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Phase 2 Report Package Assessment

Wisbech Access Study

October 2017

Wisbech Access Study

Phase 2 Report: Package Assessment

Cambridgeshire County Council / Fenland District Council

October 2017

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1. Introduction

The Wisbech Access Study

The Wisbech Access Study is an option assessment of multiple highway improvement schemes at numerous locations within the vicinity of Wisbech, Cambridgeshire.

The purpose of the options assessed is to facilitate the growth sites identified within Fenland District Council's Local Plan (adopted May 2014).

The Wisbech Access Study has been divided into two distinct phases:

Phase 1 - A series of individual option studies and scheme assessments that consider a range of potential highway improvement options to facilitate the Local Plan growth agenda.

The outcome of Phase 1 is a range of options that have been demonstrated to operate to an acceptable standard, either on their own, or have potential to operate well in conjunction with other schemes. It is these options that will be incorporated into a series of packages and progressed to Phase 2 of the study.

Phase 2 - A packaging assessment which develops and tests multiple packages of schemes (identified from Phase 1 of the study), to determine the preferred package which should be progressed to an Outline Business Case for funding.

The Phase 2 Report

This report documents the Packaging Assessment, which has been undertaken as Phase 2 of the Wisbech Access Study.

This Phase 2 Report is structured as follows:

1. **Introduction** – Explaining the structure of the Wisbech Access Study, and this Report;
2. **Phase 1 Summary** – Explaining the preferred schemes that have been progressed from Phase 1 of the study, and have been available for inclusion within the Packaging Assessment;
3. **Package Development** – Explaining how each of the packages assessed have been devised;
4. **Package Assessment** – Explaining the assessment of the packages, and identifying a preferred package; and,
5. **Summary** – Summarising the Phase 2 Packaging Assessment.

2. Phase 1 Summary

Introduction

Phase 1 of the Wisbech Access Study was a series of individual option assessments across nine areas of Wisbech. These nine areas are shown in Figure 2.1 beneath.

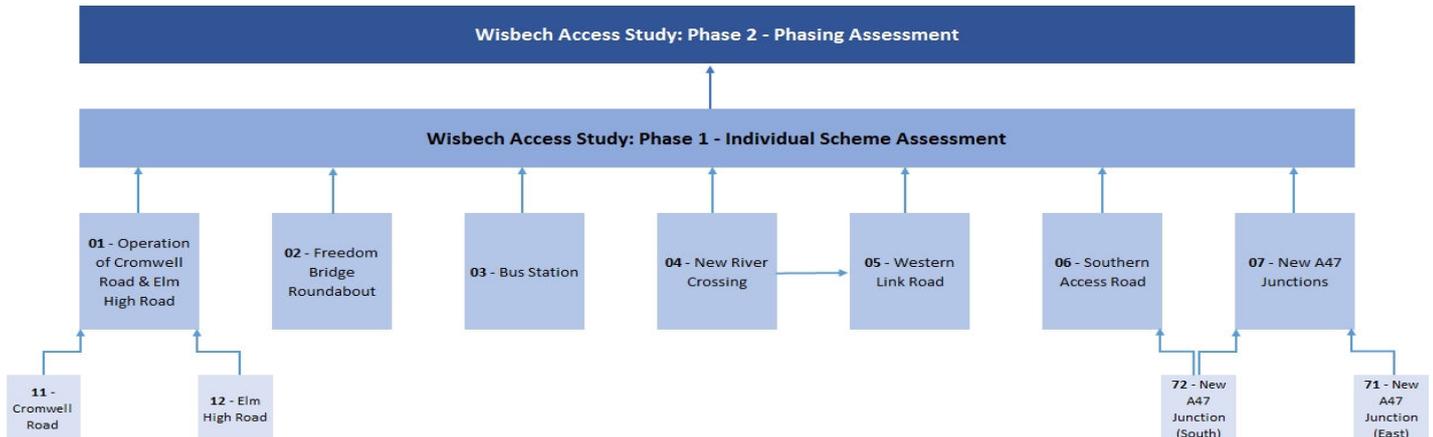


Figure 2.1: Wisbech Access Study – Project Structure

From the nine assessment areas, a total of eighteen highway improvement options were identified to be progressed to the Phase 2 Packaging Assessment.

Options Available for Phase 2 Packaging Assessment

The options progressed from Phase 1 are shown in Table 2.1 below. These options have been selected based on their operational performance during Phase 1, and are identified to either offer benefit in their own right, or would work in conjunction with another option. These options have been reviewed by the Member Steering Group overseeing the Wisbech Access Study, and have been approved for progression to the Phase 2 Packaging Assessment.

The table includes three sets of costs for each option. These are:

- **Cost (£ m)** – This is the scheme cost, which includes material, construction, design, supervision, land acquisition, traffic management and demolition where required;
- **Cost inc. 20% Risk (£ m)** – This is the scheme cost including a 20% risk allowance. This is the cost used for the schemes to be delivered by 2021 (Short Term Package); and,
- **Cost inc. OB (£ m)** – This is the scheme cost including Optimism Bias (OB). A DfT set cost contingency to cover future uncertainties and to guard against a natural tendency for scheme promoters to produce optimistic scheme cost estimates. OB for highway schemes is 45%, and 66% for structures such as bridges. This is the cost used for the schemes contained within the 2026 (Medium Term) and 2031 (Long Term) Packages.

Note: these costs do not include inflation which is currently in the region of 4 to 5% per annum within the construction industry. Inflation is added to the scheme costs as part of the Packaging Assessment, which is discussed further in the Package Assessment Chapter of this report.

