing trees on embankment	No work required.
Group P	Fastigiate Hornbeam	SM	350	14	0	18	B2	4.5	4.5	4.5	4.5	4.2	55.42	40+	Good	No visible defects seen. Maturing trees on embankment	No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
Group R	Ash, Sycamore, Hawthorn, Elm, Silver Birch	SM	350	15	1	14	B2	5	5	5	5	4.2	55.42	40+	Reasonable	No visible defects seen. Maturing trees on embankment	No work required.
8011	Field Maple	SM	300	12	2	18	B1/B2	4	4	4	4	3.6	40.72	40+	Good	No visible defects seen. On edge of Thorpe Wood	Could be retained. No work required.
8012	Elm	SM	300	12	1	12	B1/B2	5	5	5	5	3.6	40.72	40+	Good	No visible defects seen. On edge of Thorpe Wood	Could be retained. No work required.
8013	Field Maple	SM	300	10	2	18	B1/B2	3.5	3.5	3.5	3.5	3.6	40.72	40+	Good	No visible defects seen. On edge of Thorpe Wood	Could be retained. No work required.
8014	Ash	M	900	18	0	18	C1/C2	10	10	10	10	10.8	366.48	<10	Poor	Scattered minor dead wood throughout crown. Infected with Ash Heart Rot. Component of Thorpe Wood. Bat potential	No work required.
8015	Field Maple	SM	300	10	2	18	B1/B2	0	5	3	4	3.6	40.72	40+	Reasonable	No visible defects seen. On edge of Thorpe Wood	Could be retained. No work required.
8016	Field Maple	SM	300	10	2	18	C1/C2	0	5	5	1	3.6	40.72	40+	Reasonable	No visible defects seen. On edge of Thorpe Wood	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8017	Ash	M	300	10	5	10	C2/C3	0	4	3	1	3.6	40.72	<10	Poor	Scattered minor dead wood throughout crown. Infected with Ash Heart Rot. Component of Thorpe Wood. Bat potential	No work required.
8018	Ash	M	300	10	5	10	C2/C3	0	5	3	3	3.6	40.72	<10	Poor	Scattered minor dead wood throughout crown. Infected with Ash Heart Rot. Component of Thorpe Wood. Bat potential	No work required.
8019	Ash	M	500	15	5	15	C2/C3	3	5	5	5	6	113.11	<10	Poor	Scattered minor dead wood throughout crown. Infected with Ash Heart Rot. Component of Thorpe Wood. Bat potential	No work required.
8020	Hawthorn	Y	150	10	2	18	C1/C2	4	5	2	1.5	1.8	10.18	40+	Reasonable	No visible defects seen. Directly adjacent to Bridge	Fell and replace.
8021	Ash	Y	200	12	2	18	C1/C2	5	0	5	1.5	2.4	18.1	40+	Reasonable	Suppressed. Close to Bridge	Fell and replace.
8022	White Willow	M	292	10	3.5	10	C1/C2	4	1	2	3	3.5	38.49	10+	Poor	Low vigour. Suppressed.	No work required.
8023	Elder	M	250	10	3.5	10	C1/C2	3	1	4	0	3	28.28	10+	Poor	Low vigour. Suppressed.	No work required.
Group U	Ash, Hazel	M	250	10	2	18	C1/C2	4	4	4	4	3	28.28	40+	Reasonable	No visible defects seen.	No work required.

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Group V	Ash	M	250	10	2	18	C1/C2	4	4	4	4	3	28.28	40+	Reasonable	No visible defects seen. Linear group of young trees at edge of car park	No work required.
8024	Ash	Y	300	15	3	18	B1/B2	4.5	4.5	4.5	4.5	3.6	40.72	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8025	Ash	Y	250	15	3	18	B1/B2	4.5	4.5	4.5	4.5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8026	Silver Birch	Y	350	15	3	18	B1/B2	4.5	4.5	4.5	4.5	4.2	55.42	40+	Good	No visible defects seen. Component of embankment group	Could be retained. No work required.
8027	Ash	Y	350	15	5	18	B1/B2	4.5	4	6	4.5	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8028	Ash	Y	250	15	3	18	B1/B2	4.5	4.5	4.5	4.5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.

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8029	Wild Cherry	Y	180	10	3	14	B1/B2	3.5	3.5	3.5	3.5	2.16	14.66	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8030	Ash	Y	350	15	5	18	B1/B2	6	6	6	6	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8031	Silver Birch	Y	400	15	3	18	C1/C2	4.5	4.5	4.5	4.5	4.8	72.39	40+	Good	Stem divides above 1.5m. Included bark present in fork. Component of embankment group	Fell and replace.
8032	Sycamore	Y	400	12	2	18	C1/C2	3.5	3.5	3.5	3.5	4.8	72.39	40+	Good	No visible defects seen. Component of embankment group	No work required.
8033	Ash	Y	350	15	5	18	B1/B2	5	5	5	5	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8034	Ash	Y	250	15	3	18	B1/B2	4.5	4.5	4.5	4.5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.

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8035	Ash	Y	200	10	5	18	C1/C2	4	4	4	4	2.4	18.1	40+	Reasonable	Multi-stemmed form. No visible defects seen. Component of embankment group	Could be retained. No work required.
8036	Horse Chestnut	Y	400	10	2	16	B1/B2	5	5	5	5	4.8	72.39	40+	Reasonable	No visible defects seen. Component of embankment group	No work required.
8037	Horse Chestnut	Y	350	10	2	16	B1/B2	4	4	4	4	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	No work required.
8038	Horse Chestnut	Y	300	10	2	16	B1/B2	4	4	4	4	3.6	40.72	40+	Reasonable	No visible defects seen. Component of embankment group	No work required.
8039	Elm	Y	350	14	2	14	B1/B2	5	5	5	5	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	No work required.
8040	Hornbeam	Y	200	10	2.5	10	C1/C2	4	4	4	4	2.4	18.1	<10	Poor	Stem divides above 1.5m. Included bark present in fork. Component of embankment group	Fell and replace.

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Group W	Ash, Sycamore	Y	200	12	2	18	B2	4	4	4	4	2.4	18.1	40+	Reasonable	No visible defects seen. Embankment planting of variable form. Five Ash and one Sycamore	Could be retained. No work required.
8041	Ash	Y	350	14	5	18	B1/B2	6	6	6	6	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8042	Sycamore	Y	610	15	2	18	C1/C2	7	7	7	7	7.32	168.36	20+	Reasonable	Stem divides above 1.5m. Included bark present in fork. Component of embankment group	Could be retained in the short-term.
8043	Wild Cherry	Y	250	15	3	14	C1/C2	0	3.5	0	5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8044	Wild Cherry	Y	200	15	3	14	C1/C2	3	4	2	4	2.4	18.1	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8045	Horse Chestnut	Y	240	10	1	10	U	3	3	3	3	2.88	26.06	<10	Poor	Moderate infection with Horse Chestnut Bleeding Canker. Component of embankment group	Fell and replace.

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8046	Horse Chestnut	Y	500	14	0	14	C1/C2	6	6	6	6	6	113.11	<10	Poor	Early infection with Horse Chestnut Bleeding Canker. Component of embankment group	Could be retained in the short-term.
8047	Ash	Y	350	14	5	18	B1/B2	5	5	5	5	4.2	55.42	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8048	Ash	Y	250	14	5	18	B1/B2	4.5	4.5	4.5	4.5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8049	Ash	Y	420	14	5	18	B1/B2	6	6	6	6	5.04	79.81	40+	Reasonable	No visible defects seen. Scattered minor dead wood throughout crown. Component of embankment group	Could be retained. No work required.
8050	Ash	Y	400	14	5	18	B1/B2	6	6	6	6	4.8	72.39	40+	Reasonable	No visible defects seen. Scattered minor dead wood throughout crown. Component of embankment group	Could be retained. No work required.
8051	Ash	Y	212	10	5	18	C1/C2	4	4	4	4	2.54	20.27	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.

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8052	Ash	Y	200	8	5	18	C1/C2	4	4	4	4	2.4	18.1	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8053	Ash	Y	200	8	5	18	C1/C2	4	4	2	4	2.4	18.1	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8054	Ash	Y	250	8	5	18	C1/C2	4	4	2	4	3	28.28	10+	Poor	Suppressed. Component of embankment group. Fence enveloped in main stem	Fell and replace.
8055	Ash	Y	300	14	5	18	C1/C2	4	4	2	5	3.6	40.72	40+	Reasonable	No visible defects seen. Suppressed. Component of embankment group.	Could be retained. No work required.
8056	Ash	Y	350	14	5	18	C1/C2	4	4	2	5	4.2	55.42	10+	Poor	Component of embankment group. Multiple lesions on main stem and branches	Could be retained in the short-term. No work required.
8057	Wild Cherry	Y	200	6	0	6	U	1	1	1	1	2.4	18.1	<10	Dead	Dead. Component of embankment group	Fell and replace.

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8058	Horse Chestnut	Y	250	10	1	10	U	4	4	4	4	3	28.28	<10	Poor	Advanced infection with Horse Chestnut Bleeding Canker. Component of embankment group	Fell and replace.
8059	Horse Chestnut	Y	250	14	1.5	14	B1/B2	4.5	4.5	4.5	4.5	3	28.28	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8060	Wild Cherry	Y	220	8	2	8	C1/C2	2	2	2	4	2.64	21.9	10+	Poor	Low vigour. Component of embankment group	Could be retained. No work required.
8061	Horse Chestnut	Y	350	14	0	14	C1/C2	5	5	5	5	4.2	55.42	<10	Poor	Early infection with Horse Chestnut Bleeding Canker. Component of embankment group	Could be retained in the short-term.
8062	Horse Chestnut	Y	400	14	0	14	C1/C2	5	5	5	5	4.8	72.39	<10	Poor	Early infection with Horse Chestnut Bleeding Canker. Component of embankment group	Could be retained in the short-term.
8063	Horse Chestnut	Y	400	14	0	14	C1/C2	5	5	5	5	4.8	72.39	<10	Poor	Early infection with Horse Chestnut Bleeding Canker. Component of embankment group	Could be retained in the short-term.

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8064	Ash	Y	450	14	5	18	B1/B2	6	6	6	6	5.4	91.62	40+	Good	No visible defects seen. Component of embankment group	Could be retained. No work required.
8094	Ash	Y	250	12	4	18	B1/B2	6	0	2	6	3	28.28	40+	Good	No visible defects seen. Suppressed. Component of embankment group	Could be retained. No work required.
8095	Ash	Y	450	14	5	18	B1/B2	5	5	5	5	5.4	91.62	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8096	Oak	Y	200	12	5	18	C1/C2	2	4	4	2	2.4	18.1	40+	Reasonable	No visible defects seen. Component of embankment group	Could be retained. No work required.
8097	Field Maple	Y	450	10	1	18	B1/B2	5	5	5	5	5.4	91.62	40+	Good	No visible defects seen. Component of woodland group	Could be retained. No work required.
8098	Field Maple	Y	400	12	1	18	C1/C2	0	2	2	4	4.8	72.39	40+	Good	No visible defects seen. Component of woodland group	Could be retained. No work required.

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8099	Field Maple	Y	354	10	1	18	C1/C2	5	5	5	5	4.25	56.75	40+	Good	Poor form. Component of woodland group	Could be retained. No work required.
8100	Ash	Y	354	15	4	18	B1/B2	6	6	6	6	4.25	56.75	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8101	Silver Birch	Y	320	15	2	16	B1/B2	5	5	5	5	3.84	46.33	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8102	Silver Birch	Y	250	5	0	5	U	1	1	1	1	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.
8103	Silver Birch	Y	250	12	0	12	U	3	3	3	3	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.
8104	Field Maple	Y	150	10	1	18	C1/C2	5	5	5	5	1.8	10.18	40+	Good	Suppressed. Component of woodland group	Could be retained. No work required.
8105	Silver Birch	Y	250	10	0	10	U	3	3	3	3	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.

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8106	Field Maple	Y	439	10	1	18	C1/C2	6	5	7	4	5.27	87.26	40+	Good	Component of woodland group. Historic partial windthrow to East	Could be retained. No work required.
8107	Silver Birch	Y	300	10	0	10	U	3	3	3	3	3.6	40.72	<10	Dead	Dead. Component of woodland group	Fell and replace.
8108	Field Maple	Y	450	12	1	18	B1/B2	6	6	6	6	5.4	91.62	40+	Good	Multi-stemmed form. No visible defects seen. Component of woodland group.	Could be retained. No work required.
8109	Ash	Y	250	15	4	18	B1/B2	5	3	5	5	3	28.28	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8110	Silver Birch	Y	250	10	0	10	U	3	3	3	3	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.
8111	Field Maple	Y	354	12	1	18	B1/B2	6	5	6	5	4.25	56.75	40+	Good	Multi-stemmed form. No visible defects seen. Component of woodland group.	Could be retained. No work required.

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8112	Field Maple	Y	300	12	1	18	B1/B2	2	2	4	4	3.6	40.72	40+	Good	Multi-stemmed form. No visible defects seen. Component of woodland group.	Could be retained. No work required.
8113	Sycamore	Y	200	15	4	18	B1/B2	5	3	5	3	2.4	18.1	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8114	Norway Maple	Y	200	15	2	18	B1/B2	6	5	6	5	2.4	18.1	40+	Good	No visible defects seen. Component of woodland group	Could be retained. No work required.
8115	Ash	Y	320	14	4	18	B1/B2	5	5	5	5	3.84	46.33	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8116	Field Maple	Y	292	12	1	18	B1/B2	4	4	4	4	3.5	38.49	40+	Good	Multi-stemmed form. No visible defects seen. Component of woodland group.	Could be retained. No work required.

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8117	Field Maple	Y	320	12	1	18	B1/B2	4	4	4	5	3.84	46.33	40+	Good	Multi-stemmed form. No visible defects seen. Component of woodland group.	Could be retained. No work required.
8118	Field Maple	Y	180	10	1	18	C1/C2	3	3	3	3	2.16	14.66	40+	Good	Multi-stemmed form. Suppressed. Component of woodland group.	Could be retained. No work required.
8119	Field Maple	Y	180	10	1	18	C1/C2	3	3	3	3	2.16	14.66	40+	Good	Multi-stemmed form. Suppressed. Component of woodland group.	Could be retained. No work required.
8120	Field Maple	Y	377	12	1	18	B1/B2	4	4	4	4	4.52	64.19	40+	Good	Multi-stemmed form. Component of woodland group.	Could be retained. No work required.
8121	Silver Birch	Y	300	14	0	14	B1/B2	5	2	5	1	3.6	40.72	40+	Reasonable	Leaning North-East. Component of woodland group	Could be retained.

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8122	Ash	Y	283	12	4	18	C1/C2	5	5	5	5	3.4	36.32	40+	Reasonable	Stem divides below 1.5m. Included bark present in fork. Component of woodland group	Could be retained. No work required.
8123	Norway Maple	Y	250	14	0	14	U	3	3	1	3	3	28.28	<10	Poor	Component of woodland group. Recent failure at weak union at5m	Fell and replace.
8124	Field Maple	Y	300	12	1	18	B1/B2	4	4	4	4	3.6	40.72	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8125	Field Maple	Y	367	12	1	18	B1/B2	4	4	4	4	4.4	60.83	40+	Good	Multi-stemmed form. Component of woodland group.	Could be retained. No work required.
8126	Field Maple	Y	328	12	1	18	B1/B2	4	5	5	4	3.94	48.78	40+	Good	Multi-stemmed form. Component of woodland group.	Could be retained. No work required.
8127	Sycamore	Y	180	14	2	18	C1/C2	2	3	4	2	2.16	14.66	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.

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8128	Sycamore	Y	300	14	2	18	C1/C2	3.5	4	5	2	3.6	40.72	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8129	Sycamore	Y	250	14	2	18	C1/C2	3.5	0.5	5	0.5	3	28.28	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained. No work required.
8130	Field Maple	Y	235	12	1	18	C1/C2	2.5	2.5	2.5	2.5	2.82	24.99	40+	Good	Multi-stemmed form. Component of woodland group.	Could be retained. No work required.
8131	Silver Birch	Y	150	14	0	14	C1/C2	2.5	2.5	3	1	1.8	10.18	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained.
8132	Norway Maple	Y	350	15	1.5	15	C1/C2	5	5	5	5	4.2	55.42	10+	Poor	Component of woodland group. Historict failures at weak unions at 2 and 3m	Could be retained in the short-term.
8133	Sycamore	Y	212	12	2	18	C1/C2	0	3	0	3	2.54	20.27	40+	Reasonable	Scattered minor dead wood throughout crown. Component of woodland group. Two Young trees	Could be retained. No work required.

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8134	Sycamore	Y	150	12	2	18	C1/C2	0	2	0	2	1.8	10.18	40+	Reasonable	Component of woodland group. Young trees	Could be retained. No work required.
8135	Ash	Y	384	15	4	18	B1/B2	6	4	6	5	4.61	66.77	40+	Reasonable	Multi-stemmed form. Component of woodland group	Could be retained. No work required.
8136	Elder	M	292	5	0	5	C1	4	1	4	1	3.5	38.49	<10	Reasonable	Multi-stemmed form. Now in last third of safe useful life expectancy. Component of woodland group	Could be retained in the short-term. No work required.
Group Y	Sycamore	Y	150	12	2	18	C1/C2	1.5	1.5	1.5	1.5	1.8	10.18	40+	Reasonable	Component of woodland group. Young trees	Could be retained. No work required.
8137	Field Maple	Y	224	12	1	18	C1/C2	1	2.5	2.5	2.5	2.69	22.74	40+	Good	Multi-stemmed form. Suppressed. Component of woodland group.	Could be retained. No work required.
8138	Ash	Y	200	14	6	18	B1/B2	4	4	4	4	2.4	18.1	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8139	Field Maple	Y	122	8	1	18	C1/C2	1.5	1.5	1.5	1.5	1.46	6.7	40+	Good	Multi-stemmed form. Suppressed. Component of woodland group.	Could be retained. No work required.
8140	Ash	Y	470	14	6	18	B1/B2	5	5	5	5	5.64	99.95	40+	Good	No visible defects seen. Scattered minor dead wood throughout crown. Component of woodland group.	Could be retained. No work required.
8141	Ash	Y	400	14	6	18	B1/B2	6	2	6	5	4.8	72.39	40+	Good	No visible defects seen. Scattered minor dead wood throughout crown. Component of woodland group.	Could be retained. No work required.
8142	Field Maple	Y	224	12	1	18	C1/C2	4	4	4	4	2.69	22.74	20+	Reasonable	Multi-stemmed form. Component of woodland group. Two intertwined stems with weak unuon	Could be retained. No work required.
8143	Silver Birch	Y	300	6	0	6	U	3	3	3	3	3.6	40.72	<10	Dead	Dead. Component of woodland group	Fell and replace.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8144	Silver Birch	Y	150	6	0	6	U	1	1	1	1	1.8	10.18	<10	Dead	Dead. Component of woodland group	Fell and replace.
8145	Field Maple	Y	292	12	1	18	B1/B2	3	3	3	3	3.5	38.49	40+	Reasonable	Multi-stemmed form. Component of woodland group.	Could be retained. No work required.
8146	Field Maple	Y	150	12	1	18	B1/B2	3	3	3	3	1.8	10.18	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8147	Field Maple	Y	200	12	1	18	B1/B2	1	3	1	3	2.4	18.1	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8148	Silver Birch	Y	250	14	0	14	B1/B2	2.5	2.5	2.5	2.5	3	28.28	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained.
8149	Silver Birch	Y	300	10	0	10	U	3	3	3	3	3.6	40.72	<10	Dead	Dead. Component of woodland group	Fell and replace.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8150	Field Maple	Y	350	14	1	18	B1/B2	6	3	6	5	4.2	55.42	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8151	Elder	M	200	5	0	5	C1/C2	2	2	2	2	2.4	18.1	<10	Poor	Multi-stemmed form. Now in last third of safe useful life expectancy. Component of woodland group	Could be retained in the short-term. No work required.
8152	Sycamore	Y	150	12	2	18	C1/C2	2.5	2.5	2.5	2.5	1.8	10.18	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8153	Silver Birch	Y	250	10	0	10	U	2	2	2	2	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.
8154	Ash	Y	200	14	6	18	B1/B2	4	4	4	4	2.4	18.1	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8155	Field Maple	Y	200	14	1	18	C1/C2	3	2	2	5	2.4	18.1	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8156	Field Maple	Y	406	12	1	18	C1/C2	6	4	6	2	4.87	74.52	40+	Reasonable	No visible defects seen. Suppressed. Component of woodland group.	Could be retained. No work required.
8157	Sycamore	Y	361	12	2	18	C1/C2	5	3	5	4	4.33	58.91	40+	Reasonable	Component of woodland group. Western stem infected with sooty bark disease	Could be retained. No work required.
Group Z	Elder	M	600	5	0	5	C1/C2	2	2	2	2	7.2	162.88	<10	Poor	Multi-stemmed form. Now in last third of safe useful life expectancy. Component of woodland group	Could be retained in the short-term. No work required.
8158	Field Maple	Y	180	12	1	18	C1/C2	2	4	2	4	2.16	14.66	40+	Reasonable	No visible defects seen. Suppressed. Component of woodland group.	Could be retained. No work required.
8159	Field Maple	Y	320	14	1	18	B1/B2	4	4	4	5	3.84	46.33	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8160	Field Maple	Y	260	14	1	18	C1/C2	3	3	3	3	3.12	30.59	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8161	Ash	Y	200	14	6	18	B1/B2	4	4	4	4	2.4	18.1	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8162	Silver Birch	Y	250	10	0	10	U	2	2	2	2	3	28.28	<10	Dead	Dead. Component of woodland group	Fell and replace.
8163	Field Maple	Y	260	14	1	18	C1/C2	3	3	3	3	3.12	30.59	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8164	Field Maple	Y	260	14	1	18	C1/C2	3	3	3	3	3.12	30.59	40+	Reasonable	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8165	Ash	Y	400	14	6	18	C1/C2	5	5	5	5	4.8	72.39	10+	Poor	Component of woodland group. Historic fire damage to lower main syem	Could be retained in the short-term. No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8166	Ash	Y	250	14	6	18	C1/C2	4	0	5	0	3	28.28	10+	Poor	Suppressed. Component of woodland group. Historic fire damage to lower main syem	Could be retained in the short-term. No work required.
8167	Silver Birch	Y	250	12	0	16	B1/B2	3.5	3.5	3.5	3.5	3	28.28	40+	Reasonable	No visible defects seen. Component of woodland group	Could be retained.
8168	Hawthorn	M	250	12	0	16	C1/C2	2	4	4	0	3	28.28	40+	Reasonable	Component of woodland group. Collapsed to east	Could be retained.
8169	Ash	Y	250	14	2	18	C1/C2	5	5	5	5	3	28.28	40+	Reasonable	No visible defects seen. Component of woodland group.	No work required.
Group AA	Ash	Y	150	14	2	18	C1/C2	5	5	5	5	1.8	10.18	40+	Reasonable	No visible defects seen. Natural generation within woodland group.	No work required.
8170	Ash	Y	300	14	2	18	B1/B2	5	5	5	5	3.6	40.72	40+	Reasonable	No visible defects seen. Component of woodland group.	No work required.

ref.	Species	Age Class	Ø m/s (mm)	Height (m)	Lower crown height (m)	Ultimate height (m)	Grade	Crown Spread N (m)	Crown Spread S (m)	Crown Spread E (m)	Crown Spread W (m)	RPA radius (m)	RPA (m^2)	Remaining Contribution (yrs)	Condition	Comments	Recommendations made at time of survey, irrespective of any layout
8171	Field Maple	Y	606	14	1	18	C1/C2	5	2	5	4	7.27	166.06	40+	Reasonable	No visible defects seen. Scattered minor dead wood throughout crown. Component of woodland group.	Could be retained. No work required.
8172	Field Maple	Y	866	15	1	18	B1/B2	6	6	6	6	10.39	339.19	40+	Good	No visible defects seen. Component of woodland group.	Could be retained. No work required.
8173	Ash	Y	300	14	2	18	B1/B2	5	4	3	5	3.6	40.72	40+	Reasonable	No visible defects seen. Component of woodland group.	No work required.
8174	Elder	M	260	5	0	5	C1/C2	4	1	2	4	3.12	30.59	<10	Reasonable	Multi-stemmed form. Now in last third of safe useful life expectancy. Component of woodland group	Could be retained in the short-term. No work required.

Appendix C – Assessing Constraints

General

It is desirable to retain trees as they add maturity and structure to a site; provide shade and amenity value; screening or acoustic barrier.

In general, Grade 'A' and 'B' trees should be retained, especially if they offer a visual amenity to the wider community. It may be desirable to retain Grade 'C' trees where they can continue to offer a presence until they are replaced but they should not generally prevent an otherwise satisfactory layout from being achieved.

Root system

Construction can impose enormous strain on trees through damage to, or loss of root mass. The root system is the part of the tree most susceptible to damage during construction Any retained trees could be at risk of root damage through:

- Demolition and site clearance
- Excavation causing root severance
- Siting of services and excavation causing root severance
- Access for plant and vehicles which may cause compaction of the root zone leading to root death through asphyxiation
- Storage of materials or spillage of damaging substances such as fuel oil, petrol or lime, which can kill roots.
- The raising of soil levels which can kill roots through asphyxiation
- The lowering of soil levels which removes root mass, including many of the fine water collecting roots and beneficial humus layer

The symptoms that can arise from root damage as identified above can take several years to become evident.

The Arboricultural Implications Plan (see Appendix D) shows the Root Protection Area (RPA) as a magenta circle or polygon around each tree or group of trees. This is the area where if the trees are retained, ideally no excavation should take place; the soil level should not be raised or lowered; no materials should be stacked; there must be no contamination and no services should be routed. However, trees can be tolerant of some disturbance or root loss and recent advances in construction techniques can avoid causing significant damage to roots. This will depend on a number of factors including tree species and site conditions along with the type of construction methods available to the developer.

The Root Protection Area (RPA) required for each tree may affect the layout of road, footpath, housing services and other built structures. It may be possible to pave a proportion of the RPA.

Above Ground

Construction can threaten the aerial parts of the tree through physical damage by contact from various plant and delivery vehicles; and through the lighting of fires.

The height of the lower crown above ground is shown in the Tree Survey Table (Appendix B). Lifting (or raising) the crown to a set height above ground in order to allow access for plant and machinery or to erect fences for example would be an acceptable arboricultural practice. Crown spread may in itself be a constraint where it is greater than the RPA radius.

A development may affect the way wind passes the retained trees, by raising its speed or direction. This may leave weakened or newly exposed trees liable to wind throw.

Suitability and future growth

Some trees are not suitable for retention due to brittle wood, poisonous berries or leaves, prickles and thorns. Leaves falling from any of the retained trees may block gutters of nearby buildings. Fruit, blossom and leaves can become a potential slip hazard.

Whilst trees may be small at the time of survey, future growth may be considerable, both in height and radial crown spread. Very large trees worry some people because they perceive the trees to be imposing and dangerous. This is typically unfounded.

Shade

Building within the shade area can be acceptable where internal layout, fenestration or proposed use of buildings means they are not adversely affected by a lack of daylight received. Some shading may be welcomed in the summer when solar gain can make room temperatures uncomfortable.

The shade footprint that may be cast by the trees has been shown as a grey hatch on the Arboricultural Implications Plan (see Appendix D). The shade area is based on a solar inclination of 45 degrees in line with the median suggested by BS5837: 2012 that covers the main daylight hours. This simplifies the actual shade area that may affect the site but it is considered to be a good representation of the area in question.

It should also be noted that deciduous trees only cast shade for seven or eight months of the year, depending on species.

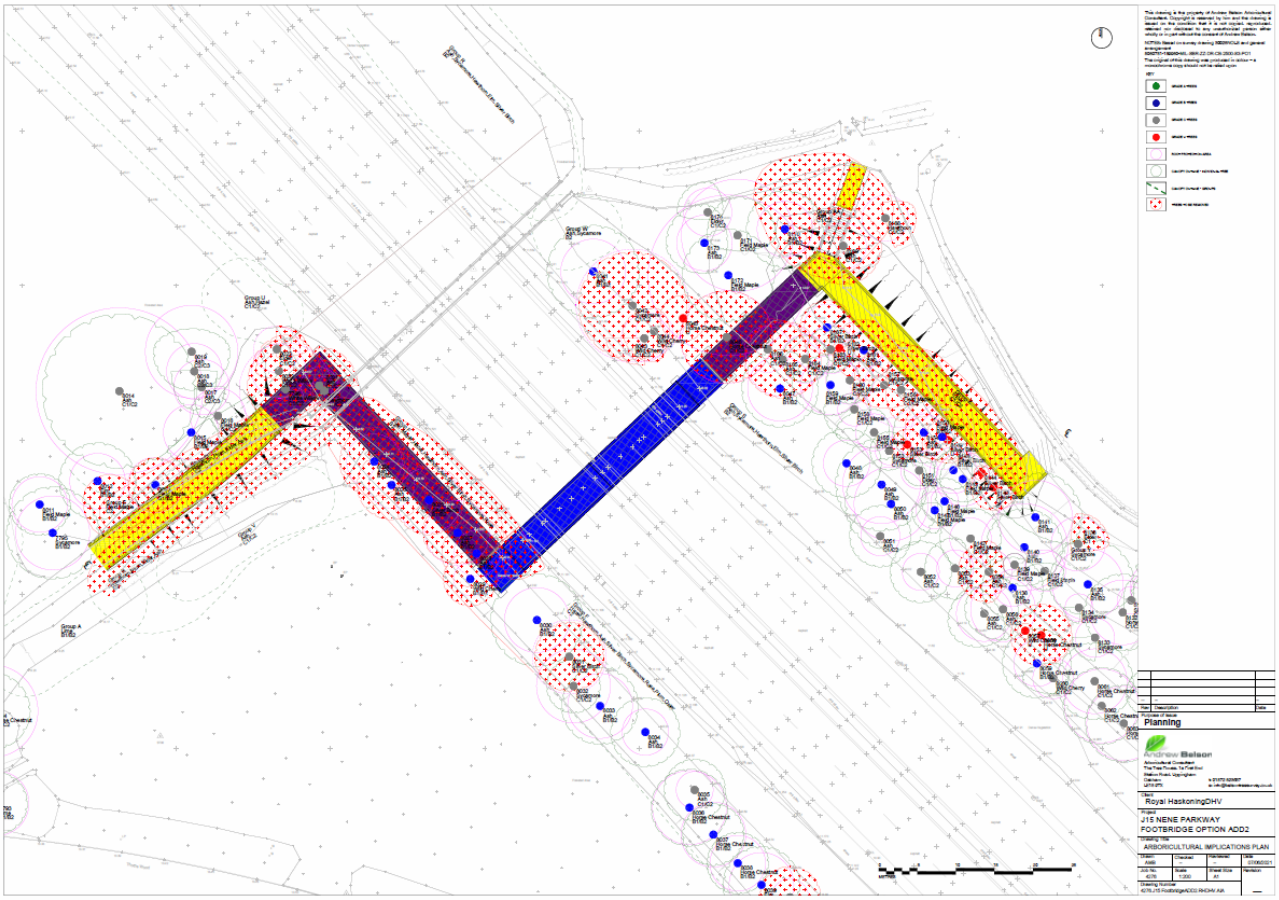
Engineering and Design

The species and height of trees (both retained or removed) may also affect the type and depth of foundations used.

The British Standard 5837: 2012 'Trees in Relation to Design, Demolition and Construction' gives more detailed guidance.

Appendix D – Arboricultural Implications Plan

A full-sized version of the Arboricultural Implications Plan (Filename: 4277.J15 Footbridge.RHDHV.AIP) has been provided with this file.



NENE PARKWAY THORPE WOOD FOOTBRIDGE
TREE REPLACEMENT AND ENHANCEMENT SCHEME
METHOD

General notes

Planting material and workmanship to minimum BS3936: Pt 1: 1992 and BS 8545: 2014.

Ground Preparation

Any areas that lie within the root protection areas of retained trees will not be stripped or excavated so far as is practical in accordance with the Approved engineering drawings for the development

Where required, the sub-soil will be graded and any detritus removed

Areas for planting will receive a minimum of 300mm of topsoil.

Topsoil will be as-dug from site or imported to BS3882: 2015

Topsoil will be laid and lightly consolidated in layers 150mm thick to the required finished level

Setting-out

Trees: As-per the landscape proposal drawing, adjusted if necessary on site to take account of any site-specific restrictions.

Shrub/understorey mix 1-3: Planted in species groups of not less than 3 and not more than 9 plants.

Hazel to the back of the group in mix 2 and 3

Shrub mix 4: Planted in species groups of not less than 3 and not more than 6 plants.

Planting

The project arboriculturalist will attend site at the start of the first day's planting to check on site conditions and advise on any changes to the planting specification.

The minimum tree pit size will be:

- to the depth of the container or root spread plus 150mm in all dimensions.

Contractors will allow for the time it may take to increase planting pit size.

Holes will be dug by hand.

Shrub/understorey planting: To be planted in holes dug by hand to the depth and diameter of the container plus 150mm in each dimension.

Backfilling: Un-amended material as dug from tree pit or shrub hole, compressed around roots in layers no more than 150mm thick

Tree support (Field Maple, Cherry and Hornbeam)

Stakes: Softwood, free from projections and large or edge knots and with pointed lower end.

Oner stakes will be driven vertically into the bottom of the tree pit on the south eastern side of the tree pit before planting.

Soil will be consolidated around the stake during backfilling.

Stakes will be cut off to 1500mm above ground level and trees tied to the stake with a single belt and buckle tree tie.

Tree support (Hazel)

Stakes: Softwood, free from projections and large or edge knots and with pointed lower end.

One stake will be driven diagonally into the side of the tree pit so that at least one stem of the tree lies nearly adjacent.

Soil will be consolidated around the stake during backfilling.

The stake will be cut off 100mm beyond the point where it crosses the tree stem.

The trees will be secured to the stake using 'Toms belt buckle ties'.

Shrub and understorey support

Each plant will be tape tied to a single bamboo cane 1.2m long, driven into the ground 300mm.

Season

Planting to be carried out in the first planting season (Mid November – end of March approx.) after construction is completed.

Planting will not be carried out during frosty weather or when the ground is waterlogged.

PLANTING SCHEDULE

Trees

Species	Common name	Size (cm girth or height in m)	Type	Total required
Acer campestre	Field Maple	10-12	CG	14
Corylus avellana	Hazel	1.5m	CG	24
Carpinus betulus	Hornbeam	10-12	CG	5
Prunus avium	Wild Cherry	10-12	CG	16

CG = Container-grown stock Size/type: As-per schedule
Possible supplier: Barcham Trees Plc, Eye Hill Drove, Ely, Cambridgeshire, CB7 5XF. Tel: 01353 720 748; Email: sales@barchamtrees.co.uk

Edge Mix 1

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	188
Viburnum opulus	Guelder Rose	45-60	BR	134
Ligustrum vulgare	Privet	45-60	BR	108
Symphoricarpos alba	Snowberry	45-60	BR	108

CG = Container-grown stock Size/type: As-per schedule

Edge Mix 2

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	74
Crataegus monogyna	Hawthorn	45-60	BR	295
Corylus avellana	Hazel	45-60	BR	49
Prunus cerasifera	Myrobalan Plum	45-60	BR	74

CG = Container-grown stock Size/type: As-per schedule

Edge Mix 3

Species	Common Name	Size (cm height)	Type	Total required
Cornus sanguinea	Dogwood	45-60	BR	102
Corylus avellana	Hazel	45-60	BR	64
Prunus cerasifera	Myrobalan Plum	45-60	BR	89

CG = Container-grown stock Size/type: As-per schedule

Edge Mix 4

Species	Common Name	Size (cm height)	Type	Total required
Crataegus monogyna	Hawthorn	45-60	BR	90
Rosa canina	Dog Rose	45-60	BR	23
Viburnum lanata	Wayfaring Tree	45-60	BR	38

CG = Container-grown stock Size/type: As-per schedule

MAINTENANCE

Trees and shrubs will be maintained for a period of five years in accordance with the following table:

Year/ Operation	1	2	3	4	5
Watering	Every three weeks from May to August	Every three weeks from May to August	Only if drought conditions persist	Only if drought conditions persist	Only if drought conditions persist
Weeding	Every three weeks from May to August	Every three weeks from May to August	Three visits	Three visits	Three visits
Pruning	None	Lift crowns of trees to 2m	Lift crowns of trees to 2m. Remove tree stakes	Lift crowns of trees to 2m	Lift crowns of trees to 2m
Check	September	September	September	September	September

Definitions

Watering means bringing the ground to field capacity.

Do not water if waterlogging or anaerobic conditions are suspected.

Weeding means the removal of all competing plants to a radius of 1m from the centre of the tree or plant.

Pruning will be to the minimum standard of BS3998: 2010 'Treework' and all arisings will be removed from site and recycled or sent to an approved tip.

Check will include the security of support, the presence of pests or disease, crown dieback, vandalism, accidental damage or death. Any findings will be noted and appropriate action taken following advice from a horticultural professional.

Replacement

At the end of year 1, the Project Arboriculturalist will assess the site for tree losses and write a schedule for replacement tree planting.

Trees and shrubs will be replaced in accordance with the original specification.

Any further trees or plants that fail within 5 years of planting will be replaced and maintained in accordance with the original specification.

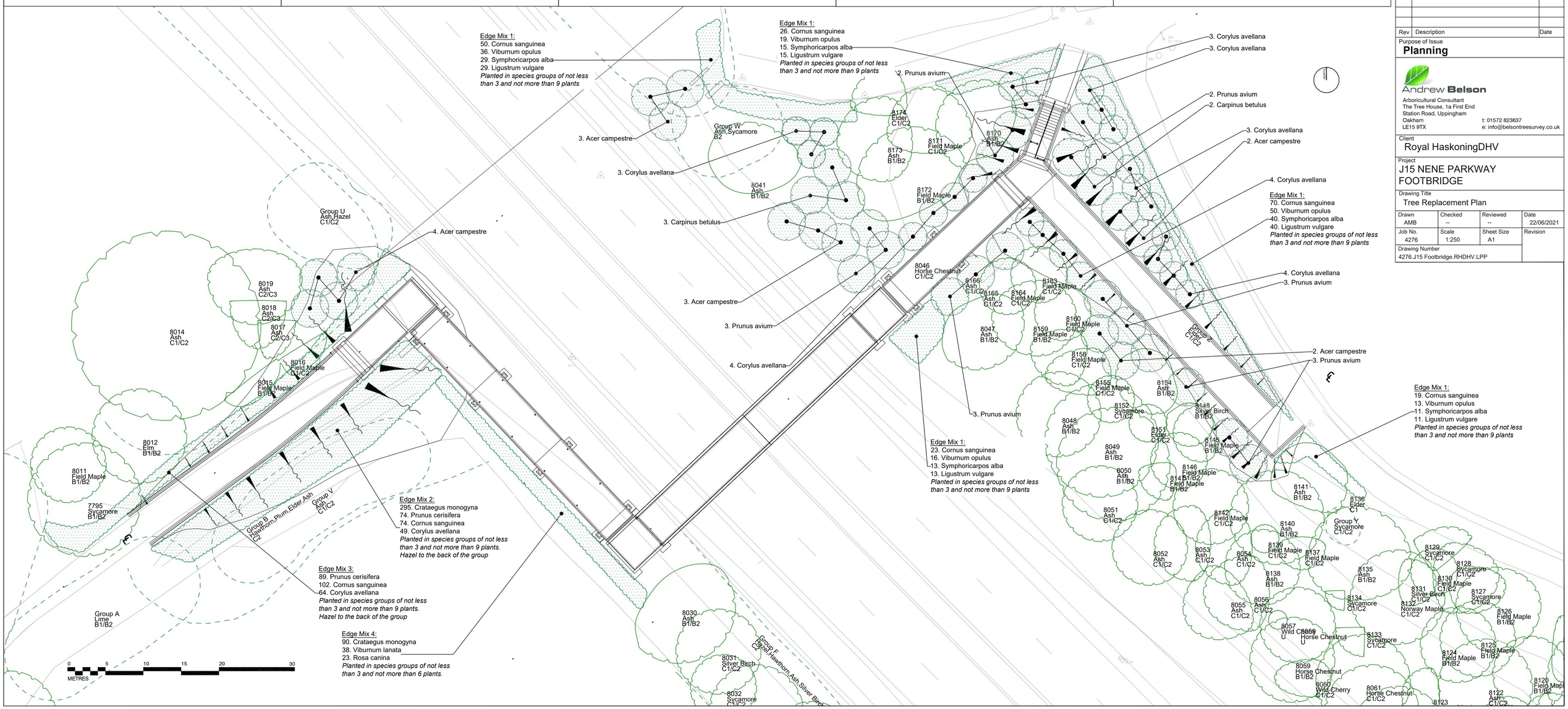
NOTES: Based on survey drawing 30028NOLS and general arrangement
5080751-159980-MIL-SBR-ZZ-DR-CB-2500-S3-PO1
The original of this drawing was produced in colour – a monochrome copy should not be relied upon

KEY

Proposed Tree

Proposed Planting

Existing/Retained tree



Rev	Description	Date

Purpose of Issue
Planning

Andrew Belson
Arboricultural Consultant
The Tree House, 1a First End
Station Road, Uppingham
Oakham t: 01572 823637
LE15 9TX e: info@belsontreesurvey.co.uk

Client
Royal HaskoningDHV

Project
J15 NENE PARKWAY FOOTBRIDGE

Drawing Title
Tree Replacement Plan

Drawn	Checked	Reviewed	Date
AMB	--	--	22/06/2021
Job No.	Scale	Sheet Size	Revision
4276	1:250	A1	

Drawing Number
4276.J15 Footbridge.RHDHV.LPP

MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix F:

