Lincoln Eastern Bypass

Monitoring & Evaluation Plan

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1 Introduction

1.1 Scheme Background and Context

The £96m Lincoln Eastern Bypass (LEB) scheme will form a 7.5km single carriageway road that will link the A158 Wragby Road in the north east of Lincoln to the A15 in the south of the city. The scheme was successful in its Best and Final Bid (BaFB) funding application and in line with the requirements of the conditional funding approval this document sets out the monitoring and evaluation plan for the scheme.

As detailed within the funding application the LEB remains an integral part of the Lincoln Integrated Transport Strategy (LITS). It aims to help alleviate the high levels of congestion from local and strategic traffic that affects the centre of Lincoln and acts as a constraint to the economy, reduces the attractiveness of the city for visitors and investors and impacts on the quality of life for local residents. The scheme is currently at the procurement stage with the main construction programme due to commence in early 2017 although some initial preparatory works have been commenced to ensure that development was started within the time limits of the planning permission.

1.2 Document Purpose & Scope

This Monitoring and Evaluation Plan has been prepared in accordance with the DfT's guidance on scheme evaluation and monitoring, specifically this includes:

- Monitoring and Evaluation Framework for Local Authority Major Schemes (2012); and
- Best Practice Guidance for Planning the Fuller Evaluations of Local Authority Major Schemes (Draft 2013).

It is important to state that due to the scale of the LEB and as the forecast costs are greater than the £50m threshold identified by DfT, the scheme falls under the Fuller Evaluation Framework. As such the primary aim of the evaluation will be to present evidence on the following:

1. How the scheme was delivered and whether this was done effectively and efficiently;
2. The causal effect of the scheme on the anticipated outcomes and whether these have contributed to the intended impacts; and
3. Whether it had any unintended adverse or positive effects.

As part of this, the evaluation will need to answer the following high level questions:

- How was the LEB delivered?

- What difference has the LEB made?
- Did the benefits justify the costs?

1.2.1 Document Structure

This remainder of this document describes the plan for evaluating the LEB and is set out as follows:

- **Section 2: Scheme Background & Context –** This section provides an overview of the scheme including the programme and estimated costs;
- **Section 3: Scheme Objectives & Outcomes –** This section describes the scheme's objectives and the expected outcomes;
- **Section 4: Monitoring & Evaluation Requirements –** This section sets out the evaluation scope, objectives and research questions;
- **Section 5: Evaluation Approach –** This section sets out the evaluation methodology related to the key evaluation indicators and scheme objectives, the data requirements and data collection methods;
- **Section 7: Evaluation Reporting and Dissemination –** This section sets out how the evaluation will be reported and disseminated; and
- **Section 7: Delivery, Timescales & Governance –** This section sets out how the evaluation will be delivered, its timescales and monitoring budget.

2 Scheme Background & Context

2.1 Rationale for LEB Scheme

As described in Section 1.1 the £96m LEB scheme will form a 7.5km single carriageway road that will link the A158 Wragby Road in the north east of Lincoln to the A15 in the south of the city. The scheme aims to help alleviate the high levels of congestion from local and strategic traffic that affects the centre of Lincoln. The lack of alternative river crossings also means that strategic traffic, including large numbers of long distance HGVs, is concentrated on the A15 within the City Centre. This intrusion of strategic traffic in the City Centre has been identified as a key constraint to Lincoln's continued success and a key driver for the promotion of the Lincoln Integrated Transport Strategy, including LEB. These issues act as a significant constraint to the economy, reducing the attractiveness of the city for visitors and investors and impacting on the quality of life for local residents.

In addition to these factors it is also important to note that significant housing and economic development is targeted for the Lincoln area. The emerging Central Lincolnshire Local Plan (being developed jointly between the County Council, City of Lincoln Council, North Kesteven District Council and West Lindsey District Council) anticipates the need for 36,960 houses for the whole of Central Lincolnshire, and 23,654 in or immediately adjacent to the Lincoln Principal Urban Area. To facilitate this, both brown and green field sites will be used, with four major Sustainable Urban Extensions planned: the Western Growth Corridor, North East Quadrant, South East Quadrant and South West Quadrant. The plans represent a near 50% increase in the number of dwellings in Lincoln by the mid-2030s. The urban extensions have the potential to accommodate a significant level of development within the Lincoln area and the LEB and Transport Strategy will be necessary to facilitate and support their delivery.

As detailed in Section 1.1 the LEB remains an integral part of the LITS and it is a scheme that is fundamental to the continued success and growth of Lincoln.

2.1.1 Scheme Description & Scope

The proposed scheme will form a single carriageway road through an area of predominantly arable land. The scheme will be located to the east of the city of Lincoln and the villages of Canwick and Bracebridge Heath and to the west of the outlying villages of North Greetwell, Cherry Willingham, Washingborough and Branston (see Appendix A). It will also provide a crossing of the River Witham, Lincoln to Market Rasen Railway Line and the Lincoln to Spalding Railway Line.

The new route will have a design speed of 100kph and a separate 3m wide combined bridleway, cycle and pedestrian right of way (located on the western side of the carriageway) provided along the full length of the scheme to link up with existing public rights of way. The scheme will comprise of the following elements (north to south starting from the Wragby Road Roundabout):

1. *Wragby Road Roundabout:* From A158 Wragby Road the single carriageway layout follows the horizontal alignment of the northwest bound side of the A158 which allows the LEB to tie into the existing roundabout as a fourth arm. The diameter of the existing roundabout remains unaltered.
2. *Hawthorn Road Junction:* The western side (residential side) of Hawthorn Road will be stopped up. A left in left out only junction with the LEB will be added and a segregation island will be included to block right turns. An NMU bridge will also be added.
3. The existing public footpath located to the north of Hawthorn Road will be stopped up where it crosses the LEB and access provided to the LEB NMU routes on the eastern and western sides of the LEB.
4. *Greetwell Road NMU Bridge:* An NMU bridge on the north side of the Greetwell Road Roundabout over the LEB will provide access to the LEB Non Motorised User (NMU) route and maintain the current NMU provision along Greetwell Road.
5. *Greetwell Road Roundabout*: A new four arm roundabout will provide a link from the LEB to Greetwell Road.
6. *Lincoln to Market Rasen Railway Underbridge:* The structure will carry the LEB over the Lincoln to Market Rasen railway line and the Viking Way. A link will be provided to the Viking Way from the LEB NMU route
7. *River Witham Underbridge:* The River Witham Underbridge is the largest structure on the scheme and will cross the River Witham floodplain on an embankment, with a bridge travelling over the North Delph, River Witham, and South Delph.
8. *Lincoln to Spalding Railway Overbridge:* To the south of the river, the bypass will cross under the Lincoln to Spalding railway line.
9. *South Delph NMU Bridge:* An NMU bridge will cross the South Delph watercourse away from the northbound carriageway and provide access from the NMU route to the existing Sustrans cycleway/ footway that runs parallel to the River Witham and passes under the River Witham Underbridge.
10. *Washingborough Road Roundabout:* The LEB joins the B1190 Washingborough Road at a new four arm roundabout.
11. A climbing lane has been provided on the southbound exit from Washingborough Road roundabout with an 8% gradient.
12. *Heighington Road Overbridge:* The LEB will pass under Heighington Road through a new overbridge, with only NMU access to Heighington Road.
13. *Lincoln Road Roundabout:* A new four arm roundabout will be constructed where the LEB crosses the B1188 Lincoln Road. An underpass is proposed for non-motorised users to cross the LEB at Lincoln Road to the north of the roundabout.

14. *Bloxholm Lane NMU Bridge*: A new NMU bridge will be provided over the LEB at Bloxholm Lane.

15. *Sleaford Road Roundabout:* A new four arm roundabout will be constructed to join the LEB with the A15 Sleaford Road and the realigned Bloxholm Lane.

2.2 Scheme Timeframe, Delivery Programme & Milestones

The important scheme milestones are listed within Table 2-1. It demonstrates that the scheme is due to start construction in early 2017 and be completed by summer 2019.

Table 2-1 – Programme of Works

Scheme Delivery Milestone	Estimated Date (June 2016)
Best & Final Bid Approval	Dec 2011
Statutory Orders Published	Oct 2014
Public Inquiry Start	Aug 2015
Confirmation of Orders	Feb 2016
Submit Full Approval to DfT	Oct 2016
Complete Procurement	Dec 2016*
Work Starts on Site	Jan 2017
Works Completed	Apr 2019

**Note this is dependent on Final Funding Approval from DfT*

2.3 Scheme Costs & Funding

The principal scheme costs are listed within Table 2-2 and identify the estimated base and outturn costs. The LEB will be funded from three different sources and as detailed within the funding application £49.950m will be provided by DfT, £12.514m allocated by LCC from their Capital Programme budget and the remainder being provided by third parties.

Table 2-2 – Estimate of Key Costs

Cost Type	Base Cost (£000s)	Estimated Outturn Costs (£000s)	Date of Estimate
Works	£55.855	£65.603	Sept 11
Ancillary Works	£2.227	£2.529	Sept 11
Statutory Undertakers	£1.519	£1.742	Sept 11
Land	£6.983	£8.568	Sept 11
Third Party	£0.586	£0.772	Sept 11
Design and Procurement Fees	£5.192	£5.970	Sept 11
Supervision Fees	£3.343	£4.274	Sept 11
Risk	£5.186	£6.399	Sept 11
Total	**£80.891**	**£95.858**	**-**

3 Scheme Objectives and Expected Outcomes

3.1 Overview

This section of the report provides an overview of the scheme objectives and the expected outcomes. The DfT Monitoring Framework Guidance recommends the use of logic mapping to present the connections between the identified problems, intended outcomes and the expected impacts. As such the purpose of this section is to define the scope of the scheme which in turn will set the framework for what the evaluation will seek to test.

3.2 Intervention Logic

The logic mapping process allows the links between the scheme, its context, inputs, outputs and outcomes to be defined which in turn will provide the focus for the evaluation. As described in the DfT guidance on planning scheme evaluations, the aim '*is to articulate the underlying causal theory based on the assumptions and evidence underpinning the rationale for the scheme.'*

3.2.1 Scheme Objectives

The LEB has three primary objectives which are in line with the Lincoln Integrated Transport Strategy (LITS). The LITS presents a plan for long term transport investment in the city and its surrounding area and was developed in response to the recognition of the fundamental role that transport will play in the future economic growth of Lincoln. It was developed as a live strategy that is able to accommodate changes in local, regional and national policy and as such has been reviewed and updated periodically. The LEB will help achieve in part, several of the LITS objectives (see Appendix I). The LEB objectives are as follows:

- **Objective 1:** To support the delivery of sustainable economic growth and the Growth Point agenda within the Lincoln Policy Area through the provision of reliable and efficient transport infrastructure.

- **Objective 2:** To improve the attractiveness and liveability of central Lincoln for residents, workers and visitors by creating a safe, attractive and accessible environment through the removal of strategic through traffic (particularly HGVs).

- **Objective 3:** To reduce carbon emissions, improve air and noise quality within the Lincoln Policy Area, especially in the Air Quality Management Area in central Lincoln, by the removal of strategic through traffic (particularly HGVs).