Table 2.1 – Options Progressed from Phase 1: Individual Option Assessment

Ref	Scheme Cost (£m) 2017	Scheme Cost + Risk Allowance (£m)	Cost inc. OB (£m)	Scheme
CR2	0.492	0.590	0.713	New Bridge Lane / Cromwell Road Signalisation
CR7c	2.766	3.319	4.011	A47 / Cromwell Road Roundabout Upgrade
CR8	1.918	2.302	2.781	Cromwell Road / Weasenham Lane Rdbt
EH1	0.743	0.892	1.077	A47 / Elm High Road Roundabout Improvements
EH3b	7.526	9.031	10.913	Relocated A47 / Elm High Road Roundabout
EH4	0.662	0.794	0.960	Weasenham Lane Junction Improvements
EH7b	2.094	2.513	3.036	Elm High Road / Weasenham Lane Roundabout
FB5b	1.978	2.374	2.868	Freedom Bridge Roundabout Improvements
BS1a	1.196	1.435	1.734	Bus Station Option 1a
BS2a	1.643	1.972	2.382	Bus Station Option 2a
NRC	3.821	4.585	6.343	New River Crossing
WLR 1D N	24.990	29.988	36.236	Western Link Road (Northern Section)
WLR 1D S	7.530	9.036	10.919	Western Link Road (Southern Section)
SAR1	1.121	1.345	1.625	Southern Access Road (wout A47 Rdbt / wout Rway)
SAR2	5.826	6.991	8.448	Southern Access Road (with A47 Rdbt / wout Rway)
SAR5a	1.121	1.345	1.625	Southern Access Road (wout A47 Rdbt / with Rway)
SAR5b	5.826	6.991	8.448	Southern Access Road (with A47 Rdbt / with Rway)
BER2	2.354	2.825	3.413	A47 / Broadend Road Roundabout Opt 2

Note, the costs used for SAR5a and SAR5b are based on the costs for SAR1 and SAR2 respectively.

3. Package Development

Introduction

This chapter sets out the process undertaken to develop the packages for the Phase 2 assessment.

Packaging Workshop

A packaging workshop was held in July 2017 consisting of members from the Wisbech Access Study project team. Members included officers from Fenland District Council, Cambridgeshire County Council, and Transport Planners from Skanska, Atkins and Amey.

During the workshop each of the options progressed from the Phase 1 assessment were reviewed, and the interrelationships between various options discussed.

Following this review, three key themes were developed to provide a framework for constructing the packages. These themes were chosen to be consistent with the approach being set out within the Strategic Case of the Business Case development work being undertaken by Amey. These three themes are:

- **Minimum (Min)** – This scenario represents the minimum level of infrastructure provision required to access the Local Plan sites. Note that the options within this scenario are primarily concerned with physical access, and do not necessarily mitigate the impact of the Local Plan traffic on the wider transport network;
- **Middle (Mid)** – This scenario builds upon the Minimum scenario described above, but seeks to mitigate the impact of the Local Plan traffic on the wider network, including locations such as the Elm High Road / A47 roundabout and Freedom Bridge Roundabout. This scenario not only provides access into the development sites, but also reduces congestion and delay on the surrounding network; and,
- **Maximum (Max)** – This scenario builds upon the Middle scenario, and adds further congestion relief to the network through the inclusion of the highest capacity options in each of the locations.

Each of the Packages developed was phased across the three forecast years used within the study, these are:

- 2021 – Short Term;
- 2026 – Medium Term; and,
- 2031 – Long Term.

This package structure has been used in line with the Business Case being developed by Amey, which sets out the Strategic Case for Wisbech across these three different periods (which align with the Local Plan). Profiling each package across these three periods also provides the flexibility for options to be added in within different years, depending on when the Phase 1 assessment results suggests that they may be required.

Although the Business Case will set out the Strategic Case over the Short, Medium and Long term periods, and thus provides a consistent vision for the growth of Wisbech up to 2031, the funding bid will only be for the short term schemes (2021).

Packages were initially developed for both 'with' and 'without' railway scenarios. The packages for Minimum, Middle and Maximum for these scenarios only differed in respect to the interaction with the railway line. The 'without' railway scenario included a Southern Access Road option that severed the railway line, and the 'with' railway scenario included a Southern Access Road option that did not sever the railway line, as well as an additional scheme at Weasenham Lane / Cromwell Road required to mitigate the impact of not building a new east – west link along New Bridge Lane.

However, only the 'with' railway line Packages were progressed to initial assessment. The decision to only assess Packages that retain the railway line was based on consultation with the Member Steering Group.

Package Construction

The options assigned to each of the packages described above were chosen based on the operational performance of each option, the interoperability with, or dependence on other options, or the options requirement in relation to the Local Plan growth profile. This information was used to determine which options should be assigned to a scenario, and for which year.

Consideration was given to three key criteria as each of the packages were created, these included:

- Local Plan – The package must provide access to the Local Plan Development Sites;
- Cost – The package should be mindful of the £10.5m of identified LEP funding available (subject to a successful Business Case). However, the Middle and Maximum packages were not constrained to this amount, with several other funding sources being acknowledged which could potentially be drawn upon to deliver certain schemes within the packages; and,
- Deliverability – The package must be considered deliverable, with no insurmountable barriers.

In terms of the consideration of cost, some of the other potential funding sources that were identified included:

- National Government Competitive Funding Opportunities, such as the National Productivity Incentive Fund (NPIF);
- Developer Contributions; and
- Third party funding, such as HE funding for A47 schemes as part of the Road Investment Strategy Programme (RIS), funding from the Greater Cambridge Greater Peterborough Local Enterprise Partnership (LEP) or the Cambridgeshire and Peterborough Combined Authority.

The packages generated during the workshop are shown on the following page.

Note that the Packages are numbered 2 (Minimum), 4 (Middle) and 6 (Maximum). As described earlier, parallel Packages were also developed for a 'without' railway scenario in which the Southern Access Road severed the railway line, these were Packages 1 (Minimum), 3 (Middle) and Package 5 (Maximum), however these were not progressed to assessment.