Project Risk Register

Risk ID	Date Identified	Cause(s)	Risk Event	Effect(s)	Risk Type	Risk Status	Proximity	Date Last Review	Mitigation Plan	Action Owner	Date Mitigation Due	Date Action Closed	Likelihood (1-5)	Impact (1-5)	RAG score (likelihood x impact	Approx. Financial Impact (£k) TOTAL £250,000	Comments/Notes/Assumptions	Risk Owner	Escalation Required?	Date Closed
32	Jul-21	Additional budget required	**Increase in costs** Due to further work required for design of the footbridge and environmental surveys. Also the HE technical review fee is higher than expected. As a result of these it has been realised that additional budget will be needed.	Additional budget required Risk of scheme being placed on hold and implications of this. Delay to existing programme	Financial	**Open**	Imminent	Aug-21	Review to be taken of how much additional budget is requred. A request will then be made to the CPCA. UPDATE request submitted to CPCA.	Lewis Banks	Jul-21		5	5	25	£250,000	Request has been submitted to the CPCA for additional budget.	PCC	No	
33	Jul-21	Finding a location for site compound	**Site compound location** There is a risk that an agreement may not be reached with Nene Park Trust for use of their car park as a site compound during construction works.	Possible risk of delay to construction programme	External	**Open**	Imminent	Aug-21	Discussions are to be held with Nene Park Trust to secure site. An alternative option will be considered in case an agreement can not be reached.	Lewis Banks	Sep-21		3	4	12		This will be closely monitored.	PCC	No	
21	Mar-21	Delay to completion of FBC due to bridge structure issues	**Delay to start of construction works** Due to the issues being experienced concerning the bridge structure it is now expected that the FBC and detailed design will not be ready for the July board.	Delay to seeking approval from CPCA board Delay to start of construction works	Planning or Environmental	**Open**	Imminent	Aug-21	The Project Team has predicted a delay associated with the footbridge design due to exploring options which mitigate against tree loss and waiting for survey results to be analysed and fed into the preferred design. The reprofiling of the programme is currently underway, however it is anticipated that the submission of the FBC will be summer 2021 and construction starting late 2021 / early 2022. UPDATE - the results from surveys show no significant findings, however further investigation on several trees is required regarding bats.	Lewis Banks	Mar-21		4	3	12		Once complete the programme will be shared and agreed with the CPCA.	PCC	No	
20	Feb-21	Structure issue	**Delay to programme** There is a risk of delay due to possible loss of trees as a result of placement of bridge ramp. Further design work will be required.	Delay to completion of detailed design	Internal	**Open**	Close	Aug-21	Workshop arranged for week commencing 22nd February – to agree new design. Impact on programme will be confirmed following the workshop and reported within next HR. Update - Arboricultural implicaton plans received and findings shared with Project Team to inform Preferred bridge design.	Lewis Banks	Apr-21		3	3	9		This risk is being closely monitored.	PCC	No	
26	Apr-21	Delay in seeking HE approval	**HE technical review approval** If during the HE technical review any changes are needed, this could have delay to progression of study and programme.	Delay to completion of detailed design Delay to construction start date	External	**Open**	Close	Aug-21	Mitigation is to maintain strong communication with HE as a key stakeholder. Should be noted that PHS is currently seeking HE approval, however have had no response to say they have received draft designs and that the approval is underway. Delay to HE approval starting will impact the designs being finalised and approved, therefore potentially impacting the rest of the program.	Lewis Banks	May-21		3	3	9		This will be closely monitored.	PCC	No	
30	Jun-21	Stats diversion required	**Stats issue** BT cabinet onsite which may have to be moved or working area provided.	Possible risk of delay to construction programme	External	**Open**	Approaching	Aug-21	Designers currently in communication and discussing options.	Lewis Banks	Jul-21		3	3	9		This risk is being closely monitored.	PCC	No	
31	Jun-21	Tree loss	**Tree loss** Due to the placement of bridge ramp there will be loss of trees. This will likely result in objections from councillors/public.	Bad publicity	Political	**Open**	Close	Aug-21	To mitigate with the loss of trees, additional trees will be planted as part of the scheme.	Lewis Banks	Jul-21		3	3	9		This risk is being closely monitored. UPDATE details with regards to number of trees to be lost as part of footbridge relocation will be communicated with residents including planting of new trees.	PCC	No	
24	Mar-21	Highways England delays in approving designs	Delay to programme due to highways england approval delays	Delay to programme	External	**Open**	Approaching	Aug-21	To maintain contact with Highways England to ensure they are viewing to the intended and necessary timescales	Lewis Banks	Mar-21		2	4	8		Payment is required making to HE so they can undertake the technical review. Additional budget is required.	PCC	No	
17	Dec-20	Issues with improvement plans for bridge structure	**Possible delay to programme** There is a risk the the design may be delayed due to issues identified with improvements proposed for the footbridge. The proposal (bringing the structure to current standards) will mean, those using the footbridge will be able to see into the back gardens of a number of residential properties. This is a concern of residents.	Re-design amendments to the footbridge ramps (over A1260 Nene Parkway) due to structural issues, could potentially impact the programme.	External	**Open**	Close	Aug-21	To work with structural engineers within PHS / designers to mitigate any adverse risk to the overall programme and delivery of junction 15.	Lewis Banks	Feb-21		3	2	6		This is a possible risk and will therefore be monitored closely.	PCC	Yes (Programme)	
2	Sep-19	Obatining sign off from CPCA	**Grant agreement sign off** There is a risk that if the grant agreement is not signed in time that it will delay start of OBC.	Delay to start of OBC Not being able to complete OBC within required time frame	External	**Open**	Imminent	Aug-21	We will keep in regular contact with our legal team to ensure that an officer is available to deal with the grant agreement and likewise we will ask for our contact at the CPCA to also do the same thus ensuring that any delay is kept to a minimum.	Lewis Banks	Dec-19		2	3	6		This is for consideration in case there is a need nearer the time. UPDATE - progress has been made. Grant agreements are in the process of being issued by PCC legal to CPCA. UPDATE agreement to be sent over to the CPCA late this month (Nov-20)	PCC	No	
15	Sep-20	Funding agreement delays	**Delay to sign off of Funding Agreements**	Delay to approaval of Full Business Case	Internal	**Open**	Imminent	Aug-21	PCC to ensure Funding Agreement for Full Business Case is signed off by relevant people within the council and to sign and send back to CPCA as soon as possible.	Lewis Banks	Sep-20		2	3	6		Progress has been made. Grant agreements are in the process of being issued by PCC legal to CPCA. To be monitored. UPDATE agreement to be sent over to the CPCA late this month (Nov-20).	PCC	No	
1	Mar-20	Delay to project	**Coronavirus outbreak** There is risk that with the rise of coronavirus cases that some of the staff working on the project may become infected and would have to self isolate.	Likely effect is that a delay would be caused	Internal	**Open**	Imminent	Aug-21	Government guidance would be followed. Any member of staff or their family do become unwell, they would be recommended to work from home for a 10 day period/self isolate.	Lewis Banks	Mar-20		2	3	6		This will be closely monitored. UPDATE score has been reduced. UPDATE with cases now rising this will be monitored. UPDATE score has been slightly increased with the introduction of the latest lockdown.	PCC	Yes	
22	Mar-21	Possibility planning permission for bridge could be required	Delay to FBC and construction due to planning permission requirement	Delays	Planning or Environmental	**Open**	Approaching	Aug-21	Meeting on 29/03/21 with planning to check what planning is required if any and the next steps	Lewis Bannks	Mar-21		2	3	6			PCC		
27	May-21	Cycle scheme design delay	**Cycle scheme design delay** There is a risk that cycle design may not be ready for the October Board meeting.	Delay to seeking approval from CPCA board	External	**Open**	Distant	Aug-21	Regular communication will be maintained to ensure if the design is ready it will included on Board agenda.	Lewis Banks	Aug-21		3	2	6		This is a possible risk and will therefore be monitored.	PCC	No	
28	May-21	Land required for cycle scheme	**Land required for cycle scheme** The land identified for the cycle scheme is owned by the Thorpe Wood Police station. Agreement would be required to purchase/use land for scheme.	Delay to cycle scheme	External	**Open**	Distant	Aug-21	Discussions are to be held with the Police to acquire land for cycle scheme.	Lewis Banks	Jul-21		2	3	6		This is a possible risk and will therefore be monitored.	PCC	No	
29	May-21	Issues with traffic management setup for construction works	**Road space booking issues** Potential risk with being able to get the required TM / road space during construction. If unable to get requirements, construction may become unviable, or TM costs may increase.	Disruption to road network surrounding J15	Reputational	**Open**	Approaching	Aug-21	Communication with the Street Works team is underway trying to confirm what is required for construction.	Lewis Banks	Jul-21		2	3	6		This is a possible risk and will therefore be monitored.	PCC	No	
25	Mar-21	Skanska resource issues	National Resource issue structural engineers	Resource issues	External	**Open**	Approaching	Aug-21	To maintain contact with Skanska to ensure they are able to fulfil the programme requirements and let us know in advance any timing issues.	Lewis Banks	Mar-21		2	2	4			PCC		
18	Jan-21	Issues with improvement plans for bridge structure	**Possible funding increase** There is a risk the the design may be delayed due to issues identified with improvements proposed for the footbridge. The proposal (bringing the structure to current standards) will mean, those using the footbridge will be able to see into the back gardens of a number of residential properties. This is a concern of residents.	Re-design amendments to the footbridge ramps (over A1260 Nene Parkway) due to structural issues, could potentially impact the programme.	External	**Open**	Close	Aug-21	To work with structural engineers within PHS / designers to mitigate any adverse risk to the overall programme and delivery of junction 15.	Lewis Banks	Mar-21		2	2	4		This is a possible risk and will therefore be monitored closely.	PCC	Yes (Programme)	
11	Sep-20	Stakeholder feedback	**Changes to design** Following feedback from consultation there is a risk that there maybe a number of changes to design of the scheme. The consequences of which may mean additional time and cost to the project.	Additional changes to design	Political	**Open**	Approaching	Aug-21	We will review programme and allow for time that may be required for any changes to the design.	Lewis Banks	Nov-20		2	2	4		This is a possible risk and will therefore be monitored. UPDATE consultation now closed and feedback is being reviewed.	PCC	No	
4	Feb-20	Unknown STATS	**Unknown Stats** STATS maybe found at the junction and cause a delay to design or construction if not found early enouih	Likely effect is that a delay would be caused	External	**Open**	Approaching	Aug-21	STAT Plans are being requested at an early stage of the project prior to design to ensure engineers are aware of the STATS that are present within the vicinity of the junction	Lewis Banks	TBC		2	2	4		This is a possible risk and will therefore be monitored.	PCC	No	
5	Feb-20	Unknown Environmental Issues	**Environmental Issues** Environmental Issues such as noise, air or ecology may cause a delay to design and construction if suitable mitigation approaches not considered	Likely effect is that a delay would be caused	External	**Open**	Approaching	Aug-21	Desktop Environmental study will be undertaken at SOBC stage to identify any possible environmental issues. At OBC stage an environmental report will be undertaken to indentify any environmental impacts and mitigation measures	Lewis Banks	TBC		2	2	4		This is a possible risk and will therefore be monitored.	PCC	No	
6	Feb-20	Adverse publicity	**Disruption to network** There is possibility that adverse publicity may be received due to the disruption to the network during construction	Likely effect is that a delay would be caused	External	**Open**	Distant	Aug-21	Advise the public as early as possible about the construction timetable. Avoid busy periods such as christmas to minimis the delays to travelling public	Lewis Banks	TBC		2	2	4		This is a possible risk and will therefore be monitored.	PCC	No	
14	Sep-20	Detailed designs increase construction cost forecasts	**Construction cost forecast increases above project budget as set out in the refreshed medium term financial plan**	Project overspend and delays	Internal	**Open**	Approaching	Aug-21	Ensuring any early indications of detailed design construction cost forecasts increasing above the preliminary designs forecasts are esculated to CPCA where discussions can take place on a plan of action with enough time to mitigate project delays.	Lewis Banks	Mar-21		1	4	4		This is a possible risk and will therefore be monitored.	PCC	No	
19	Jan-21	Increased cycle designs based on LTN 1/20 that were not in scope of OBC	**Extra funding required** In order to deliver cycle scheme improvements along with main scheme additional budget is required. The current pandemic has provided an opportunity to deliver such a scheme. Current budget identified in the MTFP is not enough to deliver the cycle scheme.	Risk of not being able to deliver cycle scheme.	Financial	**Closed**	Close	Aug-21	The options are set out below to pay for the cycleway, PCC to work up options and explore these: a)To apply for Tranche 2 active travel funding b)To assess suitability to levelling up fund c)To do new funding application to CPCA	Lewis Banks	Apr-21		2	2	4		This is a possible risk and will therefore be monitored. UPDATE - these works will be delivered as a separate scheme. Therefore it is no longer a direct risk to the main scheme.	PCC	No	
3	Dec-19	Public and stakeholder objections	**Consultation** Key issues could be that people challenge the length of the feeder lane; that we should be installing a mini roundabout	Likely effect is that a delay would be caused	Political	**Closed**	Imminent	Aug-21	Early consultation/notification as deemed necessary by PCC. Develop publicity strategy and liaise with businesses/residents affected by the works and scheme mobilisation	Lewis Banks	Nov-20	Jan-21	2	2	4		This is a possible risk, but we feel confident that it can be dealt with should it arise. UPDATE feedback is being reviewed.	PCC	No	Jan-21
12	Sep-20	Purdah effects on governance leading up to March 2021 Combined Authority Committee and Board	**Delay in Full Business case approval**	Project delays	Internal	**Closed**	Approaching	Aug-21	To keep liaising with Governance teams at both PCC and CPCA to ensure risk of governance approval delays to this project is low, therefore ensuring construction dates remain on track.	Lewis Banks and Nathan Bunting	Mar-21		1	2	2		This is a possible risk and will therefore be monitored. UPDATE with delay to the project this risk may not be encountered.	PCC	No	
10	Aug-20	Delay in PCC governance process for FBC stage	**Delay to start of key tasks of FBC** There is a risk that delay in PCC governance process or surveys planned could impact on estimated completion date set for FBC and the detailed design.	Delay to start of FBC and detailed design. Delay to orders being raised. Not being able to complete current stage within required time frame	Internal	**Closed**	Imminent	Aug-21	We will review programme and allow for additional time so approval can be gained and for this not to have too much of impact on following tasks.	Lewis Banks	Sep-20	Mar-21	1	1	1		This is a possible risk and will therefore be monitored. Any delay to start of construction works would result in delay to construction works of A1260 Junction 32/3 project. UPDATE - the project is experiencing a delay, however this ris still remains and will be reviewed again next month (Dec-20). UPDATE - score reduced slight as some progress has been made on PCC governance process, seeking approval. UPDATE now resolved.	PCC	No	Mar-21
7	Jul-19	Delay in receiving approval to start OBC	**Spending of grant** There is a risk that the grant allocation for the OBC will not be fully spent within 2019/20.	OBC not being complete Grant allocation not be fully spent/claimed in 2019/20	Internal	**Closed**	Imminent	Aug-21	To hold a meeting with Skanska to discuss what can be achieved within funding period.	Lewis Banks	Jan-20	Apr-20	1	1	1		This has been realised. Unspent budget has been transferred into 2020/21.	PCC	Yes (Programme)	Apr-20
8	Sep-19	Delay in receiving approval to raise order to Skanska	**Issuing order to Skanska** There is a risk due to delay is seeking approval in governance process that an order to Skanska cannot be raised.	Delay to order being raised to Skanska Delay to start of OBC	Internal	**Closed**	Imminent	Aug-21	Contact relevant approver/team and obtain latest on what is causing delay.	Lewis Banks	Dec-19	Jan-20	1	1	1		Order has now been raised.	PCC	No	Jan-20
9	Sep-19	Obatining approval from CPCA to commence next stage of business case	**Delay to start of OBC** There is a risk waiting for approval from CPCA to commence next phase could result in delay to start of OBC.	Delay to start of OBC Not being able to complete OBC within required time frame	External	**Closed**	Imminent	Aug-21	We will review programme and allow for additional time so approval can be gained and for this not to have too much of impact on following tasks.	Lewis Banks	Nov-19	Nov-19	1	1	1		Issue now resolved	PCC	No	Nov-19
13	Sep-20	Full Business Case delays	**Review of the FBC takes longer than is allocated**	Delay to project going to March 2021 CPCA Committee and Board	Internal	**Realised**	Approaching	Aug-21	a) To ensure Full Business Case and Detailed Designs are ready to be reviewed by January 2021 and sent to CPCA and Steers as this will ensure enough time for these reviews to complete prior to March 2021 CA Committee and Board. b) PCC to send sections and early indications within the Business Case to CPCA to review at early stages even if the full document has yet to be produced. c) PCC to ensure availability to answer questions quickly from CPCA or Steers leading up to the March Committee and Board, and PCC to line up Skanska to be available to answer questions also.	Lewis Banks	Mar-21	Jan-21	5	5	25		It has now been realised that the FBC will not be ready in time for the March board meeting. We are now looking at submission for end of May-21 so it could be presented at the July board.	PCC	No	
18	Jan-21	Change of supplier	**Delay to start of OBC** Current supplier, Skanska is in the process of selling part of its business to M Group Services. This includes highway services. There is a possible risk that transfer of resource may result in delay of project delivery. The consequences of which could impact progress.	Likely effect is that a delay would be caused	External	**Realised**	Approaching	Aug-21	Regular communication will be maintained and programme will be revised should there be a need.	Lewis Banks	Mar-21		2	2	4		This is a possible risk and will therefore be monitored.	PCC	No	
16	Nov-20	Low response to consultation	**Lack of feedback** There is a risk that we may receive a small number of responses to the consultation.	Not possible to analyse responses in detail Difficult to capture public reaction (positive or negative) to scheme proposals	Reputational	**Realised**	Imminent	Aug-21	If early indication is that not many responses have been received, consideration will be given to raise further awareness of consultation through social media/letter drop.	Lewis Banks	Nov-20	Jan-21	2	2	4		This will be closely monitored. UPDATE consultation now closed and feedback is being reviewed.	PCC	No	Jan-21

Appendix G:

Scheme Drawing_5080751-SKA-HGN-DR-CH-0003-Rev.C03 1o2 &

Scheme Drawing_5080751-SKA-HGN-DR-CH-0003-Rev.C03 2o2

NOTES:

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7. AVAILABLE WIDTH ALONG THE A1260 CORRIDOR IS CONSTRAINED IN SOME LOCATIONS DUE TO THE PRESENCE OF AN EXISTING NATURAL ROCK FACE TO THE REAR OF THE NORTHBOUND VERGE. IN ORDER TO MAINTAIN STANDARD 3.65m LANE WIDTHS, MITIGATE EXTENSIVE ROCK BREAKOUT/ EARTHWORKS AND TO AVOID LAND TAKE, THE NORTHBOUND HARD STRIP HAS BEEN OMITTED AND THE SPEED LIMIT REDUCED TO 60MPH. THESE MITIGATION MEASURES ALIGN WITH THE REQUIREMENTS OF CD 127.
8. MINIMUM REQUIRED VERGE WIDTH WHERE VRS PROTECTION IS NECESSARY IS 1.60m. SOME LOCALISED LENGTHS OF ROCK BREAKOUT ARE NECESSARY ALONG THE A1260 NORTHBOUND VERGE IN ORDER TO ACHIEVE THIS VERGE WIDTH.
9. THE EXISTING FOOTWAY LINK AND INFORMAL CROSSING ON THORPE WOOD IS TO BE PHYSICALLY REMOVED/STOPPED UP IN ORDER TO ENCOURAGE USE OF THE PROPOSED ZEBRA CROSSING.
10. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE SCHEME SPECIFICATION APPENDICES.
11. FOR FURTHER DETAIL ON STREET LIGHTING PROPOSALS REFER TO DRAWINGS 5080751-SKA-HGL-OR-DR-EO-1301 & 1302.
12. THE PROPOSED FOOTBRIDGE ALIGNMENT AND LOCATION SHOWN IS INDICATIVE AND SUBJECT TO CHANGE.
13. THE PROPOSED MAINTENANCE/SOS HARDSTANDING LOCATION IS SUBJECT TO CHANGE/OMISSION PENDING FINALISATION OF FOOTBRIDGE DESIGN.

KEY:

- PROPOSED FULL DEPTH CARRIAGEWAY WIDENING / CONSTRUCTION / KERBED ISLAND REMOVAL
- PROPOSED CARRIAGEWAY RESURFACING / RE-PROFILING
- PROPOSED HIGH FRICTION SURFACING (HFS) PATCH
- PROPOSED FULL DEPTH FOOTWAY / CENTRAL RESERVE / KERBED ISLAND CONSTRUCTION
- EXISTING FOOTWAY TO BE REMOVED
- PROPOSED TACTILE PAVING
- PROPOSED VRS
- BACK OF EXISTING VERGE / TOE OF EMBANKMENT
- PROPOSED NATURAL ROCK LAYER BREAKOUT
- SL — SITE LIMIT EXTENTS
- EG — EXISTING GULLY
- G — PROPOSED GULLY
- EKG — EXISTING KERB GULLY
- KG — PROPOSED KERB GULLY
- PROPOSED ROAD SIGN
- MP — PROPOSED MARKER POST
- PTS — PROPOSED TRAFFIC SIGNAL POLE
- PROPOSED TRAFFIC SIGNAL LOOPS
- BL — PROPOSED REFLECTIVE TRAFFIC BOLLARD
- EXISTING LIGHTING COLUMN TO REMAIN (SEE NOTE 11)
- PROPOSED LIGHTING COLUMN TO REPLACE EXISTING (SEE NOTE 11)
- PROPOSED BELISHA BEACON (SEE NOTE 11)

A47 EASTBOUND ONSLIP
A47 WESTBOUND OFFSLIP
BRETTON WAY
A47 SOUTHBOUND - A1260 SOUTHBOUND LEFT TURN FILTER LANE TO BE REALIGNED TO COMPLY WITH CD 116
DEFLECTION ISLAND REDUCED IN LENGTH
THORPE ROAD
THORPE ROAD BRIDGE
A47 JUNCTION 15
A47 / A1260 THOMAS COOK INTERCHANGE
PROPOSED CHEVRON SIGN
A1260 SOUTHBOUND
A1260 NORTHBOUND
CUT LINE CONTINUED ON SHEET 2 OF 2
A47 EASTBOUND
A47 WESTBOUND
PROPOSED NATIONAL SPEED LIMIT TERMINAL SIGNS
PROPOSED 100 YARD COUNT DOWN SIGN
OVERRUN AREA IS REQUIRED FOR LEFT TURNING HGVS
LOCALISED ROCK BREAKOUT TO ACHIEVE 1.6m VERGE WIDTH (SEE NOTE 7)
PROPOSED CONCRETE COLLAR TO BE CONSTRUCTED AT BASE OF NORTHBOUND BRIDGE PIER (SEE NOTE 6)
PROPOSED ROUNDABOUT ADS
HARD STANDING RECONSTRUCTED ENABLING VEHICLES TO REVERSE BEHIND VRS
STOP LINE AND TRAFFIC SIGNALS TO BE RELOCATED (SEE NOTE 10)
OVERRUN AREA REQUIRED FOR LEFT-TURNING HGVS
LOCALISED VRS REALIGNMENT
NEW SIGNALS CABINET ACCESS AREA
HFS PATCH OVER EXISTING ARROW MARKINGS
THIRD LANE TO BE CONSTRUCTED ON CIRCULATORY
PROPOSED TRAFFIC LIGHT WARNING SIGN
PROPOSED DIRECTIONAL SIGN
PROPOSED SPEED LIMIT SIGNS AND STOPPING PROHIBITED SIGN
PROPOSED ZEBRA CROSSING
NEW ARROWS PROPOSED AT STANDARD DISTANCES FROM NEW STOP LINE
ACCESS TRACK
FOOTPATH
COPSE COURT
THORPE WOOD
CUT LINE A
REMOVE EXISTING ARROW MARKINGS AND LAY NEW HFS PATCH
NEW ARROWS PROPOSED AT STANDARD DISTANCES FROM NEW STOP LINE

NOTE: ALL DETECTOR LOOPS ON THE A47 APPROACH AND AFFECTED AREA OF THE CIRCULATORY ARE TO BE RE-CUT TO SUIT REVISED STOP LINE LOCATIONS

SITE CHAINAGE:

- 0 — CH.0 LOCATED AT A1260 NORTHBOUND ONSLIP KERB NOSING.
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- C0 — CH.C0 LOCATED A47 WESTBOUND OFFSLIP START OF SEGREGATED LEFT TURN LANE ISLAND

Rev	Date	Description	Drn	Chk'd	App
C03	28/05/2021	RSA 2 AMENDMENTS AND SITE LIMIT EXTENTS ADDED	MH	JS	SPW
C02	01/04/2021	DETAILED STREET LIGHTING DESIGN / NOTES AMENDED	MH	JS	ARPT
C01	19/03/2021	FOR STAGE 2 RSA	MH	JS	SPW
P1	03/03/2020	AMENDMENTS TO SIGNS	JS	SPW	-
P0	25/02/2020	FIRST ISSUE	-	-	-

Revisions

Drawing Originator

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Drawing Status

FOR CONSTRUCTION

Project Name

JUNCTION 15 NENE PARKWAY

Title

GENERAL ARRANGEMENT
SHEET 1 OF 2

Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	1:500	DAG	JS	SPW
		Drawn Date 24/02/2020	Checked Date 24/02/2020	Approved Date 24/02/2020

Drawing Number	Status	Rev
5080751-SKA-HGN-DR-CH-0003	S4	C03

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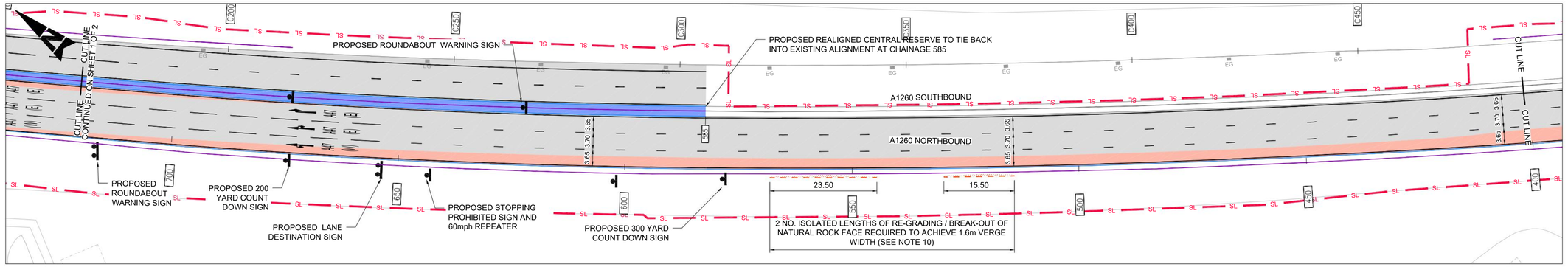

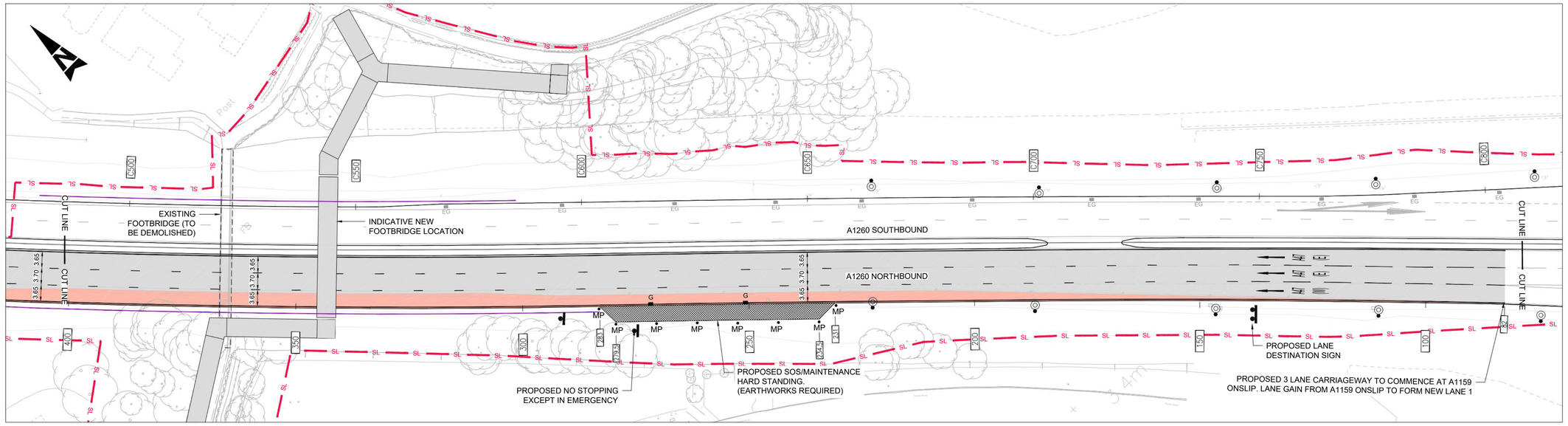

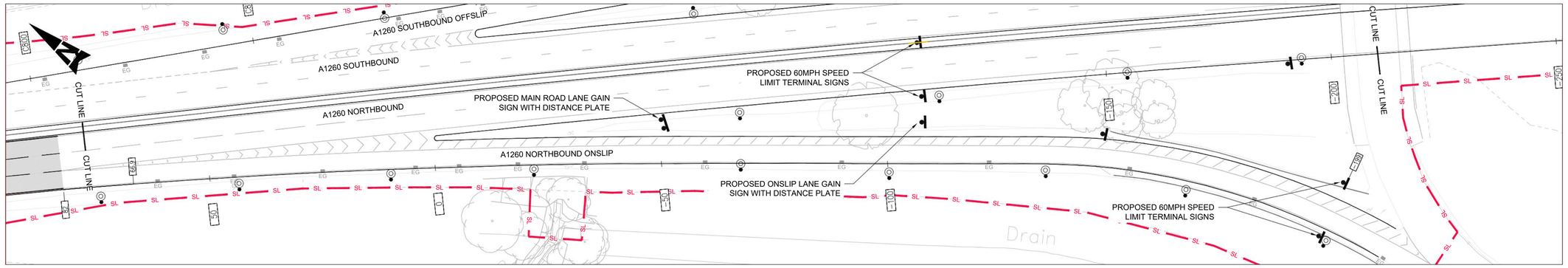

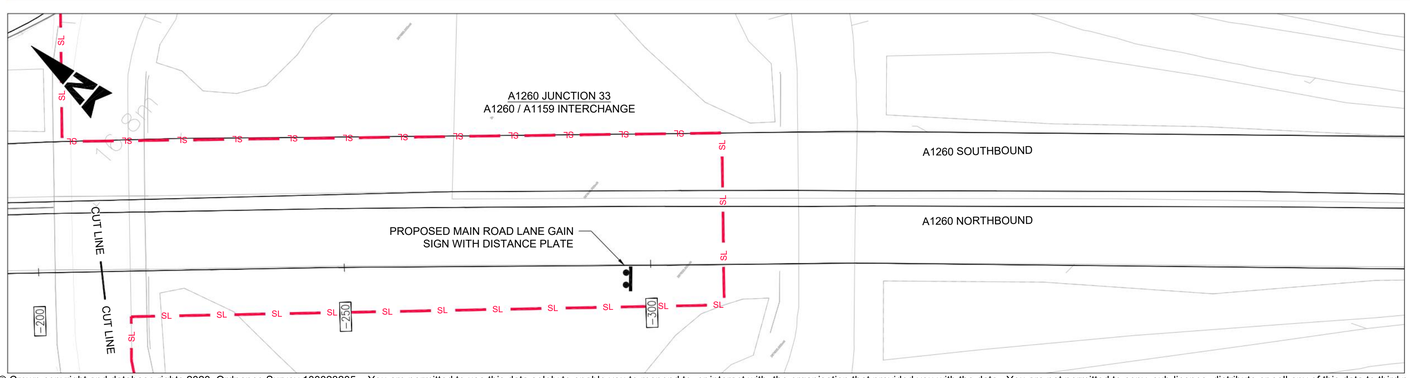

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9. THE EXISTING FOOTWAY LINK AND INFORMAL CROSSING ON THORPE WOOD IS TO BE PHYSICALLY REMOVED/STOPPED UP IN ORDER TO ENCOURAGE USE OF THE PROPOSED ZEBRA CROSSING.
10. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE SCHEME SPECIFICATION APPENDICES.
11. FOR FURTHER DETAIL ON STREET LIGHTING PROPOSALS REFER TO DRAWINGS 5080751-SKA-HGL-OR-DR-EO-1301 & 1302.
12. THE PROPOSED FOOTBRIDGE ALIGNMENT AND LOCATION SHOWN IS INDICATIVE AND SUBJECT TO CHANGE.
13. THE PROPOSED MAINTENANCE/SOS HARDSTANDING LOCATION IS SUBJECT TO CHANGE/OMISSION PENDING FINALISATION OF FOOTBRIDGE DESIGN.

Rev	Date	Description	Drn	Chk'd	App
C03	28/05/2021	RSA 2 AMENDMENTS AND SITE LIMIT EXTENTS ADDED	MH	JS	SPW
C02	01/04/2021	DETAILED STREET LIGHTING DESIGN / NOTES AMENDED	MH	JS	ARPT
C01	19/03/2021	FOR STAGE 2 RSA	MH	JS	SPW
P1	03/03/2020	AMENDMENTS TO SIGNS	JS	SPW	"
P0	25/02/2020	FIRST ISSUE	-	-	-

Revisions

Drawing Originator

Peterborough Highway Services
Delivered by SKANSKA / PETERBOROUGH CITY COUNCIL

Dodson House
Fengate
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Tel: +44 (0) 1773 747474
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Drawing Status

FOR CONSTRUCTION

Project Name

JUNCTION 15 NENE PARKWAY

Title

GENERAL ARRANGEMENT
SHEET 2 OF 2

Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	1:500	DAG	JS	SPW
		Drawn Date 24/02/2020	Checked Date 24/02/2020	Approved Date 24/02/2020

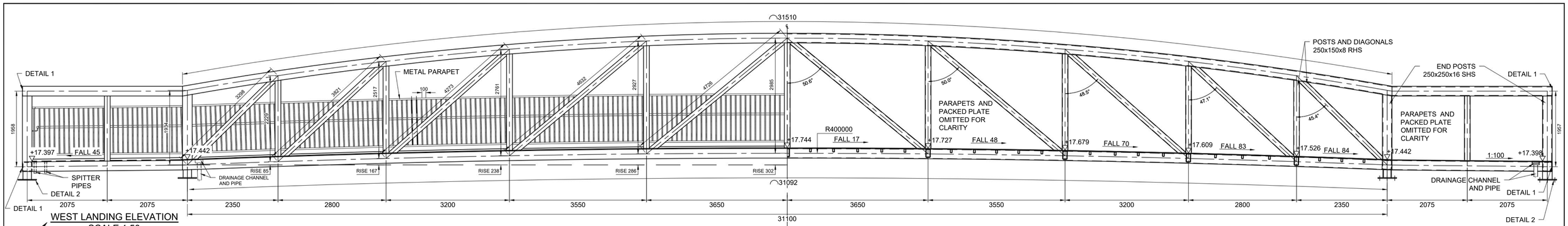
Drawing Number	Status	Rev
5080751-SKA-HGN-DR-CH-0004	S4	C03

File printed: 28 May 2021 17:23:14 File location: P:\GBIPD\HandT\ESol\06 Peterborough Highways\5101020 Junction 15 Nene Parkway\8 CAD\8.2 Construction\8.2.1 DWG\5101020-SKA-HWA-GA-CH-0001 - GA - Rev.C03.dwg Printed by: Holbrook, Michael (IS TUPE)

Appendix H:

Footbridge Scheme Drawing_5080751_155980_MIL_SBR_ZZ_DR_CB_1801 S3 P01 &

Footbridge Scheme Drawing_5080751_155980_MIL_SBR_ZZ_DR_CB_1801 S3 P02

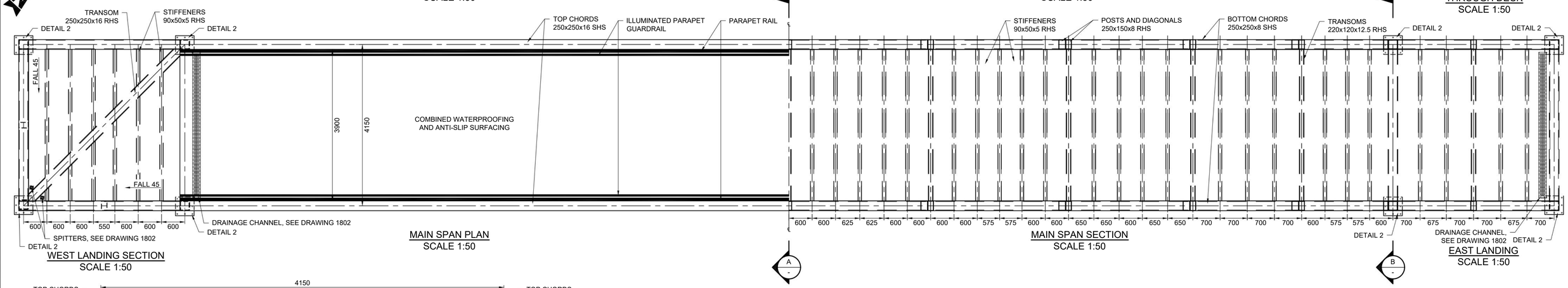


WEST LANDING ELEVATION
SCALE 1:50

MAIN SPAN ELEVATION
SCALE 1:50

MAIN SPAN SECTION THROUGH DECK
SCALE 1:50

EAST LANDING SECTION THROUGH DECK
SCALE 1:50

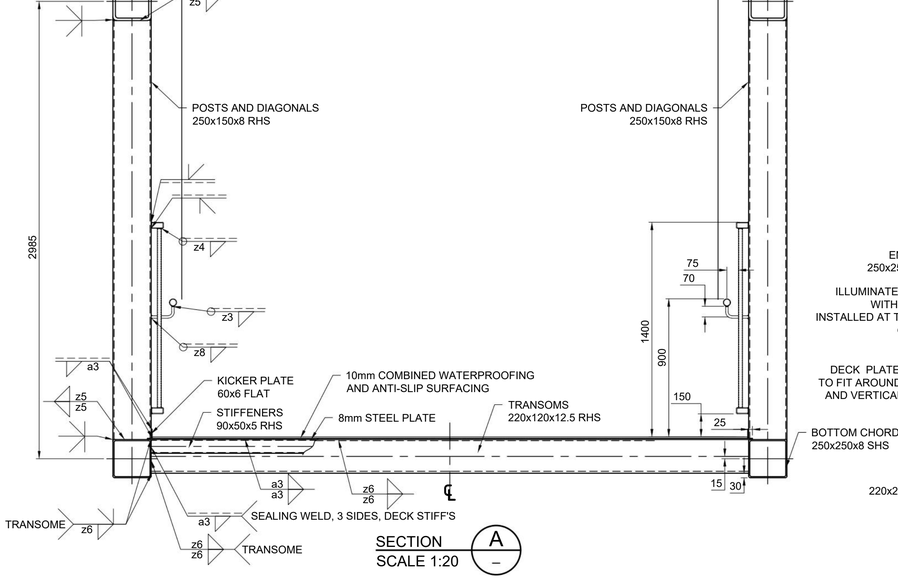


WEST LANDING SECTION
SCALE 1:50

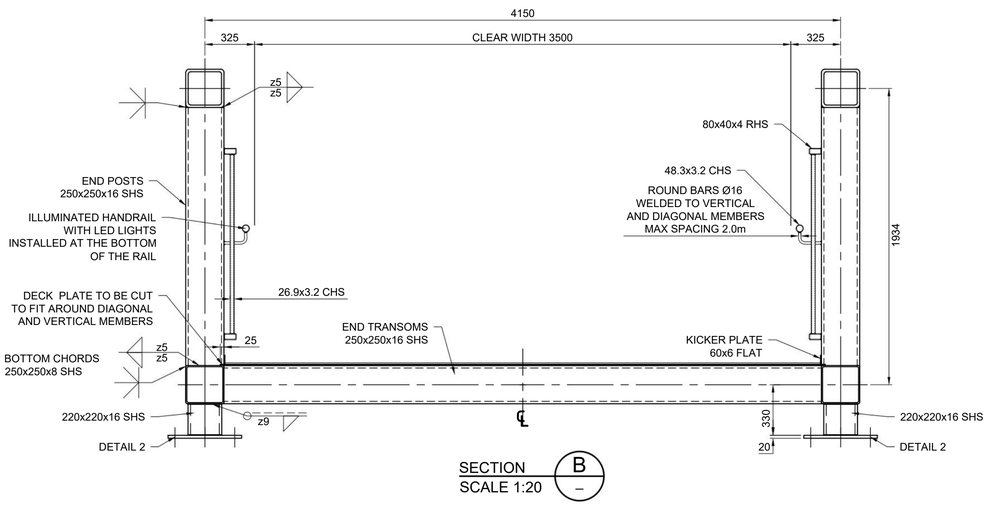
MAIN SPAN PLAN
SCALE 1:50

MAIN SPAN SECTION
SCALE 1:50

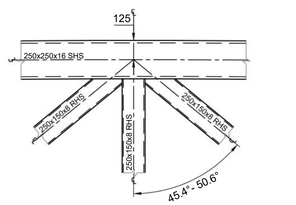
EAST LANDING
SCALE 1:50



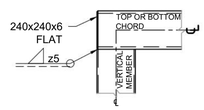
SECTION A
SCALE 1:20



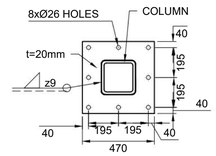
SECTION B
SCALE 1:20



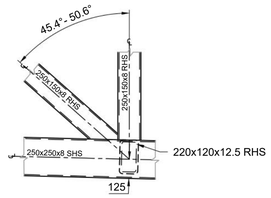
TOP CHORD NODING DETAIL
SCALE 1:20



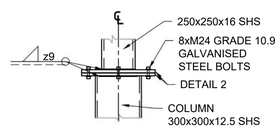
DETAIL 1
SCALE 1:20



DETAIL 2
SCALE 1:20



BOTTOM CHORD NODING DETAIL
SCALE 1:20



BOLTED BASE PLATE CONNECTION
SCALE 1:20

NOTES:
1. Do not scale from this drawing.
2. All dimensions are in millimetres unless noted otherwise.
3. This drawing is to be read in conjunction with all relevant documents and drawings.
4. All structural steel to be grade S355J2 steel hot dip galvanised with 85 microns of zinc.

DETAILS TBC: END PLATE THICKNESS, TOP CHORD SIZE

DETAILS MISSING: LIFTING POINTS, NOTES

Residual Risk Assessment
Wherever possible, risk is designed-out of this proposal during the design process. Where this is not possible the risk is indicated by this symbol.