3.2.2 Scheme Outcomes

The LEB's outcomes are the likely or achieved short-term and medium-term effects of the scheme's outputs. The table below sets out the expected scheme outcomes and demonstrates their relationship to the LEB's objectives.

Table 3-1 - Scheme Outcomes

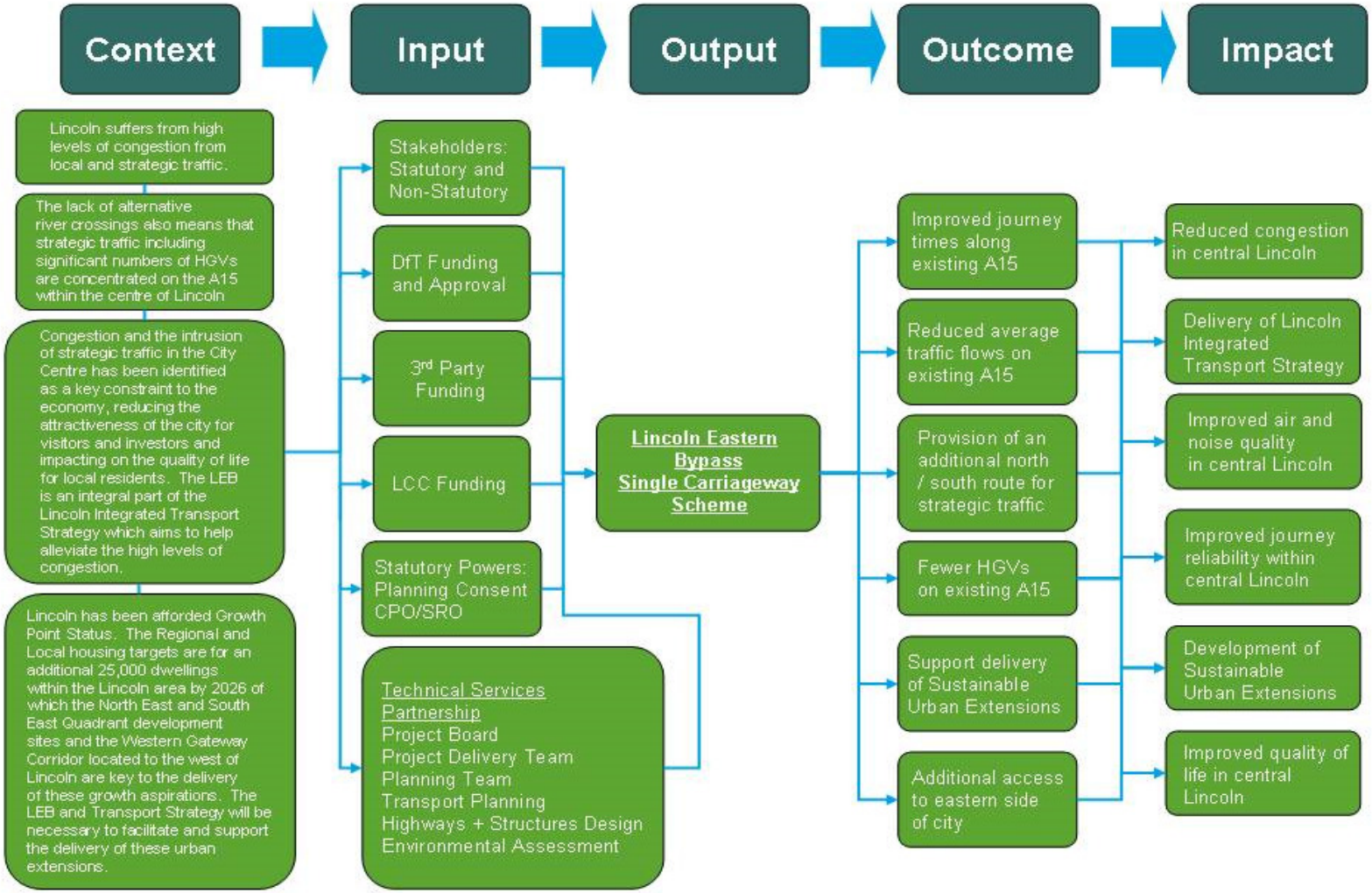
Ref	Objective	Indicators / Outcomes
Obj 1	To support the delivery of sustainable economic growth and the Growth Point Agenda within the Lincoln Policy Area through the provision of reliable and efficient transport infrastructure.	• Improved journey times along the existing A15 corridor and eastern side of Lincoln; • Reduced average traffic flows on the existing A15 corridor and eastern side of Lincoln; • Provision of an additional north / south route for strategic traffic; and • Support the delivery of the Sustainable Urban Extensions.
Obj 2	To improve the attractiveness and liveability of central Lincoln for residents, workers and visitors by creating a safe, attractive and accessible environment through the removal of strategic through traffic (particularly HGVs).	• Improved journey times along the existing A15 corridor and eastern side of Lincoln; • Reduced average traffic flows along the existing A15 corridor and eastern side of Lincoln; • Provision of an additional north / south route for strategic traffic; and • Fewer HGVs on the A15 in central Lincoln.
Obj 3	To reduce carbon emissions, improve air and noise quality within the Lincoln Policy Area, especially in the Air Quality Management Area in central Lincoln, by the removal of strategic through traffic (particularly HGVs).	• Improved journey times along the existing A15 corridor and eastern side of Lincoln; • Reduced average traffic flows along the existing A15 corridor and eastern side of Lincoln; • Fewer HGVs along the existing A15 in central Lincoln; • Improved air quality along the existing A15 corridor in central Lincoln; and • Improved noise quality along the existing A15 corridor in central Lincoln.

3.2.3 Logic Map

The logic map below summarises and links between the scheme context, inputs, outputs and outcomes and helps to set out the areas where the evaluation should be focused. Figure 3-1 below demonstrates that in addition to the shorter term outcomes associated with the scheme, the LEB is expected to have a number of longer term impacts. They are as follows:

- Reduced congestion in central Lincoln;
- Delivery of the Lincoln Integrated Transport Strategy;
- Improved air and noise quality in central Lincoln;
- Improved journey reliability within central Lincoln; and
- Assistance in Development of Sustainable Urban Extensions.

Figure 3-1 – Logic Pathway for the Evaluation of the Lincoln Eastern Bypass Scheme



4 Monitoring & Evaluation Requirements

4.1 Overview

This section of the report provides an overview of the processes used to define the scope of the evaluation including the objectives of the evaluation, the key components of the evaluation and specific research questions that it will seek to address. The purpose of this is to ensure that the evaluation process is consistent with the scheme objectives and scope.

4.2 Evaluation Objectives

The LEB evaluation will have a clear set of aims and questions that will need to be addressed. This will set out the framework and clearly define the outcome and focus for the scheme's evaluation. As per the guidance for the fuller evaluation, the following table sets out the evaluation objectives and key research questions. The aim of which is to enable a thorough and robust evaluation of the following:

- The processes employed to deliver the scheme,
- The impact of the scheme in relation to the scheme objectives;
- The economic benefits of the scheme.

As such the evaluation will aim to determine the following:

Table 4-1 – Monitoring & Evaluation Research Questions

Evaluation Theme	Evaluation Objective	Research Questions
Process Evaluation	To establish whether the LEB was delivered effectively and efficiently as described in the LEB BaFB. To establish whether the LEB achieved the conditions set by DfT.	1. Was the LEB delivered in line with the programme submitted at BaFB? 2. How well was the programme managed through the scheme's development and delivery? What were the key challenges relating to the delivery of the LEB? 3. What were Project Governance and Project Management arrangements for the scheme? Did this differ from those set out in the BaFB? 4. How were risks managed during the development and delivery of the scheme? Were the risks and actions clearly recorded, allocated and managed? 5. What were the key obstacles to the delivery of the scheme? Were these identified at the BaFB stage? 6. Did any factors external to the scheme impact on its implementation? 7. How do the latest scheme costs compare to those set out in the BaFB? What are the reasons for any significant differences from the costs as originally envisaged? 8. What worked well in terms of the delivery of the scheme and what are the key lessons learnt from the delivery of the LEB?

Evaluation Theme	Evaluation Objective	Research Questions
Impact Evaluation	To assess whether the LEB delivered the stated objectives and intended outcomes and impacts.	1. What was the context for the scheme at the time of the BaFB and did this change through the scheme's development? 2. What were the objectives at the time of the BaFB and did they change through the scheme's development? 3. What impact has the scheme had on traffic flows including HGVs in the centre of Lincoln? 4. What impact has the LEB had on journey reliability within central Lincoln? 5. Has the delivery of the LEB allowed LCC to progress the wider schemes contained within the Lincoln Integrated Transport Strategy? 6. What impact has the delivery of the scheme had on noise, air quality and carbon emissions within the centre of Lincoln?
Economic Evaluation	To establish whether the LEB scheme is delivering the economic benefits and value for money described in the best and final bid.	1. What impact has the scheme had on the delivery of the Sustainable Urban Extensions within Lincoln? 2. Has there been a change in traffic patterns on the eastern side of Lincoln? 3. Has the LEB improved journey times from journeys to central Lincoln and for north south journeys through Lincoln? 4. Have there been any unintended adverse or positive effects? 5. Has the LEB improved journey times along the existing A15 in central Lincoln?

4.2.1 Fuller Evaluation Components

The Monitoring and Evaluation Framework sets out the key measures that will need to be assessed by the fuller evaluation. The measures relate to four key stages within the scheme's development, namely:

1. **Inputs:** What is being invested in terms of resources, equipment and activities undertaken to deliver the LEB.
2. **Outputs:** What has been delivered and how it is being used.
3. **Outcomes:** The intermediate effects of the LEB including traffic flow and journey time changes.
4. **Impacts:** Longer term effects of the scheme.

Table 4-2 sets out the measures that will be assessed as part of the LEB's scheme evaluation.

Table 4-2 – Fuller Evaluation Components

Evaluation Category	Item	Stage	Data Collection Timing	Rationale
Process Evaluation	**Scheme Build**	Input	During delivery	Knowledge
	Scheme Costs	Input	During delivery / post opening	Accountability
	Delivery Process	Input	During delivery	Process & Economic Evaluation
	Delivered Scheme	Output	During delivery / post opening	Accountability & Process Evaluation
Impact Evaluation	**Travel Demand**	Outcome	Pre or during delivery / post opening	Accountability / Knowledge
	Travel Times & Reliability	Outcome	Pre or during delivery / post opening	Accountability / Knowledge
	Travel Behaviour	Outcome	Pre and post opening	Impact Evaluation
	Carbon	Impact	Pre or during delivery / post opening	Accountability / Knowledge / Impact Evaluation
	Noise	Impact	Pre or during delivery / post opening	Accountability / Knowledge
	Local Air Quality	Impact	Pre or during delivery / post opening	Accountability / Knowledge
	Accidents	Impact	Pre or during delivery / post opening	Accountability / Knowledge
	Scheme Objectives	Output / Outcome / Impact	Pre and post opening	Impact Evaluation / Accountability
Economic Evaluation	**Impact on the Economy**	Impact	Pre or during delivery / post opening	Accountability / Knowledge / Impact Evaluation
	Outturn Appraisal Assumptions	Impact	Before or during delivery and post opening	Economic evaluation

4.3 Evaluation Timescales

The monitoring and evaluation programme and timescales will follow the guidance set out in the major scheme monitoring framework. The evaluation will consist of the following three parts:

1. **Pre-construction Baseline Data Collection:** This will involve collecting all of the pre scheme data that will be used to form the baseline from which to compare the scheme post construction. The aim will be to collate and collect all pre-construction data in 2017 (whilst this is likely to be after the main

construction period has started, the effects on the highway network in the early period will be limited. Ongoing highways works for other schemes in 2016 would affect any surveys undertaken in a neutral month prior to the commencement of construction);

2. **Pre-Opening (Counterfactual) & Post Construction 1 Year Evaluation:** This will involve producing an initial report based on the pre-opening counterfactual scenario data and data collected one year after the scheme has opened. This will allow the initial outcome and impact of the scheme to be assessed. The aim will be to collect the data in 2018 for the pre-opening counterfactual data and by 2020, one year after the scheme has opened; and

3. **Post Construction 5 Year Evaluation:** This will involve producing a final report that evaluates and summarises the impact of the LEB. This 8will demonstrate the impact of the scheme once it has become a fully embedded and established part of the traffic network. The aim will be to collect the data by 2024 five years after the scheme has opened.