Package 2

Minimum - Existing Alignment

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	EH3b	Relocated A47 / Elm High Road Roundabout	£ 21.61 m
SAR5a	Southern Access Road (wout A47 Rdbt / with Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
EH4	Weasenham Lane Junction Improvements	£ 0.97 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m						
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m						
CR8	Cromwell Road / Weasenham Lane Rdbt	£ 2.80 m						
Total		£ 10.63 m	Total		£ 33.00 m	Total		£ 93.35 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 136.98 m

Package 4

Middle - Existing Alignment

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
SAR5a	Southern Access Road (wout A47 Rdbt / with Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m			
EH4	Weasenham Lane Junction Improvements	£ 0.97 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH3b	Relocated A47 / Elm High Road Roundabout	£ 10.98 m	FBSb	Freedom Bridge Roundabout Improvements	£ 4.45 m			
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m	BS1a	Bus Station Option 1a	£ 2.69 m			
CR8	Cromwell Road / Weasenham Lane Rdbt	£ 2.80 m						
Total		£ 20.53 m	Total		£ 40.14 m	Total		£ 71.74 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 132.41 m

Package 6

Maximum - Existing Alignment

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
SAR5a	Southern Access Road (wout A47 Rdbt / with Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m			
EH7b	Elm High Road / Weasenham Lane Roundabout	£ 3.05 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH3b	Relocated A47 / Elm High Road Roundabout	£ 10.98 m	FBSb	Freedom Bridge Roundabout Improvements	£ 4.45 m			
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m	BS1a	Bus Station Option 1a	£ 2.69 m			
CR8	Cromwell Road / Weasenham Lane Rdbt	£ 2.80 m						
Total		£ 22.62 m	Total		£ 40.14 m	Total		£ 71.74 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 134.50 m

Figure 3.1: Packages 2 (Minimum), 4 (Middle) and 6 (Maximum)

4. Package Assessment

Introduction

The Package Assessment has been undertaken to identify a preferred package for progression to Business Case development.

Package Comparison Workshop

A 'Package Scoring' workshop (attended by the project team) was held in July 2017 in order to compare and score each of the packages against a series of national and local objectives, using a framework similar to the DfT's Early Assessment and Sifting Tool (EAST) process.

The framework used within the qualitative scoring assessment is shown in Figure 4.2 on the following page, and includes a range of criteria which directly relates to the production of a transport business case. The criteria included critical success factors for the desired funding.

The Minimum, Middle and Maximum packages were scored using the same scoring framework shown on the following page (Figure 4.2), and the process outlined beneath was used to enable comparisons between packages to be made. Figure 4.1 shows that the Minimum Package was initially scored, and this was then used as a baseline for scoring the Middle Package and the scores were amended where they were considered to differ from the Minimum Package. The same process was repeated when scoring the Maximum Package (with the Middle Package being used as the baseline).



Figure 4.1: Process for Comparing Package Scores

Item	Details	Assessment Measures	Scoring			
			Range	2021	2026	2031
Primary Objectives/Strategic Fit						
Enable housing & employment growth in Wisbech	Deliver highway capacity to meet Local Plan targets	Number of homes/jobs meets 2031 targets	0 to +3 House Jobs			
	Meet build schedules	Meets 2021 and 2031 targets	0 to +3			
	Foundations for further growth	Provides for further growth (Garden Town)	0 to +3			
Enable & encourage sustainable modes	Scheme designs provide PT, walk and cycle	Initially subjective judgement. Quantify in later appraisals	-3 to +3			
Provide an efficient, safe, secure network for all	Ensure adequate local and strategic network performance	Modelling results	-3 to +3			
	Address known road safety & security issues	Modelling results. Safety audits	-3 to +3			
	Ensure congestion or safety issues not caused elsewhere on the local network	Modelling results. Safety audits. Some subjective judgement	-3 to +3			
	Ensure congestion or safety issues not caused elsewhere on the strategic network	Modelling results. Safety audits. Highways England views	-3 to +3			
Sustain and enhance the environment	Enhances the local environment	Subjective judgement	-3 to +3			
	Manages air quality issues	Initially subjective judgement. Quantify later	-3 to +3			
	Adequate flood protection and mitigation	Initially subjective judgement. Quantify later	-3 to +3			
Value for Money CSFs (Economic Case)						
Benefit/Cost ratio meets Assurance Framework		Full appraisal	BCR	Not assessed at this stage		
Sound return on investment (BCR and wider impacts)		Full appraisal, including SDI & WEIs	VfM category	Not assessed at this stage		
Affordability (Financial Case)						
Deliverable within available budget. NB LGF-1, LGF-2, Combined Auth		Costings	Yes/no			
Takes account of all delivery costs		Costings, inc. land, demolition, risk (certainty)	0 to +3			
Revenue implications affordable		Certainty measures based on scheme types	Yes/no			
Achievability (Commercial Case)						
Can be procured, delivered & operated as required		Based on standard procurement routes (certainty)	0 to +3			
Deliverable using current engineering solutions		Based on engineering judgement/certainty/risk	0 to +3			
Meets Highways England design standards		Highways England view through discussion	Yes/no			
Acceptable operational and maintenance liabilities		Standard measures based on scheme types	Yes/no			
Requires delivery of some other component in order to deliver benefits?		Subjective judgement/local knowledge	Yes/no			
Can be procured through feasible procurement routes		Based on standard procurement routes/certainty	Yes/no			
Management and Timescale (Management Case)						
Sound approach to planning, delivery & risk management		Based on standard approaches/certainty	Yes/no			
Construction risks acceptable and controls in place to manage		Based on standard approaches/certainty	Yes/no			
Deliverable within timescale of available funding		Based on standard approaches/certainty	0 to +3			
Land Purchase required		3=none; -3=significant, requiring CPO	-3 to +3			

Figure 4.2: Qualitative Scoring Framework

A summary of the scores awarded to each of the Packages is provided in Table 4.1 beneath. The key points of discussion from the Packaging assessment are summarised by Package on the following page.