SIGNIFICANT CDM HEALTH & SAFETY RISKS

1. Welding, hot materials

Rev	Date	Description	Drn	Chk'd	App
P01	02/07/21	For comments	ZD	-	-

Revisions

Drawing Originator: Peterborough Highway Services — Delivered by MILESTONE INFRASTRUCTURE — PETERBOROUGH CITY COUNCIL — A part of MGroupServices

Drawing Status: For Review And Comments - S3

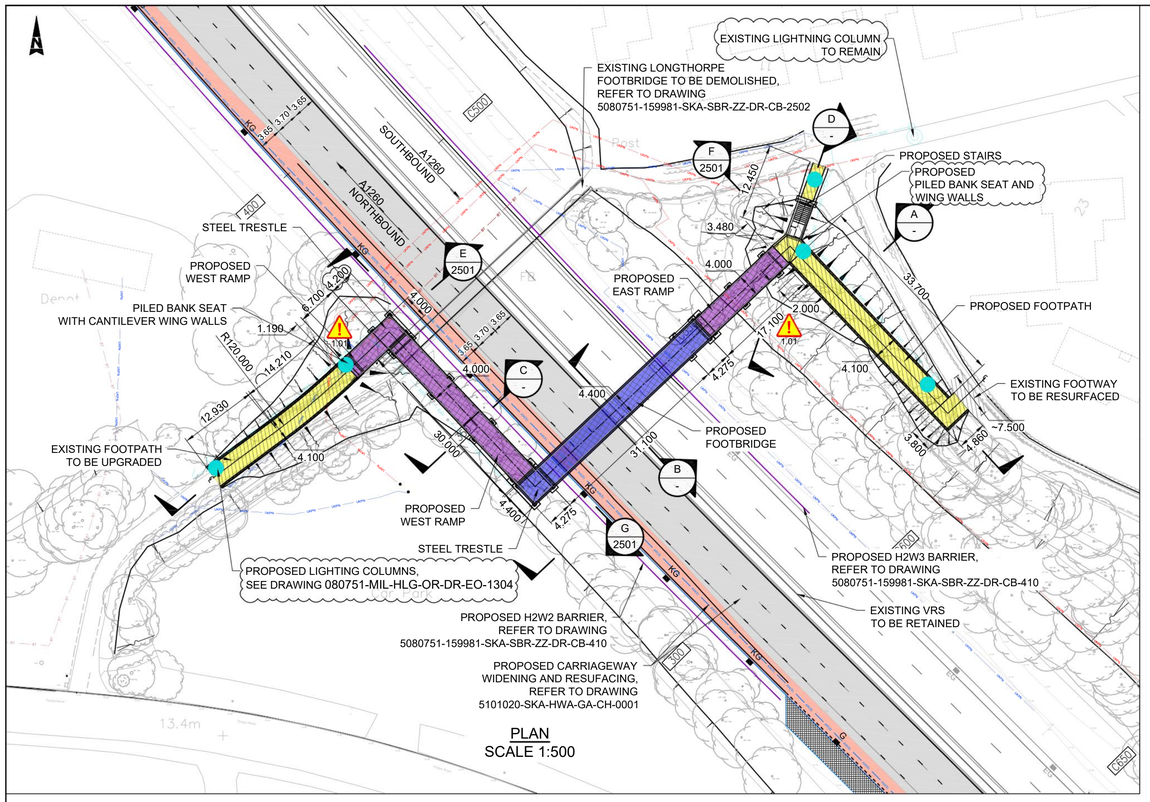
Title: Longthorpe Footbridge Main Span Steelwork

Project Name: Junction 15 - Nene Parkway A1260

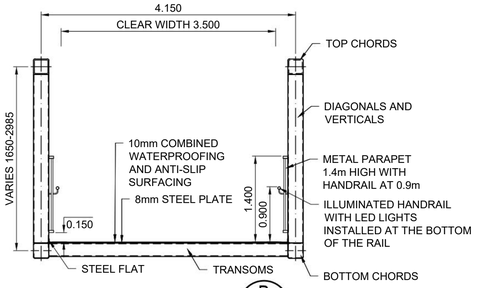
Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	AS SHOWN	ZD	MPR	AC
		Drawn Date: 02/07/21	Checked Date: -	Approved Date: -

Drawing Number	Status	Rev
5080751-159981-MIL-SBR-ZZ-DR-CB-1801	S3	P01

File Printed: 22 July 2021 12:10:50 File location: C:\Users\bc974536\OneDrive - Skanska\Desktop\5080751_155980_MIL_SBR_ZZ_DR_CB_1701-2101.dwg Printed by: Dijeva, Zanete (IS TUPE)

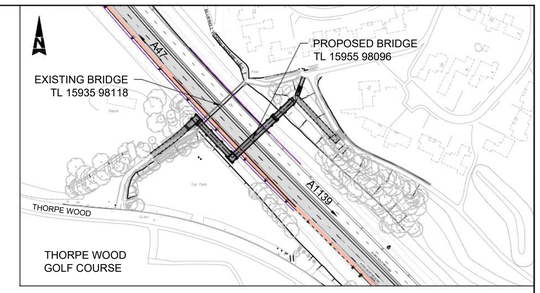


PLAN
SCALE 1:500

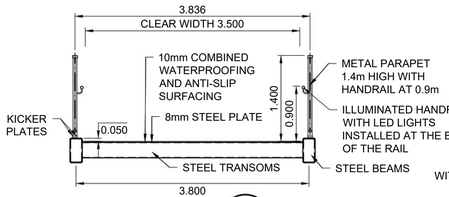


SECTION B
SCALE 1:50

TYPICAL SECTION THROUGH BRIDGE DECK

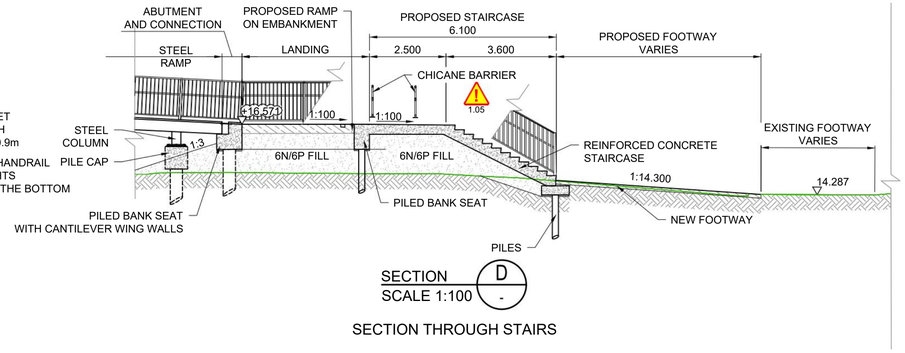


LOCATION PLAN
SCALE 1:2000



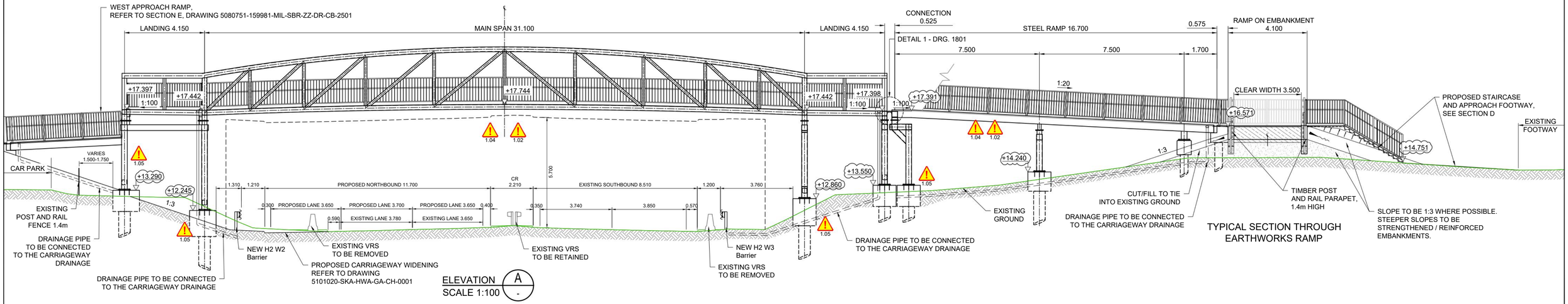
SECTION C
SCALE 1:50

TYPICAL SECTION THROUGH STEEL RAMP



SECTION D
SCALE 1:100

SECTION THROUGH STAIRS



ELEVATION A
SCALE 1:100

TYPICAL SECTION THROUGH EARTHWORKS RAMP

NOTES:
1. Do not scale from this drawing.
2. All dimensions are in millimetres unless noted otherwise.
3. Services information is given for general guidance only and markings are approximate. Existing apparatus is located in various depths and may deviate from marked routes. Markings in the plan represent the following:

BT	British Telecom
UKPN	UK Power Networks High Voltage underground cable (up to 20kV)
UKPN	UK Power Networks Low Voltage underground cable (230V or 400/230V)
AW(S)	Anglian Water
ELEC	Proposed Lighting Ducting

KEY:
- Combined waterproofing and anti-slip surfacing
- Asphalt surfacing
- Main Span
- Steel Ramps
- Ramps on embankment

Residual Risk Assessment
Wherever possible, risk is designed-out of this proposal during the design process. Where this is not possible the risk is indicated by this symbol.

SIGNIFICANT CDM HEALTH & SAFETY RISKS

1.01 Buried services.
1.02 Lifting operations.
1.04 Working at height.
1.05 Large concrete pours on site,

Rev	Date	Description	Drn	Chk'd	App
P02	02/07/21	Lighting, services added, details updated	ZD	-	-
P01	28/05/21	First Issue	ZD	-	-

Revisions

Drawing Originator
Peterborough Highway Services
Delivered by MILESTONE INFRASTRUCTURE
PETERBOROUGH CITY COUNCIL
A part of MGroupServices

Drawing Status
For Review And Comments - S3

Title
Longthorpe Footbridge
General Arrangement
(1 of 2)

Project Name
Junction 15 - Nene Parkway
A1260

Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	AS SHOWN	ZD	MPR	AC
		Drawn Date 28/05/21	Checked Date 04/06/21	Approved Date -

Drawing Number	Status	Rev
5080751-159981-MIL-SBR-ZZ-DR-CB-2500	S3	P01

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MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix I:

A1260 Geological Importance

Appendix G – Geological Importance of Embankments pf the A1260 Nene Parkway

Nene Parkway Longthorpe Junction (15) - geological conservation sections

The Nene Parkway Southern approach to the Longthorpe Junction (15) exposes Middle Jurassic limestones and clays. Constructed in 1972 the Nene Parkway was excavated through weathered Cornbrash Formation, Blisworth Clay Formation with the final excavation level cutting into the top of the Blisworth Limestone Formation (Horton, 1989). The remaining roadside cutting sections through this sequence have the potential to be retained and enhanced as part of the Nene Parkway road improvements.

Geological Importance

The Blisworth Limestone Formation is a fossiliferous shelly limestone with abundant fragmented remains of the oyster *Liostrea*. It was deposited by a marine transgression (rise in sea level) that spread across the marshy-estuarine environment of the preceding and underlying Rutland Formation. Approximately 2m of the top part of the Blisworth Limestone are exposed forming a stepped narrow bench on both sides of the Nene Parkway (Locations A, B and C). The dark grey to brown mudstone of the overlying Blisworth Clay Formation indicates a deepening and more open marine environment. A complete section through the Blisworth Clay is present on the eastern side of the cutting (Location B), though the upper part and the junction with the overlying Cornbrash Formation is currently obscured by vegetation. Weathered pockets of the Cornbrash Formation were exposed during the Parkway construction. This shelly limestone was deposited in a shallow current-swept sea.

The Nene Parkway – Longthorpe Junction road cuttings provide the only section through complex Blisworth Limestone – Blisworth Clay – Cornbrash transition in Peterborough and Cambridgeshire. Here the Blisworth Limestone is identified as the type for the Longthorpe Member of the Blisworth Limestone Formation (Cripps, 1986). At Alwalton (no longer exposed) the Blisworth limestone was quarried (during mediaeval times) for the distinctive ‘Alwalton Marble’ which was used regionally as a decorative stone most notably in Peterborough, Ely and Lincoln Cathedrals.

Geo-Conservation

The planned road improvements to the A1260 Nene Parkway present the opportunity to retain and enhance road cutting sections providing refreshed exposures of the Blisworth Limestone and Blisworth Clay Formations (and potentially the Cornbrash Formation). The following recommendations are made:

- During road improvement engineering works the opportunity should be taken to collect from and record temporary excavations and exposures. Any material collected and associated records to be donated to Peterborough Museum and Art Gallery.
- Currently sections are exposed on both sides of the Parkway. Chosen sections would benefit from vegetation clearance and a light mechanical scraping refreshing the exposures both laterally and vertically, clearing build-up of scree and soil on the limestone ledges and extending the area of accessible Blisworth Clay. This would also open up the slopes improving biodiversity.

- The road sections are visible from the Thorpe Road Bridge. An information board will interpret the geology, including illustration of the Nene Parkway construction in the 1970s, the link with the Alwalton Marble and also the value of the road cutting for local wildlife.
- Once the road is re-opened an agreed programme of vegetation management is needed to maintain an accessible and visible representative geological sequence, and associated flora.

References

Cripps, D. W., 1986. A facies analysis of Upper Great Oolite Group in Central and Eastern England. (University of Aston in Birmingham: Unpublished PhD thesis.)

Horton, A., 1989. The geology of the Peterborough District. Memoir for 1:50,000 sheet 158 (England and Wales). British Geological Survey, 44pp.

GeoPeterborough

MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix J:

Economic Case Cost Profile &

Economic Case Maintenance Cost Profile

Junction 15 - Do Something Scheme Costs in 2010 Market Prices for Economic Case

OB Proportions 0.80 Highway
H = 21% / S = 28% 0.20 Structures

Calendar Year	Assessment Year	(1) Base Cost Estimate (2021 Prices)						(2) Base Cost Estimate Including Real Cost Increases (2021 Prices)			(3) Risk Adjusted Base Cost (2021 Prices)		(4) Total Contribution of Optimism Bias		(5) Rebased to 2010 Price Base	(6) Discounted to 2010 Prices			(7) Adjusted to Market Prices
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Quantified Risk Adjustment	Risk Adjusted Cost	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2021	0	£0	£0	£0	£0	£0	**£0**	0.000	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.685	**£0**	**£0.00**
2022	1	£4,179,817	£1,040,829	£54,750	£987,615	£538,960	**£6,801,971**	1.040	£332,027.00	**£7,133,998**	£678,486	**£7,812,484**	£1,687,102	**£9,499,586**	**£7,555,039**	1.035	0.662	**£4,999,799**	**£5,949,760.53**
2023	2	£0	£0	£4,563	£50,903	£44,913	**£100,379**	1.073	£7,308.70	**£107,688**	£56,541	**£164,228**	£90,325	**£254,554**	**£202,447**	1.035	0.639	**£129,445**	**£154,040.05**
2024	3	£0	£0	£0	£0	£30,000	**£30,000**	1.094	£2,812.21	**£32,812**	£0	**£32,812**	£18,047	**£50,859**	**£40,448**	1.035	0.618	**£24,988**	**£29,735.92**
2025	4	£0	£0	£0	£0	£0	**£0**	1.117	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.597	**£0**	**£0.00**
2026	5	£0	£0	£0	£0	£0	**£0**	1.139	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.577	**£0**	**£0.00**
2027	6	£0	£0	£0	£0	£0	**£0**	1.161	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.557	**£0**	**£0.00**
2028	7	£0	£0	£0	£0	£0	**£0**	1.183	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.538	**£0**	**£0.00**
2029	8	£0	£0	£0	£0	£0	**£0**	1.206	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.520	**£0**	**£0.00**
2030	9	£0	£0	£0	£0	£0	**£0**	1.230	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.503	**£0**	**£0.00**
2031	10	£0	£0	£0	£0	£0	**£0**	1.255	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.486	**£0**	**£0.00**
2032	11	£0	£0	£0	£0	£0	**£0**	1.281	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.469	**£0**	**£0.00**
2033	12	£0	£0	£0	£0	£0	**£0**	1.308	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.453	**£0**	**£0.00**
2034	13	£0	£0	£0	£0	£0	**£0**	1.336	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.438	**£0**	**£0.00**
2035	14	£0	£0	£0	£0	£0	**£0**	1.364	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.423	**£0**	**£0.00**
2036	15	£0	£0	£0	£0	£0	**£0**	1.394	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.409	**£0**	**£0.00**
2037	16	£0	£0	£0	£0	£0	**£0**	1.422	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.395	**£0**	**£0.00**
2038	17	£0	£0	£0	£0	£0	**£0**	1.451	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.382	**£0**	**£0.00**
2039	18	£0	£0	£0	£0	£0	**£0**	1.481	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.369	**£0**	**£0.00**
2040	19	£0	£0	£0	£0	£0	**£0**	1.512	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.356	**£0**	**£0.00**
2041	20	£0	£0	£0	£0	£0	**£0**	1.544	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.344	**£0**	**£0.00**
2042	21	£0	£0	£0	£0	£0	**£0**	1.576	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.333	**£0**	**£0.00**
2043	22	£0	£0	£0	£0	£0	**£0**	1.611	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.321	**£0**	**£0.00**
2044	23	£0	£0	£0	£0	£0	**£0**	1.646	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.310	**£0**	**£0.00**
2045	24	£0	£0	£0	£0	£0	**£0**	1.682	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.300	**£0**	**£0.00**
2046	25	£0	£0	£0	£0	£0	**£0**	1.720	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.290	**£0**	**£0.00**
2047	26	£0	£0	£0	£0	£0	**£0**	1.758	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.280	**£0**	**£0.00**
2048	27	£0	£0	£0	£0	£0	**£0**	1.798	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.271	**£0**	**£0.00**
2049	28	£0	£0	£0	£0	£0	**£0**	1.840	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.261	**£0**	**£0.00**
2050	29	£0	£0	£0	£0	£0	**£0**	1.883	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.253	**£0**	**£0.00**
2051	30	£0	£0	£0	£0	£0	**£0**	1.926	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.035	0.244	**£0**	**£0.00**
2052	31	£0	£0	£0	£0	£0	**£0**	1.971	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.289	**£0**	**£0.00**
2053	32	£0	£0	£0	£0	£0	**£0**	2.017	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.281	**£0**	**£0.00**
2054	33	£0	£0	£0	£0	£0	**£0**	2.063	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.272	**£0**	**£0.00**
2055	34	£0	£0	£0	£0	£0	**£0**	2.111	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.264	**£0**	**£0.00**
2056	35	£0	£0	£0	£0	£0	**£0**	2.160	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.257	**£0**	**£0.00**
2057	36	£0	£0	£0	£0	£0	**£0**	2.210	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.249	**£0**	**£0.00**
2058	37	£0	£0	£0	£0	£0	**£0**	2.261	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.242	**£0**	**£0.00**
2059	38	£0	£0	£0	£0	£0	**£0**	2.313	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.235	**£0**	**£0.00**
2060	39	£0	£0	£0	£0	£0	**£0**	2.365	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.228	**£0**	**£0.00**
2061	40	£0	£0	£0	£0	£0	**£0**	2.419	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.221	**£0**	**£0.00**
2062	41	£0	£0	£0	£0	£0	**£0**	2.474	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.215	**£0**	**£0.00**
2063	42	£0	£0	£0	£0	£0	**£0**	2.529	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.209	**£0**	**£0.00**
2064	43	£0	£0	£0	£0	£0	**£0**	2.585	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.203	**£0**	**£0.00**
2065	44	£0	£0	£0	£0	£0	**£0**	2.643	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.197	**£0**	**£0.00**
2066	45	£0	£0	£0	£0	£0	**£0**	2.700	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.191	**£0**	**£0.00**
2067	46	£0	£0	£0	£0	£0	**£0**	2.758	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.185	**£0**	**£0.00**
2068	47	£0	£0	£0	£0	£0	**£0**	2.814	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.180	**£0**	**£0.00**
2069	48	£0	£0	£0	£0	£0	**£0**	2.874	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.175	**£0**	**£0.00**
2070	49	£0	£0	£0	£0	£0	**£0**	2.935	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.170	**£0**	**£0.00**
2071	50	£0	£0	£0	£0	£0	**£0**	2.996	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.165	**£0**	**£0.00**
2072	51	£0	£0	£0	£0	£0	**£0**	3.060	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.160	**£0**	**£0.00**
2073	52	£0	£0	£0	£0	£0	**£0**	3.126	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.155	**£0**	**£0.00**
2074	53	£0	£0	£0	£0	£0	**£0**	3.196	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.151	**£0**	**£0.00**
2075	54	£0	£0	£0	£0	£0	**£0**	3.269	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.146	**£0**	**£0.00**
2076	55	£0	£0	£0	£0	£0	**£0**	3.345	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.142	**£0**	**£0.00**
2077	56	£0	£0	£0	£0	£0	**£0**	3.424	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.138	**£0**	**£0.00**
2078	57	£0	£0	£0	£0	£0	**£0**	3.506	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.134	**£0**	**£0.00**
2079	58	£0	£0	£0	£0	£0	**£0**	3.590	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.130	**£0**	**£0.00**
2080	59	£0	£0	£0	£0	£0	**£0**	3.677	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.126	**£0**	**£0.00**
2081	60	£0	£0	£0	£0	£0	**£0**	3.768	£0.00	**£0**	£0	**£0**	£0	**£0**	**£0**	1.030	0.123	**£0**	**£0.00**
Total		**£4,179,817**	**£1,040,829**	**£59,313**	**£1,038,518**	**£613,873**	**£6,932,350**		**£342,148**	**£7,274,498**	**£735,027**	**£8,009,525**	**£1,795,474**	**£9,804,999**	**£7,797,934**			**£5,154,232**	**£6,133,536**

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	**£6,932,350**
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	**£7,274,498**
(3)	Following the real cost adjustment a quantified risk contribution has been applied.	**£8,009,525**
(4)	The next stage is to apply optimism bias.	**£9,804,999**
(5)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	**£7,797,934**
(6)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	**£5,154,232**
(7)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	**£6,133,536**

Junction 15 - Do Something Maintenane Costs in 2010 Market Prices for Economc Case

Calendar Year	Assessment Year	(1) Base Cost Estimate (2021 Prices)		(2) Base Cost Estimate Including Real Cost Increases (2021Prices)			(3) Risk Adjusted Base Cost (2021 Prices)		(4) Total Contribution of Optimism Bias		(5) Rebased to 2010 Price Base	(6) Discounted to 2010 Prices			(7) Adjusted to Market Prices
		Maintenance Costs	Total	Real Cost Inflation	Contribution to Real Cost Increases	Total (Including Real Cost Increases)	Quantified Risk Adjustment	Risk Adjusted Cost	Optimism Bias Adjustment	Optimism Bias Adjusted Cost		Discount Rate	Discount Factor	Discounted to 2010 Prices	
2021	0	£0	**£0**	0.000	£0.00	**£0**	£0	**£0**	£0.00	**£0**	**£0**	1.035	0.685	**£0**	**£0.00**
2022	1	£0	**£0**	1.040	£0.00	**£0**	£0	**£0**	£0.00	**£0**	**£0**	1.035	0.662	**£0**	**£0.00**
2023	2	£0	**£0**	1.073	£0.00	**£0**	£0	**£0**	£0.00	**£0**	**£0**	1.035	0.639	**£0**	**£0.00**
2024	3	£28,476	**£28,476**	1.094	£2,669.33	**£31,145**	£0	**£31,145**	£0.00	**£31,145**	**£24,770**	1.035	0.618	**£15,302**	**£18,209.74**
2025	4	£28,476	**£28,476**	1.117	£3,328.63	**£31,804**	£0	**£31,804**	£0.00	**£31,804**	**£25,294**	1.035	0.597	**£15,098**	**£17,966.39**
2026	5	£28,476	**£28,476**	1.139	£3,947.17	**£32,423**	£0	**£32,423**	£0.00	**£32,423**	**£25,786**	1.035	0.577	**£14,871**	**£17,696.43**
2027	6	£28,476	**£28,476**	1.161	£4,571.75	**£33,048**	£0	**£33,048**	£0.00	**£33,048**	**£26,283**	1.035	0.557	**£14,645**	**£17,427.37**
2028	7	£28,476	**£28,476**	1.183	£5,214.20	**£33,690**	£0	**£33,690**	£0.00	**£33,690**	**£26,794**	1.035	0.538	**£14,425**	**£17,165.37**
2029	8	£28,476	**£28,476**	1.206	£5,873.90	**£34,350**	£0	**£34,350**	£0.00	**£34,350**	**£27,318**	1.035	0.520	**£14,210**	**£16,909.66**
2030	9	£28,476	**£28,476**	1.230	£6,556.80	**£35,033**	£0	**£35,033**	£0.00	**£35,033**	**£27,861**	1.035	0.503	**£14,002**	**£16,662.65**
2031	10	£28,476	**£28,476**	1.255	£7,266.05	**£35,742**	£0	**£35,742**	£0.00	**£35,742**	**£28,426**	1.035	0.486	**£13,803**	**£16,425.11**
2032	11	£28,476	**£28,476**	1.281	£8,003.41	**£36,479**	£0	**£36,479**	£0.00	**£36,479**	**£29,012**	1.035	0.469	**£13,611**	**£16,197.06**
2033	12	£28,476	**£28,476**	1.308	£8,768.39	**£37,244**	£0	**£37,244**	£0.00	**£37,244**	**£29,620**	1.035	0.453	**£13,426**	**£15,977.51**
2034	13	£28,476	**£28,476**	1.336	£9,554.11	**£38,030**	£0	**£38,030**	£0.00	**£38,030**	**£30,245**	1.035	0.438	**£13,246**	**£15,762.88**
2035	14	£28,476	**£28,476**	1.364	£10,365.43	**£38,841**	£0	**£38,841**	£0.00	**£38,841**	**£30,890**	1.035	0.423	**£13,071**	**£15,554.75**
2036	15	£28,476	**£28,476**	1.394	£11,207.04	**£39,683**	£0	**£39,683**	£0.00	**£39,683**	**£31,560**	1.035	0.409	**£12,903**	**£15,354.38**
2037	16	£28,476	**£28,476**	1.422	£12,016.27	**£40,492**	£0	**£40,492**	£0.00	**£40,492**	**£32,203**	1.035	0.395	**£12,721**	**£15,137.68**
2038	17	£28,476	**£28,476**	1.451	£12,844.13	**£41,320**	£0	**£41,320**	£0.00	**£41,320**	**£32,862**	1.035	0.382	**£12,542**	**£14,924.80**
2039	18	£28,476	**£28,476**	1.481	£13,693.28	**£42,169**	£0	**£42,169**	£0.00	**£42,169**	**£33,537**	1.035	0.369	**£12,367**	**£14,716.44**
2040	19	£28,476	**£28,476**	1.512	£14,570.90	**£43,047**	£0	**£43,047**	£0.00	**£43,047**	**£34,235**	1.035	0.356	**£12,197**	**£14,514.70**
2041	20	£28,476	**£28,476**	1.544	£15,479.25	**£43,955**	£0	**£43,955**	£0.00	**£43,955**	**£34,958**	1.035	0.344	**£12,033**	**£14,319.79**
2042	21	£28,476	**£28,476**	1.576	£16,416.07	**£44,892**	£0	**£44,892**	£0.00	**£44,892**	**£35,703**	1.035	0.333	**£11,874**	**£14,130.42**
2043	22	£28,476	**£28,476**	1.611	£17,384.62	**£45,860**	£0	**£45,860**	£0.00	**£45,860**	**£36,473**	1.035	0.321	**£11,720**	**£13,947.14**
2044	23	£28,476	**£28,476**	1.646	£18,387.27	**£46,863**	£0	**£46,863**	£0.00	**£46,863**	**£37,270**	1.035	0.310	**£11,572**	**£13,770.11**
2045	24	£28,476	**£28,476**	1.682	£19,423.65	**£47,899**	£0	**£47,899**	£0.00	**£47,899**	**£38,095**	1.035	0.300	**£11,427**	**£13,598.69**
2046	25	£28,476	**£28,476**	1.720	£20,492.67	**£48,968**	£0	**£48,968**	£0.00	**£48,968**	**£38,945**	1.035	0.290	**£11,287**	**£13,432.06**
2047	26	£28,476	**£28,476**	1.758	£21,595.25	**£50,071**	£0	**£50,071**	£0.00	**£50,071**	**£39,822**	1.035	0.280	**£11,151**	**£13,270.05**
2048	27	£28,476	**£28,476**	1.798	£22,737.22	**£51,213**	£0	**£51,213**	£0.00	**£51,213**	**£40,730**	1.035	0.271	**£11,020**	**£13,113.72**
2049	28	£28,476	**£28,476**	1.840	£23,916.33	**£52,392**	£0	**£52,392**	£0.00	**£52,392**	**£41,668**	1.035	0.261	**£10,892**	**£12,961.97**
2050	29	£28,476	**£28,476**	1.883	£25,130.02	**£53,606**	£0	**£53,606**	£0.00	**£53,606**	**£42,633**	1.035	0.253	**£10,768**	**£12,813.76**
2051	30	£28,476	**£28,476**	1.926	£26,373.80	**£54,850**	£0	**£54,850**	£0.00	**£54,850**	**£43,622**	1.035	0.244	**£10,645**	**£12,667.70**
2052	31	£28,476	**£28,476**	1.971	£27,645.41	**£56,121**	£0	**£56,121**	£0.00	**£56,121**	**£44,633**	1.030	0.289	**£12,897**	**£15,347.67**
2053	32	£28,476	**£28,476**	2.017	£28,946.07	**£57,422**	£0	**£57,422**	£0.00	**£57,422**	**£45,668**	1.030	0.281	**£12,812**	**£15,245.98**
2054	33	£28,476	**£28,476**	2.063	£30,277.27	**£58,753**	£0	**£58,753**	£0.00	**£58,753**	**£46,726**	1.030	0.272	**£12,727**	**£15,145.07**
2055	34	£28,476	**£28,476**	2.111	£31,642.74	**£60,119**	£0	**£60,119**	£0.00	**£60,119**	**£47,812**	1.030	0.264	**£12,643**	**£15,045.69**
2056	35	£28,476	**£28,476**	2.160	£33,033.59	**£61,509**	£0	**£61,509**	£0.00	**£61,509**	**£48,919**	1.030	0.257	**£12,559**	**£14,945.41**
2057	36	£28,476	**£28,476**	2.210	£34,454.11	**£62,930**	£0	**£62,930**	£0.00	**£62,930**	**£50,048**	1.030	0.249	**£12,475**	**£14,845.21**
2058	37	£28,476	**£28,476**	2.261	£35,901.33	**£64,377**	£0	**£64,377**	£0.00	**£64,377**	**£51,199**	1.030	0.242	**£12,390**	**£14,744.28**
2059	38	£28,476	**£28,476**	2.313	£37,375.97	**£65,852**	£0	**£65,852**	£0.00	**£65,852**	**£52,372**	1.030	0.235	**£12,305**	**£14,642.74**
2060	39	£28,476	**£28,476**	2.365	£38,880.30	**£67,356**	£0	**£67,356**	£0.00	**£67,356**	**£53,568**	1.030	0.228	**£12,219**	**£14,541.01**
2061	40	£28,476	**£28,476**	2.419	£40,411.73	**£68,887**	£0	**£68,887**	£0.00	**£68,887**	**£54,786**	1.030	0.221	**£12,133**	**£14,438.46**
2062	41	£28,476	**£28,476**	2.474	£41,962.79	**£70,439**	£0	**£70,439**	£0.00	**£70,439**	**£56,020**	1.030	0.215	**£12,045**	**£14,333.55**
2063	42	£28,476	**£28,476**	2.529	£43,541.84	**£72,018**	£0	**£72,018**	£0.00	**£72,018**	**£57,276**	1.030	0.209	**£11,956**	**£14,228.03**
2064	43	£28,476	**£28,476**	2.585	£45,144.34	**£73,620**	£0	**£73,620**	£0.00	**£73,620**	**£58,550**	1.030	0.203	**£11,866**	**£14,120.99**
2065	44	£28,476	**£28,476**	2.643	£46,771.48	**£75,247**	£0	**£75,247**	£0.00	**£75,247**	**£59,844**	1.030	0.197	**£11,775**	**£14,012.71**
2066	45	£28,476	**£28,476**	2.700	£48,417.66	**£76,893**	£0	**£76,893**	£0.00	**£76,893**	**£61,153**	1.030	0.191	**£11,683**	**£13,902.20**
2067	46	£28,476	**£28,476**	2.758	£50,050.52	**£78,526**	£0	**£78,526**	£0.00	**£78,526**	**£62,452**	1.030	0.185	**£11,583**	**£13,783.90**
2068	47	£28,476	**£28,476**	2.814	£51,660.27	**£80,136**	£0	**£80,136**	£0.00	**£80,136**	**£63,732**	1.030	0.180	**£11,476**	**£13,656.77**
2069	48	£28,476	**£28,476**	2.874	£53,360.11	**£81,836**	£0	**£81,836**	£0.00	**£81,836**	**£65,084**	1.030	0.175	**£11,378**	**£13,540.24**
2070	49	£28,476	**£28,476**	2.935	£55,100.00	**£83,576**	£0	**£83,576**	£0.00	**£83,576**	**£66,468**	1.030	0.170	**£11,282**	**£13,425.36**
2071	50	£28,476	**£28,476**	2.996	£56,845.80	**£85,322**	£0	**£85,322**	£0.00	**£85,322**	**£67,856**	1.030	0.165	**£11,182**	**£13,306.60**
2072	51	£28,476	**£28,476**	3.060	£58,656.16	**£87,132**	£0	**£87,132**	£0.00	**£87,132**	**£69,296**	1.030	0.160	**£11,087**	**£13,193.15**
2073	52	£28,476	**£28,476**	3.126	£60,551.55	**£89,027**	£0	**£89,027**	£0.00	**£89,027**	**£70,804**	1.030	0.155	**£10,998**	**£13,087.51**
2074	53	£28,476	**£28,476**	3.196	£62,520.33	**£90,996**	£0	**£90,996**	£0.00	**£90,996**	**£72,369**	1.030	0.151	**£10,914**	**£12,987.32**
2075	54	£28,476	**£28,476**	3.269	£64,598.45	**£93,074**	£0	**£93,074**	£0.00	**£93,074**	**£74,022**	1.030	0.146	**£10,838**	**£12,897.00**
2076	55	£28,476	**£28,476**	3.345	£66,761.83	**£95,238**	£0	**£95,238**	£0.00	**£95,238**	**£75,743**	1.030	0.142	**£10,767**	**£12,812.40**
2077	56	£28,476	**£28,476**	3.424	£69,036.00	**£97,512**	£0	**£97,512**	£0.00	**£97,512**	**£77,551**	1.030	0.138	**£10,703**	**£12,736.26**
2078	57	£28,476	**£28,476**	3.506	£71,353.41	**£99,829**	£0	**£99,829**	£0.00	**£99,829**	**£79,394**	1.030	0.134	**£10,638**	**£12,659.17**
2079	58	£28,476	**£28,476**	3.590	£73,747.68	**£102,223**	£0	**£102,223**	£0.00	**£102,223**	**£81,299**	1.030	0.130	**£10,576**	**£12,585.23**
2080	59	£28,476	**£28,476**	3.677	£76,237.99	**£104,714**	£0	**£104,714**	£0.00	**£104,714**	**£83,279**	1.030	0.126	**£10,518**	**£12,516.33**
2081	60	£28,476	**£28,476**	3.768	£78,820.89	**£107,297**	£0	**£107,297**	£0.00	**£107,297**	**£85,333**	1.030	0.123	**£10,463**	**£12,451.52**
Total		**£1,651,594**	**£1,651,594**		**£1,881,495**	**£3,533,089**	**£0**	**£3,533,089**	**£0**	**£3,533,089**	**£2,724,539**			**£705,719**	**£839,806**

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is assumed to be 2021 in this assessment. No historic (bygone) costs have been provided and it is assumed that these won't influence the investment decision.	£1,651,594
(2)	The base costs have been adjusted to incorporate real cost increases (WebTAG A1.2) in construction costs.	£3,533,089
(3)	Following the real cost adjustment a quantified risk contribution has been applied.	£3,533,089
(4)	The next stage is to apply optimism bias.	£3,533,089
(5)	Optimism bias adjusted costs have been converted to the current price base (i.e. 2010) using the governments GDP deflator tool (WebTAG A1.2).	£2,724,539
(6)	Costs have been discounted to 2010 present values by applying a discount rate of 3.5% per year for 30 years and 3.0% thereafter (WebTAG A1.2).	£705,719
(7)	The final stage in preparing the scheme costs is to convert them from the factor cost to the market price unit of account using the indirect tax correction factor of 1.19	£839,806

MILESTONE INFRASTRUCTURE
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Appendix K:

Appraisal Summary Table

MILESTONE INFRASTRUCTURE
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Impacts		Summary of key impacts	Assessment	
			Qualitative	Quantitative (Monetary)
Economy	Business Users & Transport Providers	An Aimsun Next Microsimulation model has been built to assess the transport user benefits of the Junction 15 improvement scheme. This identifies that the Present Value Benefits (PVB) is estimated to be £49,600,000. The benefit calculations are only based on de-congestion benefits.	Strong Beneficial	**£11,890**
	Reliability Impact on Business Providers	Business users are expected to benefit from more reliable journey times because of congestion reductions.	Slight Beneficial	Not Assessed
	Regeneration	No regeneration proposals in the vicinity of the scheme	Not Assessed	Not Assessed
	Other impacts – impact on local business	Thorpe Wood Employment Area is accessed via Junction 15. Business users are expected to benefit from improved journey time reliability and reduced congestion, making the employment area more attractive for business. The Thorpe Wood cycleway and new footbridge will better serve Thorpe Wood Business Park, making the area more attractive for future investment.	Slight Beneficial	Not Assessed
Environmental	Noise	Noise assessments showed that without the scheme the majority of properties within the study area experience an increase in noise level of up to 0.9dB in the short term and 2.9dB in the long-term. With the scheme, the predicted long-long term change in noise level is an increase of 0.1dB to 2.9dB for all properties within the study area With the scheme, the predicted short-long term change in noise level is an increase of between 0.1dB to 0.9dB for the majority of properties within the study area.	Slight Adverse	**£41,669**
	Air Quality	The reduction in queueing, therefore idling, is anticipated to have a beneficial impact on air quality at receptors near the scheme site. Impact of dust and emissions from plant vehicles and machinery is expected to be a short-term consequence of the scheme, with mitigations and measures of best practice being followed to help minimise impact.	Slight Beneficial	Not Assessed
	Greenhouse Gases	Due to the decrease in congestion, a small positive impact on greenhouse gas emissions will be seen upon scheme completion.	Slight Beneficial	**£353,000**
	Landscape	Existing character of the highway will be retained, and the scheme is not considered to alter the landscape. The visual appearance surrounding the footbridge will be perceived as minimal in comparison to at present, prior to construction, during construction and short-term post-completion, until planting has re-established. A landscaping design accompanies the footbridge design, whereby 59 trees will be replanted alongside understorey shrubs, mitigating against the visual impact of construction.	Slight Adverse	Not Assessed
	Townscape	Existing character of the highway will be retained, and the scheme is not considered to alter the townscape.	Neutral	Not Assessed
	Historic Environment	The study area is identified to have high archaeological potential, the impact of the scheme being a direct, physical, impact to buried archaeological remains, if present. Impact on nearby heritage assets is minimal for the scheme.	Slight Adverse	Not Assessed
	Arboriculture, Ecology and Biodiversity	The proposed works are not located within a statutory designated site for conservation. Loss in tree coverage is expected at the footbridge (53 trees lost), however a higher quality tree stock has been retained through careful design development. Compensation planting will occur, whereby 59 trees will be planted surrounding the footbridge. Lighting for the footbridge will include handrail lights and will minimal impact on species in the area. Additional planting and environmental features across the study area will aid the achievement of biodiversity net gain.	Moderate Beneficial	Not Assessed
	Water Environment	No part of the Study Area is within an area at risk of flooding (Env Agency Flood Map for Planning)	Neutral	Not Assessed
Social	Commuting & Other Users	An Aimsun Next Microsimulation model has been built to assess the transport user benefits of the Junction 15 improvement scheme. This identifies that the Present Value Benefits (PVB) is estimated to be £49,600,000. The benefit calculations are only based on de-congestion benefits. Users are expected to benefit from improved journey times because of congestion reductions.	Strong Beneficial	**£38,170**
	Physical Activity	Improvements for pedestrians and cyclists will be delivered as part of the scheme.	Slight Beneficial	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 centred on the busiest junction approach of Junction 15 is expected to have a slight benefit on road safety.	Slight Beneficial	Not Assessed
	Personal Security	Although improved pedestrian and cycle facilities could lead to users feeling more secure, an in-depth analysis has not been undertaken.	Not Assessed	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 and cycle facilities across the study area and implementation of the LTN 1/20 compliant cycleway will help ease severance for sustainable travel users	Slight Beneficial	Not Assessed
	Option & Non-Use Values	Not Applicable	Not Assessed	Not Assessed
Public Accounts	Cost to Broad Transport Budget	The scheme PVC has been identified as £6,823,000. The scheme BCR is 7.269.	Strong Beneficial	**Very High Value for Money (BCR 7.269)**
	Indirect Tax Revenues	The indirect taxes would be -£813,000	Slight Adverse	**- £813,000**

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Appendix L:

Environmental Impact Assessment

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Junction 15 Improvement Scheme

EIA Screening Report

Delivering what we **promise**

Document Control

Job Number: 5080751						
Document ref: Junction 15_EIA Screening_001					Authorisation	
Rev	Purpose	Originated	Checked	Reviewed	Milestone	Date
001	Initial EIA Screening	Jackson Smith	Richard Jones	Nicole Turley	Richard Jones	04/07/2021

Contents

Figures

Tables

1. Introduction

1.1 Purpose of this Report

Milestone Infrastructure have been commissioned to undertake the Environmental Impact Assessment (EIA) Screening Report for the Junction 15 Improvement Scheme in Peterborough.

The aim of this report is to inform an EIA Screening Opinion under the following regulations:

- The Town and Country Planning (Environmental Impact Assessment) Regulations 2017; whereby, Peterborough City Council are the relevant authorities in decision making.

This report accompanies a written request for a Screening Opinion, and it will inform the Local Planning Authority ("LPA"), Peterborough City Council about the potential for significant environmental effects arising from the proposed development, in accordance with requirements of the above referred regulations.

1.2 Purpose of the Scheme

Situated on the western edge of Peterborough's urban area, the Junction 15 Improvement Scheme is required to address severe levels of congestion and delay that currently compromises the operational efficiency of Junction 15 and surrounding road network, including a cornerstone section of Peterborough's Strategic Parkway Network. Scheme improvements will address existing issues and build additional capacity in order to assist in delivering Peterborough City Council's growth aspirations.

Junction 15 is a partially signalised grade separated roundabout (positioned beneath the A47 Trunk Road) which facilitates an average of 46,000 vehicles on a typical weekday (pre-COVID-19), of which 12% are classified as commercial vehicles. High daily travel demand coupled with direct access to one of three river crossings results in extensive peak hour congestion at Junction 15. Peak hour congestion is particularly focused northbound on the A1260 Nene Parkway where queues regularly exceed a mile during the PM peak hour, compromising the surrounding road network. Because of its strategic location, the junction is critical to Peterborough's growth aspirations.

The population of Peterborough has grown considerably over recent years, increasing by 15% between 2007 and 2017 to approximately 200,000 residents (2019), making Peterborough one of the UK's top ten cities for population growth. The population of the City is set to rise following the required delivery of approximately 21,315 new homes and 17,600 new jobs between 2016 and 2036, as stated within the Peterborough Local Plan (2019).

To date Peterborough's transport network has served the City well, which was fundamentally redesigned in the 1970s to accommodate the then Peterborough New Town. However, as a consequence of recent and planned housing and employment growth, capacity issues are now

emerging on the road network, resulting in ever increasing congestion and delay. As congestion increases on the Parkway Network, and queues form at key junctions, the potential for delivering new homes and jobs in the area will become increasingly constrained. The Council are committed to addressing these highway constraints to ensure that its full growth aspirations can be realised.

The Junction 15 Improvement Scheme will provide the necessary increase in highway capacity to unlock congestion and significantly reduce delay at Junction 15, which is a major pinch-point on the network. This will improve the capacity and operational performance of the Peterborough Parkway system which is crucial to supporting further growth around the City.

Recognising the environmental and social sensitivity of the area, Milestone has been working and engaging with the following stakeholders:

- Peterborough City Council;
- Natural England;
- Historic England;
- Environment Agency (EA);
- Nene Park Trust (NPT); and
- Wildlife Trust for Bedfordshire, Cambridgeshire & Northamptonshire

1.3 Environmental Impact Assessment Regulations

EIA development is defined by the EIA Regulations as development:

“likely to have significant effects on the environment by virtue of factors such as its nature, size or locations”.

EIA screening is the procedure used to determine whether a proposed development project is likely to have significant effects on the environment and consequently whether an EIA in the format of an Environmental Statement is required.

If a development is listed in Schedule 1 of the Regulations, EIA is required in every case. This proposal does not fall within Schedule 1 of the Regulations.

Under Part 1, paragraph 2 of the Regulations, "Schedule 2 development" is defined as "development, other than exempt development, of a description mentioned in column 1 of the table in Schedule 2 where –

a) any part of that development is to be carried out in a sensitive area; or

b) any applicable threshold or criterion in the corresponding part of column 2 of that table is respectively exceeded or met in relation to that development

EIA is required for a Schedule 2 development only if it is considered that the project may create significant environmental effects or if any part of that development is to be carried out in a sensitive area. If a development is of a type listed in Schedule 2 of the EIA Regulations, and exceeds the relevant thresholds and criteria outlined in the second column of Schedule 2, the LPA is required to undertake screening to consider whether it is likely to have significant effects on the environment, and therefore requires an EIA.

The proposed Junction 15 Improvement Scheme is consistent with the description detailed in part 10(f) of Schedule 2 of the Regulations, construction of roads. As such, consideration as to whether the proposed development meets or exceeds the applicable criteria and thresholds, thus if the project is likely to result in significant effects, is required.

The regulations suggest EIA screening is required for the construction of roads if the area of development exceeds 1ha. The Planning Practice Guidance on Environmental Impact Assessment provides further guidance on the indicative criterial and thresholds as well as key issues to consider. As it pertains to road construction project, the indicative screening thresholds guidance is shown in Table 1 below:

Table 1. Extract from the Planning Practice Guidance Indicative Screening Thresholds

Development Type	Schedule 2 criteria and threshold	Indicative criteria and threshold	Key issues to consider
(f) Construction of roads (unless included in Schedule 1);	The area of the works exceeds 1 hectare.	New development over 2 km in length	Estimated emissions, traffic, noise and vibration, the degree of visual intrusion and the impact on the surrounding ecology.

The proposed development area exceeds the 1ha Schedule 2 threshold but does not exceed the 2km Planning Practice Guidance threshold. The proposed development area is therefore not considered to require an EIA without detailed screening of the potential likely impacts of the proposed development and the location of the proposed development relative to defined sensitive areas.

Consideration next turns to if the site is within a sensitive area as defined by the Regulations. Part 1, paragraph 2 of the Regulations set out the definition of a sensitive area. These include:

- Sites of Special Scientific Interest;
- National Parks;
- The Broads;
- Properties appearing on the World Heritage List;
- Scheduled Monuments;
- Areas of Outstanding Natural Beauty; and,
- European sites for conservation.

Junction 15 Improvement Scheme is located beside Scheduled Monument, Longthorpe Roman Fort and Settlement, however, it is unlikely to give rise to significant environmental effects when considered under the EIA Regulation. No direct physical impact to the Scheduled Monument has been identified as the result of the proposed works.

1.4 Approach to EIA Screening

This report has been prepared in accordance with the Town and Country Planning (EIA) Regulations 2017. Table 2 presents the information that must accompany a request for a Screening Opinion, linking them to the relevant section within this report.

The Screening Checklist can be found in Appendix D and sets out a summary of all off the below criteria and requirements and specifically addresses the proposed development at the site.