4.4 Evaluation Audience

The monitoring and evaluation project will have two primary users; the first will be DfT (Local Major Transport Projects) as the project will provide an assessment of how successful the scheme has been in relation to the financial investment made by central Government. As the LEB was part of the Major Scheme BaFB process it will also help to provide transferable evidence to inform decision making about future spending decisions on similar schemes.

The second primary user of the evaluation project will be the LEB Executive Management Project Board which consists of the following:

- Executive Councillor Highways & Transport;
- Assistant Director Highways & Transport
- Head of Service – Client Services;
- Head of Service – Consultancy; and
- LCC Finance Officer

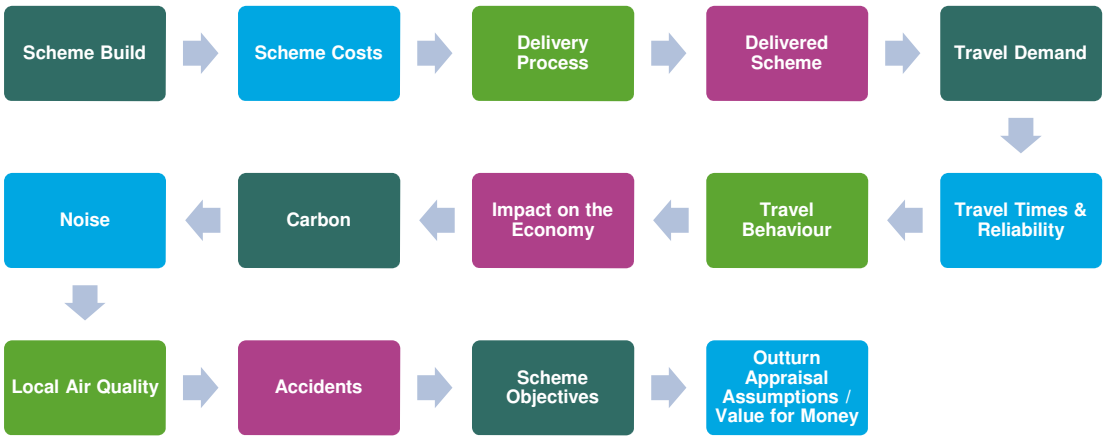
The project will provide accountability for LCCs investment, generate knowledge about the success and cost effectiveness of the LEB in achieving its objectives, enable an assessment of the delivery process to be made as well as an assessment of the success of the scheme in relation to the scheme's actual outcomes.

This in turn will allow LCC to use the evidence generated by the project to improve delivery of future schemes and to inform the decision making about future spending decisions on similar schemes.

5 Monitoring & Evaluation Approach

5.1 Introduction

The following section provides an overview of the methodology that will be used to assess each of the evaluation components identified in Section 4. As described it follows the fuller evaluation guidance and sets out the approach that will be used to assess the following components:



5.2 Process Evaluation

The following subsections set out the methodology for evaluating the delivery of the LEB. It covers the four themes set out below with the aim of establishing whether the LEB was delivered effectively and efficiently as well as identifying the key lessons learnt from the process.

5.2.1 *Scheme Build Evaluation*

The analysis of the scheme build information is intended to enable the programme, stakeholder and risk management processes to be evaluated and assessed. The evaluation will focus on comparing how the programme, stakeholders and risks were actually managed with the strategies and plans set out in the BaFB.

The outcome of the scheme build evaluation will be detailed within the Post Construction 1 Year Evaluation Report. It will specify whether the scheme build expectations were met, whether there were any differences to those expected at the start of the project as well as outline the effectiveness of stakeholder engagement and risk management processes.

An overview of the scheme build evaluation is provided in Table 5-1.

Table 5-1 – Scheme Build Evaluation Process

Stage	Approach
Input	The assessment will require the following inputs: • The proposed LEB Programme submitted with the BaFB; • The actual delivery of project milestones; • The stakeholder liaison plan submitted with the BaFB; • Actual stakeholder liaison process and outcome; • Risk Management Strategy; and • Actual Risk Management processes employed through the project delivery and scheme build process.

Process	The assessment will involve the following:
	• **Programme:** The scheme delivery process will be evaluated against the proposed delivery programme put forward as part of the BaFB. The delivery of the key programme milestones will be used as the primary measure for assessing whether the process has met expectations.
	• **Stakeholder Management:** The evaluation will assess the effectiveness of the engagement process with both statutory and non-statutory bodies throughout each stage of the development of the LEB. It will identify the challenges and issues encountered during the development of the scheme.
	• **Risk Management:** The effectiveness of the risk management process will be evaluated. This will include the process for monitoring and evaluating the risks at the each of the key programme milestones including BaFB, planning application, detailed design and during construction. It will specifically consider the following:
	  ○ How were the risks managed during the development of the LEB? How were they recorded and what actions were taken?
	  ○ How were risks reported? How were new risks identified and reported and could they have been foreseen?
	  ○ Was the risk quantification process robust? How did this compare to the cost of risks that were actually realised?

Output	The outputs will be summarised in the 'One Year After Report' and include the following: • Identification of the differences between the forecast and actual programme and the reasons for any variance; • Identification of the differences between the proposed and actual stakeholder liaison process, the key issues experienced throughout each stage of the programme and lessons learnt from stakeholder liaison; and • Evaluation of the effectiveness of the risk management process employed during the scheme preparation and construction.

5.2.2 *Scheme Cost & Risk Review*

The evaluation of the final scheme costs and risks will involve identifying any key differences from those initially submitted as part of the funding bid. Specifically it will provide a detailed comparison of the costs submitted at the BaFB stage, with the detailed design estimate and the final outturn values.

The project management team will work alongside the contractor to provide the outturn costs in a comparable format to those submitted at BaFB and for the detailed design. The outcome of the scheme cost evaluation will be provided within the Post Construction 1 Year Evaluation Report. It will specify the final outturn costs, the main differences to the cost estimates, the areas where any savings have been made and the elements where there have been an increase in costs.

In addition, and in parallel to the risk strategy review described in Section 5.2.1, a review of the risk values included within the scheme risk register will be completed.

The will look at the outturn risk costs of any realised risks compared to those set out in the BaFB. The current LEB Risk Register is provided in Appendix J.

An overview of the process is provided in the table below.

Table 5-2 – Scheme Cost and Risk Evaluation Process

Stage	Approach
Input	The assessment will require the following inputs: • Scheme cost estimate as submitted at BaFB; • Detailed design scheme cost estimate; • Final outturn costs for each element as set out in the BaFB; • Identification of risks that have been realised during the development of the LEB and the resulting cost impact
Process	The analysis will involve the following: • Outturn Costs: Analysis of the final outturn costs against the estimated scheme costs; and • Risks: Comparison of the values of the key risks realised during the preparation and construction of the scheme with the values of those contained within the risk register.
Output	The outputs of the scheme cost and risk review will be summarised in the 'One Year After Report' and include the following: • Details of changes from the scheme cost estimate and the key reasons for any changes; • Identification and explanation of any cost savings and overruns; • Identification of the reasons for the differences in the values of risks detailed within the risk register and those encountered during the preparation and construction of the scheme. This will include the appropriateness of the quantified risk values used to inform the scheme cost estimate.

5.2.3 *Delivery Process Evaluation*

As set out in the fuller evaluation requirements the delivery process assessment will build on the metrics used to assess the scheme build and scheme cost evaluations. It will aim to assess the following:

- **Scheme Context:** This will look at the context of the scheme at the time the BaFB was submitted, the justification for promoting the scheme and whether there has been any change as the LEB was developed;

- **Scheme Objectives:** This will look at the objectives for the scheme, whether they were clear or whether they changed over time;

- **Project Management and Governance:** This will assess the project management processes and procedures used to manage the scheme and coordination of resources; and

- **Scheme Inputs** / **Resources:** This will include an assessment of the resources used to develop the scheme including the factors and obstacles

relating to capital and revenue investment, staffing, skills / expertise and services.

The outcome of the scheme cost evaluation will be provided within the Post Construction 1 Year Evaluation Report. An overview of the process is provided in the table below.

Table 5-3 – Delivery Process Evaluation

Stage	Approach
Input	• **Scheme Context:** Identification of scheme context at BaFB and of any changes to the objectives over the course of the LEB's development. • **Scheme Objectives:** Confirmation of scheme objectives at BaFB and identification of any changes to the objectives over the course of the LEB's development. • **Project Management & Coordination:** Confirmation of the project governance and project management strategy agreed at programme entry stage. Description of the actual project governance and project management arrangements employed throughout the development of the scheme. • **Scheme Inputs** / **Resources:** Confirmation of the planned resources at the programme entry stage. Identification of the actual resources used throughout the development of the scheme.
Process	• **Scheme Context:** Identification and analysis of the reasons for any changes to the scheme's context. • **Scheme Objectives:** Identification and analysis of the reasons for any changes to the scheme objectives. • **Project Management & Governance:** Identification and analysis of the key differences between the planned and actual project management and governance arrangements. A workshop will be held to identify the key project management and governance challenges experienced during the delivery of the scheme; it will involve the following stakeholders: Project Board, Senior User and Project Management Team. • **Scheme Inputs** / **Resources:** Identification and analysis of the key differences between the planned and actual resources. A workshop will be held to identify the resource challenges experienced during the delivery of the scheme. It will involve the Project Board, Project Management Team and primary suppliers.
Output	• Summary of the reasons for changes to the scheme context, objectives, project management and governance arrangements, resources from those forecast and set out in the BaFB. • Summary of the significance of the changes to the scheme context, objectives, project management and governance arrangements and resources from those forecast and set out in the BaFB. • Identification of key issues, changes and challenges during the delivery of the scheme; • Identification of the critical success factors to the delivery of the LEB; • Identification of the primary 'lessons learnt.'

5.2.4 *Delivered Scheme Evaluation*

The aim of this part of the scheme evaluation will be to compare the delivered scheme with the design proposed at the BaFB stage and the detailed design. The aim of the assessment will be to show that the scheme has been delivered to the quality standards expected and meets the requirements set out in the BaFB. As part of this assessment it will also be important to capture the views of key stakeholders to ascertain whether the scheme meets their needs.