Table 4.1 – Package Scoring Summary

	2021			2026			2031		
	Min	Mid	Max	Min	Mid	Max	Min	Mid	Max
Primary Objectives/Strategic Fit									
Enable housing & employment growth in Wisbech	6	8	9	9	11	12	10	11	12
Enable & encourage sustainable modes	1	1	1	2	2	2	2	2	2
Provide an efficient, safe, secure network for all	0	3	5	3	8	9	7	9	10
Sustain and enhance the environment	0	0	0	0	0	0	0	0	0
Total	7	12	15	14	21	23	19	22	24
Value for Money CSFs (Economic Case)									
Benefit/Cost ratio meets Assurance Framework				0	0	0	0	0	0
Sound return on investment (BCR and wider impacts)				0	0	0	0	0	0
Affordability (Financial Case)									
Deliverable within available budget. NB LGF-1, LGF-2, Combined Auth	Yes	No	No	0	0	0	0	0	0
Takes account of all delivery costs	2	2	2	2	2	2	2	2	2
Revenue implications affordable	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total	2	2	2	2	2	2	2	2	2
Achievability (Commercial Case)									
Can be procured, delivered & operated as required	0	-1	-2	0	-1	-2	0	-1	-2
Deliverable using current engineering solutions	0	0	0	0	0	0	0	0	0
Meets Highways England design standards	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Acceptable operational and maintenance liabilities	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Requires delivery of some other component in order to deliver benefits?	No	No	No	No	No	No	No	No	No
Can be procured through feasible procurement routes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total	0	-1	-2	0	-1	-2	0	-1	-2
Management and Timescale (Management Case)									
Sound approach to planning, delivery & risk management	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Construction risks acceptable and controls in place to manage	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Deliverable within timescale of available funding	3	3	3	3	3	3	3	3	3
Land Purchase required	0	-1	-1	-1	-2	-2	-2	-3	-3
Total	3	2	2	2	1	1	1	0	0
Overall Package Total	12	15	17	18	23	24	22	23	24
Deliverable with identified funding	Yes	No	No						

Minimum Package

The main points from the discussion and scoring of this package were:

- The “Minimum” package is the lowest scoring package, but includes the minimum number of schemes required to unlock growth outlined within the Local Plan (2014);
- The cost of this package is slightly over the £10.5m funding identified for the study and therefore a small amount of additional funding would be required to complete the short term vision of the business case;
- This package offers benefit over the existing network, although capacity enhancements and network wide performance would be greater in the Middle and Maximum packages;
- Concerns that this package does not include schemes to mitigate the impact of additional traffic (associated with growth) on the wider network, namely the area of Freedom Bridge Roundabout;
- It was noted that this package did little to future proof the network against further growth; and,
- Concerns regarding ‘abortive work’ for a scheme at the Elm High Road / A47 roundabout (EH1 / EH3b) were raised (this scheme is seen as an interim measure until sufficient funding is available to construct scheme EH3b).

Middle Package

The main points from the discussion and scoring on this package were:

- The cost of this package is much greater than the funding identified for the short term period, due to the earlier inclusion of the larger capacity enhancing Option EH3b;
- Despite the cost of Option EH3b, the benefits associated with including this scheme in the short term is that decongestion benefits are realised earlier and it avoids the abortive cost of implementing Option EH1 as an interim measure until sufficient funding for Option EH3b becomes available;
- Unlike the Minimum Package, this package incorporates schemes to mitigate the impact of the Local Plan traffic on the wider network, including the location of Freedom Bridge Roundabout (Option FB5b), which would provide wider network benefits; and,
- Greater land take is required for Option EH3b within the short term period (2021), providing a lower ‘Achievability’ score for this package when compared to the Minimum Package.

Maximum Package

The main points from the discussion and scoring on this package were:

- This package is the most expensive package and a significant amount of additional funding is required, however it offers greater benefit for the network due to the inclusion of greater capacity enhancing schemes (EH3b and EH7b) within the short term (2021); and,
- In addition to the land take associated with Option EH3b (as identified in the Middle Package), there is also land take (including residential buildings) associated with Option EH7b. This would increase the challenge associated with delivery.

Package 8

A key issue raised during the workshop described above was that, despite the Maximum Package being identified as the highest scoring package and being the package which would be most likely to offer the greatest network wide benefits due to larger capacity schemes, the funding identified is currently only sufficient to deliver the Minimum Package.

It was however acknowledged by the workshop group, that there would likely be additional funding announced within the near future, and that the medium and long term (2026 and 2031) elements of the packages should not be constrained by uncertainty over what funding may become available, and where it may come from.

On this basis a new package was created during the Package Scoring Workshop, which consolidated the short term options from the Minimum Package and the long term options from the Maximum Package. This new package is referred to as Package 8 (to maintain the even numbering pattern created by the omission of the 'without' railway packages).

Package 8 was achieved by deferring the higher cost schemes of EH7b and EH3b from the short term to the medium term, and replacing them in the short term with low cost equivalent schemes (EH4 and EH1 respectively).

A disadvantage to this approach is that there is some additional cost involved in implementing lower costing schemes in 2021, and then replacing them with larger and higher costing schemes in 2026. If additional funding were available to add to the identified LEP funding (£10.5m), then these schemes could be accelerated from the medium (2026) to the short term (2021) to avoid these abortive costs and to accelerate the realisation of benefits.

However the consensus during the workshop was that Package 8 was preferred over the other three packages, and should be progressed to economic assessment.

Package 8 is shown on the following page in Figure 4.3.

Package 8

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
SAR5a	Southern Access Road (wout A47 Rdbt / with Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m			
EH4	Weasenham Lane Junction Improvements	£ 0.97 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m	FB5b	Freedom Bridge Roundabout Improvements	£ 4.45 m			
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m	BS1a	Bus Station Option 1a	£ 2.69 m			
CR8	Cromwell Road / Weasenham Lane Rdbt	£ 2.80 m	EH3b	Relocated A47 / Elm High Road Roundabout	£ 16.93 m			
			EH7b	Elm High Road / Weasenham Lane Roundabout	£ 4.71 m			
Total		£ 10.63 m	Total		£ 61.78 m	Total		£ 71.74 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 144.16 m

Figure 4.3: Package 8

Package 8 – Economic Assessment

The Transport User Benefits Appraisal (TUBA) program was used to quantify the transport user benefits resulting from Package 8, and to calculate a Benefit to Cost Ratio (BCR).