Table 2 – Information that must accompany a request for a screening opinion

Town and Country Planning (EIA) Regulations 2017	Section of this Report
a) a plan sufficient to identify the land;	Appendix A
b) a description of the development, in particular: i. a description of the physical characteristics of the development, and where relevant, of demolition works. ii. a description of the location of the development with regard to the environmental sensitivity of geographical areas likely to be affected;	Section 2
c) a description of the aspects of the environment likely to be significantly affected by the development;	Section 3
d) to the extent the information is available, a description of any likely significant effects of the proposed development on the environment resulting from: i. the expected residues and emissions and the production of waste, where relevant; and ii. the use of natural resources, in particular soil, land, water and biodiversity; and	Section 4
e) such other information or representations as the person making the request may wish to provide or make, including any feature of the proposed development or any measures envisaged to avoid or prevent what might otherwise be significant impacts on the environment.	Section 5

Guidance is provided in the Design Manual for Roads and Bridges (DMRB) Standard LA 102: England National Application Annex to LA102 Screening Projects for Environmental Impact Assessment.

Information presented within this report has been based on desktop studies of readily available data sources; and site walkover surveys undertaken by Milestone Infrastructure and Royal Haskoning on the following occasions: 2nd March 2021 and 23rd March 2021.

In addition, the EIA Screening Report has been supplemented by the information within the following reports:

- Archaeology and Cultural Heritage Desktop Study (PB2649-RHD-ZZ-XX-RP-Z-0001);
- Preliminary Ecological Appraisals (PB2649-RHD-ZZ-XX-RP-Z-0001 & PB2649-RHD-ZZ-XX-RP-Z-0001);
- Landscape & Arboricultural Report (PB2649 15 TAG Landscape Impacts Appraisal REV 01);
- Noise WebTAG (PB2649-RHD-ZZ-XX-NT-Z-0001);

As such, relevant information is provided herein to assist the LPA in providing an EIA screening opinion.

2. Proposed Development

2.1 Location of the Scheme

The junction provides access to the A1260 Nene Parkway, Bretton Way, Thorpe Wood and the A47 Soke Parkway. The junction also provides direct access to a major employment centre (Thorpe Wood) and accommodates a large number of peak hour commuter trips to / from this location.

The proposed scheme is comprised of improvements to highway and sustainable travel modes alongside environmental landscaping, all of which is located within the study area as indicated below in Figure 1.

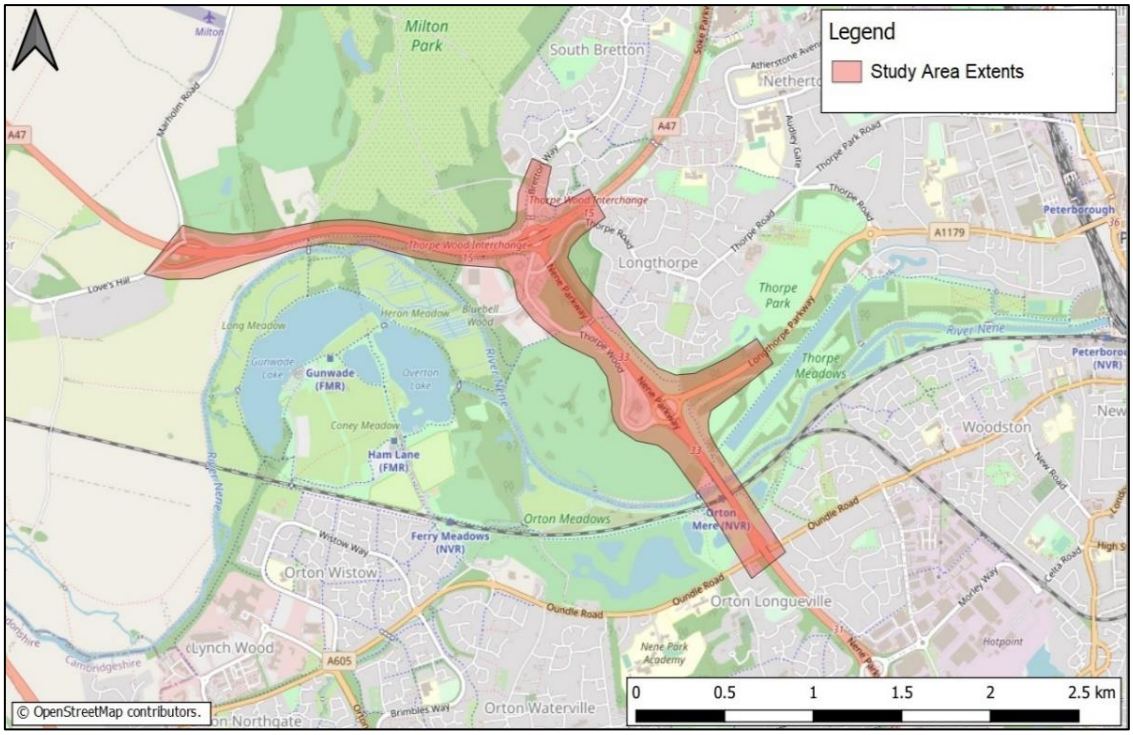


Figure 1 – Junction 15 Improvement Scheme

Highway improvements are situated at Junction 15 itself (National Grid Ref: TL 15651 98502) encompassing a circulatory lane gain and, realignment of the connecting slip roads, a flare extension on Thorpe Wood as well as a lane gain on the A1260 Nene Parkway northbound between Junction 15 and Junction 33. In order to accommodate the lane gain along Nene Parkway improvements are also required for a pedestrian footbridge which spans both northbound and southbound carriageways (National Grid Ref: TL 15934 98123). At present the footbridge is substandard in places due to its arched soffit formation, and if left unchanged bridge strikes by HGVs are likely.

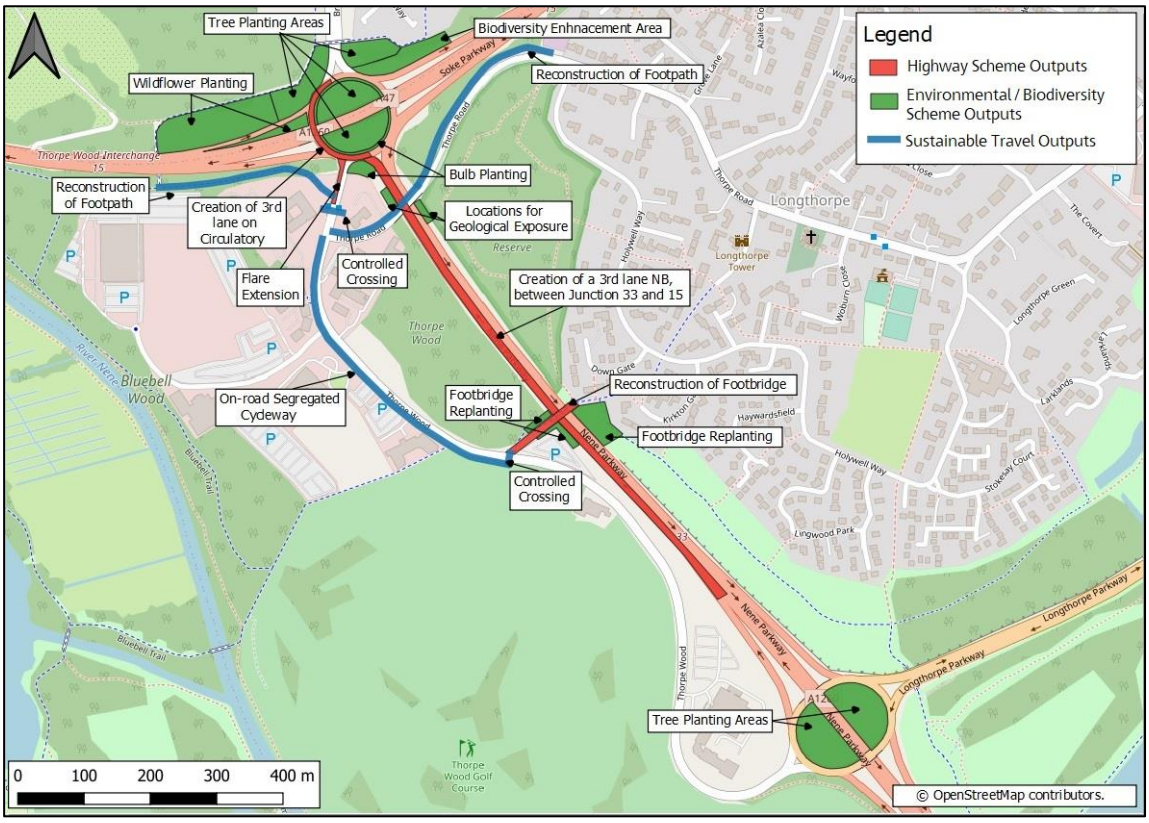


Figure 2 – Junction 15 Improvement Scheme

2.2 Characteristics of the proposed development

Highway Improvements

The proposed lane gain on the northbound carriageway of the A1260 Nene Parkway will be a continuation of the on-slip to the A1260 from Junction 33 and will stretch 0.8 kilometres in total to reach Junction 15 (refer to GA Drawings: 5080751-SKA-HGN-DR-CH-0003_GA_Sheet 1 of 2_Rev.C01, 5080751-SKA-HGN-DR-CH-0004_GA_Sheet 2 of 2_Rev.C01& 5080751-155980-MIL-SBR-ZZ-DR-2500 Appendix A). The widening of the carriageway will utilise former PCC Community Related Asset (CRA) land and will increase link capacity between these two junctions. The width of the three lanes at the circulatory will be 4.0 metres and the new nearside lane will provide both a left turn and ahead movement. A reduction to 60MPH will be introduced for the northbound carriageway of Nene Parkway.

In connection with the lane gain on Nene Parkway, a third lane on the western half of the circulatory is required within the scheme design. The third lane will feature between the A1260 Nene Parkway and Bretton Way approaches and will also use PCC CRA land. The location of the traffic signal stop line on the circulatory remains unchanged within the proposed scheme element, however due to widening and realignment the stop line on the A47 off slip is required to be pushed back 3.45m.

The proposed flare extension on the Thorpe Wood by 30m will increase the queuing capacity on this approach. The existing informal crossing point at the stop line of this approach will be removed and topsoiled over, allowing for the extension of the second lane. A new footpath and crossing will be implemented in this location connecting with the public transport routes and access to the business park.

The proposed replacement / upgrade of the public footbridge over the A1260 Nene Parkway will include a 4.4m wide steel bridge deck, which will span of approximately 31m across the carriageway. The bridge will be a howe truss crossing with its foundations positioned either side of the carriageway, of which will include reinforced concrete abutments and steel pier columns on piled foundations. The lower ramp sections will be placed on reprofiled earthwork embankments. Under current proposals the bridge will be located 30m South of the current bridge structure. The existing bridge structure will be closed to public access once construction on the carriageway commences and will be demolished once the new bridge is installed as part of the construction works on the Junction 15 Improvement Scheme.

Sustainable Travel Mode Improvements

A Travel Plan framework has been produced which provides initiatives to encourage the use of sustainable travel modes for future site users. In connection with the highway improvement of a flare extension on Thorpe Wood and the removal of the existing crossing point, there is a need to implement a controlled crossing point in this location. Scheme proposals currently introduce a

new zebra crossing close to the existing bus stops, which is to be installed prior to the commencement of the two-lane approach to the circulatory.

In relation to proposed scheme elements on Thorpe Wood, construction of a new footpath is required to connect to the new crossing mentioned in the point above to the existing footpath which runs behind the business park (to the west of Junction 15) to connect to residential areas of Bretton. The construction of a footpath will make use of an existing disused access road owned by Nene Park Trust. In addition to the construction of a new footpath link, resurfacing on the existing shared use footpath and fence line will need to be replaced in this location.

The proposed reconstruction of the footpath between Thorpe Road bridge and Longthorpe will include resurfacing works and additional street lighting, will stretch a total distance of approximately 350m.

The proposed segregated on road cycle lane will span approximately 500m along Thorpe Wood, between the footbridge over the A1260 Nene Parkway in the south to the Thorpe Road Junction in the north. The cycle lane will be situated on the western side of Thorpe Wood road space and will require 4m of widening and the realignment of the carriageway eastward. The new LTN-120 compliant cycle lane will connect with the upgraded footbridge and a new controlled crossing points in both the north and south, increasing the accessibility of the business park.

The proposed zebra crossing to the south of Thorpe Wood will connect the new cycle lane to the upgraded footbridge over the A1260 Nene Parkway. The zebra crossing will be designed to function a shared use crossing point, enabling the opportunity to provide upgrades to the cycle infrastructure in this location as the city expands.

3. The Site and its environmental sensitivity

3.1 Air Quality

The site is not located within an Air Quality Management Area (AQMA). The closest AQMA to the proposed development is located approximately 6km east of the site boundary at Flag Fen.

There are no ecologically sensitive areas, such as nature conservation sites that could be negatively impacted by a change in local air quality.

Construction phase activities such as dust generation and plant vehicle emissions will be short term effects and will be suitably reduced through the implementation of best practice mitigation measures approved by the Institute of Air Quality Management. Guidance states that dust doesn't extend beyond a 200m limit from the site boundary, therefore, construction phase activities are considered to be limited to vehicle movements. Construction traffic will be managed in accordance with a Construction Environmental Management Plan (CEMP) to minimise impacts on the nearby AQMA and local air quality.

3.2 Archaeology and Cultural Heritage

An Archaeology and Cultural Heritage Desktop Study was undertaken for the proposed Junction 15 Improvement Scheme (PB2649-RHD-ZZ-XX-RP-Z-0001) by Royal Haskoning DHV (January 2020). The results have found three Scheduled Monuments, 23 Listed Buildings, two Registered Parks and Gardens and one Conservation Area within the 1km study area. A relatively large section of Ancient Woodland (Thorpe Wood) is also bisected by the Nene Parkway just south of Junction 15 (Appendix 3).

The nearest, and arguably most significant, designated heritage asset to the Junction is the Registered Park and Garden of Milton Hall (NHLE 1000628), the boundary of which is located directly adjacent to Junction 15's northern limits. This Registered Park and Garden is Grade II* Registered and includes 19th century flower gardens and pleasure grounds on the site of a 17th century formal garden. The hall and garden are surrounded by a parkland of early 18th century origins. Currently, the parkland is set back from the Junction behind a copse of woodland; the open designed parkland does not start until approximately 250m from Junction 15. As such, the masking nature of the woodland along with the distances involved would suggest that an alteration in setting caused by minor alterations to the junction would not affect the setting of the park in a way which may adversely alter its significance. No impact to the setting of heritage assets has been identified as a result of the proposed works at Junction 15.

Directly west to Longthorpe footbridge is a large Scheduled Monument (NHLE 1006834) known as Longthorpe Roman fort and settlement. The Scheduled area covers approximately 44 ha and is scheduled due to its archaeological interest. The remains lie under what is now a golf course and are partially covered by the Nene Parkway to the east.

The land has been heavily developed in the previous 50 to 100 years, with what was once agricultural farmland being developed on, from the early 20th century to the highway infrastructure, residential and commercial properties present today. These developments will have likely impacted upon any potential buried archaeological remains which could have been present in the area.

Overall, appraisal of the historic environment baseline has identified that the area has a high archaeological potential, due to the known buried archaeological remains nearby from the prehistoric period onwards. This potential is affected however by previous development within the area which could have partially or completely removed any potential buried archaeological remains. For example, construction of the Nene Parkway and the residential and commercial areas nearby will have likely impacted to a depth which could remove buried archaeological remains.

Further details about the archaeological and heritage assets can be found in the Archaeology and Cultural Heritage Desktop Study (PB2649-RHD-ZZ-XX-RP-Z-0001).

3.3 Ecology and Conservation

An Extended Phase 1 Habitat Survey of the site was undertaken on the 13th Jan 2020 and 23rd March 2021 by Claire Smith (a Chartered Ecologist and full member of the Chartered Institute of Ecology and Environmental Management (CIEEM)) for the proposed Junction 15 Improvement Scheme (PB2649-RHD-ZZ-XX-RP-Z-0001 & PB2649-RHD-ZZ-XX-RP-Z-0001). The survey aims to record the key habitat types at the site, assess the potential for these habitats to support protected or notable species, and determine key ecological constraints relating to the proposed development.

The UK legislation to protect wildlife and habitats, EU Directives (including Habitats Directive and Wild Birds Directive) and planning policies in relation to ecology and biodiversity were considered within the survey. The survey was based on a desktop study and a site walkover survey. This section includes a brief description of terrestrial ecology based on the survey, and a more detailed account can be found within that report.

Habitats

This survey broadly followed the 'Extended Phase 1' methodology as set out in Guidelines for Baseline Ecological Assessment (Institute of Environmental Assessment, 1995). The main habitats noted during the March 2021 survey include:

- Areas of hard standing associated with the existing A1260 carriageway;
- Areas of hard standing associated with the existing footbridge and associated footpaths;
- Areas of amenity grassland (A1260 verges);
- Areas of scattered scrub; and
- Areas of screen planting (trees) for the existing A1260 carriageway.

The proposed works associated with the Junction 15 Improvement Scheme are not located within a statutory or non-statutory site for nature conservation.

There are no statutory designated sites within 2km of the proposed works, however there are nine County Wildlife Sites (CWS) within 2km of the scheme. The closest of which is Thorpe Wood Ancient Woodland CWS, located approximately 40m at its closest point to the area where works will be undertaken. It is not envisaged the proposals will impact Thorpe Wood, and best practice construction management measures will ensure there will be no potential for impact.

Protected and Notable Species

The woodland habitat has negligible potential for badgers due to lack of suitable sett construction habitat to support badgers. However, two holes were noted outside of the working area, but no evidence was recorded during the survey as to whether these are in use by badgers or other animals such as rabbits. It is recommended that further monitoring is undertaken of these two

holes to confirm if they are being used by badgers (or other animals) through the installation of camera traps. Should these holes be confirmed to be in use by badgers, where possible all works associated with the construction of the new footbridge should be undertaken at least 30m from each hole entrance.

There is potential for basking and foraging reptiles due to presence of open areas of tall ruderals that are adjacent to denser areas of scrub and/or tree cover. However, there is limited opportunities for shelter and/or hibernating reptiles due to limited areas of suitable cracks/crevices for which species could use during hibernation period.

There are no buildings within the site that could provide potential roosting habitat for bats. The woodland has good connectivity with the wider landscape for bats, particularly to the east and west, and is likely to provide a corridor for foraging and commuting bats.

No trees assessed as suitable for roosting bats due to lack of suitable features (e.g. cracks/crevices) within the footprint of the proposed new footbridge. However, there are trees within the adjacent areas which were noted and assessed as providing low to moderate potential to support roosting bats. Bat surveys will be undertaken to confirm the presence or absence of any bat roosts within trees which will inform the application proposals. Bat surveys are currently being commissioned, the scope of which will be agreed with the consulting ecologist. If roosts are found, no tree work shall take place until a Natural England Licence is obtained and appropriate mitigation measures agreed with the Peterborough City Council.

Areas of vegetation (i.e. trees, scrub) provide suitable nesting habitat for common bird species. Loss of these habitats is unlikely to have a significant effect on the local bird populations. All vegetation clearance will be undertaken outside the bird nesting season (March to August inclusive). If works cannot be undertaken outside the bird nesting season, appropriate mitigation will be implemented.

No other protected species were identified within the ecology study area for the site.

Overall, based on the information obtained to date through the desk study and field surveys, the key ecological considerations are nesting birds and common reptile species, with the additional potential of roosting bats and badgers.

Invasive Species

No evidence of invasive species was noted during the 2021 ecological survey.

Trees

No trees on site are subject to Tree Preservation Orders.

Thorpe Wood, an area of Ancient and Semi-Natural Woodland is located approximately 40m at its closest point to the area where works will be undertaken. The area to the East is known as Bluebell Wood and is used for public access and recreation. The area of Thorpe Wood to the south that lies between Thorpe Wood Police Station and Nene Parkway is not easily accessible. No works will be undertaken in these areas and appropriate best practice mitigation measures with guidance from the Wildlife Trust will be implemented prior to any works commencing nearby.

Junction 15 of Nene Parkway is enclosed by man-made embankments and linear groups of screening trees. Long shelterbelts of mature trees serving a screening function are typical of the roadside landscape in Peterborough. Embankment planting species typically comprise of Ash, Hawthorn, Field Maple and Sycamore. The trees themselves are not intrinsically important as they are of varying quality and unremarkable species.

A tree survey was undertaken by Arboricultural Consultant, Andrew Belson on 7th May 2021. Subsequent arboricultural implications reports were produced for each of the footbridge design options. There are no Category A trees on the proposed site with the remainder comprising Category B, Category C and Category U trees. Tree quality and category using the BS5837:2012 tree grading classification system and the overall tree loss were the determining factors when selecting a footbridge design. Where possible, higher quality trees have been retained, and supplementary planting implemented throughout the site.

3.4 Landscape

The site is not located in an Area of Outstanding Natural Beauty (AONB) or any other area designated for its landscape value.

The site itself comprises areas of hard standing associated with the existing A1260 carriageway with a wooded area in the east and north of the site. In general, the highway components of the grade-separated roundabout interchange at Junction 15 of Nene Parkway are enclosed by man-made embankments and linear groups of screening trees. Long shelterbelts of mature trees serve as a screening function on the roadside landscape. Planting around Junction 15 typically comprises shelterbelts formed by mature and semi-mature mass planting of species.

Moderately sized embankments also provide enclosure, some attenuation of traffic noise, and a visual barrier for surrounding land users. Roadsides typically comprise a grass verge leading to the slope of an embankment with natural generation and vegetation across the top or on the bankside.

Longthorpe Bridge is a concrete footbridge that spans the Nene Parkway further South, emerging on either side from between mature planting either present as part of the bisected Thorpe Wood

or part of the landscaping of Nene Parkway. At either end of the footbridge, paths lead through wooded areas providing some relief from the intrusion of the main road.

Figure 3 - Photo showing mature trees on top of embankments, with young trees on the banksides. Screening is on both sides of the Nene Parkway looking North toward Junction 15.

Figure 4 - Grass verges along the Nene Parkway

Figure 5 & 6 - Photos of roadside from the footbridge showing a typical mix of indigenous embankment planting comprising Ash, Hawthorn, Field Maple, Sycamore

In general, the landscape at the scheme visually screens a busy highway and allows some enjoyment of the immediately surrounding land for recreation, commercial and residential use. The trees planted on either side of the highway offer visual attenuation and the raised earthworks provide a barrier between road traffic and the surrounding areas. Embankments and enclosing landcover provide some mitigation to the visual and audible intrusion posed by the traffic which is significant. Changes to these elements would likely have significant impact on residents. Earthworks and other structures are long-term features of the landscape which could nevertheless be replaced with substitutes that provide the same benefits and perhaps offer greater amenity value. There are opportunities for replacement planting of more suitable species of trees to maintain the screening effect; however, replacing mature trees for screening would take longer to establish.

3.5 Geology and Soils

The site is not designated as a Site of Special Scientific Interest (SSSI) in relation to geological or geomorphological features that are considered of national importance. The site is not designated a Regionally Important Geological Site (RIGS) that would be considered of regional or local importance.

A Desktop study and Ground Investigations have been undertaken on the proposed site. No records of registered radioactive substances, mining activities, natural activities or historic landfills were identified in the scheme area.

Contamination testing has been undertaken. The sampling strategy, analytical suites and quantity of testing undertaken was developed to evaluate environmental risks and meet regulatory requirements under waste regulation. Chemical tests were undertaken in accordance with Milestones Sampling Plan for Waste Classification and Assessment, and where excavations are proposed, sampling and testing was undertaken in December 2020. Representative samples of topsoil made ground and natural soils have been tested to assess the risk of soil contamination by substances that are toxic to humans or harmful to controlled waters. No evidence of significant contamination has been found in these samples to suggest that any of the materials tested cannot be re-used on the scheme.

It is concluded that no significant sources of contamination have been identified for the site conceptual model of the scheme. Best practice mitigation measures will be implemented during the construction process to identify, control, and remediate unexpected discoveries of contaminated material in line with best practice guidance.

3.6 Noise and Vibration

The potential noise impacts associated with the highways improvements at Soke Parkway (A47) Junction 15 and A1260 Nene Parkway have been assessed using the WebTAG Guidance (Unit A3.2 Noise Impacts, DfT, December 2015 as updated in August 2019). Noise WebTAG (PB2649-RHD-ZZ-XX-NT-Z-0001) undertaken by Royal Haskoning DHV (January 2020).

The proposed improvements are inclusive of limited widening works within the carriageway of the Junction 15 gyratory, the A47 westbound on-slip, the northbound carriageway of the A1260 between Junction 33 and Junction 15 and the A1260 northbound on-slip at Junction 33.

The main sources of noise at the site are likely to arise from road traffic. No vibration sources of importance have been identified at the Site and its surroundings. The study area was determined by identifying affected links within the network in accordance with the DMRB criteria and incorporated an area of up to 1km around the proposed works areas. Noise levels due to road traffic were calculated at properties within 600m of the principal routes identified as having significant changes in traffic/alignment due to the proposed scheme. This included a total of 553

properties. The quantification and appraisal of noise impacts was undertaken on 553 properties within the study area of the affected routes.

During the operational phase, it is not considered the proposed development will result in a significant long term change in the existing noise climate. Compliance with the relevant criteria will ensure impacts are avoided or appropriately mitigated. As such, it is not considered an EIA would be required on the basis of noise issues. Further details and a summary of the appraisal can be found in the Noise WebTAG (PB2649-RHD-ZZ-XX-NT-Z-0001).

3.7 Community

The land surrounding the site is a combination of residential properties, social infrastructure, commercial properties, and open space.

Thorpe Wood is located east of the development acts as a green space, having environmental and social importance for the local community.

It is noted that the next closest pedestrian and cyclist crossing points are located at Thorpe Road Bridge approximately 1km to the North. The surrounding area also offers cycle and walking routes, with the Thorpe Wood Trail and Nene Park Trust routes either side of the development, important recreational routes in Peterborough.

In line with the local plans, the combined authority has considered policies within their local plans highlighting the importance of improving walking and cycling opportunities, as part of a strategy to improve air quality, accessibility, and health of the local community.

3.8 Water Recourses and Flood Risk

The site lies entirely within Flood Zone 1 (the lowest area of flood risk as defined by the Environment Agency). The existing highway is drained by a series of gullies which discharge into two ditches to the west of the A1260.These ditches eventually discharge into EA Main River - River Nene. The Proposed works are not located within 10m of a watercourse controlled by the Environment Agency and drainage works do not propose alterations to drainage into a Main River, therefore a Flood Risk Activity Permit is not required. Consultation has been undertaken with the Environment Agency – the works do not pose a risk to flooding at a regional level and an EA Flood Risk Activity Permit is not required.

The site is not located within a groundwater Source Protection Zone (SPZ).

Road drainage eventually discharges into ditches and River Nene. These waterways are of good to moderate ecological value (Environment Agency, 2015), making them relatively commonplace and of medium importance in the local area. The scheme is not expected to result in a change in traffic composition or AADT, therefore pollutant loading is not expected to increase. Consequently, a no change impact is anticipated upon water quality.

4. Description of Likely Environmental Effects

4.1 Use of Natural Recourses

The construction of all development projects will inevitably generate demand for energy, materials, water and other natural resources. However, the use of these resources can be minimised through incorporating best practice methods and by maximising the amount of material sent for re-use or recycling. Given that these actions are standard practice to minimise resource use, there would be no significant impact on the use of natural resources such that an EIA would be required. Furthermore, a detailed carbon assessment has been complete at preliminary design to identify areas of high carbon intensity. This assessment will allow for carbon reduction measures, including the use of recycled aggregate and electric plant to reduce the carbon impact on the project.

4.2 Production of Waste

The Junction 15 Improvement Scheme has the potential to generate waste during the construction phase. Although, the design chosen for the development has avoided the potential for a large amount of waste to be produced onsite, due to major components being pre-manufactured off site, waste such as topsoil and concrete will arise from works. Plastic wrapping or wooden pallets are also common construction waste types.

A Site Waste Management Plan (SWMP) for the construction is being prepared to ensure an efficient use of resources, and to minimise waste through design. The SWMP will also outline good practice and management measures for the waste generated during construction, addressing opportunities for recycling and reuse. Measures will be taken to avoid any kind of contamination of surface water due to disposal of excavation soils and temporary storage near surface waters will be forbidden. The soil will be reused on site for reprofiling or removed from the site to a suitable waste treatment facility.

In view of the above, construction is unlikely to give rise to significant impacts related to waste and would not necessitate an EIA to evaluate waste impacts.

4.3 Pollution

The potential for contaminated land has been discussed previously in this report.

4.4 Air Quality

The site is not located within an Air Quality Management Area (AQMA). Based on the existing traffic movements associated with the site it is not considered the proposals will significantly impact air quality in the local area.

Operational

The proposed work will involve the widening of the roundabout and increasing the northbound section of the A1260 from two lanes to three lanes. Properties within the search area 70m east of A1260(N) are not expected to be negatively impacted since the approach is to be widened on the western side of the carriageway, consequently moving traffic away from receptors. A no change impact is therefore expected.

The proposed change in speed limit on the A1260, Junction 15 north approach from 70mph to 60mph will lead to a permanent reduction in speed and the alleviation of peak hour congestion on completion of this scheme, therefore no impacts are anticipated. The scheme is not anticipated to result in a long-term increase in NO_2 or NO_x within 200m of the site.

Operation of the footbridge will not result in any adverse effects on air quality, and a beneficial effect is expected as it will avoid people having to make much longer trips by vehicle. In addition, there is potentially a beneficial effect on local air quality, as well as tackling climate change, through improving cycling and walking opportunities in line with local polices.

Construction

The construction phase has the potential to give rise to air quality effects due to dust emissions and associated nuisance generated by the works, construction plant and machinery and additional emissions to the atmosphere from the construction traffic.

Construction works on site have been reduced through the design, as most of the components of the bridge will be premanufactured, to limit disruption during installation. Major works that can generate dust emission, for example excavations, are also very limited in the area. Regarding air emissions arising from construction traffic, the temporary increase in traffic associated with the construction is not envisaged to be significant.

The demolition of the existing footbridge may give rise to similar effects as the construction phase, however the significance of these effects are also considered not to be significant, and mitigation measures can be also be applied to avoid any adverse significant effects related to dust emissions and nuisance.

Mitigation measures included within the CEMP, as outlined in Section 5, will ensure that no significant effects on local air quality, climate change or nuisance are likely to give rise from the construction of the Junction 15 Improvement Scheme. These processes are standard site best practice measures, and an EIA would not be required to specify them. As such, an EIA will not be required to evaluate the air quality impacts associated with the proposed development.

4.5 Archaeology and Cultural Heritage

The Archaeology and Cultural Heritage Desktop Study (PB2649-RHD-ZZ-XX-RP-Z-0001) includes a high-level assessment of potential impacts and effects of the proposed development on relevant heritage assets identified. In general, a development can impact on the significance of heritage assets indirectly (principally through changes to their settings) or directly (through physical changes to the asset itself).

The Heritage Assessment identifies that the closest designated asset to Junction 15 is the II* Registered Park and Garden associated with Milton Hall and its associated buildings, but also notes the existing screening from vegetation. This, in combination with the nature of the proposed works, means that the works would be unlikely to involve a significant change to the setting of the park, and hence would have limited impact on its significance.

The appraisal of the historic environment baseline has identified that the area has a high archaeological potential, due to the known buried archaeological remains nearby from the prehistoric period onwards. This potential is affected however by previous development within the area which could have partially or completely removed any potential buried archaeological remains. For example, construction of the Nene Parkway and the residential and commercial areas nearby will have likely impacted to a depth which could remove buried archaeological remains.

The potential impact which has been identified by the proposed Junction 15 Improvement Scheme would be a direct, physical, impact to buried archaeological remains, if present. This potential impact would occur as a result of the new infrastructure (i.e. a new lane and associated works).

Consultation has been undertaken with Historic England and Peterborough City Councils Principal Archaeologist, Dr Rebecca Casa Hatton to determine the likely impact of the scheme upon the below-ground archaeological remains (Appendix F & G). It has been agreed that given the history of land use and the anticipated degree of disturbance, the works are unlikely to give rise to significant environmental effects when considered under the EIA Regulations. The potential impact by the proposed scheme would be a direct, physical impact to non-designated buried archaeological remains, if present in undisturbed pockets of land. This potential impact has already been assessed in a Heritage Appraisal and may be mitigated through the

implementation of an archaeological programme of work to be secured by condition (e.g., watching brief of all new ground disturbance).

Further, the presence of the Scheduled Monument (Longthorpe Roman fort and settlement - 1006834) nearby to the footbridge is unlikely to give rise to significant environmental effects when considered under the EIA Regulation. No direct physical impact to the Scheduled Monument has been identified as the result of the proposed works. The potential impact by the proposed footbridge works would be a direct, physical impact to non-designated buried archaeological remains, if present. This potential impact may be mitigated through the implementation of an archaeological programme of work (strip-map-record of the area of impact) in advance of construction.

Overall, It has been agreed that an archaeological evaluation would not be required for the area of the scheme surrounding the footbridge due to the construction methodology. Instead, a strip, map and record would be undertaken sufficiently in advance of construction to enable appropriate recording and sampling of any archaeological features and/or deposits encountered.

No impact to the setting of heritage assets has been identified as a result of the proposed works.

4.6 Ecology and Conservation

Designated Sites

As described in Section 3.3 there are no statutory designated sites within 2km of the proposed works, however there are nine County Wildlife Sites (CWS) within 2km of Junction 15. The closest of which is Thorpe Wood Ancient Woodland CWS, located approximately 40m at its closest point to the area where works will be undertaken. Based on the scope of works for the footbridge and distance from the site, it is unlikely the scheme would cause any significant adverse effect on this designation.

No other designated sites are likely to have significant adverse effects during construction or operation.

Natural England have not objected to the proposed works (Appendix E).

Protected and Notable Species

As described in the survey report, trees surrounding the site are likely to support breeding birds. To avoid adverse effects on breeding birds any clearance works affecting trees should be completed outside of the bird breeding season (March-September). Nevertheless, if this is not possible then the works will require an ecological brief to ensure that trees and vegetation are clear of nests. Further mitigation should be included within the CEMP.

No trees assessed as suitable for roosting bats due to lack of suitable features (e.g. cracks/crevices) within the footprint of the proposed new footbridge. However, there are trees within the adjacent areas which were noted and assessed as providing low to moderate potential

to support roosting bats. Bat surveys will be undertaken to confirm the presence or absence of any bat roosts within trees which will inform the application proposals. This will ensure that suitable mitigation measures will be proposed and applied and that no significant adverse effects on bats could be likely due to the construction of the footbridge. In addition, to ensure that bats continue to use the commuting and foraging features being retained, the ecologist has strongly recommended that any lighting used during construction is kept to an absolute minimum and is carefully designed to prevent light spilling onto features including tree lines. During operation the lighting used on the bridge should be carefully designed to ensure that light will not cause adverse effects on birds or bats. Once this measure is in place, no significant effects are likely to occur due to the operation.

Evidence to two holes were noted at the time of the survey with large, excavated spoil piles observed at their entrances but no evidence was recorded as to whether these are in use by badgers or other animals such as rabbits. It is understood that these are outside the proposed working area; however, it is recommended that further monitoring is undertaken of these two holes to confirm if they are being used by badgers (or other animals) through the installation of camera traps. Should these holes be confirmed to be in use by badgers, where possible all works associated with the construction of the new footbridge should be undertaken at least 30m from each hole entrance. If this is not possible, and works are required to be within this 30m buffer area, a badger mitigation licence (for disturbance or destruction) from Natural England would be required. If such a licence is required, works would be programmed to ensure they are undertaken and completed within the licensing period (between 1st July and 30th November). Once this measure is in place, no significant effects are likely to occur due to the operation.

The habitats and fauna are understood, and appropriate best practice mitigation measures will be implemented prior to any works commencing on site. Therefore, it is it is considered unlikely that there will be significant effects on legally protected habitats or species and an EIA would not be required to evaluate the potential effects on ecological receptors.

Trees

Trees will be removed to allow for the demolition of the existing footbridge and construction of the new footbridge. An Arboricultural Survey Report (4276.J15FootbridgeOPT1.RHDHV. PrelimAIA) has been completed for the proposed footbridge, to inform the design and outline recommendations to protect and retain trees as much as possible.

Approximately 53 trees are to be lost to accommodate the footbridge development. While the selected design sees a loss of 53 trees, in comparison the other footbridge design options, fewer ‘Category B’ trees are lost, and a higher quality stock of trees are retrained. Work avoids working in valuable habitat that connects nearby ancient woodland.

Impact will be minimised through careful planning informed by input from an Arboricultural Impact Assessment (AIA), an appropriately worded Arboricultural Method Statement and the on-site involvement of an Arboricultural Clerk of Works. Tree removal plans have been reviewed by the Peterborough City Council Natural & Historic Environment Manager.

Overall, it is recognised there are a large number of trees located within the site's eastern and western extent. Where possible, these will be retained, and appropriate mitigation measures implemented. Where trees are to be removed, no significant adverse effects are likely to occur. In addition, a Biodiversity Net Gain Report will be produced in line with Local Plans, and any impact due to tree removal will be compensated through tree replacement. It is not considered an EIA would be required to evaluate the potential effects on trees within the site boundary.

4.7 Landscape

Construction

Removal of trees due to construction works for the footbridge have the potential to give rise to visual impacts. An Arboricultural Survey Report (4276.J15FootbridgeOPT1.RHDHV. PrelimAIA) has been completed for the proposed footbridge design, in order to inform the design and outline recommendations to protect and retain as many trees as possible. It was identified that some require removal at the eastern and western end of the bridge, however, the visual effect of this is unlikely to be significant.

In addition, the implementation of a Landscaping Design, where new tree planting will be proposed, can mitigate adverse effects and potentially produce enhancements. The physical presence of construction works will give rise to the visual appearance of construction plant and machinery, movement of heavy vehicles used for the works, and other activities associated with the works. However, any landscape and visual effects associated with the works are anticipated to be limited, localised, and temporary. This effect can be mitigated by screening the site with hoarding.

On completion of construction a Landscape Design should also be implemented to ensure that all areas affected will be reinstated. The landscape design should also address ecological recommendations and opportunities for biodiversity enhancement and net gain and improvement in line with local plans.

From the above, it is considered that once proposed mitigation are in place no significant effects are likely to arise due to construction.

Operation

The proposed scheme would not alter the essential landscape character of the Site once completed. The enclosed character of the highway would remain as the majority of the flanking vegetation would be retained. It is recommended that mitigation in the form of replanting is essential alongside the carriageway following widening and would ensure that the existing landscape character is maintained.

The proposed development would reflect the design and materials of surrounding land uses and retain a woodland buffer to the east and west. Due to the lack of sensitive receptors and surrounding land uses it is not considered an EIA would be required to evaluate the potential effects on landscape character or views.

4.8 Geology and Soils

The potential for contaminated land has been discussed previously in this report.

The magnitude of impacts identified during the construction phase, relating to potentially contaminative soils and spillages of fuels from construction plant are considered slight adverse, respectively. Potentially contaminated soils have development implications which may include transport and disposal costs, regulatory implications, re-use of site won materials, importation of clean soils, planning restrictions and onerous construction procedures.

The significance of all construction phase risks are reduced to neutral by the adoption of good working practices and implementation of the CEMP. Special precautions over and above this are not considered necessary for this proposed development.

As noted in Section 3.5, the site is not designated for any geological interest or importance and does not yield any significant geological resource.

Residual significance following mitigation for construction phase risks is defined as neutral (i.e. neither adverse nor beneficial).

4.9 Noise and Vibration

Construction

During construction, works have the potential to cause ‘disruption due to construction’ resulting from the demolition of the existing footbridge, piling, the use of heavy plant and other noisy activities on site.

Sensitive receptors have been identified near the Site. Residential receptors are located on to the east of the existing Thorpe Wood Footbridge. A Construction Noise Assessment will be produced in accordance with BS 5228 -1:2009 ‘Code of practice for noise and vibration control on construction and open sites – Part: Noise’. The assessment will detail best practice noise mitigation and management measures that will be employed during the construction phase to minimise impacts on nearby noise sensitive receptors such as residential properties to the east. This will include details of Best Practicable Means (BPM) control measures, proposed monitoring and surveys and the communication strategy for the works.

It is unlikely that total noise (pre-construction ambient noise plus construction noise) will exceed the pre-construction ambient noise by 5dB or more. Therefore, in accordance with BS 5228, noise levels generated by construction activities are not expected to be significant. No adverse significant effects are likely due to the operation of the parkway or footbridge.

Operation

The potential noise impacts associated with the highway's improvements at the A47, Junction 15 and A1260 Nene Parkway have been assessed using the WebTAG Guidance (Unit A3.2 Noise Impacts, DfT, August 2019) by Royal HaskoningDHV (PB2649-RHD-ZZ-XX-NT-Z-0001).

The new alignment is predicted to cause no perceptible change in noise level at any property within 600m. In addition, all changes in the locations are expected to be negligible. No further assessments are required.

Once operational, noise associated with the proposed development is not considered to alter the existing noise climate surrounding the site. The proposals would not result in an impact on the existing noise climate. As such, an EIA would not be required to evaluate the noise impacts of the proposals.

4.10 Community

The construction phase could affect members of the community using footpaths for recreational purposes and highways due to route diversions. This impact is temporary, as it is limited to the time of construction works. Suitable measures related to route diversion and communication with local community will be included within the CEMP.

Users of the car park on Thorpe Road including the nearby golf course and pub could also expect to experience nuisance due to route diversions and car park closure caused by the works. Nevertheless, it is considered that these effects can be mitigated through suitable traffic management and communication measures within the CEMP.

Taking into account all of the above, and with mitigation in place (refer to Section 5), no significant adverse effects upon the local community during the construction phase are likely to occur and have been assessed as slight adverse.

The expected increase in population over the next few years means that even more pedestrians and cyclists could be wanting to cross A1260 at this location. The proposed new footbridge is aligned with the local plan policies encouraging cycling and walking opportunities as ways to benefit the health and wellbeing of the community.

4.11 Water Recourses and Flood Risk

Measures to control surface water and drainage will be dealt with by commonplace design and mitigation measures, and further consultation will be undertaken with the EA and Peterborough City Council Drainage department at the detailed design stage to confirm the proposed drainage strategy. It is not considered the proposals would result in a significant impact in drainage or flood risk terms such that an EIA would be required to evaluate any potential impacts.

As is the case for most construction works taking place near the water environment, there is the potential for accidental spillages or leakages of substances (e.g. Fuels, oils, etc.) to occur from machinery, which has the potential to contaminate water through direct input or via runoff. To minimise the risk of spillage or leakages from occurring, best practice techniques within the CEMP will be implemented throughout all construction and decommissioning activities. Once these measures are in place, significant effects on water quality due to construction are unlikely.

5. Recommendations

5.1 Construction Phase

A Construction Environment Management Plan (CEMP) will be produced setting a framework to control potential impacts arising from the construction of the Junction 15 Improvement Scheme and to ensure that no significant adverse effects on the environment will arise during this phase. The CEMP will include best practice environment management control during the works and measures to reduce noise, dust emissions, light emissions, and avoid the risk of contaminated run-off and risk of potential water contamination due to accidental spills and leakages.

Specific measures for some environmental factors have been included in the sections below and will be incorporated within the associated works and CEMP.

Community

Prior notice of the works should be given to the local community, including any groups who use the Thorpe Wood as a recreational resource, for example, walkers.

The construction programme for the footbridge should avoid spring /summer months, where possible, and if any event could be affected, it should be discussed with interested parties and relevant authorities. It will be ensured that any diversion routes and closures are advertised in advance of the works and are clearly signposted in accordance with Peterborough City Council requirements.

Surface Water and Flooding

The following measures will be implemented:

- Drainage strategy for the Junction 15 Improvement Scheme
- The CEMP will include surface water drainage management measures and pollution prevention measures.

Ecology

Protected species surveys are required (as recommended within the PEA):

- Badgers
- Roosting bats surveys will be undertaken prior to the works (Details can be found within the PEA report).

The CEMP will be produced to ensure considerations regarding protected species, habitats and wildlife conservation are taken into account during construction works to minimise impacts. In addition, specific mitigation measures have been outlined in the PEA for bats, breeding birds and priority habitats. These measures must be considered and included within the CEMP. This includes the following:

- Mitigation related to breeding birds;
- Root protection of trees, where identified by the Arboricultural Method Statement (BS 5837);
- Methods that avoid noise and vibration;
- Limit additional lighting and night-time working where possible. Where lighting is required for night working, light spill should be kept to a minimum; and
- Specific methods to avoid the spread of invasive species.