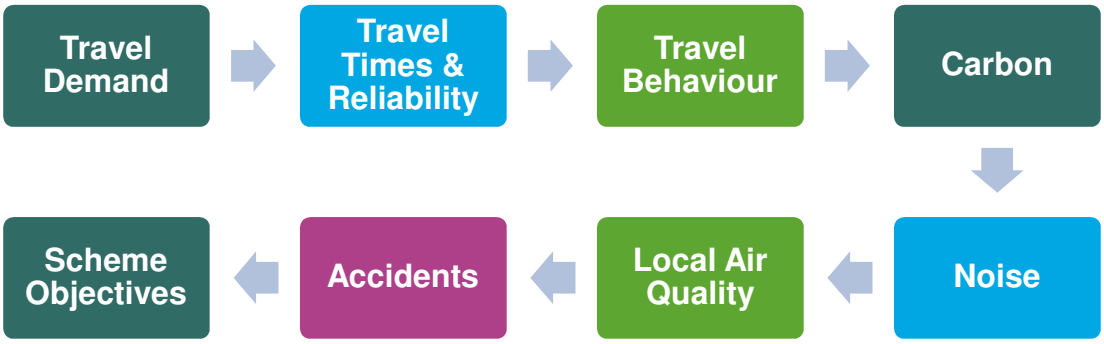
The outcome of the analysis of the delivered LEB scheme will be provided within the Post Construction One Year after Report. A summary of the approach is provided below.

Table 5-4 –Delivered Scheme Evaluation

Stage	Approach
Input	The following information will be provided: • Description of the LEB preliminary design and detailed design; • Full description of the implemented LEB; • Plans of the delivered LEB; and • Plans of the key elements of the scheme including the structures.
Process	• Comparison of the scheme design as set out at BaFB and actual delivered scheme. • Identification of any changes to the scheme since funding approval; this will focus on the key design changes and the rationale for each change. • Assessment of the design standards used to construct and deliver the scheme. **Workshop 1 – Quality Assessment** • This will involve the Project Board, Project Management Team and primary suppliers. A qualitative appraisal of the quality standards achieved and compared to that detailed within the BaFB. **Workshop 2 – Requirements Assessment** • This will involve the Senior User, Project Management Team, primary suppliers and key stakeholders (Members, Business Groups, Transport Providers, Interest Groups see Appendix F). The aim will be to undertake a qualitative appraisal of the scheme to ascertain whether it meets the needs of stakeholders and end users.
Output	The outputs will be summarised in the 'One Year After Report' and include the following: • Summary of the delivered LEB scheme • Summary of the key changes from preliminary design as provided at the BaFB stage, the detailed design and the actual delivered scheme. • Summary of the rationale for the design changes and identification of any impact on the scheme objectives. • Evidence that the scheme has been delivered to the expected standards and summary of the quality standards achieved. • Summary of stakeholders views regarding the scheme.

5.3 Impact Evaluation

The following subsections set out the methodology for evaluating the impact of the LEB. It covers the eight areas set out below with the aim of establishing whether the LEB was delivered in line with the objectives and intended outcomes set out in the BaFB as well as identifying whether there were any unintended impacts.



5.3.1 *Travel Demand Evaluation*

The assessment will focus on the changes to travel patterns across Lincoln and the changes to traffic flows, pedestrian and cycle movements across the areas directly impacted by the scheme. It will specifically look at the impact on north south movements across Lincoln, as the scheme provides a new north south route and it will look at the impact on east west movements to the east of Lincoln, as the scheme will link into a number of existing radial routes.

Two screenlines will be used to assess the impact on travel demand, both of which are set out in Appendix B. A north south screenline will aim to capture the changes to traffic movements through the city. Lincoln is crossed in an east-west direction by the River Witham and the Fossdyke Navigation; these form a convenient and natural north south divide which will be used to measure changes to north south traffic movements. For the purposes of this evaluation the changes to north south traffic will be measured crossing the following screenline points:

- A46 Western Bypass;
- City Centre: B1273 Brayford Way;
- City Centre: A57 Wigford Way;
- City Centre: A15 Broadgate; and
- Lincoln Eastern Bypass.

The east west screenline will aim to capture changes to local traffic movements on radial routes that will be directly impacted by the scheme. These include Hawthorn Road, Greetwell Road, Washingborough Road, Heighington Road, Lincoln and Sleaford Road. The pedestrian and cycle movements will also be captured both at these points and on the LEB Non-Motorised User Route (NMU) route. The aim will

be to show the number of pedestrians and cyclists using the LEB NMU route and the impact on pedestrian and cycle movements on the radial routes crossed by the scheme.

ATC data (using existing data where it is available) will be collected prior to construction to assess the baseline conditions, prior to completion of the scheme to assess the counterfactual scenario and post construction. To ensure that the impact of the scheme is fully captured, the counterfactual data will be collected in 2018 prior to opening and the post construction traffic data will be collected one year and five years after the scheme has opened. The data will be collected for a neutral month (this will be May, June, September or October) and be used to provide the average five and seven day 12 hour and 24 hour flows and average peak hour traffic flows. The pedestrian and cycle counts will also be undertaken during the same period as the traffic data and cover the AM and PM peak periods.

The evaluation of travel demand metrics will be provided within the 'One Year after Report' and the Final Report. The table below summarises the approach.

Table 5-5 – Travel Demand Evaluation

Stage	Approach
Input	Traffic volumes will be monitored using continuous ATCs that are already in place and temporary ATCs (note that for monitoring traffic flows on the LEB LCC are considering installing permanent ATCs). The ATCs will be used to form the screenlines (see Appendix B) and the data collected pre construction, pre-opening (counterfactual), 1 year after opening and up to five years after opening. The following will be collected: **North South Screenline:** • ATC Data: Average AM and PM peak hour traffic flows (Monday – Friday and Monday – Saturday); and • ATC Data: Average 12 hour and 24 hour traffic flows (Monday – Friday and Monday – Saturday). **East West Screenline:** • ATC Data: Average AM and PM peak hour traffic flows (Monday – Friday and Monday – Saturday); and • ATC Data: Average 12 hour and 24 hour traffic flows (Monday – Friday and Monday – Saturday). • Pedestrian & Cycle Counts Data: Average AM and PM peak hour counts. Forecast development and local growth information used to inform the development log. Actual development and growth information up to Opening Year and five years post opening.
Process	The data will be collated at the following points: • Prior to construction: To establish the pre-LEB traffic conditions and pedestrian and cycling numbers; • Pre-opening (counterfactual) surveys 2018: To help understand the trend of traffic growth as close to opening as possible and to help estimate the counterfactual scenario. • Post-construction 1 Year After Opening: To assess the outcome and impact of the scheme once it has become established; and • Post-construction - up to 5 Years after Opening: To assess the long term impact of the scheme. The post construction data for both time periods will be compared to the baseline data and forecast traffic flow data as set out in the BaFB. The data will be analysed to determine the key changes in traffic patterns including HGVs resulting from the scheme.

Stage	Approach
	Comparison of forecast development and actual development information. Assessment of the contribution of the East West Link Scheme to the changes in traffic demand within central Lincoln.
Output	**Pre-Construction (Counterfactual) and 1 Year After Report:** • Summary of the pre-opening traffic conditions • Summary of the Post-construction 1 Year traffic conditions; • Identification of the traffic flow changes across the north south and east west screenlines; • Identification of the changes to the numbers of pedestrians and cyclists across the east west screenlines; and • Comparison of forecast modelled traffic flows with the base pre construction / opening traffic flows and post construction 1 year after traffic flows. • Identification of differences to the forecast and actual development data up to Opening Year and identification of impacts on traffic flows. • Summary of the impact of the East West Link Scheme to the changes in traffic demand within central Lincoln. **Scheme Impact Report (5 years post construction):** • Summary of traffic conditions up to 5 years post construction; • Identification of the traffic flow changes (from the baseline and 1 year post construction conditions) across the north south and east west screenlines; • Identification of the changes to the numbers of pedestrians and cyclists (from the baseline and 1 year post construction conditions) across the east west screenlines. • Identification of differences to the forecast and actual development data up to 5 years post opening and identification of impacts on traffic flows. • Summary of the impact of the East West Link Scheme to the changes in traffic demand within central Lincoln.

5.3.2 Travel Times & Journey Reliability

The evaluation of journey time changes will provide a robust indication of the effectiveness of the scheme in relation to reducing congestion and improving journey reliability within Lincoln. One of the key objectives of the LEB is to remove strategic traffic from central Lincoln through the provision of a new north south route. As such the aim of the travel time and journey reliability evaluation will be to analyse the changes along the primary north south routes through the city. It will also assess the changes to the existing east west routes that are bisected by the LEB.

The variability in journey times across each route will also be measured as this will help to provide a robust indication of changes to journey reliability. As set out in WebTAG Unit A1.3 journey reliability will be measured through calculating the variance from the mean journey times across each of the routes and the standard deviation. Calculating the variance and standard deviation for the pre and post construction journey times will provide a metric that will enable the impact of the scheme on journey reliability to be evaluated.

A summary of the routes that will be included within the analysis are provided in Table 5-6 below and in Appendix B and Appendix C.

Table 5-6 – Travel Time and Journey Reliability Routes

Ref	Route	Route Description
North South Screenline	A46	From junction with A57 Saxilby Road to junction with B1378 Skellingthorpe Road
	B1273 Brayford Way	From A57 Carholme Road to Rope Walk
	A57 Wigford Way	From A57 Newland to A57 St Mary's Street
	A15 Broadgate	From B1308 Clasketgate to A57 Pelham Street
	Lincoln Eastern Bypass	From Junction with B1308 Greetwell Road to junction with B1190 Washingborough Road
Key North South Corridors	A15 Corridor	From A15 Bunkers Hill to A15 Sleaford Road - This is the existing primary north south route through Lincoln
	LEB	From A15 Wragby Road to A15 Sleaford Road
	A1434 Newark Road	From the A15 St Catherines Road to the A46 - This is key north south route through the southern part of Lincoln that provides a link from the A15 to the existing A46 bypass
East West Screenline	B1308 Greetwell Road	From Cherry Willingham to the A15 Wragby Road
	B1190 Washingborough Road	From Washingborough to the B1188 Lincoln Road
	Heighington Road	From Washingborough to the B1188 Lincoln Road
	B1188 Lincoln Road	From Branston to the A15 Canwick Road

The evaluation will use Trafficmaster data to demonstrate the existing journey times along each of the routes and to identify changes to journey times both one year and five years after the scheme has opened. Due to known resource constraints within the DfT, discussions will be needed with the relevant DfT department on the supply of this information. The data required for this monitoring process will need to cover the following time periods:

- **Pre-construction assessment:** This provides the baseline conditions and will be collected for a neutral month (this will likely be May, June, September or October)
- **Pre-opening (counterfactual) assessment:** This will be collected in a neutral month in 2018 during construction.
- **Post-Construction 1 Year after Opening:** This will be collected for a neutral month.
- **Post-Construction 5 Years after Opening:** This will be collected for a neutral month as set out above.

An overview of the process is provided in the Table 5-7 below.