The TUBA assessment uses the output files from the updated Wisbech Area Transport Study (WATS) model to quantify the change in journey time and distance as a result of the Preferred Package compared to a Do Minimum Scenario, and hence quantify the journey time and vehicle operating cost benefits (if any). This information is then used to calculate a 60-year whole life Present Value of Benefits (PVB) which when compared to a Present Value of Costs (PVC) is then used to calculate a Benefit Cost Ratio (BCR). A Value for Money (VfM) category is then determined based on this BCR. The VfM categories defined by DfT in the Value for Money Framework are shown beneath in Table 4.2.

Table 4.2 – Package Scoring Summary

VfM Category	BCR Value
Very High	BCR greater than or equal to 4
High	BCR between 2 and 4
Medium	BCR between 1.5 and 2
Low	BCR between 1 and 15
Poor	BCR between 0 and 1
Very Poor	BCR less than or equal to 0

The BCR and VfM category for Package 8 are shown beneath in Table 4.3. Further details on the economic assessment and the use of TUBA can be found in the Technical Note provided in Appendix A.

Table 4.3 – Package 8: BCR and VfM Category

Short Term BCR (2021 Schemes)	Long Term BCR (2021, 2026 and 2031)
BCR = 1.336	BCR = 1.662
Category = Low VfM (1 > 1.5)	Category = Medium VfM (1.5 > 2)

The results show that the Short Term schemes that are the subject of the Business Case have a BCR of 1.336, which equates to a Low VfM category.

Analysis of both the WATS and TUBA models identified that retaining the existing railway alignment had a detrimental impact on transport user benefits. This was because trip distance remained relatively high for vehicles trying to access the Wisbech South Development as the eastern side of the development can only be accessed from Boleness Road, and the western side of the development can only be accessed by Cromwell Road. This results in circuitous routes (via the A47 or Weasenham Lane) for trips from one side of Wisbech to reach the development land on the opposing side of the railway line. A sensitivity test was undertaken to determine the impact of this occurrence on the Package BCR.

Package 7 – Railway Line Sensitivity Test

An equivalent package which assumes the railway line would follow a 'different alignment' and that New Bridge Lane could sever the current alignment was also assessed to understand the impact of preserving the current railway line alignment, and to determine if a higher VfM category could be achieved.

This new package was called Package 7 to maintain the numbering pattern used for the 'without' railway scenarios.

The two key differences between the Package 8 and Package 7 are:

- Option SAR5a in Package 8 is replaced with Option SAR 1 in Package 7 (severing the railway line), and;
- Option CR8 in Package 8 is not included in Package 7 as this scheme is only required if the railway line is retained (to mitigate the impact of additional traffic on Weasenham Lane as a result of not creating a new east-west link on New Bridge Lane).

Figure 4.4 on the following page shows Package 8 (as referenced above in Figure 4.3) alongside Package 7. The individual schemes highlighted in green are those that differ between the two packages.

Package 8

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
SAR5a	Southern Access Road (wout A47 Rdbt / with Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m			
EH4	Weasenham Lane Junction Improvements	£ 0.97 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m	FB5b	Freedom Bridge Roundabout Improvements	£ 4.45 m			
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m	BS1a	Bus Station Option 1a	£ 2.69 m			
CR8	Cromwell Road / Weasenham Lane Rdbt	£ 2.80 m	EH3b	Relocated A47 / Elm High Road Roundabout	£ 16.93 m			
			EH7b	Elm High Road / Weasenham Lane Roundabout	£ 4.71 m			
Total		£ 10.63 m	Total		£ 61.78 m	Total		£ 71.74 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 144.16 m

Package 7

Short Term (2021)			Medium Term (2026)			Long Term (2031)		
Scheme	Description	Cost	Scheme	Description	Cost	Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m	WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m	WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
SAR1	Southern Access Road (wout A47 Rdbt / wout Rway)	£ 1.64 m	NRC	New River Crossing	£ 9.84 m			
EH4	Weasenham Lane Junction Improvements	£ 0.97 m	CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m			
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m	FB5b	Freedom Bridge Roundabout Improvements	£ 4.45 m			
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m	BS1a	Bus Station Option 1a	£ 2.69 m			
			EH7b	Elm High Road / Weasenham Lane Roundabout	£ 4.71 m			
			EH3b	Relocated A47 / Elm High Road Roundabout	£ 16.93 m			
Total		£ 7.84 m	Total		£ 61.78 m	Total		£ 71.74 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 141.36 m

Figure 4.4: Package 8 compared to Package 7

Package 7 – Economic Assessment

The results of the sensitivity test (Package 7) are shown beneath in Table 4.4.

Table 4.4 – Package 7: BCR and VfM Category

Short Term BCR (2021 Schemes)	Long Term BCR (2021, 2026 and 2031)
BCR = 4.146	BCR = 1.778
Category = Very High VfM (> 4)	Category = Medium VfM (1.5 > 2)

The results in Table 4.4 demonstrate that creating a new east-west route over the railway line through the construction of Option SAR1 provides a much higher BCR for the Short Term schemes (which are the subject of the funding bid) than Package 8. This is due to the reduced trip length which results from the improved east – west connectivity created by the connection of New Bridge Lane and Boleness Road in Option SAR1. The lower package cost of Package 7 (achieved as Option CR8 is not required) also contributes to the improved BCR.

The BCR for Package 7 is within the Very High VfM category. A key consideration in selecting a package of schemes for a transport business case are the conditions and requirements of the funding provider. In this instance the funding conditions of the Greater Cambridge Greater Peterborough Local Enterprise Partnership (LEP) are set out in the LEP's Technical Assurance Framework.