In order to prevent significant pollution events and resulting adverse effects to aquatic receptors, the CEMP should also incorporate working precautions and procedures in accordance with published Guidance on Pollution Prevention.

Ecological Enhancement and Biodiversity Net Gain

In line with National Planning Policy Framework (2019) and Peterborough City Councils Biodiversity Action Plan a Biodiversity Net Gain report will be produced in order to inform and further enhance the ecological value of the Site as compensation for the local communities affected. Further ecological enhancement could include:

- Habitat restoration as recommend by Peterborough City Council
- Incorporating wildflower planting alongside the footpaths and highways into a Landscape Scheme to enhance the Site for pollinating insects such as bumble bees and butterflies; and
- Tree planting for mitigation; and
- Exposure of locally recognised rock face in partnership with Peterborough City Council and Natural England.

Archaeology and Heritage

As per request of Peterborough City Council Archaeologist, strip, map and record should be undertaken sufficiently in advance of construction to enable appropriate recording and sampling of any archaeological features and/or deposits encountered. This will include a Written Scheme of Investigation (WSI) by the appointed archaeological contractor for the intrusive archaeological mitigation. An Archaeological contractor is be appointed.

Landscape

A Landscaping Design Strategy should be adopted and should consider the different stages of the proposed scheme (construction and operation). This Landscaping Design Strategy will ensure that any visual effect caused by the Junction 15 Improvement Scheme will be minimised.

In addition, the CEMP will set out measures and good practices with the aim of reducing landscape and visual effects. These will include, but are not limited to:

- Tree protection measures and site clearance measures, as defined by the Arboricultural Method Statement;
- The orderly segregation of particular construction site activities, for example, the clear delineation of construction site offices and staff facilities, material storage areas, plant and machinery storage areas.

Air Quality and Climate Change

Dust emissions and carbon emissions will be managed by standard construction environmental management measures. These will include but are not limited to:

- Adherence to reasonable construction site working hours which will avoid early mornings, night-time and weekend working (unless required for lane closures);
- Damping down of dusty surfaces and processes where dust may be generated;
- Appropriate covering of potentially dust generating stockpiled materials on the construction site;
- Avoiding the occurrence of dust generating activities during dry and windy weather conditions;
- Dust monitoring to assess the effectiveness of dust management controls and to indicate if any when additional measures may be required; and
- Use of modern, low emission plant and machinery, and implementing a no idling policy for plant and machinery when not in use.

Noise and Vibration

Standard construction management measures related to noise will be detailed in the CEMP and will include the following, but are not limited to:

- Adherence to reasonable construction site working hours which will avoid early mornings, night-time and weekend working (unless required for lane closures);
- The use of construction techniques known to reduce the incidence of noise and vibration;
- The use of modern, low noise emission plant and machinery;
- Switching off plant and machinery when not in use; and
- Noise and vibration monitoring to assess the effectiveness of the management controls and to indicate if any when additional measures may be required.

5.2 Operation Phase

The lighting strategy of the Junction 15 development will ensure the following:

- Minimal risk of disturbance to bats; and
- Incorporation of the best practices in relation to safety and security of users.

The implementation and management of a landscape design strategy (including planting and Biodiversity Net Gain) will continue during this stage to recover the areas affected by construction.

6. Conclusions

This report provides a description of the proposed Junction 15 Improvement Scheme and potential for likely significant effects on the environment in line with the requirements of EIA Regulations.

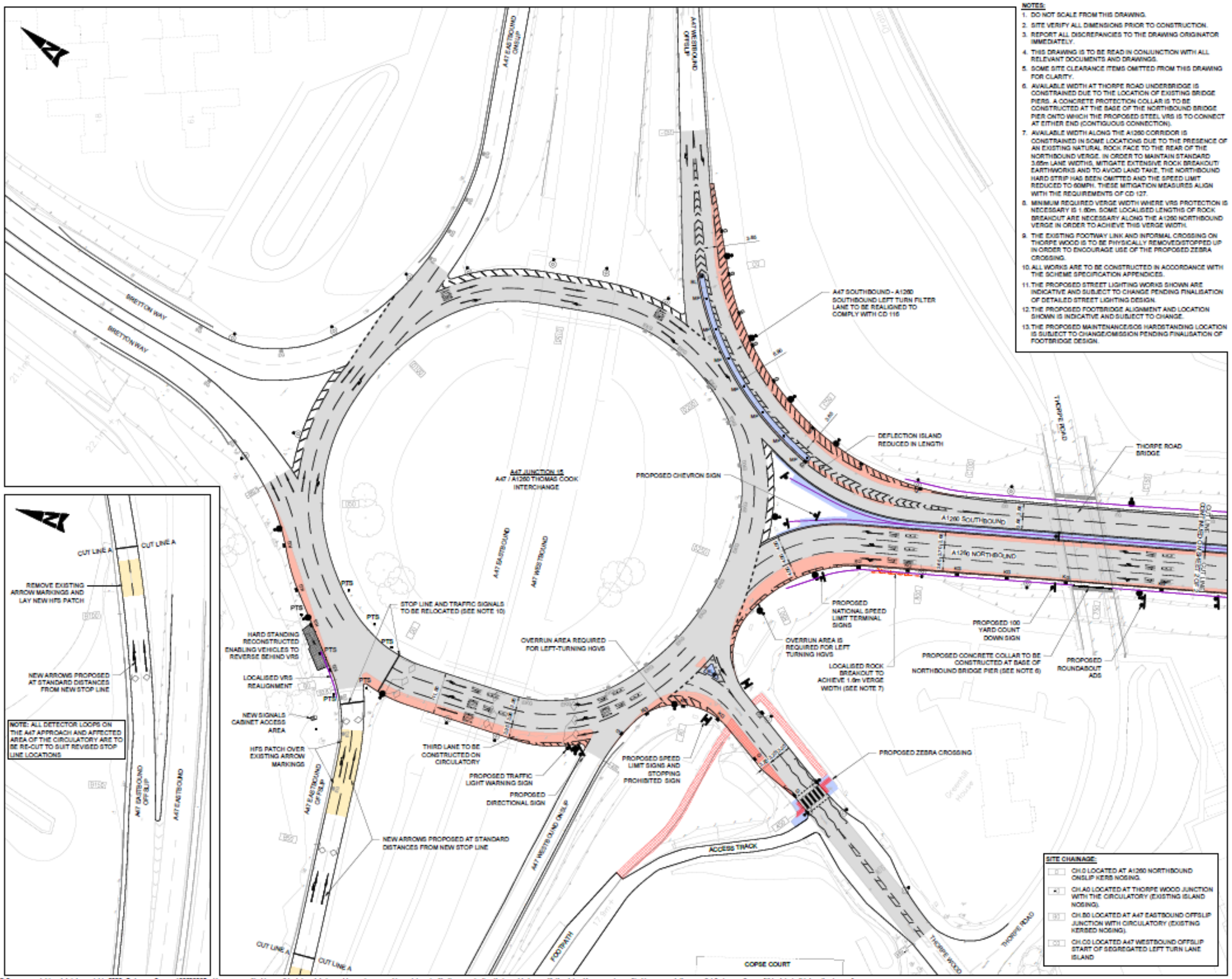
The Junction 15 Improvement Scheme will benefit the local community of Peterborough, as it will provide safe and suitable access to the thousands of motorists, pedestrians and cyclists that travel every day.

The proposed Junction 15 Improvement Scheme is considered to have a light design and modest scale, comparable to the existing infrastructure. The screening assessment has identified that significant effects on the environment are not considered likely either alone or in combination with other development. The proposals would be small scale and effects could be managed in accordance with standard methods. The proposed development is therefore not considered to be formal EIA development as defined by the EIA Regulations. Most of the likely effects will be temporary and reversible, and once the replacement footbridge is built there will be opportunities for improvements to be made regarding landscape (including biodiversity enhancements).

7. Appendix A

Site Boundary and General Arrangement Plan

MILESTONE
INFRASTRUCTURE
A part of MGroupServices



NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. SITE VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. REPORT ALL DISCREPANCIES TO THE DRAWING ORIGINATOR IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTS AND DRAWINGS.
5. SOME SITE CLEARANCE ITEMS OMITTED FROM THIS DRAWING FOR CLARITY.
6. AVAILABLE WIDTH AT THORPE ROAD UNDERBRIDGE IS CONSTRAINED DUE TO THE LOCATION OF EXISTING BRIDGE PIERS. A CONCRETE PROTECTION COLLAR IS TO BE CONSTRUCTED AT THE BASE OF THE NORTHBOUND BRIDGE PIER ONTO WHICH THE PROPOSED STEEL VRS IS TO CONNECT AT EITHER END (CONTIGUOUS CONNECTION).
7. AVAILABLE WIDTH ALONG THE A1260 CORRIDOR IS CONSTRAINED IN SOME LOCATIONS DUE TO THE PRESENCE OF AN EXISTING NATURAL ROCK FACE TO THE REAR OF THE NORTHBOUND VERGE. IN ORDER TO MAINTAIN STANDARD 3.65m LANE WIDTHS, MITIGATE EXTENSIVE ROCK BREAKOUT/ EARTHWORKS AND TO AVOID LAND TAKE, THE NORTHBOUND HARD STRIP HAS BEEN OMITTED AND THE SPEED LIMIT REDUCED TO 60MPH. THESE MITIGATION MEASURES ALIGN WITH THE REQUIREMENTS OF CD 127.
8. MINIMUM REQUIRED VERGE WIDTH WHERE VRS PROTECTION IS NECESSARY IS 1.60m. SOME LOCALISED LENGTHS OF ROCK BREAKOUT ARE NECESSARY ALONG THE A1260 NORTHBOUND VERGE IN ORDER TO ACHIEVE THIS VERGE WIDTH.
9. THE EXISTING FOOTWAY LINK AND INFORMAL CROSSING ON THORPE WOOD IS TO BE PHYSICALLY REMOVED/STOPPED UP IN ORDER TO ENCOURAGE USE OF THE PROPOSED ZEBRA CROSSING.
10. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE SCHEME SPECIFICATION APPENDICES.
11. THE PROPOSED STREET LIGHTING WORKS SHOWN ARE INDICATIVE AND SUBJECT TO CHANGE PENDING FINALISATION OF DETAILED STREET LIGHTING DESIGN.
12. THE PROPOSED FOOTBRIDGE ALIGNMENT AND LOCATION SHOWN IS INDICATIVE AND SUBJECT TO CHANGE.
13. THE PROPOSED MAINTENANCE/SOS HARDSTANDING LOCATION IS SUBJECT TO CHANGE/OMISSION PENDING FINALISATION OF FOOTBRIDGE DESIGN.

KEY:

- PROPOSED FULL DEPTH CARRIAGEWAY WIDENING / CONSTRUCTION / KERBED ISLAND REMOVAL
- PROPOSED CARRIAGEWAY RESURFACING / RE-PROFILING
- PROPOSED HIGH FRICTION SURFACING (HFS) PATCH
- PROPOSED FULL DEPTH FOOTWAY / CENTRAL RESERVE / KERBED ISLAND CONSTRUCTION
- EXISTING FOOTWAY TO BE REMOVED
- PROPOSED TACTILE PAVING
- PROPOSED VRS
- BACK OF EXISTING VERGE / TOE OF EMBANKMENT
- PROPOSED NATURAL ROCK LAYER BREAKOUT
- EXISTING GULLY
- PROPOSED GULLY
- EXISTING KERB GULLY
- PROPOSED KERB GULLY
- PROPOSED ROAD SIGN
- PROPOSED MARKER POST
- PROPOSED TRAFFIC SIGNAL POLE
- PROPOSED TRAFFIC SIGNAL LOOPS
- PROPOSED REFLECTIVE TRAFFIC BOLLARD
- EXISTING LIGHTING COLUMN TO REMAIN (SEE NOTE 11)
- PROPOSED LIGHTING COLUMN TO REPLACE EXISTING (SEE NOTE 11)
- PROPOSED BELISHA BEACON (SEE NOTE 11)

SITE CHAINAGE:

- CH.0 LOCATED AT A1260 NORTHBOUND ONSLIP KERB NOSING.
- CH.A0 LOCATED AT THORPE WOOD JUNCTION WITH THE CIRCULATORY (EXISTING ISLAND NOSING).
- CH.B0 LOCATED AT A47 EASTBOUND OFFSLIP JUNCTION WITH CIRCULATORY (EXISTING KERBED NOSING).
- CH.C0 LOCATED A47 WESTBOUND OFFSLIP START OF SEGREGATED LEFT TURN LANE ISLAND

Rev	Date	Description	Dwn	Chkd	App
C01	19/03/2021	FOR STAGE 2 RSA	MH	JS	SPW
P1	03/03/2020	AMENDMENTS TO SIGNS	JS	SPW	-
P0	25/02/2020	FIRST ISSUE	-	-	-

Revisions

Drawing Originator

Peterborough Highway Services

Delivered by SKANSKA

Drawing Status

FOR CONSTRUCTION

Project Name

JUNCTION 15 NENE PARKWAY

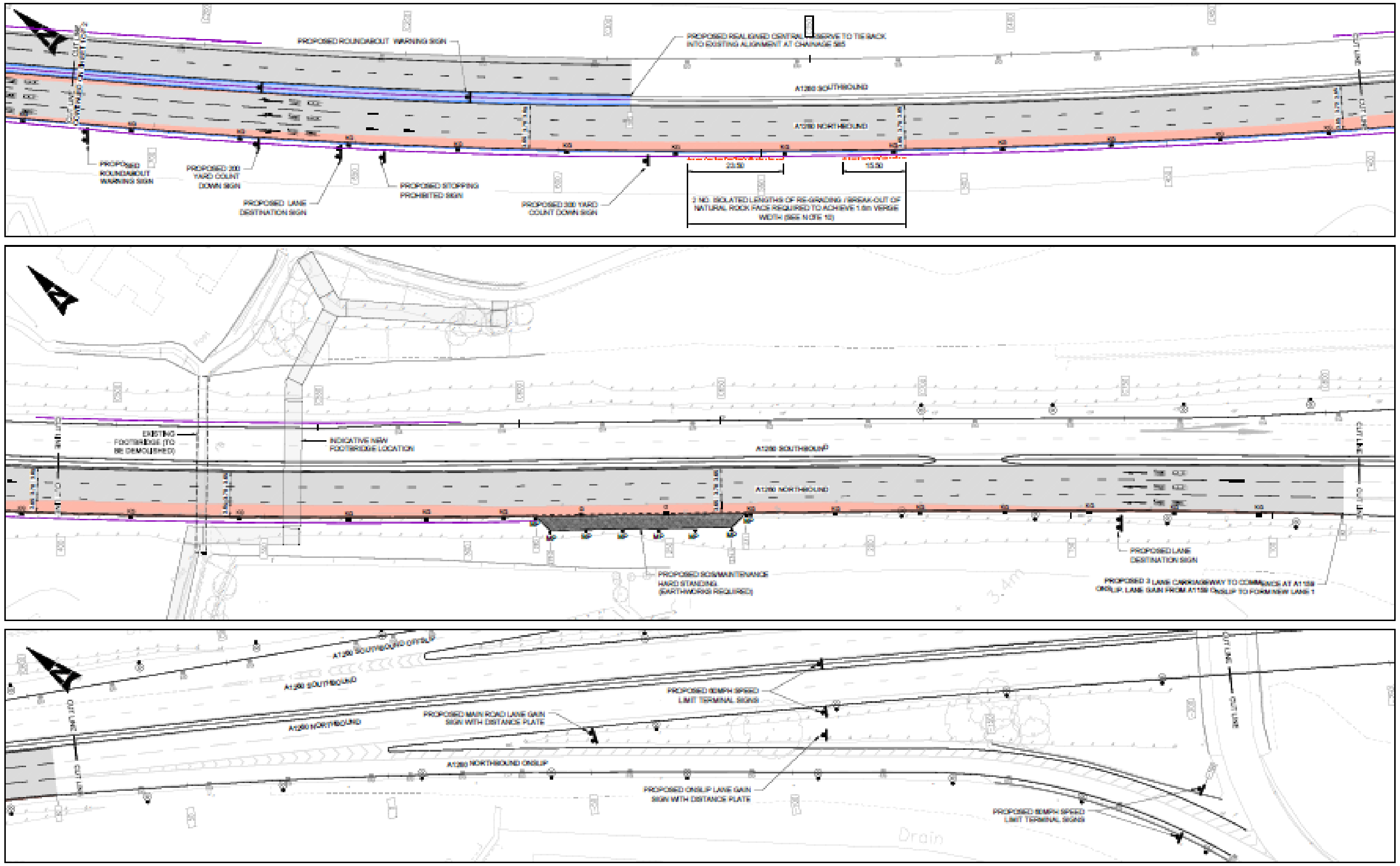
Title

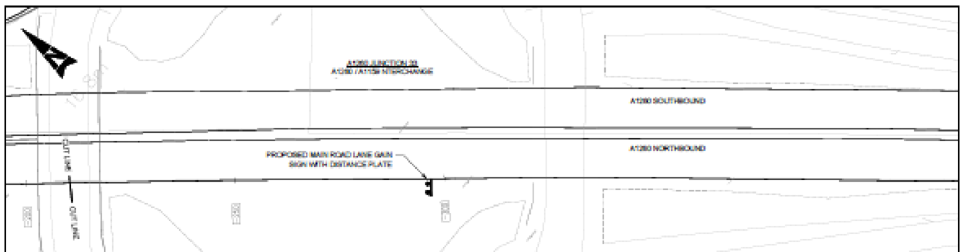
GENERAL ARRANGEMENT
SHEET 1 OF 2

Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	1:500	D&G	JS	SPW
		Drawn Date 24/02/2020	Checked Date 24/02/2020	Approved Date 24/02/2020

Drawing Number	Status	Rev
5080751-SKA-HGN-DR-CH-0003	S4	C01

MILESTONE INFRASTRUCTURE





KEY:

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- CH.C0 LOCATED A47 WESTBOUND OFFSLIP START OF SEGREGATED LEFT TURN LANE ISLAND

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. SITE VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. REPORT ALL DISCREPANCIES TO THE DRAWING ORIGINATOR IMMEDIATELY.
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Rev	Date	Description	Drn	Chk'd	App
C01	[illegible]	FOR STAGE 2 RSA	MH	JS	SPW
P1	[illegible]	AMENDMENTS TO SIGNS	JS	SPW	-
P0	[illegible]	FIRST ISSUE	-	-	-

Peterborough Highway Services

SKANSKA

Drawing Status: FOR CONSTRUCTION

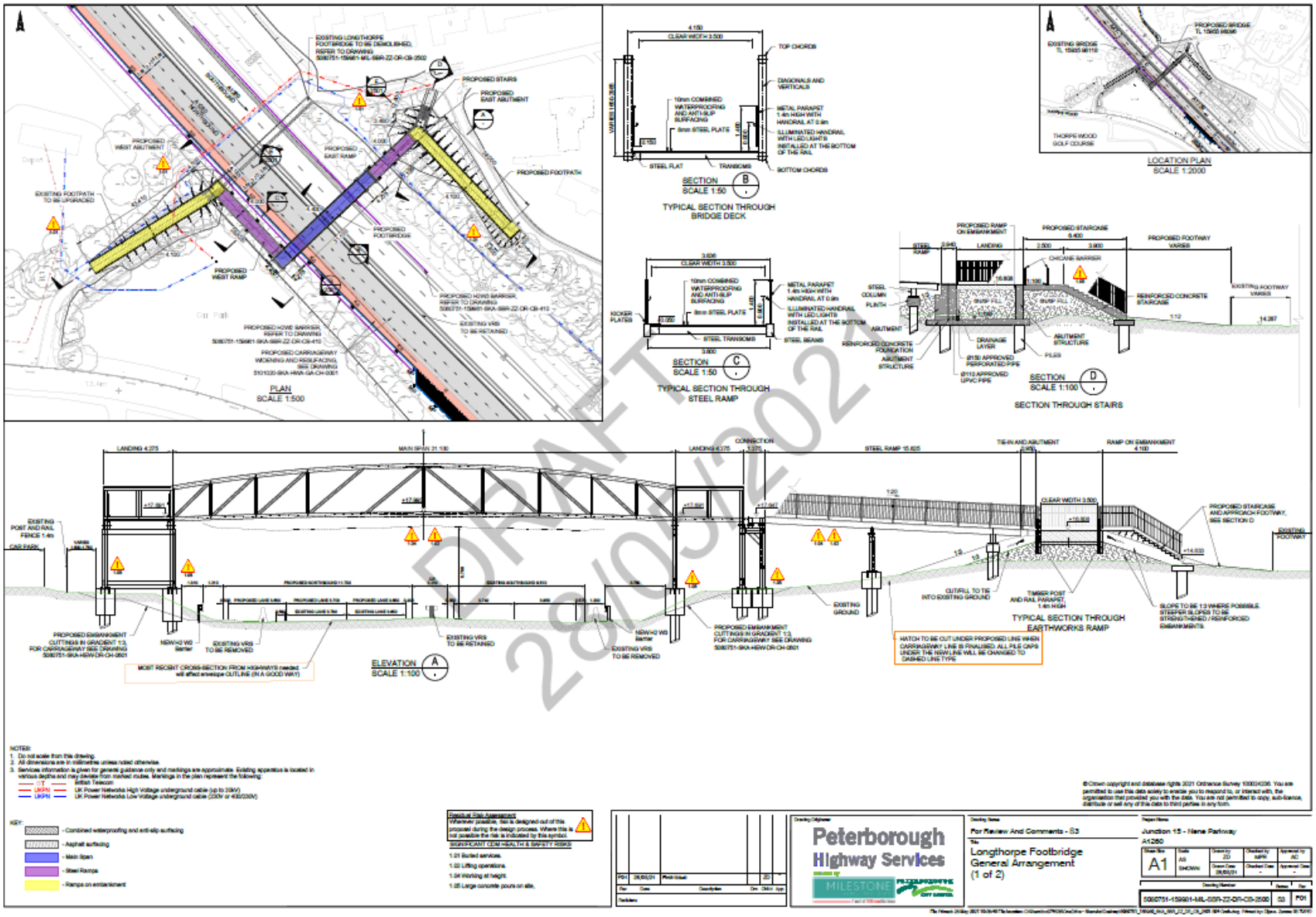
Project Name: JUNCTION 15 NENE PARKWAY

Title: GENERAL ARRANGEMENT SHEET 2 OF 2

Sheet Size	Scale	Drawn by	Checked by	Approved by
A1	1:500	DAG	JS	SPW

Drawing Number	Status	Rev
5060751-SKA-HGN-DR-CH-0004	S4	C01

MILESTONE
INFRASTRUCTURE
A part of MGroup Services



NOTES:
1. Do not scale from this drawing.
2. All dimensions are in millimetres unless noted otherwise.
3. Services information is given for general guidance only and markings are approximate. Existing apparatus is located in various depths and may deviate from marked routes. Markings in the plan represent the following:
   - BT — British Telecom
   - UKPN — UK Power Networks High Voltage underground cable (up to 33kV)
   - UKPN — UK Power Networks Low Voltage underground cable (230V or 400/230V)

KEY:
- Combined waterproofing and anti-slip surfacing
- Asphalt surfacing
- Main Span
- Steel Ramps
- Ramps on embankment

Peterborough Highway Services
MILESTONE INFRASTRUCTURE

For Review And Comments - S3

Longthorpe Footbridge
General Arrangement
(1 of 2)

Junction 15 - Nene Parkway
A1260

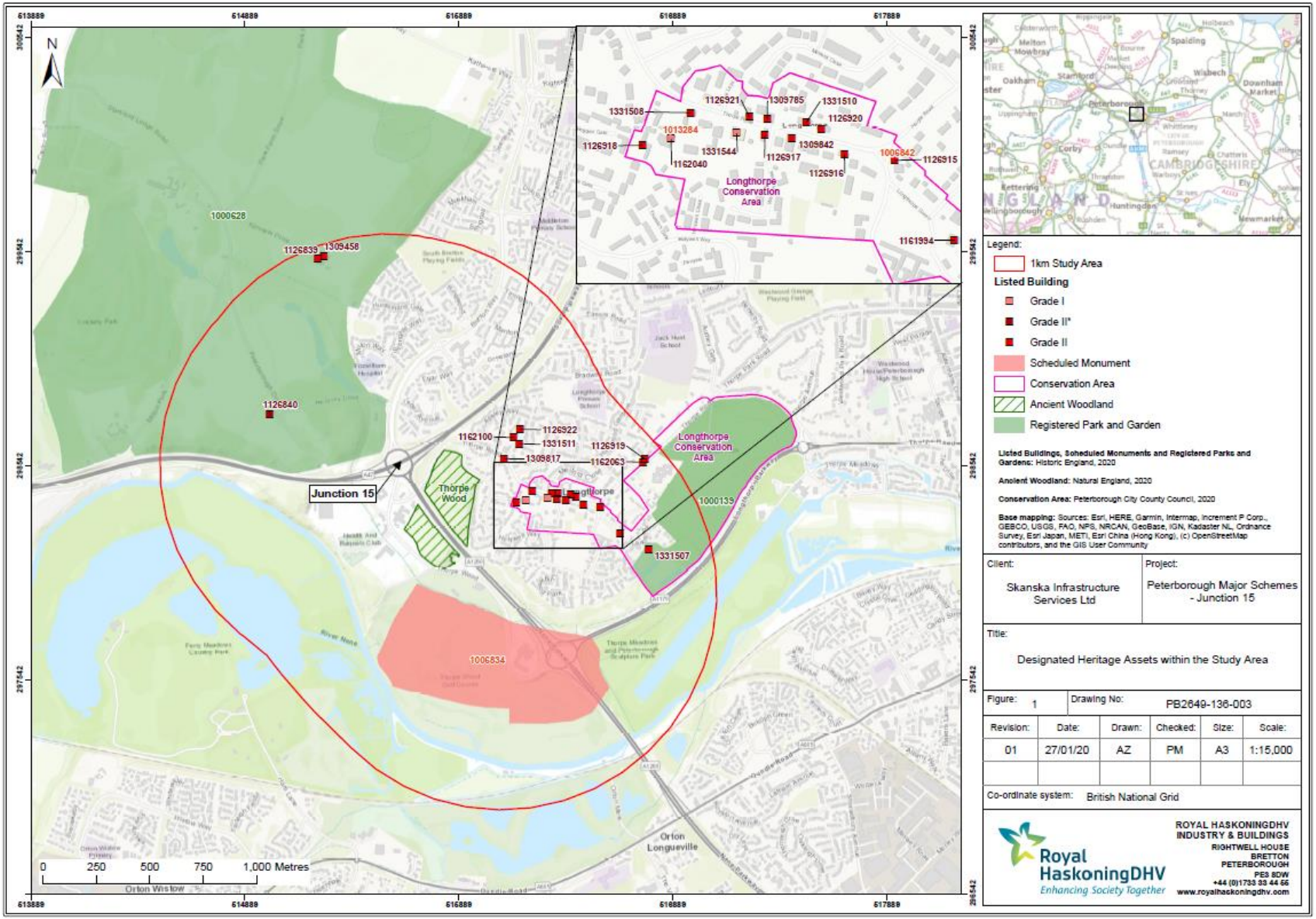
A1

5060751-159601-MIL-GBR-ZZ-DR-CB-2500 | S3 | P01

8. Appendix B

Designated Assets

MILESTONE
INFRASTRUCTURE
A part of MGroup Services

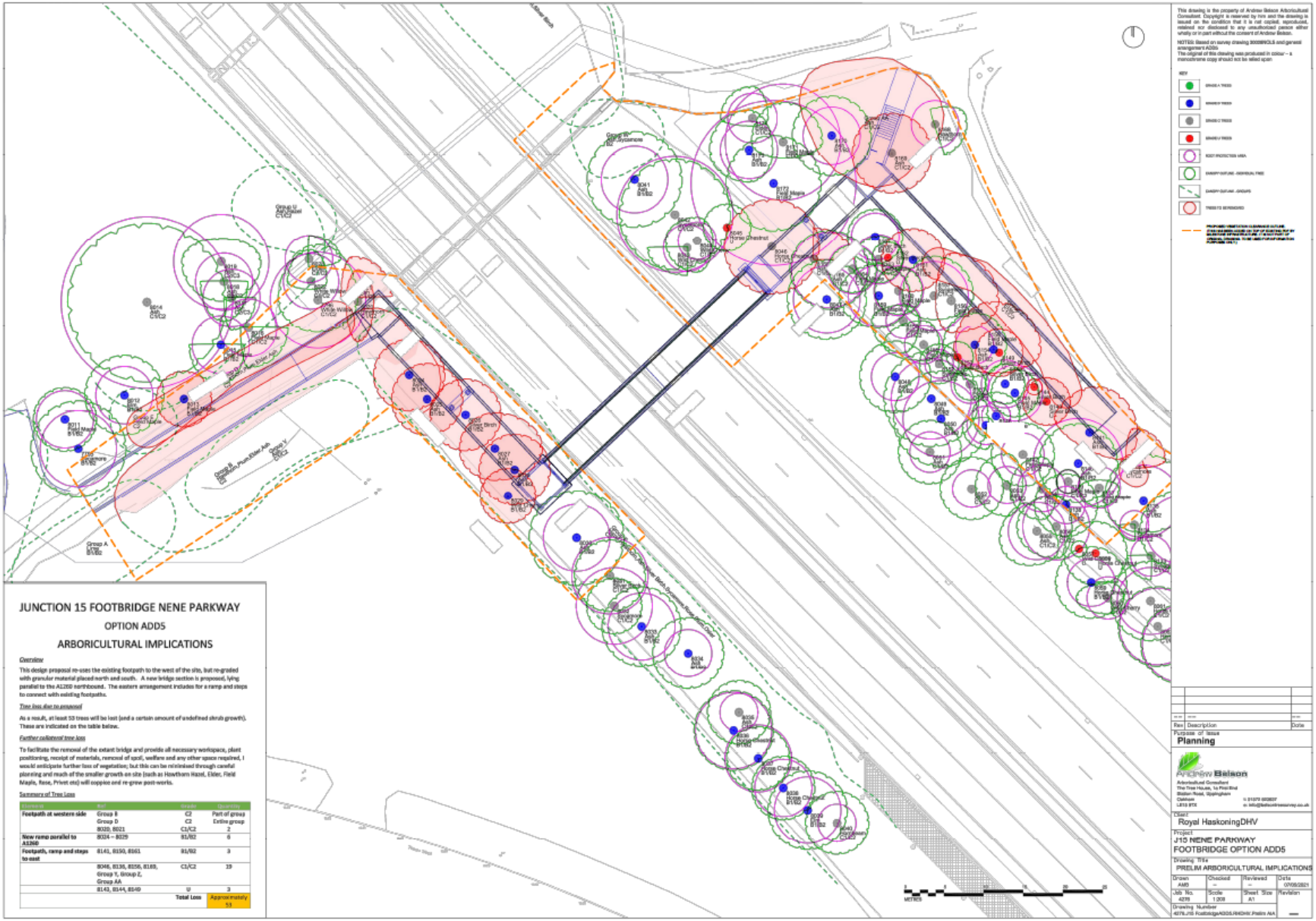


9. Appendix C

Arboricultural Implication Assessment

MILESTONE INFRASTRUCTURE

A part of MGroupServices



Location	Ref	Grade	Quantity
Footpath at western side	Group B	C2	Part of group
	Group D	C2	Entire group
	8020, 8021	C1/C2	2
New ramp parallel to A1260	8024 – 8029	B1/B2	6
Footpath, ramp and steps to east	8141, 8150, 8161	B1/B2	3
	8046, 8136, 8158, 8169, Group Y, Group Z, Group AA	C1/C2	19
	8143, 8144, 8149	U	3
		Total Loss	Approximately 53

10.

11. Appendix D

Screening Checklist

Is the project a Maintenance or Improvement project?	Improvement
Does the project fall under a **Schedule 1 or Schedule 2** project?	Schedule II
Is the project over 1 ha incorporating temporary traffic management and all of the storage area for materials and equipment?	Yes, the project is approx. 4ha
Is the project likely to have a significant effect on the environment?	The works are localised and will take place over period of 6-12 months. Vegetation clearance required to facilitate the scheme would not alter the essential landscape character of the site once completed. Due to the lack of sensitive receptors and surrounding land uses it is not considered an EIA would be required to evaluate the potential effects on landscape character or views. Activities will not occur in any protected or designated areas. The works will take place predominately during daytime working hours, and sensitive receptors within proximity to the Scheme could experience temporary noise disruption. Providing best practice and pollution prevention measures are in place throughout the construction phase, no significant effects are predicted on the environment

Screening Assessment for Junction 15 Improvement Scheme

Screening Criteria	Proposed Development
1. Characteristics of The Development	
(a) Size of the development	
Will the development be out of scale with the existing environment?	The Scheme is taking place along the A1260 Nene Parkway at Junction 15. The existing land use of the area affected by the works comprises of the A1260 Highway, Thorpe Bridge, embankments and woodland.
Will it lead to further consequential development or works	No. The proposed development is a highways improvement.
(b) Accumulation with other development	
Are there potential cumulative impacts with other existing development or development not yet begun but for which planning permission exists?	No.
Should the application for this development be regarded as an integral part of a more substantial project? If so, can related developments which are subject to separate applications proceed independently?	No. The proposed development is a discrete project and could proceed independently.
(c) Use of natural resources	
Will construction, operation or decommissioning of the project involve actions which will cause physical changes in the topography of the area?	The principal land use will not change. There will be no change to water bodies or topography.
Will construction or operation of the project use natural resources above or below ground such as land, soil, water, materials/minerals or energy which are non-renewable or in short supply?	The proposed construction and operational phases of the development will use resources in terms of land, water and energy as would be expected for an urban development project.

Are there any areas on/around the location which contain important, high quality or scarce resources which could be affected by the project, e.g. forestry, agriculture, water/coastal, fisheries, minerals?	According to the Environment Agency website, the site is located within Flood Zone 1 and is at low risk of flooding from rivers and the sea. The site is not located within a groundwater Source Protection Zone (SPZ). None of the other features are present in or adjacent to the site.
(d) Production of waste	
Will the development produce wastes during construction or operation or decommissioning?	Construction waste would be reused and recycled where possible. Any operational waste would be disposed of in accordance with all applicable legislation.
(e) Pollution and nuisances	
Will the development release any pollutants or any hazardous, toxic or noxious substances to air?	During the construction phase of the proposed development, dust would be generated. Dust generation would be managed in accordance with standard best practice measures, enforced through a construction environmental management plan (CEMP) and is not anticipated to generate significant adverse effects. There would be emissions associated with plant and vehicles during the construction phase and from vehicles during the operation of the proposed development. There is not anticipated to be a requirement to store large volumes of hazardous materials. Any such materials would be stored and handled in accordance with relevant legislation.

Will the project cause noise and vibration or release of light, heat, energy or electromagnetic radiation?	The potential exists for noise effects to result from the construction processes associated with the proposed development. These effects will be managed in accordance with best practice measures, implemented through the CEMP and are not anticipated to generate significant adverse effects. Lighting would be designed carefully in accordance with relevant British Standards and DMRB Guidance Notes for the Reduction of Obtrusive Light. No electromagnetic radiation, heat or energy releases are expected.
Will the project lead to risks of contamination of land or water from releases of pollutants onto the ground or into surface waters, groundwater, coastal waters or the sea?	Appropriate measures, in accordance with all relevant legislation, would be used to prevent accidental spillages of contaminants during the construction or operational phrases of the proposed development. The land uses proposed are not highly contaminative and it is not expected that there is a high risk of contaminants being released into the environment.
Are there any areas on or around the location which are already subject to pollution or environmental damage, e.g. where existing legal environmental standards are exceeded, which could be affected by the project?	The site is not located within an AQMA.
(f) Population and human health	
Will there be any risk of major accidents (including those caused by climate change, in accordance with scientific knowledge) during construction, operation or decommissioning?	During the construction phase, the contractor(s) would implement measures in accordance with Health and Safety legislation/requirements, and best practice

	to minimise the risks of accidents that would have effects on people or the environment. All such measures would form part of the CEMP. There are no anticipated significant risks of accidents during operation as the proposed development does not involve users dealing with hazardous substances.
Will the project present a risk to the population (having regard to population density) and their human health during construction, operation or decommissioning? (for example due to water contamination or air pollution)	During the construction phase, certain materials may be present on the site which may be harmful to the environment. However, it is considered that through the implementation of appropriate environmental control measures in line with the relevant legislation there will be no significant environmental effects. The operational development is not expected to involve the use, transport or production of substances or materials which could be harmful to the environment.
(g) Water Resources	
Are there any water resources including surface waters, e.g. rivers, lakes/ponds, coastal or underground waters on or around the location which could be affected by the project, particularly in terms of their volume and flood risk?	According to the Environment Agency website, the site is located within Flood Zone 1 and is at low risk of flooding. The site is not located within or close to a groundwater SPZ. No other water bodies would be expected to be significantly affected by the proposed development.
(h) Biodiversity (Species And Habitats)	
Are there any protected areas which are designated or classified for their terrestrial, avian and marine ecological value, or any non-	There are no sensitive areas, as defined by the EIA Regulations, located within the site. There

designated / non-classified areas which are important or sensitive for reasons of their terrestrial, avian and marine ecological value, located on or around the location and which could be affected by the project? (e.g. wetlands, watercourses or other water-bodies, the coastal zone, mountains, forests or woodlands, undesignated nature reserves or parks. (Where designated indicate level of designation (international, national, regional or local))).	are no statutory designated sites within 2km of the proposed works. Thorpe Wood, an area of Ancient and Semi-Natural Woodland is located approximately 40m at its closest point to the area where works will be undertaken. No works will be undertaken in this area and appropriate best practice mitigation measures with guidance from the Wildlife Trust will be implemented prior to any works commencing. Given the nature of the works no impacts on the designated sites are anticipated.
Could any protected, important or sensitive species of flora or fauna which use areas on or around the site, e.g. for breeding, nesting, foraging, resting, over-wintering, or migration, be affected by the project?	Ecological appraisals were conducted on site in on the 13th January 2020 and 23rd March 2021. The main habitats within the proposed working areas comprise hard standing (existing footbridge and footpath), areas of scattered scrub and areas of planted trees which provide a screening of the A1260 carriageway. Although no evidence of the presence of legally protected species or invasive species was noted during the 2021 ecological survey, the areas of vegetation were noted to provide nesting opportunities for common bird species as well as relic bird nesting sites also being observed. Features (trees) were also noted and assessed as providing suitability to support roosting bats, although it is unknown if these features will require removal to facilitate the proposed works. Bat surveys will be undertaken to confirm the presence or absence of any bat roosts within trees which will inform the application proposals. The woodland habitat has negligible potential for badgers due to lack of suitable sett construction habitat to support badgers. However, two holes were noted outside of the

	working area, but no evidence was recorded during the survey as to whether these are in use by badgers or other animals such as rabbits. It is recommended that further monitoring is undertaken of these two holes to confirm if they are being used by badgers (or other animals) through the installation of camera traps.
(i) Landscape And Visual	
Are there any areas or features on or around the location which are protected for their landscape and scenic value, and/or any non-designated / non-classified areas or features of high landscape or scenic value on or around the location which could be affected by the project? Where designated indicate level of designation (international, national, regional or local).	The site is not located in an Area of Outstanding Natural Beauty (AONB) or any other area designated for its landscape value. The site itself comprises areas of hard standing associated with the existing A1260 carriageway with enclosed by man-made embankments and linear groups of screening trees. Long shelterbelts of mature trees serve as a screening function on the roadside landscape. The landscape and visual character of the site reflects the local landscape context. The proposed scheme would not alter the essential landscape character of the Site once completed. Mitigation in the form of replanting would ensure that the existing landscape character is maintained.
Is the project in a location where it is likely to be highly visible to many people? (If so, from where, what direction, and what distance?)	The potential for local views of the site exists from the existing highway and footbridge. However, no features will be lost.
(j) Cultural Heritage/Archaeology	
Are there any areas or features which are protected for their cultural heritage or archaeological value, or any non-designated / classified areas and/or features of cultural heritage or archaeological importance on or around the location which could be affected by	Directly west to Longthorpe footbridge is a large Scheduled Monument (NHLE 1006834) known as Longthorpe Roman fort and settlement. The Scheduled area covers approximately 44 ha and is scheduled due to its archaeological interest. The remains lie under what is now a

the project (including potential impacts on setting, and views to, from and within)? Where designated indicate level of designation (international, national, regional or local).	golf course and are partially covered by the Nene Parkway to the east. No direct physical impact to the Scheduled Monument has been identified as the result of the proposed works. The potential impact by the proposed footbridge works would be a direct, physical impact to non-designated buried archaeological remains, if present. This potential impact may be mitigated through the implementation of an archaeological programme of work (strip-map-record of the area of impact) in advance of construction.
(k) Transport and Access	
Are there any routes on or around the location which are used by the public for access to recreation or other facilities, which could be affected by the project?	The development area offers cycle and walking routes, with the Thorpe Wood Trail and Nene Park Trust routes either side of the development, important recreational routes in Peterborough. The construction phase could affect members of the community using footpaths for recreational purposes and highways due to route diversions. This impact is temporary, as it is limited to the time of construction works. Suitable measures related to route diversion and communication with local community will be included within the CEMP.
Are there any transport routes on or around the location which are susceptible to congestion or which cause environmental problems, which could be affected by the project?	High daily travel demand coupled with direct access to one of three river crossings results in extensive peak hour congestion at Junction 15. The Junction 15 Improvement Scheme will provide the necessary increase in highway capacity to unlock congestion and significantly

	reduce delay at Junction 15, which is a major pinch-point on the network. This will improve the capacity and operational performance of the Peterborough Parkway system which is crucial to supporting further growth around the City.
(l) Land Use	
Are there existing land uses or community facilities on or around the location which could be affected by the project? E.g. housing, densely populated areas, industry / commerce, farm/agricultural holdings, forestry, tourism, mining, quarrying, facilities relating to health, education, places of worship, leisure /sports / recreation.	The proposed development is not considered likely to affect the surrounding residential and/or commercial areas.
Are there any plans for future land uses on or around the location which could be affected by the project?	No.
(m) Land Stability and Climate	
Is the location susceptible to earthquakes, subsidence, landslides, erosion, or extreme /adverse climatic conditions, e.g. temperature inversions, fogs, severe winds, which could cause the project to present environmental problems?	According to the Environment Agency website, the site is located within Flood Zone 1 and is at low risk of flooding. The site is not located within a groundwater SPZ. The site is not located within an AQMA. The site is not considered susceptible to any other hazards.
(n) Cumulative effects	
Could this project together with existing and/or approved development result in cumulation of impacts together during the construction/operation phase?	No.

(o) Transboundary effects	
Is the project likely to lead to transboundary effects?	No.

12. Appendix E

Natural England Consultation

Consultation: Junction 15, A47 - Peterborough

Thank you for your consultation dated and received by Natural England on 22 February 2021 .
Natural England is a non-departmental public body. Our statutory purpose is to ensure that the natural environment is conserved, enhanced, and managed for the benefit of present and future generations, thereby contributing to sustainable development.

The proposed works are in close proximity to Nene Washes (Whittlesey) SSSI. However, based on the information provided and given the nature and scale of this proposal, Natural England raises no objection to the proposed works being carried out on account of the impact on designated sites.

If the proposed works could, at any stage, have an impact on protected species, then you should refer to our Standing Advice which contains details of survey and mitigation requirements.

Natural England and the Forestry Commission have also published standing advice on ancient woodland and veteran trees which you can use to assess any impacts on ancient woodland.

Should the proposal be amended in a way which significantly affects its impact on the natural environment then, in accordance with Section 4 of the Natural Environment and Rural Communities Act 2006, Natural England should be consulted again.

If you wish to discuss this response please do not hesitate to contact us at consultations@naturalengland.org.uk

Yours sincerely

Julie Lunt
Operations Delivery
Consultations Team
Natural England
Hornbeam House, Electra Way
Crewe Business Park
Crewe, Cheshire CW1 6GJ

tel 0300 060 3900

Email: consultations@naturalengland.org.uk
www.gov.uk/natural-england

During the current coronavirus situation, Natural England staff are primarily working remotely to provide our services and support our customers and stakeholders.