Table 5-7 – Travel Times & Journey Reliability

Stage	Approach
Input	• Pre-construction / Pre-opening (counterfactual) / Post Construction 1 Year after Opening / Post Construction 5 Years after Opening Trafficmaster data for the routes identified in Table 5-6. • Summary of other network changes across central Lincoln other than the LEB.
Process	• Calculation of average journey times across each route identified in Table 5-6. • Calculation of the variance and standard deviation in journey times across each of the identified routes. • Analysis of pre and post construction Trafficmaster data for journey time analysis routes. • Analysis of the statistical differences in journey times across each of the identified routes. • Identification of the impact of other network changes on journey times for routes identified in Table 5-6. • Assessment of the contribution of the East West Link Scheme to the changes in travel times within central Lincoln.
Output	• Summary of journey time changes across each route. • Identification of the differences between pre and post construction journey times. • Identification of the differences between the outturn journey times and the forecast journey times. • Summary of the changes to journey reliability across each route. • Summary of the key impacts of the LEB journey times and reliability. • Summary of the impact of the East West Link Scheme to the changes in travel times within central Lincoln.

5.3.3 *Impact on Travel Behaviour*

The impact on travel behaviour will focus on the changes to traffic assignment across the network as a result of the scheme. This will use the travel demand, journey time and journey reliability metrics (see sections 5.3.1 and 5.3.2) to show and explain how travel behaviour has changed following the introduction of the scheme.

It is important to highlight the objectives and aims of the scheme are not directly connected to promoting a travel mode shift. As a result an assessment of changes to travel modes across Lincoln will not provide any statistically robust data that will demonstrate the impact of the LEB on mode shift.

Table 5-8 – Impact on Travel Behaviour

Stage	Approach
Input	• Pre (inc counterfactual scenario) and post construction travel demand and journey time data (as described in table 5-5 and 5-6). • Summary of other network changes and developments across central Lincoln other than the LEB (including the East West Link).
Process	• Identification of key changes to traffic assignment and journey times across Lincoln; • Analysis of impact of network changes and new developments on traffic assignment (including the East West Link);
Output	• Identification of impact of the LEB on travel behaviour.

5.3.4 *Impact on Carbon*

An evaluation of the scheme's impact on carbon emissions will be completed for both the Post Construction – 1 Year after Opening assessment and the 5 Years after Opening assessment. The evaluation will assess changes in traffic flows and speeds across the north south screenline as this will provide a robust indication of the changes in traffic conditions through the centre of Lincoln. This in turn will allow the impact on carbon emissions to be assessed within the area that is expected to experience the greatest relief in traffic.

A summary of the approach to assessing the impact on carbon emissions is provided below.

Table 5-9 – Impact on Carbon

Stage	Approach
Input	**Traffic Volumes** **North South Screenline:** • ATC Data: Average AM and PM peak hour traffic flows (Monday – Friday and Monday – Saturday); and • ATC Data: Average 12 hour and 24 hour traffic flows (Monday – Friday and Monday – Saturday). **Traffic Speeds** Trafficmaster travel time data for the following routes which cross the north south screenline (as detailed in Table 5-6).
Process	To calculate the impact of the scheme on carbon emissions in the centre of Lincoln, the road-based fuel consumption related carbon dioxide equivalent emissions for the pre-construction (inc counterfactual scenario) 'without scheme' situation and with post construction periods will be estimated using the DMRB 11.3.1 air quality screening spreadsheet. This will calculate the difference in carbon emissions based on the observed traffic flows and journey times across the north south screenline. The TAG Greenhouse Gases Workbook will then be used to calculate the annual monetised carbon benefits.
Output	Comparison of actual (calculated) carbon savings with the forecast carbon savings over the 1 year and 5 year post construction periods. Identification of the reasons for any differences between the forecast (at BaFB) and actual (calculated) carbon savings.

5.3.5 *Impact on Noise*

The noise impact assessment will focus on evaluating whether the forecast traffic noise impacts of the scheme are in line with the actual outcomes. It will also aim to establish whether there have been any unintended adverse or positive impacts resulting from the scheme.

The noise assessment will be completed for both the post construction time periods i.e. one year after opening period and five years after opening. A summary of the approach for assessing the noise impact is provided below.

Table 5-10 – Impact on Noise

Stage	Approach

Input	The noise assessment will require the following inputs:
	ATC Data
	• Pre scheme (inc counterfactual scenario) / Post scheme 1 Year after Opening / Post scheme - 5 Years after Opening ATC data. The ATC data will be captured for the locations set out in Appendix D and will allow the following information to be extracted:
	  • 18 hour AAWT traffic volumes,
	  • Composition of traffic (% HGVs), and
	  • Average traffic speeds.
	Baseline Noise Monitoring
	• Outputs from simultaneous short term (3 hours) noise monitoring.
	• This will be completed for a number of representative locations along the LEB corridor. The locations will selected based on a number of criteria, including proximity to the carriageway, location of Defra Important Areas, consultation with the LA, and identified sensitive non-dwelling receptors, such as schools, hospitals, and care homes.

Process	The following process will be used to evaluate the impact on noise: • Model noise levels resulting from input ATC data using existing LEB noise model; • Comparison of modelled noise levels based on the surveyed traffic flows for each of the selected receptors, and the monitored noise levels obtained through the noise surveys. • The above steps will be repeated for Years 1 and 5 with the relevant 'actual' traffic data for these years.
Output	The noise monitoring evaluation will be included in the Post Construction 1 Year after Opening Report and the Post Construction 5 Years after Opening Report. The outputs will be as follows: • Summary of noise levels resulting from observed traffic data; • Comparison of pre and post construction noise levels at each selected location along the LEB corridor; • Identification of the key pre and post construction changes in noise levels across the LEB corridor; • Identification of the differences in actual noise levels and those forecast at the BaFB and the reasons for any significant differences.

5.3.6 *Impact on Local Air Quality*

The air quality assessment will utilise data from the existing City of Lincoln air quality monitoring sites located throughout the city (see Appendix E). These form part of the City's regular monitoring activities and will allow the impact of the scheme on air quality within the centre of Lincoln to be assessed.

In line with the LEB's objectives the evaluation will focus on the impact on air quality within central Lincoln as one of the primary aims of the scheme is to remove strategic through traffic (particularly HGVs) from the centre of the city. The assessment will be completed prior to construction and then repeated for the two post construction periods (i.e. one and five years post construction). Table 5-11 below summarises the approach for evaluating the impact on local air quality.

Table 5-11 – Impact on Local Air Quality

Stage	Approach
Input	The following AQ data will be collected pre construction (inc the counterfactual scenario), 1 year after opening and up to five years after opening: • Canwick Road NO_2 Continuous Monitoring Site • NO_2 Diffusion tube sites (19 sites – see Appendix E) • Canwick Road PM^{10} Continuous Monitoring Site
Process	• Analysis of pre and post construction NO_2 and PM^{10} data. • Identification of the key post construction differences and impact of the scheme.
Output	The air quality monitoring evaluation will be included in the Post Construction 1 Year and 5 Years after Opening Reports. The outputs will be as follows: • Comparison of pre and post construction air quality outputs at each selected location within the study area; • Identification of the key pre and post construction changes in NO_2 and PM^{10} within central Lincoln; • Identification of the differences in actual NO_2 and PM^{10} levels with those forecast at the BaFB and the reasons for any significant variance.

5.3.7 *Impact on Accidents*

The evaluation will look at changes in the number of accidents within the study area following the opening of the LEB. It will analyse the differences between the actual changes in the number accidents and the forecast changes as detailed within the BaFB. The accident assessment will be included within the final report which as discussed earlier will be produced five years after the scheme has opened. Importantly this will provide a sufficient amount of time for any statistically significant changes within the number of accidents to be identified. As set out in the Monitoring and Evaluation Framework any analysis before this period will not provide enough time to draw any statistically sound conclusions. Table 5-12 below provides an overview of the evaluation of accident impact analysis.

Table 5-12 – Impact on Accidents

Stage	Approach
Input	**Prior to construction Accident Records:** • 2006 – 2011 5 Year Accident Record (as provided at the BaFB) • 2011 – 2016 5 Year Accident Record (prior to construction baseline) • Forecast (COBA) Accident Savings (as provided at BaFB) **Post Construction - 5 Years after Opening:** • 2020 – 2025 5 Year Accident Record
Process	• Analysis of 2006 - 2011 and 2001 – 2016 accident records and identification of any pre construction trends and changes within the study area. • Analysis of 2020 – 2025 Accident Record. • Comparison of total number of accidents within study area between pre construction (2011 – 2016) and post construction periods. • Analysis of the change in accidents within central Lincoln including along the A15 corridor.
Output	• Comparison with the forecast accident savings over the five year post construction period with the actual number of accidents saved. • Identification of the reasons for differences between the forecast and actual accident savings. • Identification of any safety issues that need to be investigated further.

5.3.8 *Scheme Objectives*

The evaluation will assess whether the scheme has achieved the three objectives set out in the BaFB. The achievement of these objectives will be reviewed and assessed both at the post construction one year evaluation and the five year evaluation points.

To assess the impact of the scheme against its three objectives, the evaluation will use the changes to journey times, traffic flows, air and noise quality and accidents (as per Section 5.3.7 the accident analysis will only be completed for the five year assessment) as the key metrics that will demonstrate the changes in conditions within Lincoln resulting from the scheme.

In addition to these assessments and to provide a wider view linked to evaluating the impact of the scheme on the local economy and general city environment, the study will aim to capture the views of the key project stakeholders. These will include the groups and organisations contacted as part of the BaFB, such as public transport operators, emergency services, key business groups and employers (a full list is provided in Appendix F). Their views will be captured through a series of workshops which will aim to provide further evidence to help answer the following research questions:

- Has the LEB improved journey times and journey reliability for journeys to central Lincoln and for north south journeys through Lincoln?

- Has the LEB improved journey times along the existing A15 corridor in central Lincoln?

- What impact has the scheme had on traffic flows including HGVs in the centre of Lincoln?
- Has the delivery of the LEB allowed LCC to progress the wider schemes contained within the Lincoln Integrated Transport Strategy?
- What impact has the scheme had on the delivery of the Sustainable Urban Extensions within Lincoln?

The tables below summarise the evaluation approach.

Table 5-13 – Objective 1 Evaluation

Objective 1: To support the delivery of sustainable economic growth and the Growth Point agenda within the Lincoln Policy Area through the provision of reliable and efficient transport infrastructure.	
Stage	**Approach**

Input	• **Traffic Flows – Pre Construction (inc counterfactual scenario), Post Construction 1 Year and 5 Years after Opening:** North South Screenline traffic flows
	• **Journey Time Changes – Pre Construction (inc counterfactual scenario), Post Construction 1 Year and 5 Years after Opening:**
	  • Traffic Master Data for North South Screenline.
	  • Existing A15 Corridor from Bunkers Hill to Bracebridge Heath: This is the existing primary north south route through Lincoln;
	  • A1434 Newark Road from the A15 to the A46. This is key north south route through the southern part of Lincoln that provides a link to the existing A46 bypass.
	• **Stakeholder Workshop(s):** Workshops will be held to capture the views of key stakeholders 1 year after opening and 5 years after opening.