This Assurance Framework is available on the LEP's website and sets out the terms and conditions upon which funding would be granted. With regard to economic assessment of schemes, the assurance Framework states that "Projects with a Benefit Cost Ratio of less than 2:1 will not normally be funded"¹.

Package 8 only achieved a BCR of 1.336 and did not meet the LEP's technical assurance criteria. Progressing this package posed a very significant risk that the funding requirements would not be met, and that the available funding may not be realised. Package 7 does meet the LEP's technical assurance framework as the BCR is greater than 2.0, and it was progressed for further consideration on this basis.

Package 7a

As shown in Figure 4.4, the total cost for the short term schemes in Package 7 is £7.84m, which is short of the £10.5m available from the LEP. To increase the user benefits that could be achieved with the funding available, Package 7 was amended by replacing the lower impact Option EH4 on Elm High Road with the higher impact Option EH7b scheme. This increased the Package cost to £9.92m.

The other significant benefit of Package 7a over Package 7 is that it avoids the implementation of an interim scheme during the short term period (2021) that would ultimately be replaced with a permanent scheme in the medium term (2026), reducing the overall long term cost and disruption to network users, local residents and businesses.

The difference between Package 7 and Package 7a is shown in green in Figure 4.5 on the following page.

¹ <http://www.gcgp.co.uk/wp-content/uploads/2017/05/GCGP-Assurance-Framework-May-2017.pdf>

Package 7

Short Term (2021)		
Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m
SAR1	Southern Access Road (wout A47 Rdbt / wout Rway)	£ 1.64 m
EH4	Weasenham Lane Junction Improvements	£ 0.97 m
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m
Total		£ 7.84 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Medium Term (2026)		
Scheme	Description	Cost
WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m
NRC	New River Crossing	£ 9.84 m
CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m
FB5b	Freedom Bridge Roundabout Improvements	£ 4.45 m
BS1a	Bus Station Option 1a	£ 2.69 m
EH7b	Elm High Road / Weasenham Lane Roundabout	£ 4.71 m
EH3b	Relocated A47 / Elm High Road Roundabout	£ 16.93 m
Total		£ 61.78 m

Costs: Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Long Term (2031)		
Scheme	Description	Cost
WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
Total		£ 71.74 m

Costs: Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 141.36 m

Package 7A

Short Term (2021)		
Scheme	Description	Cost
CR2	New Bridge Lane / Cromwell Road Signalisation	£ 0.72 m
SAR1	Southern Access Road (wout A47 Rdbt / wout Rway)	£ 1.64 m
EH7b	Elm High Road / Weasenham Lane Roundabout	£ 3.05 m
EH1	A47 / Elm High Road Roundabout Improvements	£ 1.08 m
BER2	A47 / Broadend Road Roundabout Opt 2	£ 3.43 m
Total		£ 9.92 m

Costs: Scheme cost + Risk Allowance @ 20%
Includes 5% inflation pa * 4 years

Medium Term (2026)		
Scheme	Description	Cost
WLR 1D S	Western Link Road (Southern Section)	£ 16.94 m
NRC	New River Crossing	£ 9.84 m
CR7c	A47 / Cromwell Road Roundabout Upgrade	£ 6.22 m
FB5b	Freedom Bridge Roundabout Improvements	£ 4.45 m
BS1a	Bus Station Option 1a	£ 2.69 m
EH3b	Relocated A47 / Elm High Road Roundabout	£ 16.93 m
Total		£ 57.07 m

Costs: Scheme cost + Optimism Bias
Includes 5% inflation pa * 9 years

Long Term (2031)		
Scheme	Description	Cost
WLR 1D N	Western Link Road (Northern Section)	£ 71.74 m
Total		£ 71.74 m

Costs: Scheme cost + Optimism Bias
Includes 5% inflation pa * 14 years

Package Total £ 138.74 m

Figure 4.5: Package 7 compared to Package 7a

Package 7a was also assessed using TUBA to calculate a Package BCR and to understand the impact of replacing Option EH4 with EH7b. The results from this assessment are shown beneath in Table 4.5.

Table 4.5 – Package 7a: BCR and VfM Category

Short Term BCR (2021 Schemes)	Long Term BCR (2021, 2026 and 2031)
BCR = 5.185	BCR = 1.835
Category = Very High VfM (> 4)	Category = Medium VfM (1.5 > 2)

The results in Table 4.5 show that the replacement of Option EH4 with EH7b increases the Package BCR. This is consistent with results from the individual option testing along Elm High Road from Phase I of the study, which showed that Option EH7b performed significantly better than Option EH4.

Preferred Package

Based on the assessment described within this chapter, Package 7a has been selected as the preferred Package to progress to Outline Business Case for funding.

5. Summary

Phase 2 of the Wisbech Access Study has assessed a range of packages to identify a preferred package for progression to Outline Business Case.

This assessment drew on a series of options identified in the Phase 1 assessment (Individual Option Assessment), and used these options in different combinations to create each of the packages. The packages assessed were developed in a workshop attended by the core project team, including officers from Fenland District Council and Cambridgeshire County Council. The packages were formed around three key themes, these were:

- **Minimum (Min)** – this scenario represents the minimum level of infrastructure provision required to access the Local Plan sites. Note that the options within this scenario are primarily concerned with physical access, and do not necessarily mitigate the impact of the Local Plan traffic on the wider transport network.
- **Middle (Mid)** – this scenario builds upon the Minimum scenario described above, but seeks to mitigate the impact of the Local Plan traffic on the wider network, including locations such as the Elm High Road / A47 roundabout and Freedom Bridge Roundabout. This scenario not only provides access into the development sites, but also reduces congestion and delay on the surrounding network.
- **Maximum (Max)** – this scenario builds further upon the Middle scenario, and adds in further congestion relief with the highest capacity options in each of the locations.