Please continue to send any documents by email or contact us by phone to let us know how we can help you. See the latest news on the coronavirus at http://www.gov.uk/coronavirus and Natural England's regularly updated operational update at https://www.gov.uk/government/news/operational-update-covid-19.

Stay home. Protect the NHS. Save lives.

13. Appendix F

Historic England Consultation

Historic England

Mr Jackson Smith
Skanska UK
Unit 1a, Vantage House
Vantage Park
Washingley Road
Huntingdon
PE29 6SR

Direct Dial: 01223 582725

Our ref: PA01149805

23 March 2021

Dear Mr Smith

Pre-application Advice

NENE PARKWAY, JUNCTION 15 IMPROVEMENT SCHEME

Thank you for contacting us on 22/02/2021 seeking our pre-application advice on proposals for the above site.

Advice

The proposals involve works to Junction 15 (including regraded embankments, new road markings, new signs and traffic controls), and the reconstruction of a footbridge to the southwest of Junction 15, over the A1260 and linking in to Bluebell Woods Nature Trail. Based on a review of the submitted information on the proposals to date, we would agree with the broad conclusions of the Heritage Appraisal by Royal Haskoning (dated January 2020) that the proposed works would be unlikely to have a significant impact on the setting of designated heritage assets in the vicinity.

The Heritage Assessment identifies that the closest designated asset to Junction 15 is the II* Registered Park and Garden associated with Milton Hall and its associated buildings, but also notes the existing screening from vegetation. This, in combination with the nature of the proposed works, means that the works would be unlikely to involve a significant change to the setting of the park, and hence would have limited impact on its significance.

The proposed replacement bridge is in close proximity to the scheduled monument 1006834, 'Longthorpe Roman fort and settlement'. The design of the new bridge is not finalised, but again, taking into account the current landuses and setting of the monument, we would envisage that the proposals would be unlikely to involve any significant impact on the significance of the designated asset through development in its setting.

We note, however, that there will be further design processes and that further heritage

24 BROOKLANDS AVENUE, CAMBRIDGE, CB2 8BU
Telephone 01223 582749
HistoricEngland.org.uk

Historic England

assessment is proposed, which we support and we would welcome the opportunity to review further information at a later pre-application stage, in the event that there are material changes to the proposals which would have an impact on the historic environment.

It may be appropriate to seek the advice of the local planning authority and/or the relevant amenity societies on your proposals, and we note ongoing conversations with the City Council's Archaeologist. The bridge development is close to Thorpe Wood, an Ancient Woodland, and we would also advise consultation with relevant consultees.

If you have questions regarding any of the above, please do contact me.

Yours sincerely

Abby Antrobus
Inspector of Ancient Monuments
E-mail: Abby.Antrobus@historicengland.org.uk

cc: Rebecca Casa-Hatton, Archaeologists, Peterborough City Council

14. Appendix G

Peterborough City Council Archaeology Consultation

Smith, Jackson

From: Rebecca Casa-Hatton <Rebecca.Casa-Hatton@peterborough.gov.uk>
Sent: 14 April 2021 12:19
To: Smith, Jackson (S)
Subject: Re: Longthorpe Roman fort and settlement - 1006834

Hi, Jackson.

Thank you for your email.

All good at my end. Thank you.

With reference to your query, no major concerns.

- Junction works - given the history of land use and the anticipated degree of disturbance, the scheme is unlikely to give rise to significant environmental effects when considered under the EIA Regulations. The potential impact by the proposed junction works would be a direct, physical impact to non-designated buried archaeological remains, if present in undisturbed pockets of land. This potential impact has already been assessed in a Heritage Appraisal, and may be mitigated through the implementation of an archaeological programme of work to be secured by condition (e.g., watching brief of all new ground disturbance).
- Footbridge works - notwithstanding the presence of the Scheduled Monument (SM) (Longthorpe Roman fort and settlement - 1006834), the scheme is unlikely to give rise to significant environmental effects when considered under the EIA Regulation. No direct physical impact to the SM has been identified as the result of the proposed works. The potential indirect impact on the setting of the SM will have to be assessed by Historic England. The potential impact by the proposed footbridge works would be a direct, physical impact to non-designated buried archaeological remains, if present. This potential impact may be mitigated through the implementation of an archaeological programme of work (strip-map-record of the area of impact) in advance of construction.

Should you have any queries, please do not hesitate to contact me.

Kind Regards
Rebecca

Dr Rebecca Casa Hatton MCIfA
Archaeologist
Peterborough City Council I Natural & Historic Environment I Planning Services I Place and Economy
Sand Martin House | Bittern Way | Fletton Quays | Peterborough | PE2 8TY

Email: rebecca.casa-hatton@peterborough.gov.uk
Direct Telephone: 01733 864702
Mobile: 07920 160223

(Mon-Thu 09:00 - 15:00)

MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix M:

Financial Case Cost Profile

Junction 15 - Do Something Scheme Costs for Financial Case

Calendar Year	Assessment Year	(1) Base Cost Estimate 2021 Prices						(2) Risk Adjusted Cost		(3) Risk Adjusted Cost Estimate Including Construction Price Inflation			(4) Inflated Risk Adjusted Cost Including Whole Life Costs		
		Construction Costs (Highways)	Construction Costs (Structures)	Land & Property Costs	Preparation and Supervision Costs	Other Costs	Total	Quantified Risk Adjustment	Risk Adjusted Cost	Inflation Rate	Cost of Inflation	Total (Including Inflation)	Whole Life Costs	Inflated Whole Life Costs	Total (Including Whole Life Costs)
2021	0	£0	£0	£0	£0	£0	**£0**	£0	**£0**	0.000	£0.00	**£0**	£0	£0	**£0**
2022	1	£4,179,817	£1,040,829	£54,750	£987,615	£538,960	**£6,801,971**	£678,486	**£7,480,457**	1.040	£332,027.00	**£7,812,484**	£0	£0	**£7,812,484**
2023	2	£0	£0	£4,563	£50,903	£44,913	**£100,379**	£56,541	**£156,919**	1.073	£11,425.48	**£168,345**	£0	£0	**£168,345**
2024	3	£0	£0	£0	£0	£30,000	**£30,000**	£0	**£30,000**	1.094	£2,812.21	**£32,812**	£28,476	£31,145	**£63,957**
2025	4	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.117	£0.00	**£0**	£28,476	£31,804	**£31,804**
2026	5	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.139	£0.00	**£0**	£28,476	£32,423	**£32,423**
2027	6	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.161	£0.00	**£0**	£28,476	£33,048	**£33,048**
2028	7	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.183	£0.00	**£0**	£28,476	£33,690	**£33,690**
2029	8	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.206	£0.00	**£0**	£28,476	£34,350	**£34,350**
2030	9	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.230	£0.00	**£0**	£28,476	£35,033	**£35,033**
2031	10	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.255	£0.00	**£0**	£28,476	£35,742	**£35,742**
2032	11	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.281	£0.00	**£0**	£28,476	£36,479	**£36,479**
2033	12	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.308	£0.00	**£0**	£28,476	£37,244	**£37,244**
2034	13	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.336	£0.00	**£0**	£28,476	£38,030	**£38,030**
2035	14	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.364	£0.00	**£0**	£28,476	£38,841	**£38,841**
2036	15	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.394	£0.00	**£0**	£28,476	£39,683	**£39,683**
2037	16	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.422	£0.00	**£0**	£28,476	£40,492	**£40,492**
2038	17	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.451	£0.00	**£0**	£28,476	£41,320	**£41,320**
2039	18	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.481	£0.00	**£0**	£28,476	£42,169	**£42,169**
2040	19	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.512	£0.00	**£0**	£28,476	£43,047	**£43,047**
2041	20	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.544	£0.00	**£0**	£28,476	£43,955	**£43,955**
2042	21	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.576	£0.00	**£0**	£28,476	£44,892	**£44,892**
2043	22	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.611	£0.00	**£0**	£28,476	£45,860	**£45,860**
2044	23	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.646	£0.00	**£0**	£28,476	£46,863	**£46,863**
2045	24	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.682	£0.00	**£0**	£28,476	£47,899	**£47,899**
2046	25	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.720	£0.00	**£0**	£28,476	£48,968	**£48,968**
2047	26	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.758	£0.00	**£0**	£28,476	£50,071	**£50,071**
2048	27	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.798	£0.00	**£0**	£28,476	£51,213	**£51,213**
2049	28	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.840	£0.00	**£0**	£28,476	£52,392	**£52,392**
2050	29	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.883	£0.00	**£0**	£28,476	£53,606	**£53,606**
2051	30	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.926	£0.00	**£0**	£28,476	£54,850	**£54,850**
2052	31	£0	£0	£0	£0	£0	**£0**	£0	**£0**	1.971	£0.00	**£0**	£28,476	£56,121	**£56,121**
2053	32	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.017	£0.00	**£0**	£28,476	£57,422	**£57,422**
2054	33	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.063	£0.00	**£0**	£28,476	£58,753	**£58,753**
2055	34	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.111	£0.00	**£0**	£28,476	£60,119	**£60,119**
2056	35	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.160	£0.00	**£0**	£28,476	£61,509	**£61,509**
2057	36	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.210	£0.00	**£0**	£28,476	£62,930	**£62,930**
2058	37	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.261	£0.00	**£0**	£28,476	£64,377	**£64,377**
2059	38	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.313	£0.00	**£0**	£28,476	£65,852	**£65,852**
2060	39	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.365	£0.00	**£0**	£28,476	£67,356	**£67,356**
2061	40	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.419	£0.00	**£0**	£28,476	£68,887	**£68,887**
2062	41	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.474	£0.00	**£0**	£28,476	£70,439	**£70,439**
2063	42	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.529	£0.00	**£0**	£28,476	£72,018	**£72,018**
2064	43	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.585	£0.00	**£0**	£28,476	£73,620	**£73,620**
2065	44	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.643	£0.00	**£0**	£28,476	£75,247	**£75,247**
2066	45	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.700	£0.00	**£0**	£28,476	£76,893	**£76,893**
2067	46	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.758	£0.00	**£0**	£28,476	£78,526	**£78,526**
2068	47	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.814	£0.00	**£0**	£28,476	£80,136	**£80,136**
2069	48	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.874	£0.00	**£0**	£28,476	£81,836	**£81,836**
2070	49	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.935	£0.00	**£0**	£28,476	£83,576	**£83,576**
2071	50	£0	£0	£0	£0	£0	**£0**	£0	**£0**	2.996	£0.00	**£0**	£28,476	£85,322	**£85,322**
2072	51	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.060	£0.00	**£0**	£28,476	£87,132	**£87,132**
2073	52	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.126	£0.00	**£0**	£28,476	£89,027	**£89,027**
2074	53	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.196	£0.00	**£0**	£28,476	£90,996	**£90,996**
2075	54	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.269	£0.00	**£0**	£28,476	£93,074	**£93,074**
2076	55	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.345	£0.00	**£0**	£28,476	£95,238	**£95,238**
2077	56	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.424	£0.00	**£0**	£28,476	£97,512	**£97,512**
2078	57	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.506	£0.00	**£0**	£28,476	£99,829	**£99,829**
2079	58	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.590	£0.00	**£0**	£28,476	£102,223	**£102,223**
2080	59	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.677	£0.00	**£0**	£28,476	£104,714	**£104,714**
2081	60	£0	£0	£0	£0	£0	**£0**	£0	**£0**	3.768	£0.00	**£0**	£28,476	£107,297	**£107,297**
Total		**£4,179,817**	**£1,040,829**	**£59,313**	**£1,038,518**	**£613,873**	**£6,932,350**	**£735,027**	**£7,667,377**		**£346,265**	**£8,013,642**	**£1,651,594**	**£3,533,089**	**£11,546,731**

Step	Description	Scheme Cost at Each Step
(1)	Outlines the initial estimate of the investment costs in 2020 prices but taking no account of real increases in construction costs. Includes Design cost, Construction cost profile, Land cost, Preparation and Administration costs. Year of Opening is	**£6,932,350**
(2)	The base costs have been adjusted to incorporate risk.	**£7,667,377**
(3)	The risk adjusted costs have been adjusted to incorporate increases in construction costs.	**£8,013,642**
(4)	The inflated risk adjusted costs have been adjusted to incorporate whole life costs.	**£11,546,731**

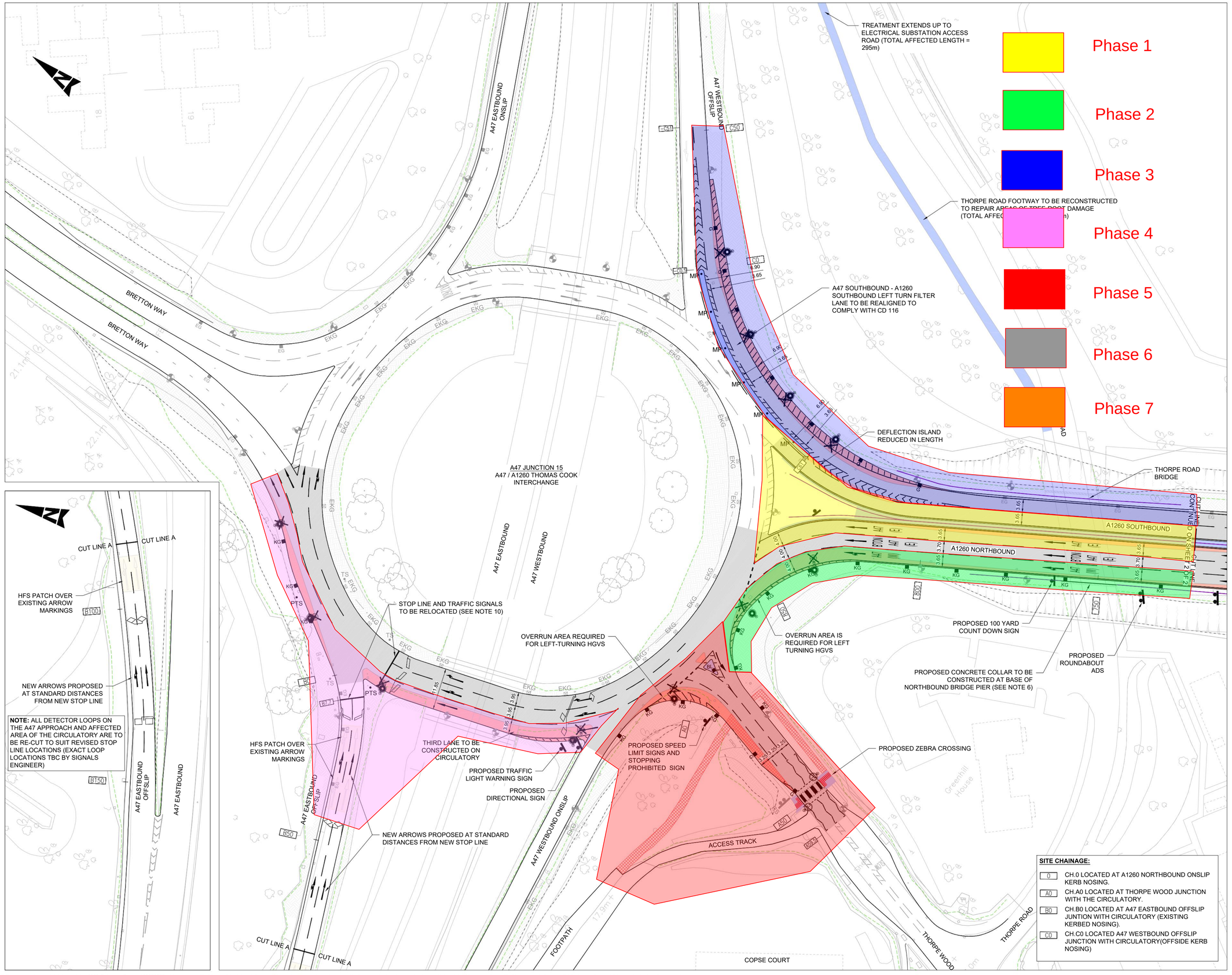
MILESTONE INFRASTRUCTURE
A part of MGroupServices

Appendix N:

Construction Programme &

Construction Phasing Drawing 1o2 &

Construction Phasing Drawing 2o2



SITE CHAINAGE:

- 0 — CH.0 LOCATED AT A1260 NORTHBOUND ONSLIP KERB NOSING.
- A0 — CH.A0 LOCATED AT THORPE WOOD JUNCTION WITH THE CIRCULATORY.
- B0 — CH.B0 LOCATED AT A47 EASTBOUND OFFSLIP JUNTION WITH CIRCULATORY (EXISTING KERBED NOSING).
- C0 — CH.C0 LOCATED A47 WESTBOUND OFFSLIP JUNCTION WITH CIRCULATORY(OFFSIDE KERB NOSING)

KEY:

- PROPOSED FULL DEPTH CARRIAGEWAY WIDENING / CONSTRUCTION / KERBED ISLAND REMOVAL (2676sq.m) (APPROXIMATE DEPTH 860mm)
- PROPOSED CARRIAGEWAY RESURFACING / RE-PROFILING (12525sq.m)
- PROPOSED HIGH FRICTION SURFACING (HFS) PATCH (205sq.m)
- PROPOSED FULL DEPTH FOOTWAY / CENTRAL RESERVE / KERBED ISLAND CONSTRUCTION (1280sq.m) (APPROXIMATE DEPTH 440mm)
- EXISTING FOOTWAY TO BE REMOVED (217sq.m)
- PROPOSED TACTILE PAVING (9sq.m)
- PROPOSED VRS (598m)
- BACK OF EXISTING VERGE / TOE OF EMBANKMENT
- EG — EXISTING GULLY
- G — PROPOSED GULLY
- EKG — EXISTING KERB GULLY
- KG — PROPOSED KERB GULLY
- PROPOSED ROAD SIGN
- MP — PROPOSED MARKER POST
- TS — EXISTING TRAFFIC SIGNAL POLE
- PTS — PROPOSED TRAFFIC SIGNAL POLE
- PROPOSED TRAFFIC SIGNAL LOOPS (INDICATIVE)
- BL — PROPOSED REFLECTIVE TRAFFIC BOLLARD
- EXISTING LIGHTING COLUMN TO REMAIN (SEE NOTE 8)
- EXISTING LIGHTING COLUMN TO BE REMOVED
- PROPOSED LIGHTING COLUMN TO REPLACE EXISTING (SET BACK TO NEW KERB LINE) (SEE NOTE 8)
- PROPOSED BELISHA BEACON (SEE NOTE 8)
- PIRS — PROPOSED ILLUMINATED TRAFFIC SIGN (SEE NOTE 8)

NOTES:

1. DO NOT SCALE FROM THIS DRAWING.
2. SITE VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. REPORT ALL DISCREPANCIES TO THE DRAWING ORIGINATOR IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTS AND DRAWINGS.
5. SOME SITE CLEARANCE ITEMS OMITTED FROM THIS DRAWING FOR CLARITY.
6. AVAILABLE WIDTH AT THORPE ROAD UNDERBRIDGE IS CONSTRAINED DUE TO THE LOCATION OF EXISTING BRIDGE PIERS. IN ORDER TO ACHIEVE CD127 COMPLIANT LANE WIDTHS AT THIS LOCATION IT IS PROPOSED THAT THE NORTHBOUND VRS PROTECTION INCLUDES A GA/72 TRANSITION (STEEL- CONCRETE) ON THE NEARSIDE BRIDGE PIER. A CONCRETE COLLAR IS REQUIRED TO FORM A VERTICAL CONCRETE FACE ON THE TRAFFIC SIDE OF THE PIER.
7. THE EXISTING FOOTWAY LINK AND INFORMAL CROSSING IS TO BE PHYSICALLY REMOVED/STOPPED UP IN ORDER TO ENCOURAGE USE OF THE PROPOSED ZEBRA CROSSING.
8. THE PROPOSED STREET LIGHTING AND BELISHA BEACON ALTERATIONS SHOWN ARE INDICATIVE AND SHOWN FOR INFORMATION ONLY. ALL STREET LIGHTING, ILLUMINATED SIGNING AND BELISHA BEACON DETAILS ARE TO BE CONFIRMED BY PCC STREET LIGHTING TEAM.
9. PROPOSED KERB-GULLY/GULLY CHANGES SHOWN ARE INDICATIVE AND FULL DRAINAGE MODELLING IS TO BE COMPLETED DURING DETAILED DESIGN. KERB-GULLY/GULLY SPACINGS ARE IN ACCORDANCE WITH CD526.
10. AN EXISTING LIMESTONE ROCK FACE IS PRESENT TO THE REAR OF THE NORTHBOUND VERGE. BREAK-OUT / RE-GRADING OF THE ROCK FACE IS REQUIRED IN SOME LOCATIONS AS SHOWN TO ACHIEVE NECESSARY VERGE WIDTHS.
11. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE PCC ESTATE ROAD CONSTRUCTION SPECIFICATION (2012) AND DMRB.

Rev	Date	Description	Drn	Chkd
P0	25/02/2020	First Issue	-	-

Revisions

Client

Peterborough Highway Services
Delivered by SKANSKA PETERBOROUGH CITY COUNCIL

Dodson House
Fengate
Peterborough
PE51 5S
Tel: +44 (0) 1773 747474
Facsimile: +44 (0) 1773 453444

Drawing Status

PRELIMINARY DESIGN

Project Name

JUNCTION 15 NENE PARKWAY

Original drawing sheet is A1

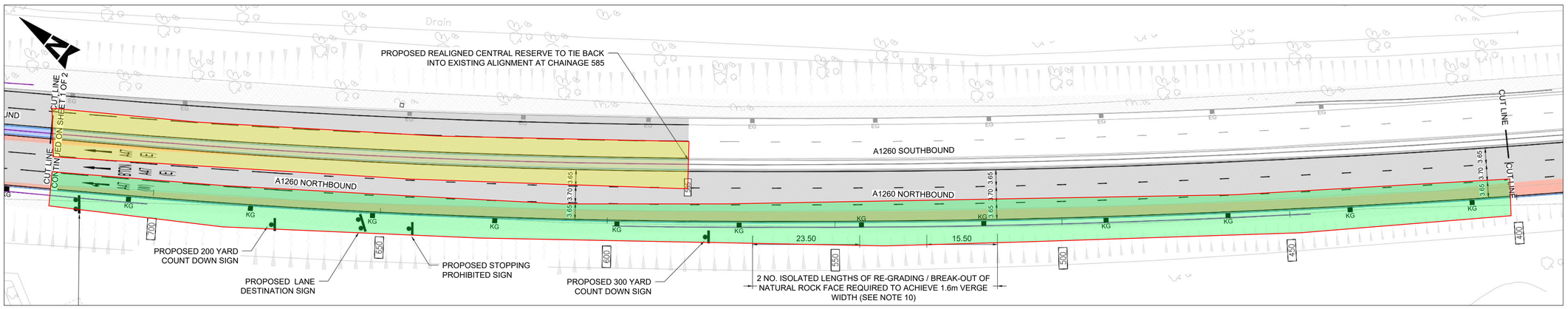
Title

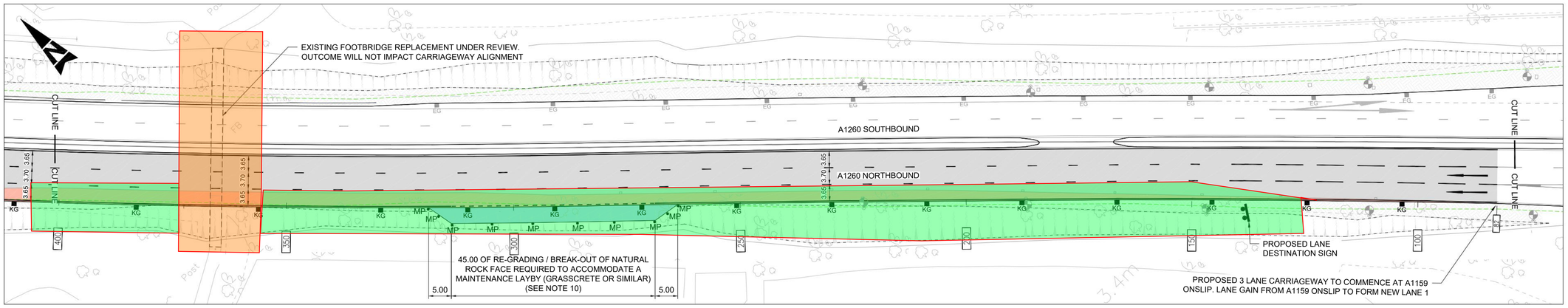
GENERAL ARRANGEMENT SHEET 1 OF 2

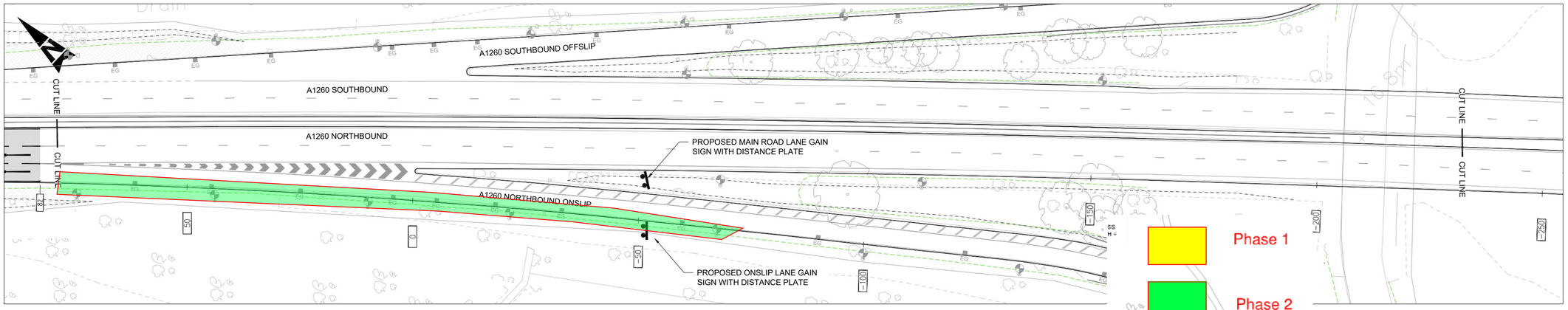
Scale	Drawn by	Checked by	Approved by
1:500	DAG	JS	SPW
	Drawn Date	Checked Date	Approved Date
	24/02/2020	24/02/2020	24/02/2020

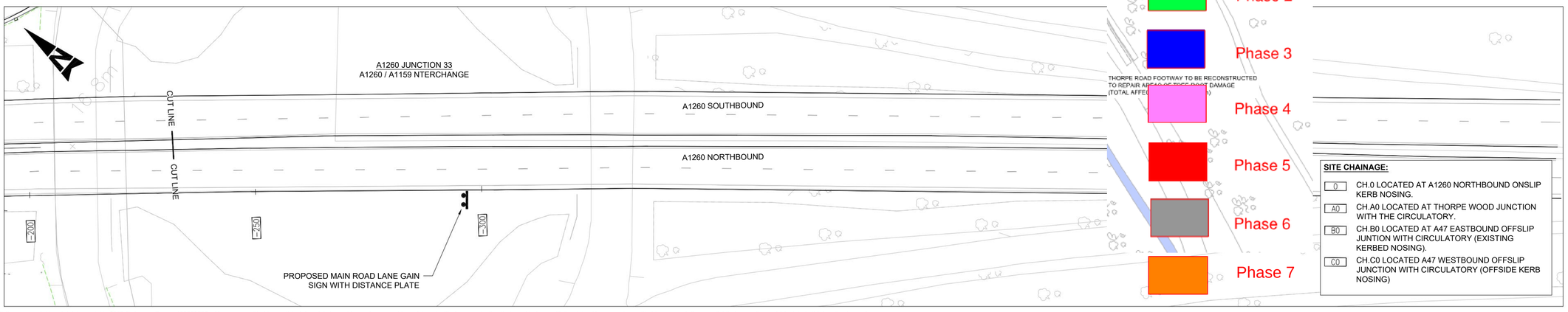
Drawing Number: 5080751-SKA-HGN-CH-0003-S2 Rev: P0

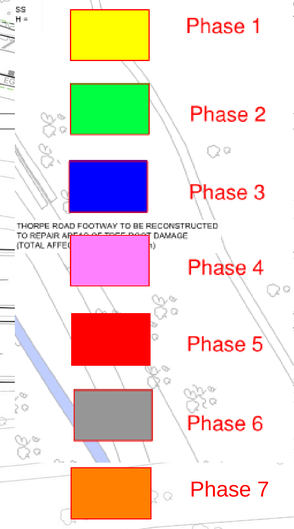
File location: P:\GBIPD\HandT\ESol\06 Peterborough Highways\5101020 Junction 15 Nene Parkway\8 CAD\8.1 Preliminary\8.1.1 DWG\5101020-SKA-HWA-GA-CH-0001-S2 (60mph Alignment).dwg Printed by: Small, Jack (IS)











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2. SITE VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
3. REPORT ALL DISCREPANCIES TO THE DRAWING ORIGINATOR IMMEDIATELY.
4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTS AND DRAWINGS.
5. SOME SITE CLEARANCE ITEMS OMITTED FROM THIS DRAWING FOR CLARITY.
6. AVAILABLE WIDTH AT THORPE ROAD UNDERBRIDGE IS CONSTRAINED DUE TO THE LOCATION OF EXISTING BRIDGE PIERS. IN ORDER TO ACHIEVE CD127 COMPLIANT LANE WIDTHS AT THIS LOCATION IT IS PROPOSED THAT THE NORTHBOUND VRS PROTECTION INCLUDES A GA/72 TRANSITION (STEEL- CONCRETE) ON THE NEARSIDE BRIDGE PIER. A CONCRETE COLLAR IS REQUIRED TO FORM A VERTICAL CONCRETE FACE ON THE TRAFFIC SIDE OF THE PIER.
7. THE EXISTING FOOTWAY LINK AND INFORMAL CROSSING IS TO BE PHYSICALLY REMOVED/STOPPED UP IN ORDER TO ENCOURAGE USE OF THE PROPOSED ZEBRA CROSSING.
8. THE PROPOSED STREET LIGHTING AND BELISHA BEACON ALTERATIONS SHOWN ARE INDICATIVE AND SHOWN FOR INFORMATION ONLY. ALL STREET LIGHTING, ILLUMINATED SIGNING AND BELISHA BEACON DETAILS ARE TO BE CONFIRMED BY PCC STREET LIGHTING TEAM.
9. PROPOSED KERB-GULLY/GULLY CHANGES SHOWN ARE INDICATIVE AND FULL DRAINAGE MODELLING IS TO BE COMPLETED DURING DETAILED DESIGN. KERB-GULLY/GULLY SPACINGS ARE IN ACCORDANCE WITH CD526.
10. AN EXISTING LIMESTONE ROCK FACE IS PRESENT TO THE REAR OF THE NORTHBOUND VERGE. BREAK-OUT / RE-GRADING OF THE ROCK FACE IS REQUIRED IN SOME LOCATIONS AS SHOWN TO ACHIEVE NECESSARY VERGE WIDTHS.
11. ALL WORKS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH THE PCC ESTATE ROAD CONSTRUCTION SPECIFICATION (2012) AND DMRB.

Rev	Date	Description	Drn	Chkd
P0	25/02/2020	First issue	-	-

Revisions

Client

Peterborough Highway Services
Delivered by SKANSKA / PETERBOROUGH CITY COUNCIL

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Drawing Status

PRELIMINARY DESIGN

Project Name

JUNCTION 15 NENE PARKWAY

Title — Original drawing sheet is A1

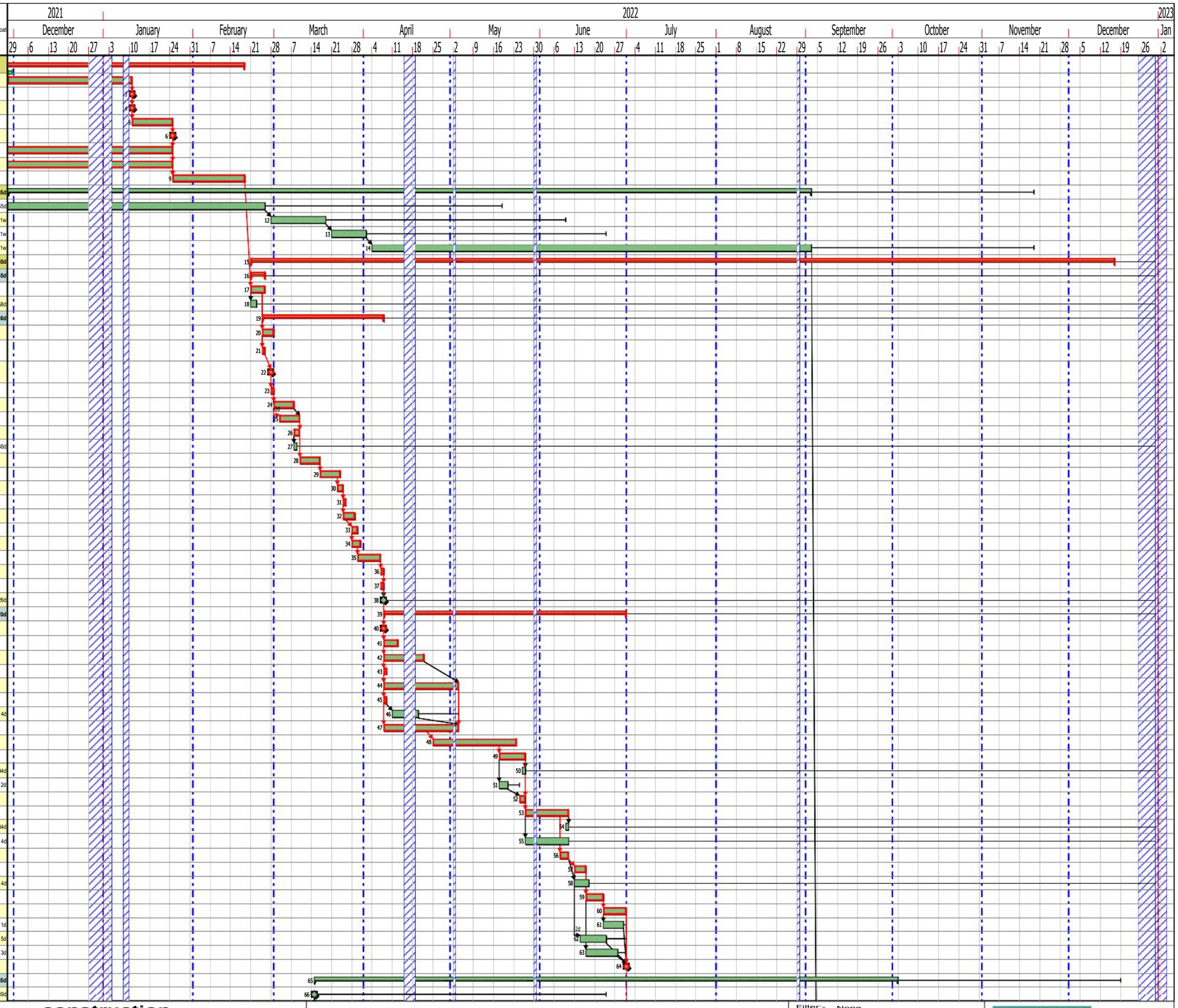
GENERAL ARRANGEMENT SHEET 2 OF 2

Scale	Drawn by	Checked by	Approved by
1:500	DAG	JS	SPW
	Drawn Date	Checked Date	Approved Date
	24/02/2020	24/02/2020	24/02/2020

Drawing Number: 5080751-SKA-HGN-CH-0004-S2 — Rev: P0

File location: P:\GBIPD\HandT\ESol\06 Peterborough Highways\5101020 Junction 15 Nene Parkway\8 CAD\8.1 Preliminary\8.1.1 DWG\5101020-SKA-HWA-GA-CH-0001-S2 (60mph Alignment).dwg Printed by: Small, Jack (IS)

Line	Unique task ID	Name	Calendar	Start	Duration	Finish	Total float
1	**85463**	**Target costing & contract award for Highways**	**5 day week, Xmas & Bank Holidays**	**25/10/21**	**15w 4d**	**18/02/22**	
2	85475	Completion of target cost price	5 day week, Xmas & Bank Holidays	29/11/21	5w	10/01/22	
3	85483	Milestone Director Reveiw (M. Shopland)	5 day week, Xmas & Bank Holidays	10/01/22		10/01/22	
4	85485	TC Submission	5 day week, Xmas & Bank Holidays	10/01/22		10/01/22	
5	85493	Client Approval	5 day week, Xmas & Bank Holidays	11/01/22	2w	24/01/22	
6	85503	Contract award	5 day week, Xmas & Bank Holidays	24/01/22		24/01/22	
7	85513	Apply for TTRO's & Roadspace (Highways England)	5 day week, Xmas & Bank Holidays	25/10/21	12w	24/01/22	
8	85523	Apply for TTRO's & Roadspace (PCC)	5 day week, Xmas & Bank Holidays	22/11/21	8w	24/01/22	
9	85464	Mobilisation	5 day week, Xmas & Bank Holidays	25/01/22	3w 4d	18/02/22	
10	**93156**	**Bridge Works Target cost & procurement**	**5 day week, Xmas & Bank Holidays**	**29/11/21**	**37w 4d**	**02/09/22**	**55d**
11	85474	Structures Design	5 day week, Xmas & Bank Holidays	29/11/21	11w 4d	25/02/22	55d
12	85465	Target cost	5 day week, Xmas & Bank Holidays	28/02/22	3w	18/03/22	11w
13	85466	Client Order	5 day week, Xmas & Bank Holidays	21/03/22	2w	01/04/22	11w
14	85467	Bridge Procurement	5 day week, Xmas & Bank Holidays	04/04/22	21w	02/09/22	11w
15	**90806**	**Site Works**	**5 day week, Xmas & Bank Holidays**	**21/02/22**	**42w**	**16/12/22**	**450d**
16	**85463**	**Set Up Site**	**5 day week, Xmas & Bank Holidays**	**21/02/22**	**1w**	**25/02/22**	**655d**
17	85473	Set up site Compound in Golf Club Car Park	5 day week, Xmas & Bank Holidays	21/02/22	1w	25/02/22	
18	85483	Electrical Connection for welfare & connect cabins	5 day week, Xmas & Bank Holidays	21/02/22	2d	22/02/22	658d
19	**85472**	**Phase 1**	**5 day week, Xmas & Bank Holidays**	**25/02/22**	**6w**	**08/04/22**	**626d**
20	85482	Install TM - Full closure to off-slip & Nene Parkway southbound (Nights)	5 day week, Xmas & Bank Holidays	25/02/22	2d	28/02/22	
21	85473	Break out existing kerbs & shorten island to new design length to central reserve & infil with tarmac (nights)	5 day week, Xmas & Bank Holidays	25/02/22	1d	25/02/22	
22	85474	Install varioguard to North & South bound carriageways & shut both lane 2's (full length of works - no access off roundabout) Nights	5 day week, Xmas & Bank Holidays	28/02/22		28/02/22	
23	85475	Remove existing VRS barriers/ site clearance (250mtrs)	5 day week, Xmas & Bank Holidays	28/02/22	1d	28/02/22	
24	85485	Break out & remove kerbs & central reservation	5 day week, Xmas & Bank Holidays	01/03/22	1w	07/03/22	
25	85486	Excavate to formation	5 day week, Xmas & Bank Holidays	03/03/22	1w	09/03/22	
26	85495	Install Street Light Duct crossing in both lane 2's	5 day week, Xmas & Bank Holidays	08/03/22	2d	09/03/22	
27	85496	Install Street Light Duct crossing by J33 (Lane 2)	5 day week, Xmas & Bank Holidays	08/03/22	1d	08/03/22	648d
28	85505	Install type 1	5 day week, Xmas & Bank Holidays	10/03/22	1w	16/03/22	
29	85515	Install all new kerbs to phase 1	5 day week, Xmas & Bank Holidays	17/03/22	1w	23/03/22	
30	85525	Trim type 1	5 day week, Xmas & Bank Holidays	23/03/22	2d	24/03/22	
31	85535	install Binder coarse	5 day week, Xmas & Bank Holidays	25/03/22	1d	25/03/22	
32	85476	Install signs / columns	5 day week, Xmas & Bank Holidays	25/03/22	2d	28/03/22	
33	90746	Install Roadsigns	5 day week, Xmas & Bank Holidays	28/03/22	2d	29/03/22	
34	85477	Install sockets for new VRS	5 day week, Xmas & Bank Holidays	28/03/22	3d	30/03/22	
35	85478	Install VRS & Terminals	5 day week, Xmas & Bank Holidays	30/03/22	1w 1d	06/04/22	
36	85479	Install surface coarse	5 day week, Xmas & Bank Holidays	07/04/22	1d	07/04/22	
37	85480	Remove Varioguard (nights) & open Nene Parkway lanes 1 & 2 S/B	5 day week, Xmas & Bank Holidays	07/04/22	1d	07/04/22	
38	85481	Complete Phase 1	5 day week, Xmas & Bank Holidays	08/04/22		08/04/22	626d
39	**85482**	**Phase 2**	**5 day week, Xmas & Bank Holidays**	**08/04/22**	**11w 1d**	**01/07/22**	**570d**
40	85483	Install Varioguard to Nene Parkway N/B lane 1 incl off-slip - (narrow lane working) - Sunday Night	5 day week, Xmas & Bank Holidays	08/04/22		08/04/22	
41	85484	Remove existing VRS (incl concrete barriers) & site clearance	5 day week, Xmas & Bank Holidays	08/04/22	3d	12/04/22	
42	85485	Break out & remove existing kerbs (circa 800lm)	5 day week, Xmas & Bank Holidays	08/04/22	1w 3d	21/04/22	
43	85495	Disconnect & remove streetlights (1nr)	5 day week, Xmas & Bank Holidays	08/04/22	1d	08/04/22	
44	85486	Excavate to formation for new widening (circa 2500m3 & say 20 loads muck away /day)	5 day week, Xmas & Bank Holidays	08/04/22	3w	03/05/22	
45	85487	Excavate for new maintenance bay	5 day week, Xmas & Bank Holidays	08/04/22	1d	08/04/22	
46	85497	Expose existing rock/ Rock cutting	5 day week, Xmas & Bank Holidays	11/04/22	1w	19/04/22	1w 4d
47	85488	Install capping/ type 1 (say 2500t)	5 day week, Xmas & Bank Holidays	08/04/22	3w	03/05/22	
48	85489	Install drainage Incl all manholes & connections (say 850 lm)	5 day week, Xmas & Bank Holidays	25/04/22	4w	23/05/22	
49	85490	Gulleys (33nr)	5 day week, Xmas & Bank Holidays	18/05/22	1w 2d	26/05/22	
50	85501	Install Streetlighting duct Road crossing by J33 (Lane 1) Nights	5 day week, Xmas & Bank Holidays	26/05/22	1d	26/05/22	594d
51	85511	Install Streetlighting ducts 200m	5 day week, Xmas & Bank Holidays	18/05/22	3d	20/05/22	2d
52	85521	Trim Type 1	5 day week, Xmas & Bank Holidays	25/05/22	2d	26/05/22	
53	85531	kerbs (circa 800lm)	5 day week, Xmas & Bank Holidays	27/05/22	2w	10/06/22	
54	85532	Install street lights (4nr)	5 day week, Xmas & Bank Holidays	10/06/22	1d	10/06/22	584d
55	85541	Concrete Collar to existing bridge structure (Thorpe Road road bridge)	5 day week, Xmas & Bank Holidays	27/05/22	2w	10/06/22	116w 4d
56	85542	Trim Type 1	5 day week, Xmas & Bank Holidays	08/06/22	3d	10/06/22	
57	85571	Surfacing to Lane Widening (to Binder coarse)	5 day week, Xmas & Bank Holidays	13/06/22	4d	16/06/22	
58	85581	Grasscrete to maintenance bay	5 day week, Xmas & Bank Holidays	13/06/22	1w	17/06/22	115w 4d
59	85551	Install sockets for new VRS	5 day week, Xmas & Bank Holidays	17/06/22	4d	22/06/22	
60	85561	Install VRS & terminals (circa 550 mtrs)	5 day week, Xmas & Bank Holidays	23/06/22	1w 1d	30/06/22	
61	85562	Topsoiling to verges	5 day week, Xmas & Bank Holidays	23/06/22	1w	29/06/22	1d
62	90746	Road signs	5 day week, Xmas & Bank Holidays	15/06/22	1w 2d	23/06/22	5d
63	90756	install & connect Streetlights incl cabling (4nr)	5 day week, Xmas & Bank Holidays	17/06/22	1w 2d	27/06/22	3d
64	90757	Complete Phase 2	5 day week, Xmas & Bank Holidays	01/07/22		01/07/22	
65	**90767**	**Bridge Works**	**5 day week, Xmas & Bank Holidays**	**15/03/22**	**27w 4d**	**03/10/22**	**55d**
66	90777	Place order for bridge	5 day week, Xmas & Bank Holidays	15/03/22		15/03/22	69d