Process	• **Traffic Flows Changes:** Comparison of pre and post construction traffic flows across north south screenline and analysis of changes. • **Journey Time Changes:** Comparison of pre and post construction journey times across north south screenline and analysis of changes. • Comparison of pre and post construction journey times across north south corridors and analysis of changes. • **Stakeholder Workshop(s):** Analysis of stakeholder workshop outputs.
Output	• Summary traffic flow and journey time changes. • Summary of stakeholder views relating to journey reliability improvements, changes to conditions in Lincoln and impact on local economy.

Table 5-14 – Objective 2 Evaluation

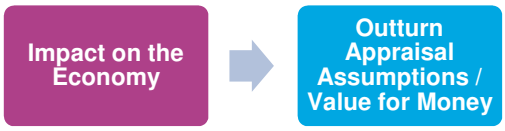
Objective 2: To improve the attractiveness and liveability of central Lincoln for residents, workers and visitors by creating a safe, attractive and accessible environment through the removal of strategic through traffic (particularly HGVs).	
Stage	**Approach**
Input	• Traffic Flow analysis for North South Screenline (see Section 5.3.1) • Lincoln Integrated Transport Strategy update • Accident analysis (see Section 5.3.7) • Stakeholder Workshop(s): Workshops will be held to capture the views of key stakeholders 1 year after opening and 5 years after opening.
Process	• **Traffic Flows Changes:** Comparison of pre (inc counterfactual scenario) and post construction traffic flows including HGVs across north south screenline and analysis of changes. • **Accident Changes:** Identification of distributional impacts of changes to accidents (included in the final 5 year assessment only). • **Lincoln Transport Strategy:** Lincoln Transport Strategy progress review. • **Stakeholder Workshop(s):** Analysis of stakeholder workshop outputs.
Output	• Summary of traffic flow changes and impact on central Lincoln. • Summary of changes to the number of accidents across the study area and the identification of the locations benefiting from the reduction in accidents. • Summary of stakeholder views relating to journey reliability improvements, changes to conditions in Lincoln and impact on local economy.

Table 5-15 – Objective 3 Evaluation

Objective 3: To reduce carbon emissions, improve air and noise quality within the Lincoln Policy Area, especially in the Air Quality Management Area in central Lincoln, by the removal of strategic through traffic (particularly HGVs).	
Stage	**Approach**
Input	• Noise impact analysis (see Section 5.3.5) • Air quality impact analysis (see Section 5.3.6) • Traffic demand analysis (see Section 5.3.1) • Impact on Carbon (see Section 5.3.4)
Process	• Noise Changes: Identification of distributional impacts of changes to noise quality. • Air quality Changes: Identification of distributional impacts of changes to air quality. • Traffic Demand Changes: Identification of changes to traffic demand within the centre of Lincoln including traffic composition.
Output	• Summary of changes to air and noise quality. • Summary of changes to traffic demand and impact on carbon emissions.

5.4 Economic Evaluation

The following subsections set out the methodology for evaluating the economic impact of the scheme. It covers the two themes set out below with the aim of establishing whether the LEB is delivering the economic benefits described in the BaFB.



5.4.1 Impact on the Economy

This part of the evaluation will aim to demonstrate the impact that the scheme has had on the local economy. The LEB is forecast to deliver significant economic benefits through reducing congestion and improving journey times to unlocking large development areas located within Lincoln. As set out in the fuller evaluation guidance it will focus on the following three areas:

1. **Impact on congestion relief and improved journey times:** The LEB aims to support economic growth through the delivery of reliable transport infrastructure. To assess the economic impact, the annual monetised user benefits will be calculated using the observed traffic data.

2. **Impact on delivery of local development:** The North East Quadrant (NEQ) and South East Quadrant (SEQ) development sites are dependent on the LEB. The evaluation will assess how each development is progressing and the role the LEB has had in facilitating their development. It will also look at other key developments within the Lincoln and their relationship with the scheme. Importantly developers will be consulted to discuss the impact of the scheme in relation to kick starting the respective developments.

3. **Impact on job creation and employment:** To assess the impact of the scheme on job creation and employment the evaluation will look at three key areas:

    - The number of people directly employed as part of the construction of the scheme;

    - The views of stakeholders to assess the wider economic impact of the LEB. This will include the Local Enterprise Partnership, Lincoln Chamber of Commerce, Lincolnshire County Council Economic Regeneration Team, City of Lincoln Council (and economic development teams), Federation of Small Businesses and Lincoln Business Improvement Group as well as individual businesses or operations. The main aim of this will be to provide a representative sample of views from different groups and employment sectors; and

- The changes in employment and growth rates within Lincoln over the evaluation period. This will provide important background information that will show the wider trend across the city.

Table 5-16 summarises the approach for evaluating the impact on the local economy. The evaluation will be completed one year after the scheme has opened and then repeated five years after it has opened. This will allow robust economic evaluation to be completed that shows the initial impact of the scheme and the longer term impact once the scheme has become fully embedded within the Lincoln traffic network.

Table 5-16 – Impact on the Economy

Stage	Approach

Input	**<u>Congestion Relief and Journey Times</u>**
	• **Pre-construction data, Pre opening (counterfactual) data, Post construction data (1 Year and 5 Years Post Construction):**
	  • Traffic flow data for north south screenline (A46 Western Bypass, City Centre: B1273 Brayford Way, A57 Wigford Way, A15 Broadgate and (post construction) LEB).
	  • Traffic Master Data for north south screenline (A46 Western Bypass, City Centre: B1273 Brayford Way, A57 Wigford Way, A15 Broadgate and (post construction) LEB)
	  • Traffic Master Data for key north south corridors.
	<u>Delivery of local development</u>
	• **Pre-construction data (including Pre-Opening Counterfactual data):** Summary of proposed NEQ / SEQ development including programme for delivery, development plans and quantum, current status and estimated economic impact.
	• **Post construction data (1 Year and 5 Years Post Construction):** Summary of current status and progress of NEQ / SEQ including development programme, build out rates, development plans and quantum.
	<u>Job Creation and Employment</u>
	• **Pre-construction data:**
	  • Current employment and business growth rates within Lincoln and summary of economic conditions at the time of the evaluation;
	  • Summary of strategic economic plan and planned developments for Lincoln;
	  • Expected number of people employed as part of LEB's construction.
	• **Post construction data (1 Year and 5 Years Post Construction):**
	  • Employment and business growth rates within Lincoln for post construction periods and summary of economic conditions at the time of the evaluation;;
	  • Actual number of people employed as part of LEB's construction.
	  • Stakeholder Workshops: Impact of LEB on delivery of jobs and employment

Process	**<u>Congestion Relief and Journey Times:</u>** • Comparison of observed Pre construction / Pre Opening (counterfactual) screenline (north south, east west) traffic flows and journey times with opening year modelled screenline traffic flows. • Identification of differences in total screenline traffic flows and observed traffic growth. • Update base model matrices to account for outturn traffic growth. • Re-run TUBA to calculate outturn travel time saving benefits for Opening Year and over 60 years using revised model outputs. **<u>Delivery of local development:</u>** • Summary of the delivery programme of the NEQ / SEQ developments following introduction of LEB;

Stage	Approach
	• Comparison of NEQ / SEQ delivery programmes pre and post LEB, identification of any changes and identification of changes to build out rates. **Job Creation and Employment** • Identification of actual number of people employed by construction of LEB. • Summary of stakeholder views on the following: 1. Has the introduction of the LEB resulted in changes to journey reliability within Lincoln? 2. What impacts has the changes in traffic conditions had on local businesses? 3. In addition to the NEQ / SEQ has the introduction of the LEB led to any other development land being unlocked? 4. Has there been a change in the number of businesses relocating to Lincoln and can this be attributable to the LEB? • Identification of changes to employment and growth rates in Lincoln and identification of wider changes in employment and the economy.
Output	Summary of the economic impact of the LEB in relation to: • Outturn Opening Year and 60yr appraisal period journey time benefits and comparison with forecast journey time benefits. • Delivery of local development; • Job creation and employment. • Identification of differences to the forecast economic impact set out in the BaFB.

5.4.2 *Outturn Appraisal Assumptions*

This part of the evaluation will focus on the robustness of the assumptions used in the development of the scheme economic appraisal supplied at BaFB with the most current values supplied by DfT through the TAG Data book. The evaluation will specifically look at the assumptions used to derive the following:

- **Scheme Costs:** Including GDP, inflation factors, road construction price indices and factors used to convert the total scheme costs to the DfTs base year;
- **Transport User and Costs per Accident:** Including vehicle operating costs, values of time and costs per casualty those used within the economic analysis; and
- **Environmental Impact Costs:** Including the monetary valuation of changes to noise levels, cost values by pollutant used within the air quality assessment and the non-traded values of greenhouse gases.

The evaluation of outturn appraisal assumptions will be included within Post Construction 1 Year after Opening Report. An overview of the approach is set out in Table 5-17 below.

Table 5-17 – Outturn Appraisal Evaluation

Stage	Approach
Input	The evaluation will require the following inputs: **Scheme Costs:** • Inflation, road construction price indices and factors used in the BaFB. • Actual inflation and road construction price factors (for the period up to scheme opening). • Actual scheme outturn costs. **Transport User Costs:** • Vehicle operating costs, values of time and costs per casualty for those used in the BaFB and revised costs as at scheme opening. **Environmental Impact Costs:** • Monetary valuation of changes to noise levels, cost values by pollutant used within the air quality assessment and the non traded values of greenhouse gases used in the BaFB and revised costs at as at scheme opening.
Process	**Scheme Costs:** Comparison of forecast and actual inflation factors and road construction price indices. Analysis of impact on scheme cost estimate and comparison with actual outturn scheme costs. **Transport User Costs:** Comparison of forecast and revised vehicle operating costs, values of time and costs per casualty. Analysis of impact on Transport Economic Efficiency Benefits BCR. **Environmental Impact Costs:** Comparison of forecast and revised noise, air quality and greenhouse gas 'costs'. Analysis of impact on scheme benefits calculation.
Output	Review of appraisal assumptions and summary of the impact on economic appraisal. Identification of significant changes to appraisal outputs.

6 Evaluation Reporting & Dissemination

6.1 Evaluation Summary & Reporting

The results of the evaluation process will be summarised in three reports, as described in Section 4.3 these will be the Pre-Construction Report, Post-Construction Interim Scheme Assessment Report (1 Year after Opening) and the Post Construction Final Report (5 Years after Opening). A summary of what will be included within each report is set out in Appendix G and described below.

6.1.1 Pre-Construction Report

The report will provide an overview of the data collection processes used to inform the baseline pre-construction situation. It will describe the existing conditions within Lincoln prior to the introduction of the LEB and be used as the basis for evaluating the impact of the scheme.

6.1.2 Post-Construction 1 Year after Opening Report

The 1 Year after Opening Report will summarise the outcome of the initial post construction analysis described in Section 5 and set out the emerging conclusions and impacts of the scheme. A concise evaluation report will be produced, and made available on the authority's website, forwarded to DfT and uploaded onto the DfT Knowledge Hub.

The report will expand on the processes used to evaluate the scheme as described in this plan and the key interim findings of the evaluation. Specifically the report will provide:

- The interim outcome of the LEB Process Evaluation including overview of the scheme build evaluation, scheme costs assessment, delivery process and delivered scheme evaluation;
- An interim impact evaluation that includes an overview of travel demand, travel times and journey reliability, carbon, noise impacts, air quality impacts and a review of progress towards the scheme objectives;
- An interim economic evaluation; and
- An interim assessment of any untended impacts.