The packages were phased over three periods. These were the Short Term (2021), the Medium Term (2026) and the Long Term (2031). Parallel packages were initially created for a 'with' and 'without' railway scenario, however based on consultation with the Member Steering Group only the 'with' railway Packages were assessed.

The packages were initially assessed against a series of study objectives in a workshop attended by the core project team including representatives of Fenland District Council and Cambridgeshire County Council. This process identified the Maximum package as the highest scoring and most desirable package to progress, however noted that the short term schemes (2021) within this package exceeded the funding available. As a result of this a hybrid package was created which included the affordable short term schemes from the Minimum Package and the higher costing schemes from medium and long term phases of the Maximum Package. This new package (Package 8) was then progressed to economic assessment.

An economic assessment of Package 8 was undertaken using the Transport User benefits Appraisal (TUBA) program and demonstrated that Package 8 achieved a BCR of 1.336 for the short term schemes. This is beneath the figure of 2.0 required by the Greater Cambridge Greater Peterborough's Local Enterprise Partnership (GCGP LEP) in their Technical Assurance Framework. Analysis of the TUBA outputs identified that the lack of connectivity through the Wisbech South Development site (as a result of preserving the railway line) was a significant factor in the low BCR.

A sensitivity test was then undertaken to understand the impact of preserving the railway line on the package BCR. The sensitivity test replaced the Southern Access Road Option (SAR5a) with one that did sever the railway line (SAR1) and linked New Bridge Lane and Boleness Road in the process. This Package also excluded Option CR8 (roundabout at the junction of Cromwell Road / Weasenham Lane) which was only required to mitigate

the impact of retaining the railway line. The result of the economic assessment on Package 7 was a BCR of 4.146.

The decision was made to progress Package 7 over Package 8 as it performed significantly better in the economic assessment, and critically as it met the funding requirements of a BCR of greater than 2.0.

The total Package cost for Package 7 is £7.84m which is beneath the £10.5m of funding available from the GCGP LEP. To increase the user benefits that could be achieved with the funding available, Package 7 was amended by replacing the lower impact Option EH4 on Elm High Road with the higher impact Option EH7b scheme. This created Package 7a and increased the Package cost to £9.92m. The results from the TUBA assessment of Package 7a demonstrated that it had a BCR of 5.185. The increase in BCR between Package 7 and Package 7a is consistent with the results from Phase 1 of the Wisbech Access Study which demonstrated the Option EH7b offered significantly more benefit than Option EH4.

Package 7a has been selected as the preferred package to be progressed to Outline Business Case.

Appendix A – TUBA Assessment Technical Note.

Technical Note

Project:	Wisbech Access Study – Phase 2 Packaging	To: Jack Eagle (CCC)
Subject:	TUBA – Cost-benefit Analysis	From: Ross Jones
Date:	27.10.2017	cc: Richard Jones

Introduction

Skanska undertaken a cost-benefit analysis of the Phase 2 Packaging schemes as part of the Wisbech Access Study (WAS). A cost-benefit analysis was undertaken using the Department for Transport's Transport Users Benefit Appraisal (TUBA) software, with the intention of demonstrating the value for money for each package to ensure they met the funding requirements (BCR of greater than 2.0)..

The purpose of this technical note is to outline the steps taken to assess the costs and benefits of Packages 7, 8 and 7a in the short-term (2021 schemes only) and the long-term (2021, 2026 and 2031 schemes).

Methodology

The assessment was undertaken using TUBA Version 1.9.9 which required two main input files:

- **A scheme parameters file** – defines the trip, distance and time matrices for each user class, year and time period; annualisation factors for each time period; scheme costs and cost profiles, and other scheme-specific parameters; and,
- **Skimmed matrices** – skimmed trip, distance and time matrices for each user class, year and time period. Matrices are skimmed from the WATS model using SATTUBA2.

Table 1 shows the factors used to convert the trip matrices from PCUs to vehicles. In total, 270 matrices were used for the short-term assessment and 450 in the long-term assessment. An additional five “reference distance” matrices have been included in each assessment since the introduction of TUBA Version 1.9.9.

Table 1: Matrix Conversion Factors

Matrix Type	Original Unit of Measure	Required Unit of Measure	TUBA Factor
User Class 1-4 Trips	PCUs	Trips per Hour	1.00000
User Class 5 (HGV) Trips	PCUs	Trips per Hour	0.41700

The packages have been assessed over a 60 year appraisal period as standard for highway schemes, starting with the introduction of schemes in 2021 and the conclusion of benefits in 2080.

The modelled years for the full package assessment have been staggered to include **2025** and **2030** to avoid overestimating the change in benefits between each assessment year. This required the input of additional future year matrices for the 2021 and 2026 network years. Table 2 below summarises the matrices required for assessing the full packages in TUBA.

Table 2: TUBA Matrices Required for Full Package Assessments

Network Year	Matrix Year	Time Periods	Matrix Types	User Classes
Do Minimum (DM)	2021	AM Peak (08:00 – 09:00)	Trips (per Hour)	1 – Car (Commuting) 2 – Car (Employer Business) 3 – Car (Other) 4 – LGV 5 – HGV
	2026			
	2031			
2021	2021	Inter Peak (Average Hour of 10:00 – 16:00)	Distance (Km)	
	2025 (equivalent to 2026)			
2026	2026	PM Peak (17:00 – 18:00)	Time (Hours)	
	2030 (equivalent to 2031)			
2031	2031			

The short-term package assesses the performance of schemes that have been introduced in the 2021 network against traffic growth in 2021, 2026 and 2031 and its subsequent impact on journey distance and time.

Table 3 summarises the scheme parameters assumed for the long-term and short-term package assessments.