Programme No : Stanground
Revision No : C
Issue Date : 08/09/2017
Drawn by : Kev Balaam

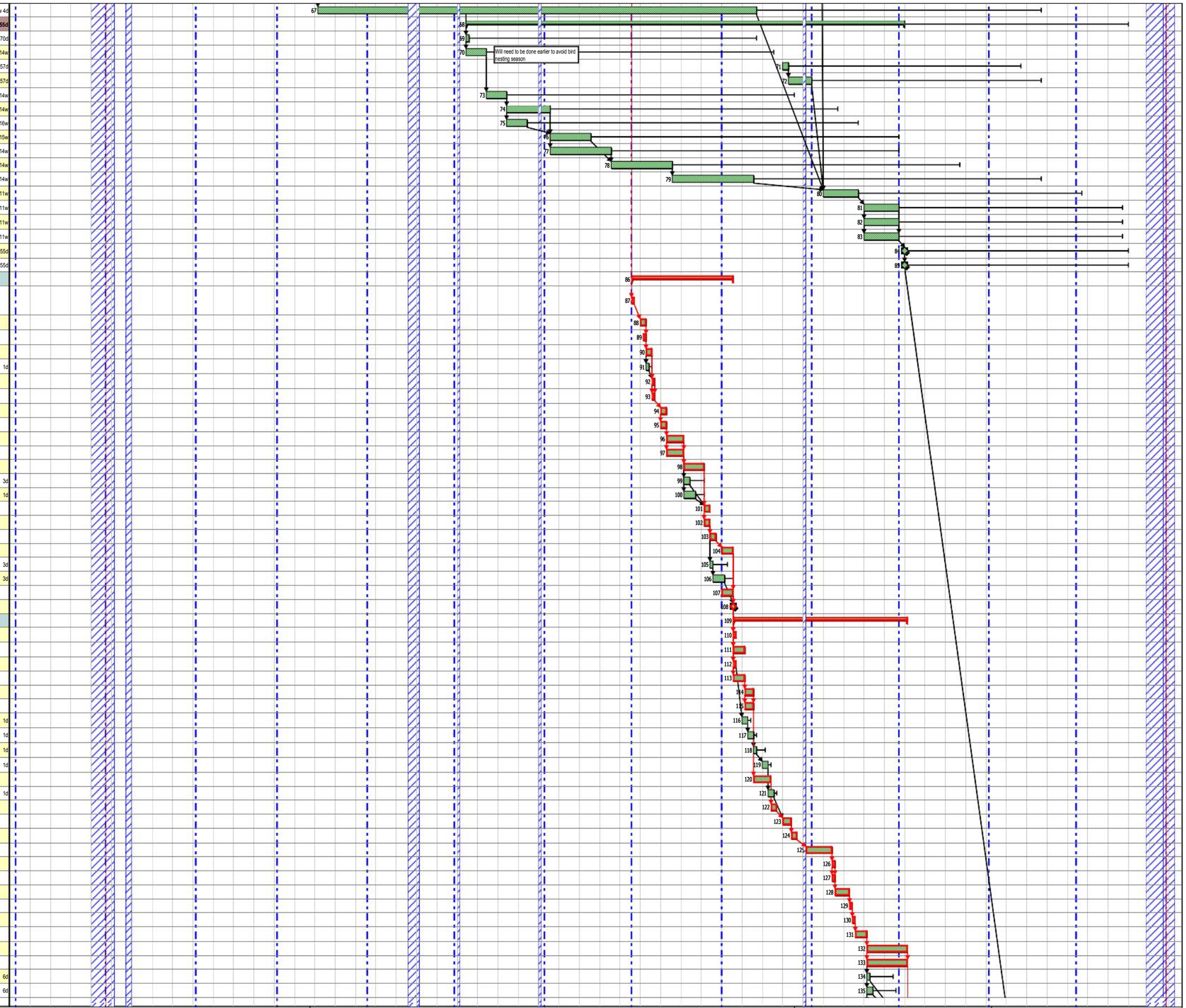
construction
PETERBOROUGH CITY COUNCIL

Filter:- None

MILESTONE INFRASTRUCTURE
A part of MGroup Services

File Ref. Peterborough - PCC Construction Programmes

67	90787	Design & fabrication	5 day week, Xmas & Bank Holidays	15/03/22	21w	12/08/22	13w 4d	
68	**90788**	**Bridge Construction Works**	**5 day week, Xmas & Bank Holidays**	**05/05/22**	**21w**	**03/10/22**	**55d**	
69	90797	Install Varioguard (night)	5 day week, Xmas & Bank Holidays	05/05/22	1d	05/05/22	70d	
70	90769	Tree clearance	5 day week, Xmas & Bank Holidays	05/05/22	1w	11/05/22	14w	
71	90779	Install Footpath diversion	5 day week, Xmas & Bank Holidays	22/08/22	2d	23/08/22	57d	
72	90770	Demolish & remove existing footbridge (incl substructures)	5 day week, Xmas & Bank Holidays	24/08/22	1w	31/08/22	57d	
73	90776	Piling platform Northbound	5 day week, Xmas & Bank Holidays	12/05/22	1w	18/05/22	14w	
74	90796	Piling Northbound	5 day week, Xmas & Bank Holidays	19/05/22	2w	02/06/22	14w	
75	90786	Piling platform Southbound	5 day week, Xmas & Bank Holidays	19/05/22	1w	25/05/22	16w	
76	90856	Piling Southbound	5 day week, Xmas & Bank Holidays	03/06/22	2w	16/06/22	15w	
77	90816	Foundations & Civils Northbound	5 day week, Xmas & Bank Holidays	03/06/22	3w	23/06/22	14w	
78	90826	Foundations & Civils Southbound	5 day week, Xmas & Bank Holidays	24/06/22	3w	14/07/22	14w	
79	90827	Concrete Curing	5 day week, Xmas & Bank Holidays	15/07/22	4w	11/08/22	14w	
80	90836	Install Footbridge (Full weekend road closures for main bridge span) including ramp sections	5 day week, Xmas & Bank Holidays	05/09/22	2w	16/09/22	11w	
81	90866	Ducting & Streetlights	5 day week, Xmas & Bank Holidays	19/09/22	2w	30/09/22	11w	
82	93136	Complete civils works by old bridge (lane widening)	5 day week, Xmas & Bank Holidays	19/09/22	2w	30/09/22	11w	
83	90846	Complete Footpaths & Civils works	5 day week, Xmas & Bank Holidays	19/09/22	2w	30/09/22	11w	
84	90766	Remove Varioguard (Nights) & open 'old' lane 1 (new lane to remain closed)	5 day week, Xmas & Bank Holidays	03/10/22		03/10/22	55d	
85	90876	Complete Bridge Works	5 day week, Xmas & Bank Holidays	03/10/22		03/10/22	55d	
86	**85492**	**Phase 3**	**5 day week, Xmas & Bank Holidays**	**01/07/22**	**5w**	**05/08/22**		
87	90756	Install Full closure to A47 off slip & outer ring of roundabout (nights) open slip road lane 1 (narrow lane) during day time & outer ring of roundabout to remain closed	5 day week, Xmas & Bank Holidays	01/07/22	1d	01/07/22		
88	85493	Break out existing Trief kerbs to splitter island (Nights)	5 day week, Xmas & Bank Holidays	04/07/22	2d	05/07/22		
89	85494	Disconnect & remove illuminated direction bollard (Nights)	5 day week, Xmas & Bank Holidays	05/07/22	1d	05/07/22		
90	85504	Trim sub-base & Install new kerbs to splitter island (nights)	5 day week, Xmas & Bank Holidays	06/07/22	2d	07/07/22		
91	85514	Install Streetlight ducts accross Nene Parkway S/B	5 day week, Xmas & Bank Holidays	06/07/22	1d	06/07/22	1d	
92	85495	Install varioguard to shut lane 1 of off-slip & lane 1 Nene Parkway (Full closure for Instalation) (Night)	5 day week, Xmas & Bank Holidays	08/07/22	1d	08/07/22		
93	85496	open lane 2 off-slip & lane 2 Nene parkway (Night)	5 day week, Xmas & Bank Holidays	08/07/22	1d	08/07/22		
94	85506	Site Clearance Incl remove existing VRS	5 day week, Xmas & Bank Holidays	11/07/22	2d	12/07/22		
95	85497	Break out existing kerbs & remove	5 day week, Xmas & Bank Holidays	11/07/22	2d	12/07/22		
96	85498	Excavate to formation	5 day week, Xmas & Bank Holidays	13/07/22	4d	18/07/22		
97	85499	Type 1	5 day week, Xmas & Bank Holidays	13/07/22	4d	18/07/22		
98	85500	Install drainage	5 day week, Xmas & Bank Holidays	19/07/22	1w	25/07/22		
99	85501	Install gulleys (connect to existing drainage) 8nr	5 day week, Xmas & Bank Holidays	19/07/22	2d	20/07/22	3d	
100	85502	Install streetlighting ducts & boxes (150 mtrs)	5 day week, Xmas & Bank Holidays	19/07/22	4d	22/07/22	1d	
101	85511	Install streetlights (6nr)	5 day week, Xmas & Bank Holidays	26/07/22	2d	27/07/22		
102	85521	Kerbs (125mtrs)	5 day week, Xmas & Bank Holidays	26/07/22	2d	27/07/22		
103	85531	Install VRS sockets	5 day week, Xmas & Bank Holidays	28/07/22	2d	29/07/22		
104	85541	Install VRS & terminals (135 mtrs)	5 day week, Xmas & Bank Holidays	01/08/22	4d	04/08/22		
105	85542	Trim Type 1	5 day week, Xmas & Bank Holidays	28/07/22	1d	28/07/22	3d	
106	85551	Surfacing to B/C	5 day week, Xmas & Bank Holidays	29/07/22	2d	01/08/22	3d	
107	85561	Topsoil to verges	5 day week, Xmas & Bank Holidays	01/08/22	4d	04/08/22		
108	85571	Complete Phase 3	5 day week, Xmas & Bank Holidays	05/08/22		05/08/22		
109	**85502**	**Phase 4**	**5 day week, Xmas & Bank Holidays**	**05/08/22**	**8w 1d**	**04/10/22**		
110	85512	Install TM to outer ring of roundabout & lane 1 of E/B Offslip	5 day week, Xmas & Bank Holidays	05/08/22	1d	05/08/22		
111	90876	Install all existing traffic signals in NAL Blocks (barrels)	5 day week, Xmas & Bank Holidays	05/08/22	2d	08/08/22		
112	85503	Site clearance	5 day week, Xmas & Bank Holidays	05/08/22	1d	05/08/22		
113	85504	Break out existing kerbs & slabs & CA	5 day week, Xmas & Bank Holidays	05/08/22	2d	08/08/22		
114	85505	Excavate to formation level (all areas)	5 day week, Xmas & Bank Holidays	09/08/22	3d	11/08/22		
115	85506	Type 1	5 day week, Xmas & Bank Holidays	09/08/22	3d	11/08/22		
116	85507	Road crossing ducts (both directions of Bretton Way) (Nights)	5 day week, Xmas & Bank Holidays	08/08/22	2d	09/08/22	1d	
117	85508	Road Crossing ducts (SL & TS) to A47 E/B off slip road (Nights)	5 day week, Xmas & Bank Holidays	10/08/22	2d	11/08/22	1d	
118	85509	Road crossing ducts (SL) to A47 W/B Onslip (road closure) Nights	5 day week, Xmas & Bank Holidays	12/08/22	1d	12/08/22	1d	
119	85519	Road Crossing ducts to roundabout (TS) (Nights)	5 day week, Xmas & Bank Holidays	15/08/22	2d	16/08/22	1d	
120	85520	TS ducts by lane 1 & Lane 3 + controller base	5 day week, Xmas & Bank Holidays	12/08/22	4d	17/08/22		
121	85529	TS ducts to A47 E/B Offslip (both sides) Nights	5 day week, Xmas & Bank Holidays	17/08/22	2d	18/08/22	1d	
122	85539	Install Gulleys & connections (4nr)	5 day week, Xmas & Bank Holidays	18/08/22	2d	19/08/22		
123	85549	Install kerbs	5 day week, Xmas & Bank Holidays	22/08/22	3d	24/08/22		
124	85559	Install TS ducts niall sockets & loop boxes to lane 1 (4nr)	5 day week, Xmas & Bank Holidays	25/08/22	2d	26/08/22		
125	85510	Install streetlight ducts & boxes	5 day week, Xmas & Bank Holidays	30/08/22	1w 2d	07/09/22		
126	85511	Excavate for maintenance bay	5 day week, Xmas & Bank Holidays	08/09/22	1d	08/09/22		
127	85521	Type 1 to maintenance bay	5 day week, Xmas & Bank Holidays	08/09/22	1d	08/09/22		
128	85541	Install VRS & terminal	5 day week, Xmas & Bank Holidays	09/09/22	3d	13/09/22		
129	85522	Grasscrete to Maintenance bay	5 day week, Xmas & Bank Holidays	14/09/22	1d	14/09/22		
130	85551	Tarmac surfacing to Binder coarse	5 day week, Xmas & Bank Holidays	15/09/22	1d	15/09/22		
131	85569	Install TS ducts niall sockets & loop boxes to lane 3 (3nr)	5 day week, Xmas & Bank Holidays	16/09/22	2d	19/09/22		
132	85531	Install new traffic lights & cabling	5 day week, Xmas & Bank Holidays	20/09/22	2w	03/10/22		
133	85561	Install Streetlighting	5 day week, Xmas & Bank Holidays	20/09/22	2w	03/10/22		
134	85571	Install Road signs	5 day week, Xmas & Bank Holidays	20/09/22	1d	20/09/22	6d	
135	85591	Reinstate paving slabs under bridge	5 day week, Xmas & Bank Holidays	20/09/22	2d	21/09/22	6d	



Line	Unique task ID	Name	Calendar	Start	Duration	Finish	Total float
136	85601	Topsoiling	5 day week, Xmas & Bank Holidays	20/09/22	3d	22/09/22	6d
137	85611	Remove TM	5 day week, Xmas & Bank Holidays	03/10/22	1d	03/10/22	
138	85621	Complete Phase 4	5 day week, Xmas & Bank Holidays	04/10/22		04/10/22	
139	**85512**	**Phase 5**	**5 day week, Xmas & Bank Holidays**	**04/10/22**	**4w 4d**	**07/11/22**	**480d**
140	85522	Install TM (off-peak lane closure & diversion. Access into Thorpe Wood only) & temporarily relocate bus stop + outer ring closure	5 day week, Xmas & Bank Holidays	04/10/22	1d	04/10/22	
141	85532	Site clearance	5 day week, Xmas & Bank Holidays	04/10/22	1d	04/10/22	
142	85542	Break out Kerbs, edgings & footpath & CA (Access Track side)	5 day week, Xmas & Bank Holidays	05/10/22	2d	06/10/22	
143	85552	Excavate to formation	5 day week, Xmas & Bank Holidays	07/10/22	1w	13/10/22	
144	85562	Type 1	5 day week, Xmas & Bank Holidays	10/10/22	4d	13/10/22	
145	85582	Drainage connection accross Thorpe Wood (part)	5 day week, Xmas & Bank Holidays	14/10/22	2d	17/10/22	
146	85572	Kerbs	5 day week, Xmas & Bank Holidays	18/10/22	2d	19/10/22	
147	85573	Drainage	5 day week, Xmas & Bank Holidays	20/10/22	1w	26/10/22	
148	85583	Road Duct crossings (2nr) part	5 day week, Xmas & Bank Holidays	14/10/22	2d	17/10/22	7d
149	85584	Ducts	5 day week, Xmas & Bank Holidays	27/10/22	1w	02/11/22	
150	85585	Streetlighting (incl cabling etc	5 day week, Xmas & Bank Holidays	31/10/22	3d	02/11/22	
151	85586	Trim type 1	5 day week, Xmas & Bank Holidays	31/10/22	1d	31/10/22	
152	85587	Tactile paving & edgings to new Zebra crossing	5 day week, Xmas & Bank Holidays	31/10/22	1d	31/10/22	
153	85588	Surfacing to B/C	5 day week, Xmas & Bank Holidays	01/11/22	1d	01/11/22	
154	85589	Topsoiling to verges	5 day week, Xmas & Bank Holidays	02/11/22	2d	03/11/22	
155	85590	Roadsigns	5 day week, Xmas & Bank Holidays	02/11/22	2d	03/11/22	481d
156	85591	Alter TM to close outer ring & lane each side of splitter island	5 day week, Xmas & Bank Holidays	02/11/22	1d	02/11/22	482d
157	85592	drainage connection accross Thorpe Wood (part)	5 day week, Xmas & Bank Holidays	02/11/22	2d	03/11/22	
158	85593	Road Duct crossings (2nr) part	5 day week, Xmas & Bank Holidays	04/11/22	1d	04/11/22	
159	85602	Tactile paving & edgings to new Zebra crossing	5 day week, Xmas & Bank Holidays	02/11/22	2d	03/11/22	
160	85603	Streetlighting ducting	5 day week, Xmas & Bank Holidays	04/11/22	1d	04/11/22	
161	85612	Break out & remove existing splitter island & form new island (Nights)	5 day week, Xmas & Bank Holidays	02/11/22	3d	04/11/22	
162	85622	Complete Phase 5	5 day week, Xmas & Bank Holidays	07/11/22		07/11/22	
163	**85513**	**Phase 6 - Surfacing**	**5 day week, Xmas & Bank Holidays**	**07/11/22**	**4w**	**02/12/22**	**460d**
164	**85522**	**Phase A**	**5 day week, Xmas & Bank Holidays**	**07/11/22**	**1w 1d**	**14/11/22**	
165	85523	TM (Nights)	5 day week, Xmas & Bank Holidays	07/11/22	1w	11/11/22	
166	85524	Plane & lay 45mm Casc+	5 day week, Xmas & Bank Holidays	07/11/22	1w	11/11/22	
167	85525	Roadmarkings	5 day week, Xmas & Bank Holidays	08/11/22	1w	14/11/22	
168	**85532**	**Phase B**	**5 day week, Xmas & Bank Holidays**	**14/11/22**	**3d**	**16/11/22**	
169	85542	Stand-down shift for surfacing	5 day week, Xmas & Bank Holidays	14/11/22	1d	14/11/22	
170	85533	TM (Nights)	5 day week, Xmas & Bank Holidays	15/11/22	2d	16/11/22	
171	85534	Plane & lay 45mm Casc+	5 day week, Xmas & Bank Holidays	15/11/22	2d	16/11/22	
172	85535	Roadmarkings (incl weekend)	5 day week, Xmas & Bank Holidays	16/11/22	1d	16/11/22	
173	**85542**	**Phase C**	**5 day week, Xmas & Bank Holidays**	**17/11/22**	**2d**	**18/11/22**	
174	85543	TM (Nights)	5 day week, Xmas & Bank Holidays	17/11/22	2d	18/11/22	
175	85544	Plane & lay 45mm Casc+	5 day week, Xmas & Bank Holidays	17/11/22	2d	18/11/22	
176	85545	Roadmarkings	5 day week, Xmas & Bank Holidays	17/11/22	2d	18/11/22	
177	**85552**	**Phase D**	**5 day week, Xmas & Bank Holidays**	**07/11/22**	**2w 2d**	**22/11/22**	**468d**
178	85562	Install traffic signals & cabling (Days)	5 day week, Xmas & Bank Holidays	07/11/22	2w	18/11/22	94w
179	85553	TM (Nights)	5 day week, Xmas & Bank Holidays	21/11/22	1d	21/11/22	
180	85554	Plane & lay 45mm Casc+	5 day week, Xmas & Bank Holidays	21/11/22	1d	21/11/22	
181	85564	Roadmarkings	5 day week, Xmas & Bank Holidays	21/11/22	2d	22/11/22	
182	85555	Induction Loops	5 day week, Xmas & Bank Holidays	21/11/22	2d	22/11/22	
183	**85562**	**Phase E**	**5 day week, Xmas & Bank Holidays**	**22/11/22**	**2d**	**23/11/22**	
184	85572	Stand-down shift for surfacing	5 day week, Xmas & Bank Holidays	22/11/22	1d	22/11/22	
185	85563	TM (Nights)	5 day week, Xmas & Bank Holidays	23/11/22	1d	23/11/22	
186	85564	Plane & lay 45mm Casc+	5 day week, Xmas & Bank Holidays	23/11/22	1d	23/11/22	
187	85565	Roadmarkings	5 day week, Xmas & Bank Holidays	23/11/22	1d	23/11/22	
188	**85572**	**Phase F**	**5 day week, Xmas & Bank Holidays**	**24/11/22**	**1w 2d**	**02/12/22**	**10d**
189	85582	TM (Nights)	5 day week, Xmas & Bank Holidays	24/11/22	1d	24/11/22	
190	85593	High Friction Surfacing	5 day week, Xmas & Bank Holidays	24/11/22	1d	24/11/22	
191	85594	Induction Loops	5 day week, Xmas & Bank Holidays	25/11/22	1d	25/11/22	
192	85602	Roadmarkings (including weekend)	5 day week, Xmas & Bank Holidays	28/11/22	1d	28/11/22	14d
193	85595	Comission Traffic Signals	5 day week, Xmas & Bank Holidays	28/11/22	1w	02/12/22	
194	**90826**	**Completion**	**5 day week, Xmas & Bank Holidays**	**05/12/22**	**2w**	**16/12/22**	
195	90836	Demob, snagging and tidy up compound area	5 day week, Xmas & Bank Holidays	05/12/22	2w	16/12/22	
196	85603	Planned completion date	5 day week, Xmas & Bank Holidays	16/12/22		16/12/22	
197	85612	Terminal Float	5 day week, Xmas & Bank Holidays	19/12/22	3w	17/01/23	
198	85622	Completion date	5 day week, Xmas & Bank Holidays	17/01/23		17/01/23	

Programme No : Stanground
Revision No : C
Issue Date : 08/09/2017
Drawn by : Kev Balaam

construction
PETERBOROUGH CITY COUNCIL

Filter:- None

MILESTONE INFRASTRUCTURE
A part of Milestone Services

File Ref. Peterborough - PCC Construction Programmes

MILESTONE INFRASTRUCTURE
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Appendix O:

Construction Inflation Costs

Jct 15 Nene Parkway

Tender Number
Revision Number
Date 16/09/2021

Inflation Calculator

Element	Base Cost	Cost Basis Notes	Percentage Split								Inflation Adjustment								Inflation Value								Total Inflation Adjustment	Average Inflation Adjustment
			Qtr Yr 1 Oct-Dec21	Qtr Yr 2 Jan- Mar22	Qtr Yr 3 Apr - Jun 22	Qtr Yr 4 Jul-Sept 22	Qtr Yr 5 Oct - Dec22	Qtr Yr 6	Qtr Yr 7	Qtr Yr 8	Qtr Yr 1 Oct-Dec21	Qtr Yr 2 Jan- Mar22	Qtr Yr 3 Apr - Jun 22	Qtr Yr 4 Jul-Sept 22	Qtr Yr 5 Oct - Dec22	Qtr Yr 6	Qtr Yr 7	Qtr Yr 8	Qtr Yr 1	Qtr Yr 2	Qtr Yr 3	Qtr Yr 4	Qtr Yr 5	Qtr Yr 6	Qtr Yr 7	Qtr Yr 8		
Prelims																												
Staff *(from Prelim)*	£640,370				33%	33%	33%						3.00%	3.00%	3.00%						£6,397	£6,397	£6,397				£19,192	3.0%
Labour *(from Prelim)*	£12,031			25%	25%	25%	25%					3.00%	3.00%	3.00%	3.00%					£90	£90	£90	£90				£361	3.0%
Security Guards *(from Prelim)*																												
General Prelims *(from Prelim)*	£104,630			25%	25%	25%	25%					1.25%	1.88%	2.50%	3.13%					£327	£492	£654	£819				£2,291	2.2%
People																												
Labour *(from Candy)*	£58,542			25%	25%	25%	25%					1.27%	3.80%	3.80%	3.80%					£186	£556	£556	£556				£1,854	3.2%
Materials																												
Materials *(from build up)*																												
Temp Materials *(from build up)*	£19,488			25%	25%	25%	25%					3.00%	3.00%	3.00%	3.00%					£146	£146	£146	£146				£585	3.0%
Fuel *(from build up)*	£14,280			25%	25%	25%	25%					2.50%	81.77%	83.02%	84.27%					£89	£2,919	£2,964	£3,008				£8,981	62.9%
Plant																												
Total Plant *(from build up)*	£91,458			25%	25%	25%	25%					1.25%	1.88%	2.50%	3.13%					£286	£430	£572	£716				£2,003	2.2%
Temporary Works																												
Subcontractors																												
Disposal *(from build up)*	£27,180			20%	40%	30%	10%					4.63%	5.19%	7.08%	7.64%					£252	£564	£577	£208				£1,601	5.9%
Surfacing	£778,821			10%	37%	38%	15%					7.11%	8.06%	8.72%	8.78%					£5,537	£23,226	£25,807	£10,257				£64,828	8.3%
Rd Marking	£46,796			2%	2%	2%	94%					2.71%	4.14%	5.69%	5.82%					£25	£39	£53	£2,560				£2,678	5.7%
Signing	£61,362				40%	50%	10%					6.44%	7.04%	8.15%	8.24%						£1,728	£2,500	£506				£4,734	7.7%
TM	£435,967			32%	29%	29%	10%					0.38%	1.58%	3.79%	3.98%					£530	£1,998	£4,792	£1,735				£9,055	2.1%
Civils	£1,652,373			20%	40%	30%	10%					3.07%	6.52%	7.45%	7.59%					£10,146	£43,094	£36,931	£12,542				£102,712	6.2%
Street Lighting	£150,075			2%	30%	30%	10%					4.01%	4.85%	6.40%	6.53%					£120	£2,184	£2,881	£980				£6,165	4.1%
Structure	£591,838				70%	30%						12.50%	12.50%	12.50%	12.50%						£51,786	£22,194					£73,980	12.5%
Traffic Signals	£34,046						100%								6.00%								£2,043				£2,043	6.0%
Bearings	£3,950					100%								6.00%								£237					£237	6.0%
Joints	£4,000					100%								6.00%								£240					£240	6.0%
Safety Barrier	£288,795			10%	40%	40%	10%					4.01%	4.85%	6.40%	6.53%					£1,158	£5,603	£7,393	£1,886				£16,040	5.6%
Fixed Demolition	£81,300			100%																								
Piling	£148,278			25%	75%							7.65%	8.13%	9.02%	9.09%					£2,836	£9,041						£11,877	8.0%
Landscaping	£13,939						100%					0.54%	1.76%	3.92%	4.11%								£573				£573	4.1%
Other																												
TOTAL INFLATION ADJUSTMENT																			£ -	£ 21,729	£ 150,292	£ 114,985	£ 45,021	£ -	£ -	£ -	£ 332,027	6.7%

MILESTONE INFRASTRUCTURE
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Appendix P:

Construction Risk Register

Jct 15 Nene Parkway - Construction Risk Register

Date Updated:	21/09/2021

No.	Risk Description	Likelihood (%)	Minimum Cost (£)	Most Likely Cost (£)	Maximum Cost (£)	Project Impact	Comments	Likelihood (%) x Most Likely Cost (£)	Mitigation	Risk Category	Owner
1	Public issues/ Access Issues	40.0%	£5,562.50	£11,125.00	£17,800.00	Operational	5 shift TM lane closure, 5 Night supervision, some allowance for Public Liaison officer and Project Manager to liaise with public and arrange public meetings.	£4,450.00	Risk with PCC, a Provision is made in Target against so that the there will be regular updates and meeting with public .		Milestone
2	Weather delays affecting the operations	40.0%	£6,937.50	£20,812.50	£34,687.50	Operational	3 shift TM , 3 shift supervision and some cost for welfare and other	£8,325.00	Risk with Client if weather is over 1 in 10- Normal 1 In 10 Weather conditions and related possible restrictions/ idle time and cancellations etc are allowed in this risk.		Milestone
3	Materials delivery issues with Bitumen/ Concrete- plant breakdown/ wrong materials	40.0%	£14,093.75	£28,187.50	£56,375.00	Operational	5 shift TM and cancellation charges, 5 shift supervision and some cost for welfare and other	£11,275.00	Service Provider to manage by confirming back up plant etc with sub contractor. This risk allow for TM and Supervision for 1 week		Milestone
4	Under ground utilities and condition	50.0%	£12,150.00	£24,300.00	£48,600.00	Operational	No Diversion works allowed in the Tender	£12,150.00	Risk with the provider only to mitigate direct labour plant cost by scanning of works, and making trial holes and provision of vacuum excavator etc . Not included any Third Party cost for removal of rerouting services .		Milestone
5	Take off errors	50.0%	£0.00	£0.00	£0.00	Operational		£0.00			Milestone
6	Damages	60.0%	£5,000.00	£19,250.00	£25,000.00	Operational	Security by CCTV/ allowance for damages	£11,550.00	Security by CCTV/ allowance for damages		Milestone
7	Hard Excavation provision during the drainage works is not enough.	75.0%	£3,276.67	£6,553.33	£9,830.00	Operational	All for a % additional time and cost for Rock excavation and reinstatement	£4,915.00	All for a % additional time and cost for Rock excavation and reinstatement		Milestone
8	Ecological mitigation works	60.0%	£3,166.67	£6,333.34	£9,500.01	Operational	Ecological survey on all locations before start of construction as per the bill. Allow for a week cost for Ecological visits	£3,800.00	Ecological survey on all locations before start of construction as per the bill. Allow for a week cost for Ecological visits		Milestone
9	Price increase of materials- Steel and other Construction materials					Operational	Now included in Tender	£0.00	Fix the tender validity. Allow for £300 increase of steel (150T) cost in risk for Steel materials		Milestone
10	No Availability materials- Steel and other Construction materials	40.0%	£4,687.50	£9,375.00	£23,437.50	Operational	Allow for advance purchase of for Steel materials- Additional cost for bond 2.5% 0f Materials cost	£3,750.00	Allow for advance purchase of for Steel materials- Additional cost for bond 2.5% 0f Materials cost		Milestone
11	Programme Delays due to delay in structural works	55.0%	£15,909.10	£31,818.19	£63,636.38	Operational	Allow for Float in the programme, combine and prepare the programme in line with the discussion /contractors-2 Weeks TM cost included	£17,500.00	Allow for Float in the programme, combine and prepare the programme in line with the discussion /contractors-2 Weeks TM cost included		Milestone
12	Programme Delays due to delay in structural Demolition works	55.0%	£6,363.64	£6,363.64	£12,727.28	Operational	Allow for Float in the programme, combine and prepare the programme in discussion with the contractors. Allow for 2 Days TM	£3,500.00	Allow for Float in the programme, combine and prepare the programme in discussion with the contractors. Allow for 2 Days TM		Milestone
13	Traffic signal, Landscaping and Vegetation Clearance works are sourced by client- Traffic signal works under Skanska TM and Programme provision		£0.00	£0.00	£0.00	Operational	Allow for supervision element and loss of revenue	£0.00	Allow for supervision element and loss of revenue		Milestone
14	Welfare location, cost and its reinstatement	40.0%	£10,000.00	£22,000.00	£30,000.00	Operational	Allow for estimated cost for reinstatement	£8,800.00	Allow for estimated cost for reinstatement		Milestone
15	Impact of Wind affecting the bridge installation works	40.0%	£20,000.00	£38,750.00	£50,000.00	Operational	Allow float in the programme, provide cost for possible cancellation in the risk	£15,500.00	Allow float in the programme, provide cost for possible cancellation in the risk		Milestone
	Total		**£107,147.32**	**£224,868.50**	**£381,593.67**			**£105,515.01**			

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Appendix Q:

Scheme Monitoring and Evaluation Plan

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Junction 15 Improvement Scheme

Scheme Evaluation Plan (Phase 1)

| Delivering what we **promise**

Document Control

Job Number:						
Document ref:					Authorisation	
Rev	Purpose	Originated	Checked	Reviewed	Milestone	Date
1.0	First Issue	HP	JB	RMJ	RMJ	23.09.21

Contents

Figures

Tables

1. Introduction

1.1.1 This document is the Scheme Evaluation Plan for the proposed Junction 15 Improvement Scheme. The report has been produced in conjunction with the Junction 15 Full Business Case (FBC) submitted to the Cambridge and Peterborough Combined Authority (CPCA).

1.1.2 To avoid duplication of information, this report includes both a Benefits Realisation Plan and the Monitoring and Evaluation Plan.

1.1.3 The aim of this report is to provide context of the Junction 15 Improvement Scheme, whilst setting out the expected benefits and outcomes alongside the methods in which will be used to monitor and evaluate these both pre and post construction.

1.2 Monitoring and Evaluation Guidance

1.2.1 The Cambridgeshire and Peterborough Combined Authority (CPCA) Assurance Framework[1] sets out the fundamental principles in relation to the use and administration of funding from the CPCA and their proposed approach to monitoring and evaluation of projects.

1.2.2 The Assurance Framework states that all transport schemes (over £5m) will follow the DfT Monitoring and Evaluation Guidance for Local Authority Major Schemes. The DfT Monitoring and Evaluation Guidance (2012)[2] identifies three tiers of Monitoring and Evaluation:

- **Standard Monitoring** –schemes are required to be monitor and reported on a standard set of measures
- **Enhanced Monitoring** – for schemes costing more than £50m or are anticipated to have a significant impact on particular indicators
- **Fuller Evaluation** – for DfT- specified selection of schemes.

1.2.3 The cost of the Junction 15 Improvement Scheme is significantly less than £50m and the study has not been specified for Fuller Evaluation, resulting in Junction 15 falling under the Standard Monitoring tier.

[1] Local-Assurance-Framework-.pdf .

[2] Major Scheme Business Cases: Evaluation Guidance for Local Authority Major Schemes (publishing.service.gov.uk)

1.3 Report Structure

- Chapter 2: Scheme Background and Context
- Chapter 3: Scheme Objectives and Outcomes
- Chapter 4: Benefits Realisation Plan
- Chapter 5: Monitoring and Evaluation Approach
- Chapter 6: Data Requirements and Collection Methods
- Chapter 7: Evaluation Resources and Governance
- Chapter 8: Dissemination Plan

2. Scheme Background and Context

2.1 Scheme Location

2.1.1 Junction 15 is a large grade separated junction between two of Peterborough's busiest strategic roads. The junction is a crucial cornerstone of the Parkway Network and provides access to one of the City's three road river crossings.

2.1.2 The junction provides access to the A1260 Nene Parkway, Bretton Way, Thorpe Wood and the A47 Soke Parkway. The junction also provides direct access to a major employment centre (Thorpe Wood) and accommodates a large number of peak hour commuter trips to / from this location.

2.1.3 Figure 2.1 beneath highlights the location of Junction 15 in relation to the Parkway system and Peterborough City Centre.

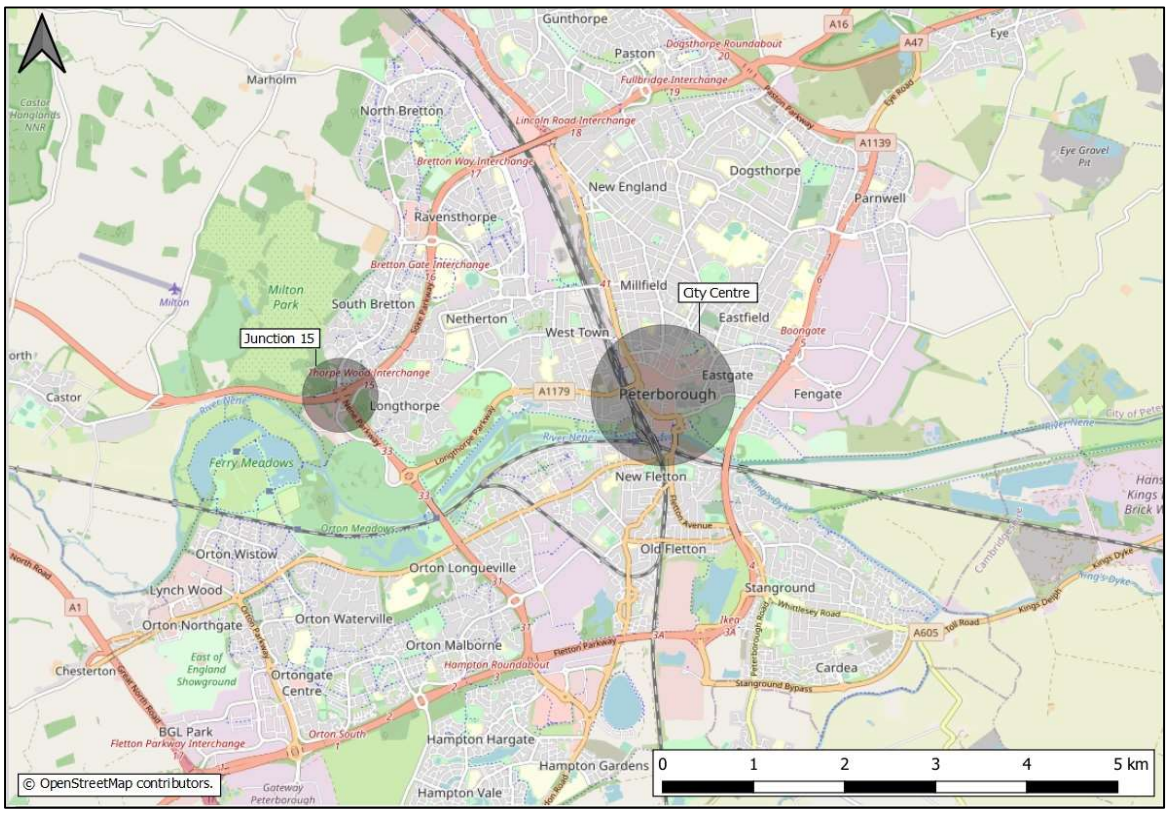

Figure 2.1: Junction 15 Location

2.1.4 On average 46,000 vehicles pass through Junction 15 on a typical weekday, of which 12% are classified as commercial vehicles[3]. The junction is used by trips from all over the Peterborough area, and experiences significant peak hour congestion, particularly northbound on the A1260 Nene Parkway where queues regularly exceed a mile during the PM peak hour, compromising the surrounding road network.

2.1.5 To date Peterborough's transport network has served the City well, which was fundamentally redesigned in the 1970s to accommodate the then Peterborough New Town. However, as a consequence of recent and planned housing and employment growth, capacity issues are now emerging on the road network, resulting in congestion and delay. As congestion increases on the Parkway Network, and queues form at key junctions, the potential for delivering new homes and jobs in the area will become increasingly constrained.

2.1.6 The proposed scheme will address severe levels of congestion and delay that are currently compromising the operational efficiency of junction 15 and surrounding road network. By addressing existing issues, and building in additional capacity, the scheme is expected to unlock the wider network and assist in delivering growth aspirations for the City.

2.2 Scheme Description

2.2.1 The Junction 15 scheme will be delivered in two phases. The first phase will deliver highway improvements and a new footbridge over the A1260 Nene Parkway, whilst the second phase will deliver A LNT 1/20 cycleway along Thorpe Wood alongside wider sustainable transport improvements.

2.2.2 Construction of the scheme will address significant issues of congestion and delay at a crucial cornerstone of Peterborough's Parkway Network, providing much needed capacity for Peterborough City Council (PCC) and the Cambridgeshire and Peterborough Combined Authority (CPCA) to meet their agenda for growth in Peterborough.

2.2.3 A breakdown of the scheme components and phasing is detailed overleaf.

[3] Manual Traffic Survey Data, 9th November 2017.

2.2.4 Scheme elements include:

- Creation of a third lane (northbound) between Junction 33 and Junction 15 of the A1260 Nene Parkway, with a speed reduction to 60MPH implemented
- Creation of a three-lane circulatory on Junction 15 between the A1260 Nene Parkway approach and the Bretton Way exit
- Extension of the flare on the Thorpe Wood to Junction 15 by approximately 30 metres
- Creation of a zebra crossing over Thorpe Wood close to the existing bus stops
- Replacement of the pedestrian footbridge over the A1260 Nene Parkway (to facilitate the creation of a third northbound lane and bring the footbridge to standard)
- Construction of a new footpath alignment from the bus stops to the north-western footpath between the business park and Bretton
- Environmental and biodiversity enhancements in the north-eastern corner of Junction 15 between Bretton Way and A47 EB on-slip
- Wildflower Planting Trial centred on the grass verges either side of the A47 eastbound off-slip
- Areas of mass bulb planting located on the lower ledge of the Junction 15 circulatory as well as the grass verge between the A1260 Nene Parkway and Thorpe Wood
- Tree planting at several locations across the study area as compensation for tree loss at the footbridge and helping to achieve biodiversity net gain.
- The exposing of the geological profile of the A1260 Nene Parkway embankments near Thorpe Road Bridge and subsequent interpretation board.

Figure 2.2 overleaf highlights the final Junction 15 scheme.

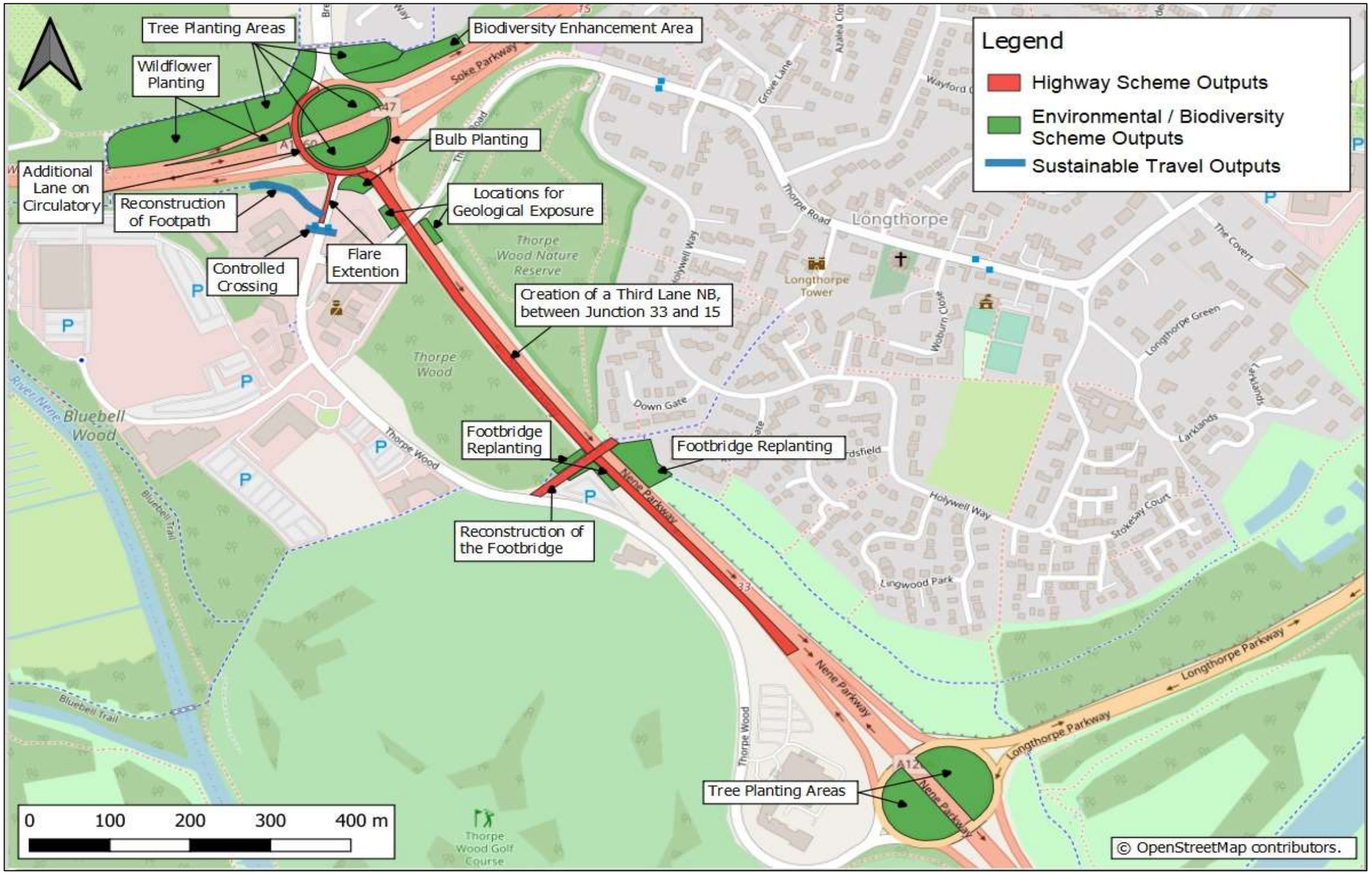

Figure 2.2: Junction 15 Final Scheme

2.3 Scheme Costs and Funding

2.3.1 The forecast Outturn cost of the scheme is £8,013,642

2.3.2 The scheme is to be funded by the CPCA, with funding already identified within the Single Investment Fund.

2.3.3 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.