6.1.3 Post-Construction 5 Year after Opening Report

The final report will describe the final outcome of the evaluation analysis and set out the full scheme impacts and outcomes. It will detail the outcome of each part of the evaluation (i.e. the process, impact and economic evaluations), set out whether the scheme has achieved its objectives and provide answers to the evaluation questions described in Section 4.2 and set out in the table below.

The final report will also be made available on the authority's website, forwarded to DfT and uploaded onto the DfT Knowledge Hub.

Table 6-1 – LEB Monitoring & Evaluation Research Questions

Evaluation Theme	Research Questions
Process Evaluation	1. Was the LEB delivered in line with the programme submitted at BaFB? 2. How well was the programme managed through the scheme's development and delivery? What were the key challenges relating to the delivery of the LEB? 3. What were the Project Governance and Project Management arrangements for the scheme? Did this differ from those set out in the BaFB? 4. How were risks managed during the development and delivery of the scheme? Were the risks and actions clearly recorded, allocated and managed? 5. What were the key obstacles to the delivery of the scheme? Were these identified at the BaFB stage? 6. Did any factors external to the scheme impact on its implementation. 7. How do the latest scheme costs compare to those set out in the BaFB? What are the reasons for any significant differences from the costs as originally envisaged? 8. What worked well in terms of the delivery of the scheme and what are the key lessons learnt from the delivery of the LEB?
Impact Evaluation	9. What was the context for the scheme at the time of the BaFB and did this change through the scheme's development; 10. What were the objectives at the time of the BaFB and did they change through the scheme's development; 11. What impact has the scheme had on traffic flows including HGVs in the centre of Lincoln? 12. What impact has the LEB had on journey reliability within central Lincoln? 13. Has the delivery of the LEB allowed LCC to progress the wider schemes contained within the Lincoln Integrated Transport Strategy? 14. What impact has the delivery of the scheme had on noise, air quality and carbon emissions within the centre of Lincoln?
Economic Evaluation	15. What impact has the scheme had on the delivery of the Sustainable Urban Extensions within Lincoln? 16. Has there been a change in traffic patterns on the eastern side of Lincoln? 17. Has the LEB improved journey times from journeys to central Lincoln and for north south journeys through Lincoln? 18. Have there been any unintended adverse or positive effects? 19. Has the LEB improved journey times along the existing A15 in central Lincoln? 20. What are the actual opening year outturn benefits? 21. How do the opening year outturn benefits compare with the MSBC appraisal? 22. What contributing factors have influenced the potential variation in outturn benefits? 23. What is the potential net return for the scheme over the 60 year appraisal period? 24. Did the benefits justify the costs? 25. How will change in external factors influence the economic appraisal result? 26. What is the evidence of how economic activity changes as a result of transport improvements?

6.2 Dissemination Plan

The findings of each of the three reports will be submitted to DfT and provided to the LEB Project Board and Executive Management team. In addition executive summaries of both the 1 Year after Opening Report and the Final Evaluation Report

will be provided to key stakeholders and Lincolnshire County Council's partners including the district councils.

The reports will be reviewed at two workshops attended by the Project Management Team, Project Board, Executive Management Team and suppliers. The first workshop will review the outcome of the Post Construction Year 1 Evaluation and the aim will be to identify any key interim 'lessons learnt' that will be valuable for any schemes in development at that time. The results will be discussed with other teams in the LCC Technical Services Partnership and LCC's key partners.

The final workshop will be attended by the Project Management Team, Project Board, Executive Management Team, suppliers and relevant stakeholders. The aim will be to complete a final lessons learnt workshop, the results of which will be disseminated to the wider County Council and LCC's key partners.

7 Delivery Plan, Timescales & Governance

7.1 Introduction

The following section sets out the plan for the delivery of the monitoring and evaluation process and the associated timescales.

7.2 Evaluation Plan Delivery & Timescales

In line with the DfT Fuller Evaluation programme, Table 7-1 outlines (and Appendix H) the indicative evaluation timescales and anticipated submission date of the interim and final reports.

Table 7-1 – Indicative Monitoring & Evaluation Programme

Evaluation Stage	Indicative Start Date	Indicative End Date
Evaluation Plan Approval from DfT	Jan-17 (latest)	Feb-17 (latest)
Pre-Construction Data Collection		
Process Evaluation Data Collection		
Scheme Build Information Collation	Feb-17	Mar-17
Scheme Cost & Risk Information	Mar-17	Mar-17
Delivery Process Information	Mar-17	Mar-17
Delivered Scheme Information	Mar-17	Mar-17
Impact Evaluation Data Collection		
Travel Demand Baseline	Feb-17	Mar-16
Travel Times & Journey Reliability Baseline	Feb-17	Apr-17
Carbon Baseline Assessment	Apr-17	May-17
Noise Baseline Assessment	Feb-17	May-17
Air Quality Baseline Assessment	Feb-17	Apr-17
Economic Evaluation		
Collation of local development information	Apr-17	Apr-17
Collation of pre-construction employment data	Apr-17	Jun-17
Pre-Construction Reporting	May-17	Jun-17
Lincoln Eastern Bypass Construction	**Jan 2017**	**Jun 2019**
Pre-opening (Counterfactual Scenario) Data Collection		
Impact Evaluation Data Collection		
Travel Demand Baseline	Oct-18	Oct-18
Travel Times & Journey Reliability Baseline	Oct-18	Nov-18
Carbon Baseline Assessment	Dec-18	Dec-18
Noise Baseline Assessment	Nov-18	Dec-18
Air Quality Baseline Assessment	Oct-18	Nov-18
Post Construction 1 Year after Opening Evaluation		
Process Evaluation		
Scheme Build Information Evaluation	Oct-20	Nov-20
Scheme Cost & Risk Evaluation	Nov-20	Dec-20
Delivery Process Evaluation	Dec-20	Dec-20
Delivered Scheme Information	Jan-21	Feb-21

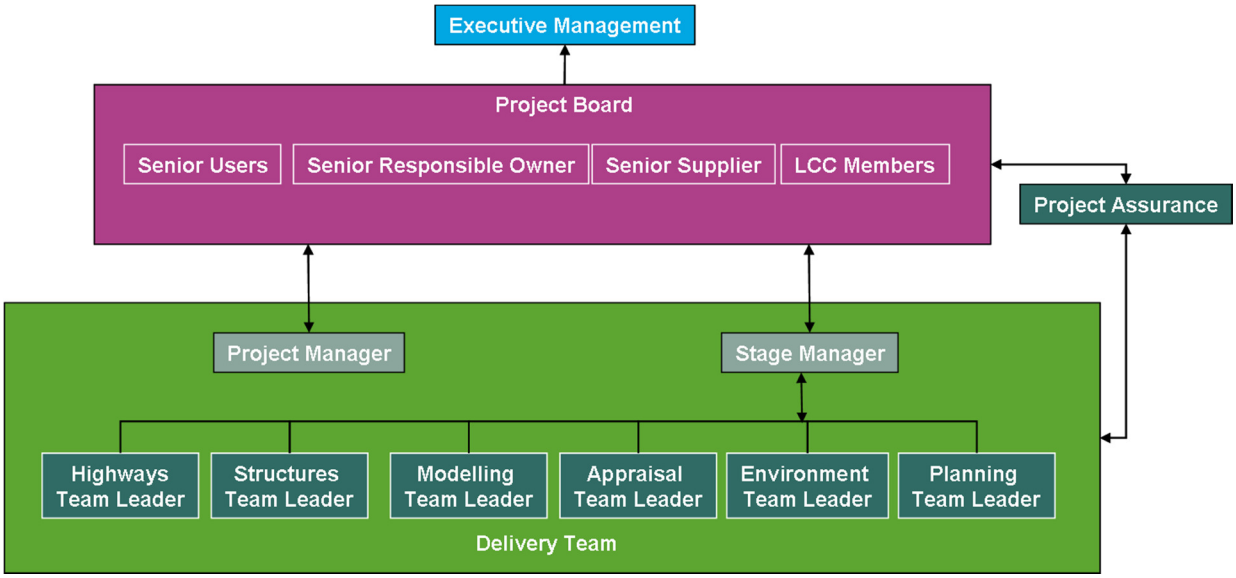
Evaluation Stage	Indicative Start Date	Indicative End Date
Impact Evaluation		
Travel Demand	Oct-20	Nov-20
Travel Demand Evaluation & Reporting	Dec-20	Dec-20
Travel Times & Journey Reliability	Dec-20	Jan-21
Carbon Assessment	Dec-20	Jan-21
Noise Assessment	Oct-20	Jan-21
Air Quality Assessment	Nov-20	Dec-20
Scheme Objectives	Dec-20	Mar-21
Economic Evaluation		
Economic Impact	Feb-21	Mar-21
Outturn Appraisal Assumptions	Feb-21	Mar-21
Post Construction 1 Year Reporting	Mar-21	Apr-21
Post Construction 5 Years after Opening Evaluation		
Impact Evaluation		
Travel Demand	Oct-24	Dec-24
Travel Demand Evaluation & Reporting	Jan-25	Feb-25
Travel Times & Journey Reliability	Dec-24	Feb-25
Carbon Assessment	Feb-25	Mar-25
Noise Assessment	Dec-24	Mar-25
Air Quality Assessment	Dec-24	Feb-25
Accident Analysis	Oct-24	Nov-24
Scheme Objectives	Feb-25	May-25
Economic Evaluation		
Economic Impact	Oct-24	Oct-24
Outturn Appraisal Assumptions	Mar-25	Apr-25
Post Construction 5 Year Reporting	Jun-25	Jul-25

7.3 Resourcing & Governance

The project governance arrangements for the scheme evaluation will follow the format set out for the management of the LEB. The scheme is being delivered under a structured Project Management methodology developed by LCC under their technical services partnership. The methodology is based on PRINCE2 and seeks successful management and effective scheme delivery.

The project structure is organised around three tiers comprising Executive Management, Project Board and Project Delivery team.