Table 3: TUBA Scheme Parameters

	Long-Term (2021 – 2031)	Short-Term (2021 Only)
First Year	2021	
Horizon Year	2080 (60 year appraisal period)	
Modelled Years	2021, 2025, 2026, 2030, 2031	2021, 2026, 2031
Current Year (Year of Cost Estimate)	2017	
Annualisation Factors	AM – 244; PM – 271; Inter Peak – 2837	
Time Slices	AM (08:00 – 09:00) and PM (17:00 – 18:00) Peak Hours; Inter Average Peak Period (10:00 – 16:00)	

Annualisation factors were calculated for each time period and used to convert the benefits per time period to annual benefits. The calculations were based upon Highways England’s WebTRIS Automatic Traffic Count (ATC) data along the A47 (south of the Fengate Road junction).

A profile of the construction, land, preparation and supervision costs was compiled for the long-term package and short-term package assessments. A value of 1.7% per annum for maintenance costs has been assumed at this stage. Example short and long term scheme files containing assumed cost profiles have been provided with this technical note.

The short-term scheme costs include 20% risk allowance whereas the long-term scheme costs do not include risk but apply optimism bias instead. All schemes from 2026 onwards include 45% optimism bias with the exception of the New River Crossing (NRC) which includes 66% optimism bias in line with WebTAG guidance. Inflation was removed from all costs before undertaking as required before undertaking the assessment within TUBA.

Data Checks

Once TUBA has run, an output file is produced containing all cost and benefit results and any warnings that TUBA has discovered whilst undertaking the calculations. When warnings occurred within the output files the following checks¹ were undertaken to ensure the input matrices were correct and consistent:

- **Warning – Ratio of DM to DS time or distance too high/low**
 - Are the correct trip, time and distance matrices defined within the scheme parameters file for the Do Minimum (DM) and Do Something (DS) scenarios and for each modelled year and time period?
 - Are the ratios of DM to DS travel times and distances producing warnings/serious warnings? If so, are they expected? E.g. large change in cost.
- **Warning – One of DM and DS (but not both) time or distance is zero**
 - Are the user classes the same for both scenarios?
- **Warning – Origin-Destination speed too high/low**
 - Are there any errors within the time and/or distance matrices?
- **Warning – Error in input matrix, wrong units or incorrect matrix factor specified**
 - Is each matrix cell value for passenger or vehicle trips below the maximum value of 100,000 trips per hour?
 - Is each matrix cell value for distance below the maximum value of 1,000km?
 - Is each matrix cell value for time below the maximum value of 10 hours?

Any errors identified within the initial TUBA run were corrected and the assessment was re-run, and these errors no longer affected subsequent TUBA calculations.

¹ TUBA User Manual (Department for Transport, 2016)

Package 7 vs Package 8 Results (with & without the Railway)

TUBA calculations were undertaken for Packages 7 (severs the railway line) and 8 (does not sever the railway line) in the short-term and long-term. Table 4 below shows a breakdown of the monetised costs and benefits for Packages 7 and 8 in the short-term and long-term. All monetised values are in 2010 discounted prices as per WebTAG guidance.

Table 4: Analysis of Monetised Costs and Benefits for Packages 7 and 8 (£'000s)

	Package 7		Package 8	
	Short-Term	Long-Term	Short-Term	Long-Term
Greenhouse Gases	85	18	-72	-172
Economic Efficiency: Consumer Users (Commuting)	2911	25884	1420	25122
Economic Efficiency: Consumer Users (Others)	14144	64907	9249	65020
Economic Efficiency: Business Users and Providers	8465	20109	504	17166
Wider Public Finances (Indirect Taxation Revenues)	-147	82	85	399
Present Value of Benefits (PVB)	25458	111000	11186	107535
Broad Transport Budget	6140	62414	8375	64686
Present Value of Costs (PVC)	6140	62414	8375	64686
Net Present Value (NPV)	19318	48586	2811	42849
Benefit to Cost Ratio (BCR)	4.146	1.778	1.336	1.662

Package 7 outperformed Package 8 with a short-term BCR of 4.146 (very high value for money) and a long-term BCR of 1.778 (medium value for money).

The full TUBA Output results have been submitted alongside this technical note.

Package 7a

Following this assessment a variation of Package 7 was developed which replaced Option EH4 with EH7b at the junction of Elm High Road and Weasenham Lane, this became Package 7a. Table 5 shows a breakdown of the monetised costs and benefits for Package 7a in the short-term and long-term.

Table 5: Analysis of Monetised Costs and Benefits for Package 7a (£'000s)

	Package 7a	
	Short-Term	Long-Term
Greenhouse Gases	492	899
Economic Efficiency: Consumer Users (Commuting)	8940	43045
Economic Efficiency: Consumer Users (Others)	16535	60919
Economic Efficiency: Business Users and Providers	11601	9559
Wider Public Finances (Indirect Taxation Revenues)	-1080	-1936
Present Value of Benefits (PVB)	36488	112486
Broad Transport Budget	7037	61316
Present Value of Costs (PVC)	7037	61316
Net Present Value (NPV)	29451	51170
Benefit to Cost Ratio (BCR)	5.185	1.835

Table 5 demonstrates that the replacement of Option EH4 with EH7b has a positive impact on the Package. Package 7a outperforms Package 7 with a short-term BCR of 5.185 (very high value for money) and a long-term BCR of 1.835 (medium value for money).

The full TUBA Output results are provided with this technical note.

Conclusion

This technical note has outlined the steps taken to undertake a cost-benefit analysis within TUBA for Packages 7 and 8 of the Wisbech Access Study. The process involved:

- Skimming trip, time and distance matrices;
- Calculating annualisation factors;
- Compiling the scheme parameters file;
- Running TUBA;
- Checking all TUBA output files for warnings, and;
- Re-running TUBA if necessary.

A variation of Package 7, known as Package 7a was then also assessed.

Packages 7 and 7a both offer very high value for money in the short-term with BCRs in excess of 4.0. They both offer medium value for money in the long-term with BCRs between 1.5 and 2.0. Package 8 does not perform as well and considered to be low value for money in the short-term, and medium value for money in the long-term. Based on this assessment, Package 7a is considered to be the Preferred Package.