2.3.4 The scheme costs (excluding operating costs) can be summarised as:

- Base Investment Cost = £6,932,350
- Risk Adjusted Base Cost = £7,667,377
- Risk Adjusted Base Cost with Inflation (**Outturn Cost**) = £8,013,642

2.4 Delivery and Timeframes

2.4.1 Key project milestones to scheme delivery are outlined in the table beneath.

Table 2.1: Key Project Milestones

August 2020 – September 2021	Detailed Design undertaken and Full Business Case produced.
September 2021 – November 2021	Full Business Case reviewed by CPCA, and CPCA Board approval sought for construction funding.
November 2021 – March 2022	Completion of bridge design and procurement
January 2022 – February 2022	Mobilisation begins onsite, Site Clearance undertaken
February 2022 – December 2022	Highway construction begins, includes 6 phases as detailed below
February 2022 – April 2022	Phase 1 of construction programme, includes site clearance, removal of VRS system and evacuation centred on the A1260 Nene Parkway
April 2022 – July 2022	Phase 2 of construction programme, includes elements of exposing the geological profile, A1260 Nene Parkway lane gain and the required maintenance bay
May 2022 – October 2022	Bridge construction commences, including site clearance, demolition of the exiting structure, piling and foundations and installation of new bridge
July 2022 – August 2022	Phase 3 of construction programme, includes the realignment of the A47 WB off slip and new VRS system
August 2022 – October 2022	Phase 4 of construction programme, includes the additional lane on the circulatory and signals on the A47 EB off slip
October 2022 – November 2022	Phase 5 of construction programme, includes the Thorpe Wood flare, zebra crossing and reconstructed footpath
November 2022 – December 2022	Phase 6 of construction programme, includes surfacing across the site with works spilt into phases A through to F
December 2022 – January 2023	Demobilisation

3. Scheme Objectives and Outcomes

3.1 Scheme Objectives

3.1.1 The objectives for the Junction 15 Improvement Scheme were developed based on goals and outcomes from key local policy documents and align with the CPCA objectives, and therefore consider both the extent of existing conditions and future highway concerns alongside objectives to be delivered at the national, regional and local level (not necessarily in the scheme area).

3.1.2 Primary objectives include:

- **Tackle congestion and improve journey time reliability**: Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)
- **Support Peterborough's Growth Agenda and encourage homes and jobs:** Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand
- **Create wider economic benefits:** Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space
- **Protect and improve the biodiversity value within the study area:** Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the Study Area.

3.1.3 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 Junction 15, and specifically on the A605 Oundle Road approach to Junction 32 of the A1260 Nene Parkway
- **Improve road safety:** Reduce personal injury accidents and improve personal security amongst all travellers around the junction
- **Mitigate the impact of air quality on the local environment:** Maintain or improve air quality within the study area as a result of minimising stationary / queuing traffic

3.1.4 The Junction 15 Improvement Scheme will aim to satisfy all primary objectives and as many of the secondary.

3.2 Scheme Outcomes

3.2.1 The proposed scheme is expected to achieve its objectives in the following ways:

- It will create additional highway capacity, resulting in reduced congestion and delay, more reliable journey times for road users, particularly northbound on Nene Parkway
- It will reduce queuing at the junction in the AM and PM peak periods, reducing emissions of stationary traffic, and aiding the operational efficiency of the City
- It will address conflicts between movements at the Junction, aiding the reduction in accident rates
- It will introduce cycle and pedestrian facilities increasing connectivity and accessibility for the Thorpe Wood Business Park
- It will reduce congestion and delay at a cornerstone Junction, helping the visitor and retail economy
- It will incorporate the environment elements into the scheme from an early stage, achieving the required minimum 10% net gain calculation

3.3 Scheme Logic Map

3.3.1 Based on the objectives set for the scheme, the evaluation process will measure outcomes relating to:

- Changes in traffic flow and journey time reliability, at Junction 15 and the wider network
- Changes in safety including the number and severity of road traffic accidents
- Monitoring whether environmental mitigation measures and improvements to biodiversity have been implemented as in the approved scheme design
- Whether increased capacity on the Parkway Network has improved Council Aspirations

3.3.2 The Logic Map in Figure 2.3 highlights the links between the context, inputs, outputs, outcomes and impacts of the scheme and gives a visual representation of process by which the desired outcomes of the scheme objectives are to be achieved.

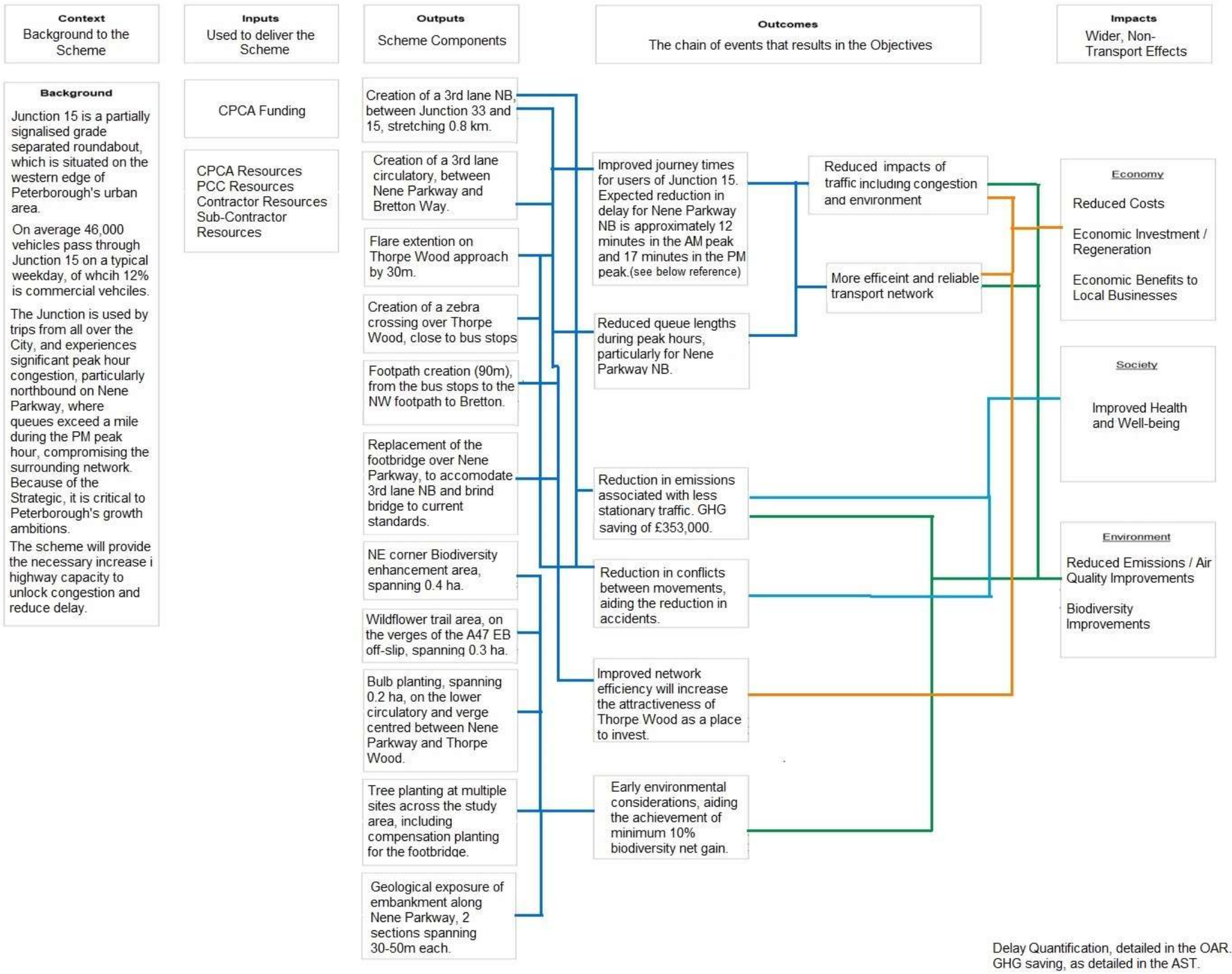

Figure 3.1: Junction 15 Scheme Logic Model

4. Benefits Realisation Plan

4.1 Benefits Realisation Strategy

4.1.1 Table 4.1 provides the framework against which the anticipated benefits will be planned for, tracked and realised. It sets out the key activities needed to manage the successful realisation of the benefits in the short, medium and long term, together with the timescales and who is responsible for each activity.

4.1.2 The strategy starts with the scheme objectives and follows a logical progression:

- **Scheme objectives** – as set out in the Strategic Case of the FBC
- **Enabling changes** – what the scheme needs to deliver in order to achieve each objective
- **Benefits experienced** – the benefits that will occur as a result of successful delivery of change
- **Key beneficiaries** – who will experience the benefits
- **Benefit owners** – who has responsibility for delivering the benefits
- **Benefit enablers** - an outline of actions to be taken, and additional actions which could be taken to help achieve the benefits.

Table 4.1: Benefits Realisation Strategy

Scheme Objective	Enabling Changes	Benefits Experienced	Key Beneficiaries	Benefit Owners	Benefit Enablers
Tackle congestion and improve journey time reliability: Tackle congestion and address journey time reliability on the primary approaches to the junction (A47 Soke Parkway and A1260 Nene Parkway approaches)	• Create additional 3rd lane NB on the A1260 Nene Parkway • Create 3rd lane on the circulatory between Nene Parkway and Bretton Way • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased operational efficiency of the Junction and wider network • Reduction in stationary / rolling traffic resulting in air quality improvement • More attractive entrance to the City from the west	• Commuters / Business trips • Local residents • Visitors to the City	CPCA / PCC	• Completion of the scheme • Monitoring of network performance
Support Peterborough's Growth Agenda and encourage homes and jobs: Ensure that the planned employment and housing growth across Peterborough is promoted whilst providing for future demand	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased network capacity and operational efficiency • Increased attraction of the Thorpe Wood Business park	• PCC in regard to fulfilment of the Local Plan • Business at Thorpe Wood • Residents / Local Community	CPCA / PCC	• Completion of the scheme • Promotion of Thorpe Wood Business Park and wider City Area
Create wider economic benefits: Provide conditions that encourage inward investment in higher value employment sectors across Peterborough and utilise available employment space	• Create additional 3rd lane NB on the A1260 Nene Parkway • Create 3rd lane on the circulatory between Nene Parkway and Bretton Way • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased attraction of the Thorpe Wood Business park • Increased accessibility to Ferry Meadows, as key attraction of the area	• PCC in regard to fulfilment of the Local Plan • Business at Thorpe Wood • Residents / Local Community	CPCA / PCC	• Completion of the scheme • Promotion of Thorpe Wood Business Park and wider City Area
Positively impact traffic conditions on the wider network: Positively impact the performance of local routes impacted by the traffic and congestion in and around Junction 15	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15	• Reduced peak hour congestion for motorists leading to more reliable journey times • Increased operational efficiency of the Junction and wider network	• Commuters / Business trips • Local residents • Bus Operators	CPCA / PCC	• Completion of the scheme • Monitoring of network performance
Improve road safety: Reduce personal injury accidents and improve personal security amongst all travellers around the junction	• Create additional 3rd lane NB on the A1260 Nene Parkway • Extend the flare on Thorpe Wood approach to Junction 15 • Creation of controlled crossings along Thorpe Wood, particularly near the Bus stops • Upgrading of the Nene Parkway footbridge	• Fewer accidents involving rear end shunts on main approaches • Fewer causalities • Increased sense of safety and security on footpaths / bridge at night	• Commuters / Business trips • Local residents • Visitors to the City • Active Mode users • Visitors to Ferry Meadows	CPCA / PCC	• Completion of the scheme including walking and cycling elements • Road safety audit • Monitoring / investigation of accidents • Monitoring of footbridge users upon completion
Mitigate the impact of air quality on the local environment: Maintain or improve air quality within the study area as a result of minimising stationary / queuing traffic	• Create additional 3rd lane NB on the A1260 Nene Parkway	• Reduced peak hour congestion for motorists leading to more reliable journey times • Reduced stationary / queuing traffic	• Commuters / Business trips • Local residents / wider community • PCC / CPCA in regard to air quality control and policy goals	CPCA / PCC	• Completion of the scheme • Air quality monitoring
Protect and improve the biodiversity value within the study area: Mitigate any adverse impact of a scheme and enhance biodiversity net gain within the Study Area	• Implementation of environmental / biodiversity scheme elements • Additional planting / compensation planting mitigating the loss known at the footbridge	• Achievement of minimum 10% biodiversity net gain • Gaining of new statuses across the study area – County Wildlife Site on north-eastern grass bank and Site of Local Interest with geological exposure • More attractive entrance to the City from the west	• PCC / CPCA in regard to environment and biodiversity • Commuters • Local residents • Visitors to the City	CPCA / PCC	• Completion of the scheme / soft landscaping designs of the footbridge • Biodiversity Net Gain Calculation

5. Monitoring and Evaluation Approach

5.1.1 The Monitoring and Evaluation Plan for the Junction 15 Improvement Scheme takes a proportionate and targeted approach, and aims to demonstrate how the scheme has performed in relation to its objectives and intended outcomes.

5.1.2 The monitoring plan is designed to determine whether the Junction 15 Improvement Scheme:

- Has been designed and delivered efficiently and effectively
- Has met the requirements of the stated scheme objectives
- Has achieved the desired outcomes and impacts
- Represents value for money
- Resulted in any unintended outcomes and impacts (both positive and negative)

5.2 Types of Measures

5.2.1 The following types of measure will be monitored, as defined in the DfT framework:

- Inputs – what is being invested to deliver the Scheme
- Outputs – what has been delivered, and how it is being used
- Outcomes – intermediate effects of the Scheme, such as changes in traffic flow
- Impacts – longer-term effects on wider social and economic outcomes, such as economic growth

5.3 Stages of Monitoring and Evaluation

5.3.1 Monitoring and Evaluation is required both during the development and construction, as well as in the years following implementation of the improvement scheme, in order to meet the stated evaluation objectives and effectively assess any scheme outcomes and impacts.

5.3.2 As per the DfT standard monitoring guidance, the monitoring process will be split into three stages:

- **Pre-construction and during delivery (monitoring)**
  - Baseline data is 2018 surveys, limited surveys / assessments to be undertaken in 2021 before scheme construction commences as part of FBC
  - Data to monitor scheme delivery will be collected during construction

- **One-year after (Monitoring and Evaluation)**
  - Data to monitor scheme performance will be collected at least one year (but less than two years) after scheme opening.
  - An initial "One Year After"' report will be published within two years of scheme opening, focusing on the scheme's outcomes
- **Five-years after (Monitoring and Evaluation)**
  - Further data will be collected up to approximately five years after scheme opening
  - A final "Five Years After" report will be published within six years of scheme opening, based on analysis of all the data available, including an assessment of the wider impacts of the scheme

5.3.3 Monitoring timescales for Junction 15 are summarised in Table 5.1 beneath.

Table 5.1: Monitoring and Evaluation Timescales

Monitoring Activity	Timescale
Prior to scheme build (Baseline)	2018
During Construction	2022
Scheme Opening	2023
One year post scheme opening	2024
Five years post scheme opening	2028

5.4 Measures to be Monitored

5.4.1 The measures which will be monitored for evaluation of the scheme, as stated within the DfT standard monitoring guidance, are set out in Table 5.2 overleaf.

Table 5.2: Standard Monitoring Measures

Item	Type of Measure	Data Collection Timing	Rationale
Scheme Build	Input	During Delivery	Knowledge
Delivered Scheme	Output	During Delivery Post Opening (1 Year)	Accountability
Scheme Costs	Input	During Delivery Post Opening (1 Year)	Accountability
Scheme Objectives	Output / Outcome / Impact	Pre-Delivery Post Opening (up to 5 years)	Accountability
Travel Demand	Outcome	Pre-Delivery Post Opening (1 year and up to 5 Years)	Accountability / Knowledge
Travel Time and Reliability	Outcome	Pre-Delivery Post Opening (1 year and up to 5 Years)	Accountability / Knowledge
Impact on Economy	Impact	Pre-Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge
Impact on Local Environment / air quality	Impact	Pre-Delivery During Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge
Carbon	Impact	Pre-Delivery Post Opening (1 Year and up to 5 Years)	Accountability / Knowledge

5.4.2 In addition, an assessment will be undertaken to determine the extent to which the Junction 15 Improvement Scheme has delivered the Value for Money (VfM) that was anticipated in the appraisal set out in the FBC. This will be done by re-calculating the benefit-cost ratio (BCR) in both the "One Year After"' and "Five Years After" reports and comparing it to the BCR calculated in the FBC.

5.4.3 The following chapter describes how data will be collected and analysed to monitor the scheme's performance in each of these areas.

6. Data Requirements and Collection Methods

6.1.1 Data collection for the scheme is required at various stages through scheme development to ensure effective monitoring and evaluation takes place.

6.1.2 Table 6.1 beneath sets out the data that will be collected to monitor and evaluate the Junction 15 Improvement Scheme, along with the rational for its inclusion, the proposed data collection method, and the proposed frequency of data collection.

Table 6.1: Monitoring and Evaluation Data Requirements

Measure	Data to be used	Rationale for inclusion	Data Collection Method	Frequency of Data Collection
Scheme Build	• Progress of construction against key milestones • Qualitative feedback from the Project Team • Information from the Risk Register • Project programme / disruptions to delivery	To gain knowledge and understanding of the level of effectiveness of the scheme build processes and to learn lessons for future projects.	• Analysis of key project documents by the scheme's Project Team, inlcuding Risk Register, Review of Early Warnings etc, Interviews with key staff	On-going throughout the construction and delivery of the scheme, reporting on monthly basis
Delivered Scheme	• Scheme definition at full funding approval • Scheme design drawings • Logged design iterations • Information from project change control log	To assess the impact of change during construction, and realisation of scheme objectives.	• Desk study / site visits • Analysis of key project documents by the schemes Project Board	During construction and 1 year fter scheme opening
Scheme Costs	• Forecast scheme costs at time of funding approval (FBC) • Actual outturn costs once scheme is completed	Cost analysis enables 'performance to budget' to be monitored and corrective actions to be implemented. Lessons Learnt to be realised and implemented for other similar projects, alongside having potential to refine contractural arrangements where necessary.	• Financial monitoring of the scheme costs from approval to scheme completion • Project Manager's monthly reports to Project Board • Interviews with key staff	On going throughout constructionand delivery of the scheme, reporting on a monthly basis.
Travel Demand	• Daily traffic flows classified into vehicle types and by movement	To monitor changes in traffic flows at Junction 15, more specifically the volume of traffic on key approaches	• Desk study / site visits • Collated data from 12 hour manul classified counts	Baseline 2018 before scheme completion, 1 year after scheme opening and 5 year after scheme opening. ATC - continuous monitoring
Travel times and reliability	• TomTom or Traffic Master data	To monitor changes in travel times and queuing at Junction 15 on key approaches	• Desk study / site visits • Survey footage review • Journey time dataset for a month period	Baseline 2018 before scheme completion, 1 year after scheme opening and 5 year after scheme opening.
Impact on Economy	• Local employment statistics	To assess the economic impact of the scheme on the wider City	• Desk Study of economic data provided by PCC • Review of Local Plan goals for economic growth	Baseline 2018, before scheme completion, 1 year after scheme opening and 5 year after scheme opening
Impact on the Local Environment / Air Quality	• Carbon emission workshops / calculations • Biodiversity calulations – completed scheme maps	To monitor and assess the emissions as a result of the Junction 15 scheme and any impact on the environment	• Desk study / site visits • Analysis of key project documents by the schemes Project Board	Baseline 2018, during construction, before scheme completion, 1 year after scheme opening and 5 year after scheme opening
Carbon	• Carbon emission workshops / calculations • Traffic flows and speeds within the Junction 15 study area	To monitor carbon emission within the Junction 15 study area as a result of the scheme	• Desk Study analysis FBC calculation for carbon • Analysis of key project documents by the schemes Project Board	Baseline 2018, before scheme completion, 1 year after scheme opening and 5 year after scheme opening

6.2 Data Collection

6.2.1 Data collection for the measures of 'travel demand' and 'journey times and reliability' as stated in Table 6.1 includes:

- Manual Classified Counts (MCC)
- Satellite Navigation Data

6.2.2 Survey data collected as part of the scheme monitoring and evaluation will be a replication of data collected in the original 2018 baseline dataset, enabling a direct comparison to be made.

Manual Classified Turning Counts / Queue Length Data

6.2.3 MCC's will be used to monitor changes in traffic demand at Junction 15 at both 1 year and 5 years after scheme completion.

6.2.4 MCC surveys will include the seven locations listed below and data will be classified into Car, Light Goods Vehicles (LGV), Other Goods Vehicles (OGV1 and OGV2), Bus, and Motorcycle classifications. Surveys will cover a 12-hour period between 07:00 and 19:00 and should be conducted in November reflecting the collection period of the baseline data.

6.2.5 MCC survey locations are detailed below and shown in Figure 6.1 overleaf:

1. A47 Soke Parkway / A1260 Nene Parkway / Bretton Way / Thorpe Wood partially signalised roundabout
2. A1260 Nene Parkway / A1179 Longthorpe Parkway / Thorpe Wood roundabout
3. Thorpe Wood / Business access
4. A47 Soke Parkway off slip / R21 Marholm Road
5. A47 Soke Parkway on slip / R21 Marholm Road
6. Thorpe Wood / Thorpe Road junction
7. A1260 Nene Parkway / A605 Oundle Road mini roundabouts

6.2.6 WebTRIS data was also used within the baseline dataset to provide classified counts along the A47. Data taken from WebTRIS will also be recaptured during November, in line with the above surveys.

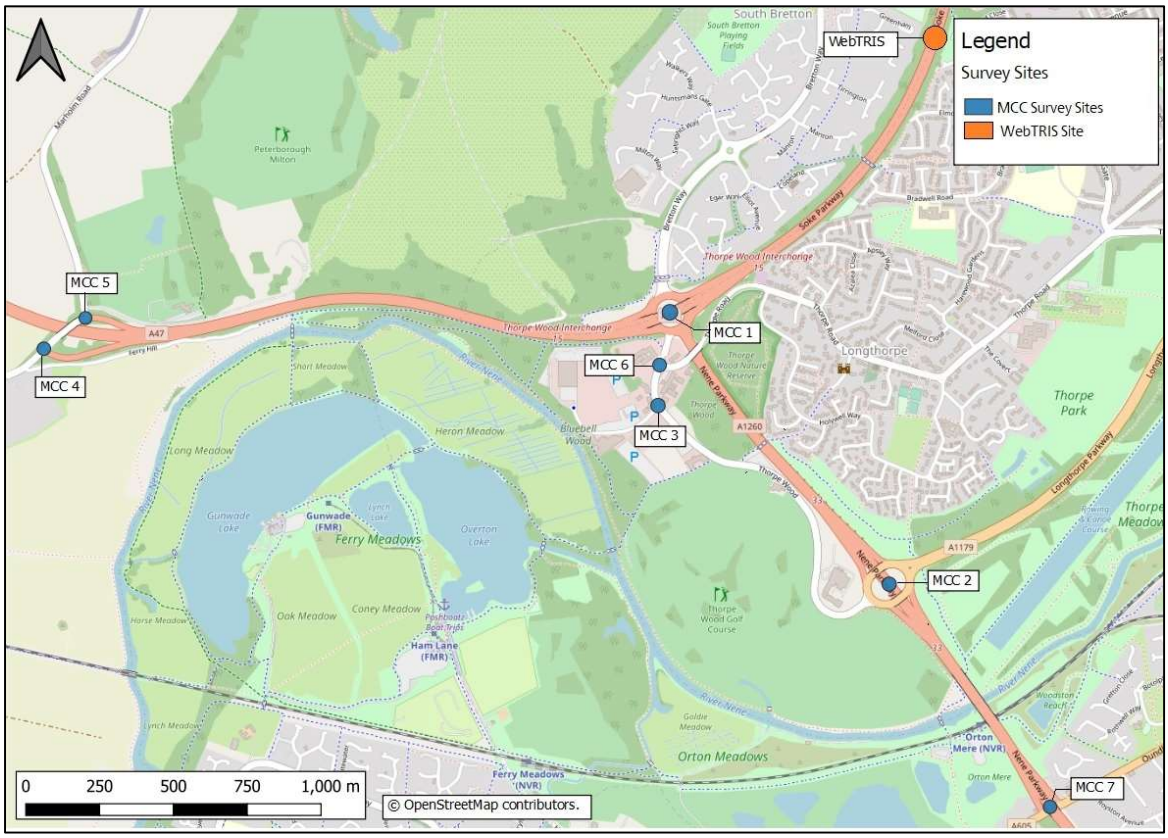

Figure 6.1: Monitoring and Evaluation Survey Locations

Satellite Navigation Data / Journey Times

6.2.7 Satellite Navigation data will be used to monitor changes in journey times at Junction 15 at both 1 year and 5 years after scheme completion.

6.2.8 Journey time data will be obtained for a month period (Oct / Nov) for the routes shown in Figure 6.2 which were used in the original 2018 baseline data set. Survey data will be collected for the AM (08:00 – 09:00) and PM (17:00 – 18:00) peak hours and the month period should exclude non-neutral days such as weekends, holidays, and any period relating to major roadworks / incidents.

6.2.9 Journey time routes which will be covered in the dataset include:

- A1260 Nene Parkway northbound and southbound, between Junction 15 and Oundle Road on / off slips
- A47 eastbound, from the western edge of the model area to Junction 15
- A47 westbound, from the eastern edge of the model area to Junction 15
- Thorpe Wood north, between Thorpe Wood business access and Junction 15
- Thorpe Wood south, between Thorpe Wood business access and Junction 33 (northbound and southbound)
- A1179 Longthorpe Parkway, from eastern edge of model to Junction 33 (eastbound and westbound).

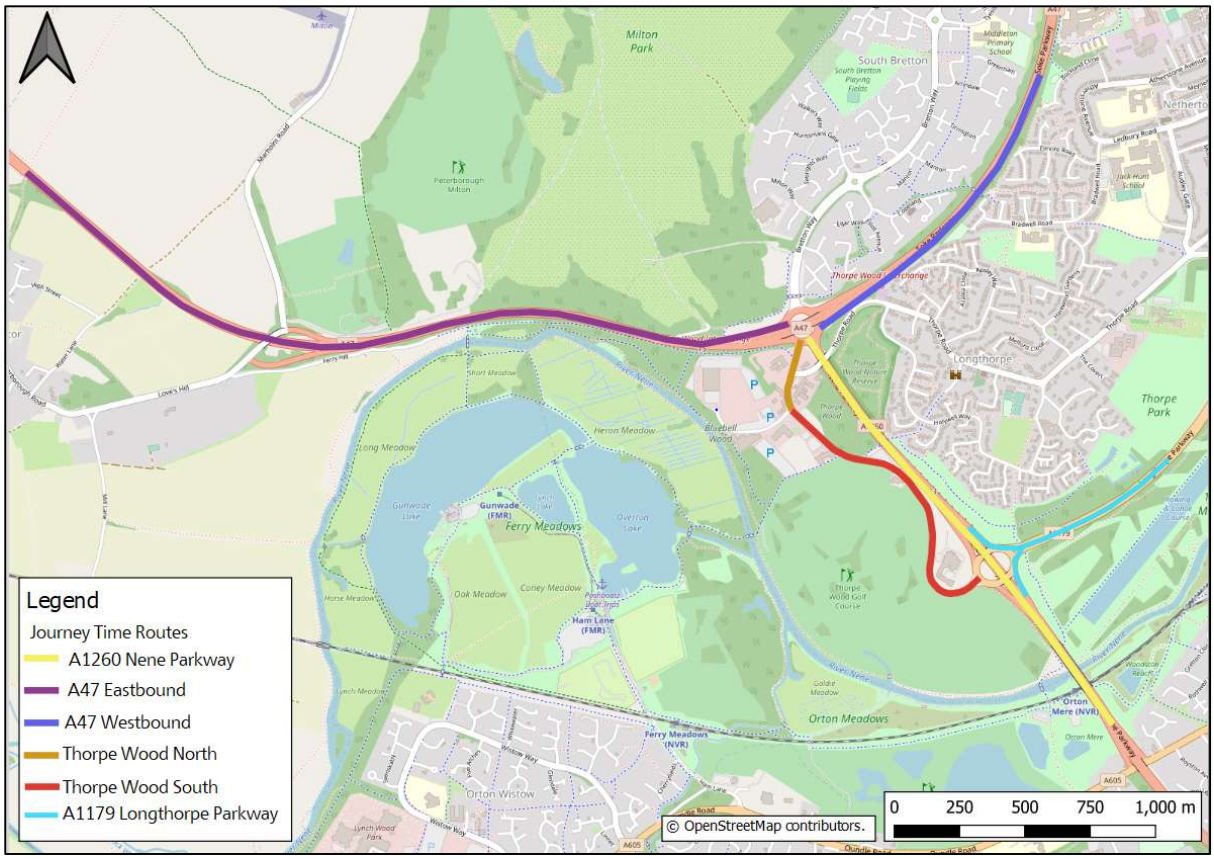

Figure 6.2: Monitoring and Evaluation Journey Time Routes

7. Evaluation Resource and Governance

7.1 Monitoring and Evaluation Plan costs

7.1.1 Table 7.1 overleaf provides a summary of the monitoring and evaluation plan for Junction 15, highlighting data collection, reporting programme and indicative costs.

7.1.2 The necessary monitoring and evaluation budget is estimated to be £30,000, based on survey data, analysis and reporting. A breakdown of costs is provided beneath in Table 7.1 beneath.

Table 7.1: Monitoring and Evaluation Plan

	Measure	Measure of Success	Data Source	Data Collection / Reporting Programme			Ownership	Indicative Cost Estimate
				Baseline	Delivery	Post Completion		
Inputs-	Scheme Costs	CPCA Funding	CPCA Funding submission Final Scheme Cost Data	Planned	January 2022 – September 2022	-	CPCA / PCC	-
Outputs	Scheme Build / Delivered Scheme	Infrastructure delivered as part of the scheme	Inspection On-Site	December 2021	January 2022 – September 2022	2023	CPCA / PCC	£1500
Objectives	**Outcomes**							
1 / 4 / 5	Travel Time and Reliability	Enhanced Network Performance, particularly during Peak Hours	Satellite Navigation Data / Travel Time data / Site Visits / Survey Footage	November 2018	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1500
		Enhanced Network Performance for Public Transport, namely for the Citi 2 Service	Local Bus Company Punctuality Data	2018 / 2021	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
		New Infrastructure for Sustainable Modes	Site Inspection / Usage Data	2021 / 2022	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
		Reduce the number of KSI incidents at Junction 15	Peterborough Database of Road Traffic Records	Dataset 2015 - 2020	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
4	Travel Demand	Enhanced Network Performance, on A1260 Nene Parkway and wider network of Junction 33 and A605 Oundle Road	Manual Classified Counts / Site Visits / Video Survey Footage	November 2018	-	November 2024 / November 2028	CPCA / PCC	£6000 for MCC surveys and £500 for data analysis at both 1 year and 5 year reporting Total = £13,000
2 / 3	Impact on Economy	Realisation of Local Housing and Employment Growth Ambitions	PCC Planning Portal - Local and Regional Economic Reports / Development Figures Post scheme opening	2018	-	November 2024 / November 2028	CPCA / PCC	£500 for data analysis at both 1 year and 5 year reporting Total = £1000
7	Impact on the Local Environment	Ensure a Net Gian of Biodiversity across the Study Area	Biodiversity Calculation / Site Survey and Desk Based Assessment	July 2021	-	November 2024 / November 2028	CPCA / PCC	£1000 for site inspections and data analysis at both 1 year and 5 year reporting Total = £2000
6	Carbon	Improvement to Air Quality in Future Years	FBC Calculations for Carbon assessment / PCC Air Quality Monitoring Sites / Future traffic demand data	May 2021	-	November 2024 / November 2028	CPCA / PCC	£1000 data analysis at both 1 year and 5 year reporting Total = £2000
Reporting	Year 1 reports summarising the outcomes of the monitoring and evaluation work			-	-	2024	CPCA / PCC	£3,000
	Year 5 report summarising local economic growth, scheme impacts and development figures prior and post opening of the scheme			-	-	2028	CPCA / PCC	£3,000
	Total Monitoring and Evaluation Budget							**£30,000**

7.2 Governance

7.2.1 The CPCA have the responsibility for ensuring Value for Money from the Junction 15 Improvement Scheme. Under the CPCA, PCC will be responsible for ensuring the Scheme Evaluation Plan is undertaken as outlined within this report.

7.2.2 Monitoring during construction and post scheme opening is likely to be undertaken by PHS under commission from CPCA and PCC. However, owners for each monitoring task should be defined following the approval of the FBC.

7.2.3 To ensure the successful delivery of the scheme throughout construction, the following resource used to date will continue:

- Project Delivery Team
- PHS Project Board

7.2.4 Delivery of the scheme to date has been managed by the PCC Project Manager and wider Project Team, consisting of key project delivery partners. The Project Team have been responsible for the daily running of the project, and will continue to meet on a monthly basis throughout the construction period. The main responsibilities being to:

7.2.5 The delivery team will continue to meet on a monthly basis throughout the construction phase of the project. Its main responsibilities are to:

- Comment on delivery and ensure sufficient resource is allocated to scheme delivery
- Monitor overall delivery against programme to ensure key activities / milestones are completed
- Consider project costs and risks and review and advise on any impacts to project delivery
- Provide governance for the project and initiate corrective action where necessary
- Provide updates, including written progress reports

7.2.6 The existing PHS Project Board will be used to oversee the continued 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 continue to meet on a monthly basis until the scheme is completed. After which arrangements will be agreed for the on-going resource / schedule for reporting associated with the monitoring and evaluation plan of the scheme.

7.2.7 Figure 7.1 provides an outline of the overall governance structure highlighting key roles and lines of accountability for the development and delivery of the scheme.

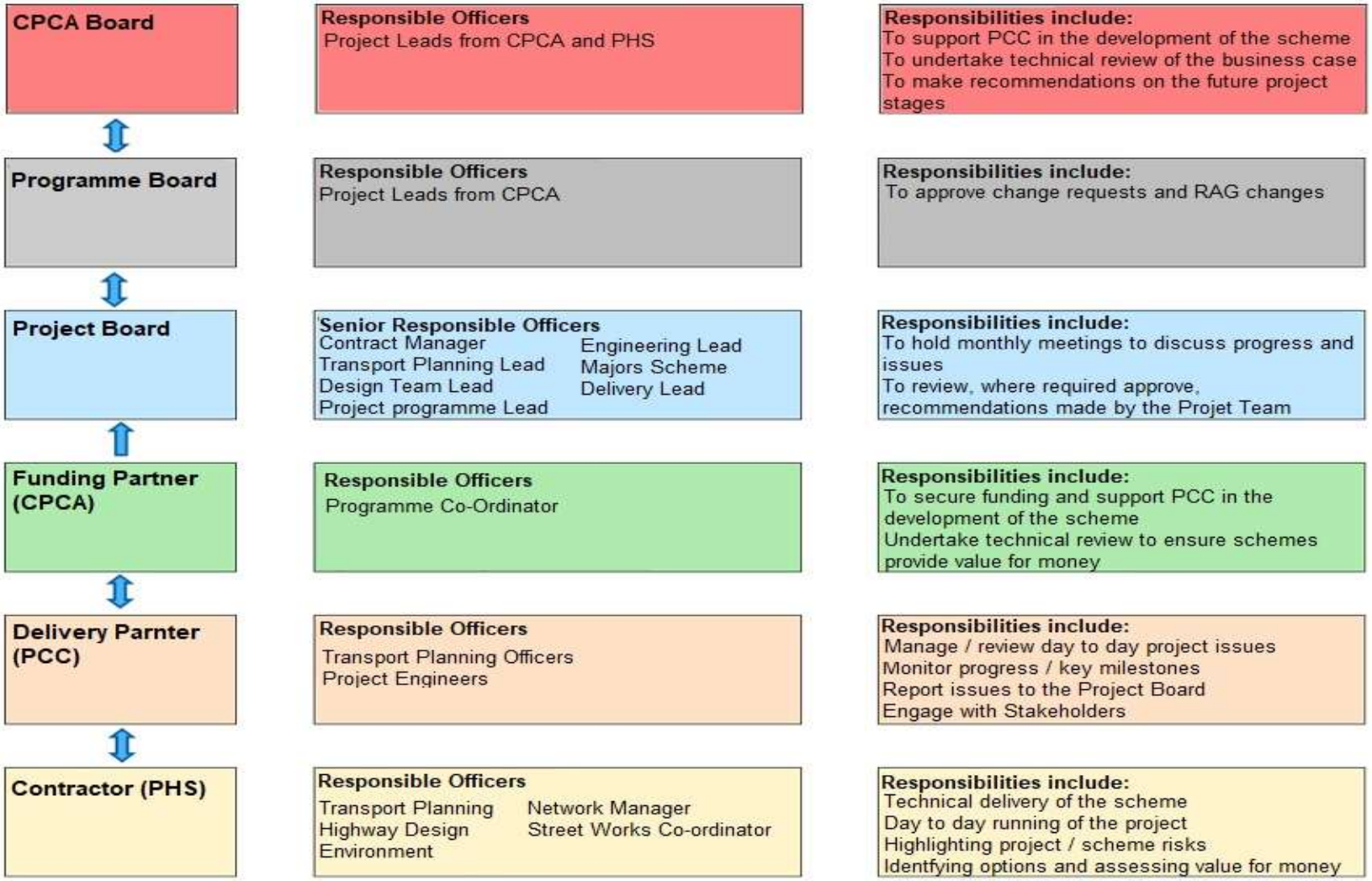

Figure 7.1: Organisational and Governance Structure

7.3 Quality Assurance

7.3.1 The project to date has been managed by PCC in line with their existing assurance and approvals processes, namely the CPCA Assurance Framework. The CPCA Assurance Framework sits alongside a number of Combined Authority documents including the '10-point guide' mentioned above and details the fundamental principles in relation to the use, administration and evaluation of Cambridgeshire and Peterborough Investments.

7.3.2 Under the management of The Council, a Project Manager was assigned and has been responsible for the daily running of the project. In instances where approval was required, the Project Manager would be advised and then provided by the Project Board.

7.3.3 The Project Manager will also be responsible for quality assurance for the MEP. Development and ongoing maintenance of the scheme evaluation plan will ensure that it reflects the programme and key milestones.

7.3.4 The Project Manager will also:

- Arrange for the undertaking of quality checks by internal peer review to ensure high quality
- Record proceedings at meetings with the project board, project team and technical specialists, and reporting them in the form of meeting minutes including a clear record of actions and action dates
- Ensure compliance with the consistency in approach / assessment / presentation of documents and output
- Contribute to project close out and post project appraisal exercises for the task.

7.4 Risk Management

7.4.1 The risk management strategy for the evaluation process is in line with the strategy for the project delivery. Risk areas identified in relation to evaluation of the project are:

- **Baseline data** – transport data issues (completeness, correctness, accuracy and relevance), impacting on processing.
- **Baseline data collection** – unable to collect data before site opens e.g. weather or resourcing constraints.
- **Data processing** – inaccuracy of data analysis, impacting on evaluation. •
- **Future year data** – funding issues prevent future data survey collection.
- **Evaluation** – post analysis realisation that baseline data will be insufficient for purpose or potential newly identified factors.

7.4.2 Table 7.2 below highlights the calculated likelihood and severity of the risk identified for the project evaluation, as well as mitigation measures that can be taken.

Table 7.2: Risk Matrix and Mitigations

Risk	Likelihood Score (1-5)	Impact Score (1-5)	RAG Score (Likelihood x Impact)	Mitigations
Baseline Data Accuracy	1	2	2	Baseline data has been used throughout the business case lifespan of the project. Baseline data has been reassessed in prepartion for the required monitoring and evaluation, and is suffiecient for future data comparisons.
Baseline Data Collection	3	2	6	Construction programme is known, careful planning / weather monitoring to be undertaken when arranging surveys.
Data Processing	1	1	2	Once data is recieved from survey companies, rigourous reviewing to be undertaken to highlight any inconsistencies / issues at the earliest point.
Future Year Data	2	5	10	Funding required for the monitoring and evaluation of the project has been costed priort o construction and will be recieved with the construction funding (approval November 2021). Funding will be seprated for future use.
Evaluation	1	2	2	See above comments.

8. Dissemination Plan

8.1.1 This Scheme Evaluation Plan will be agreed with PCC and CPCA prior to the submission of the FBC. Costs for monitoring and Evaluation will be included within the final funding request from the CPCA for construction costs.

8.2 Dissemination Reporting

8.2.1 Monitoring will be undertaken before and during construction, and after the opening of the Scheme. A "One Year After"' evaluation report will be produced within two years of the Scheme opening, followed by a "Five Years After" report within six years of the Scheme opening. The reports associated with this Monitoring and Evaluation will be published on the PCC website.

8.3 Stakeholder Engagement

8.3.1 PCC and the Project Team have engaged with key stakeholders throughout the development of the Scheme, and this will continue during the delivery phase. The list of stakeholders who received communication regarding the scheme can be found in the Strategic Case of the FBC.

8.3.2 Communication with stakeholders throughout the delivery phase will be via email or letter (as per previous communications) as well as via the scheme PLO who will keep stakeholders informed with the progression of the scheme build throughout the construction phase.

8.3.3 Stakeholders where necessary will also be invited to the continue project team monthly meetings and receive the formal reporting associated with the Scheme Evaluation Plan.

8.4 Lessons Learnt

8.4.1 The Scheme will represent a significant investment of public money for the City by the CPCA. Monitoring and evaluation is therefore essential, not only to demonstrate that the scheme investment has been delivered as planned with the desired impacts, but also to inform and enlighten future decision makers, both locally and nationally. In this way, future investment can be targeted, to provide the best value for money.

8.4.2 Lessons will be learnt by seeking answers to the following research questions

- **Delivery**: Has the Scheme been delivered as intended and to the expected timetable? If any internal and external factors affected delivery, what impact did these have? Could they have been foreseen or avoided? What went well and what went less well?
- **Cost:** How accurate were the cost estimates? If out-turn costs were different from expectations, why was this, and what actions were taken? Were the allowances for quantified risk and optimism bias reasonable, or should a different approach be taken in future?
- **Traffic / Journey Reliability:** Has the scheme produced the expected changes to congestion and journey time reliability at and surrounding Junction 15, and were there any unintended changes? If not, what are the reasons? If there are differences, are they due to Scheme specific, or external factors affecting traffic demand. Are there implications for similar schemes in future?
- **Economy:** Has the Scheme enhanced the position of Peterborough in relation to policies and growth aspirations? Has it altered the perception of the City as a place to work, better attracting new investors as a place of opportunity? Have there been any unintended consequences?
- **Value for money:** Did the traffic model provide a realistic forecast of future growth and the effects of the Scheme? If there are differences, are they enough to raise questions about the VfM category attributed to the Scheme?
- **Environment:** Were the environmental impacts of the Scheme in line with expectations? Is mitigation perceived to have been effective? Have there been any unintended impacts, and, if so, how might they have been foreseen, or avoided with future schemes? How is the new footbridge now perceived as part of the townscape for local residents and the Thorpe Wood Business Park?