Figure 7-1 – LEB Project Governance Structure

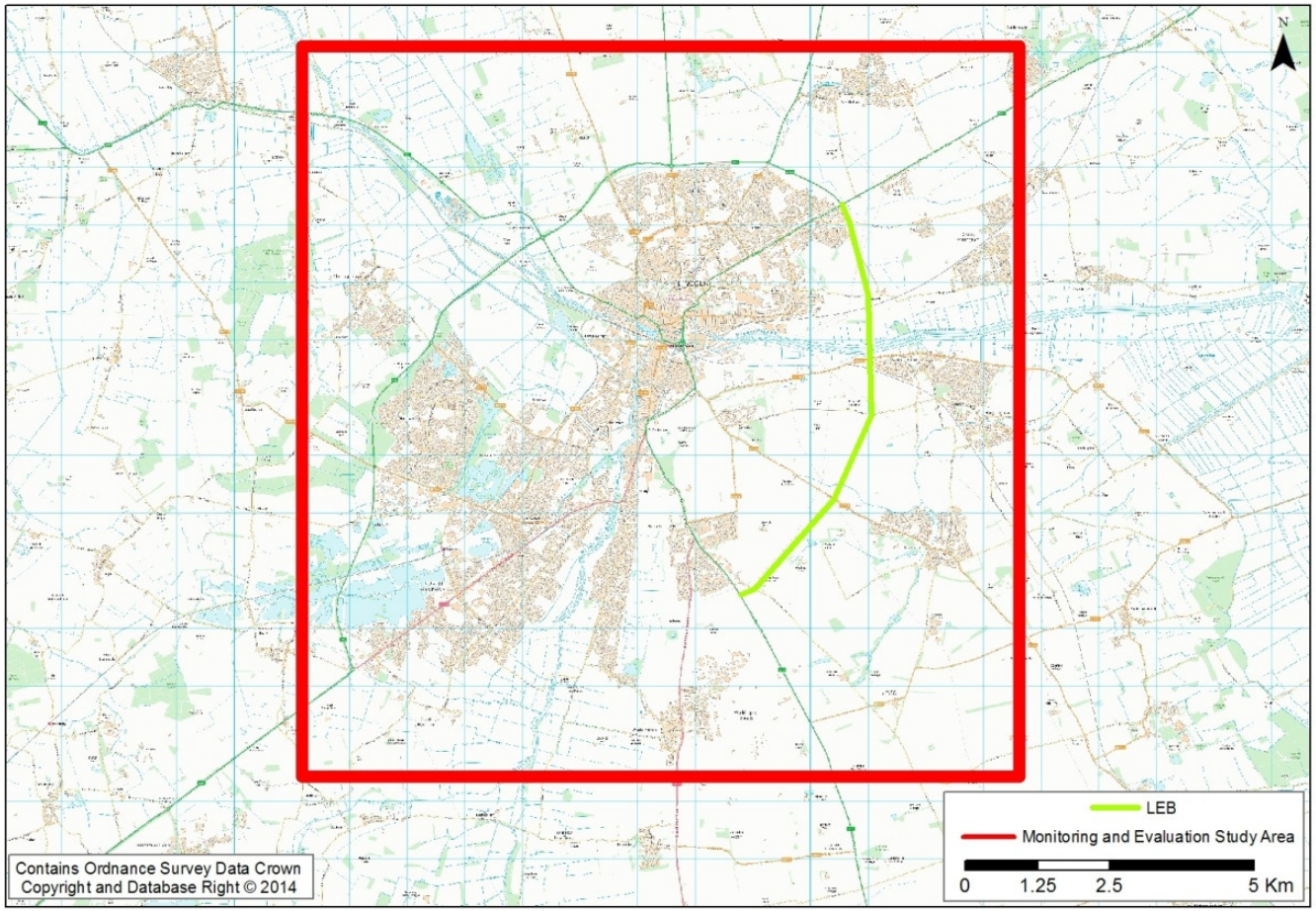


The Executive Management team has responsibility for overseeing the management of the programme ensuring that it is being delivered in accordance with the project plan and in line with the budget and specified timeframe. This includes the delivery of the scheme evaluation. In addition the Project Board has the responsibility of providing the strategic platform for key decision making and providing guidance on exceptional issues to the Project Manager and Delivery Team.

The Project Manager has responsibility for managing all aspects of the delivery of the scheme programme including the scheme evaluation and the tasks described in Section 4 and as per the timescales specified in Table 7-1. In the case of this scheme the Project Manager is LCC Senior Project Leader Lee Rowley.

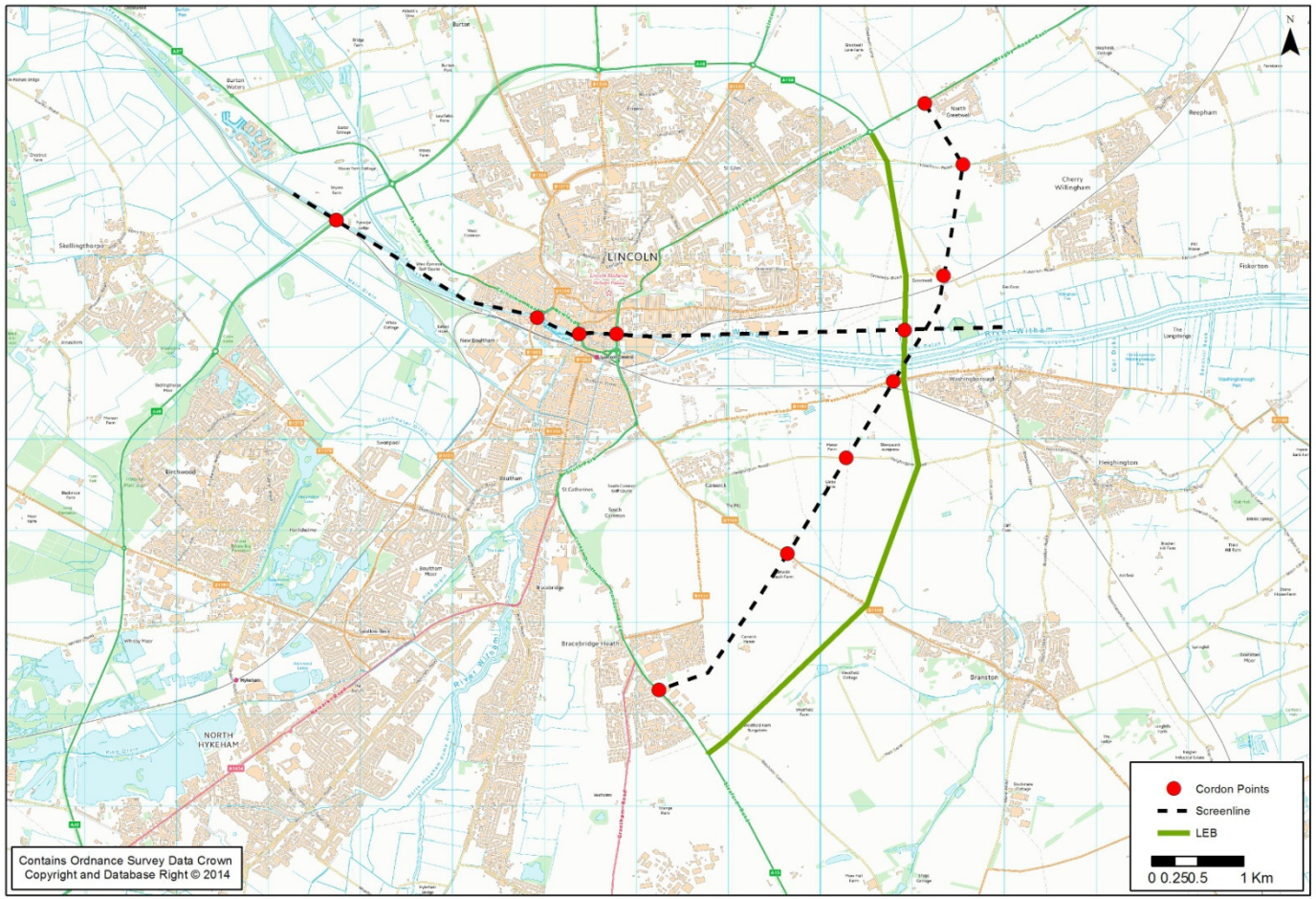
8 Appendix A – Scheme Location & Study Area

Figure 8-1 – Scheme Location & Study Area



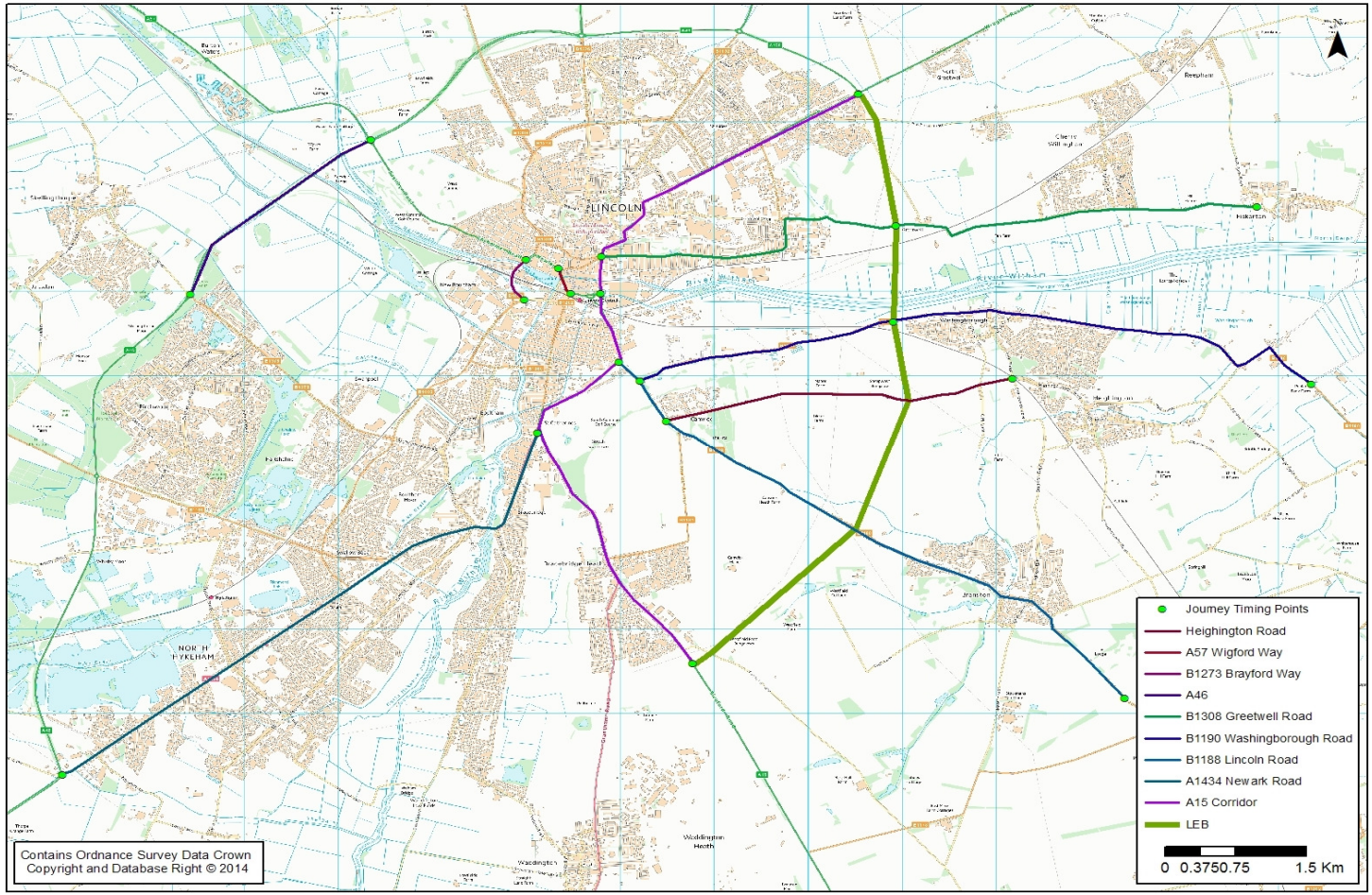
9 Appendix B – Traffic, Pedestrian & Cycle Count Screenlines

Figure 9-1 – Lincoln Traffic Screenlines



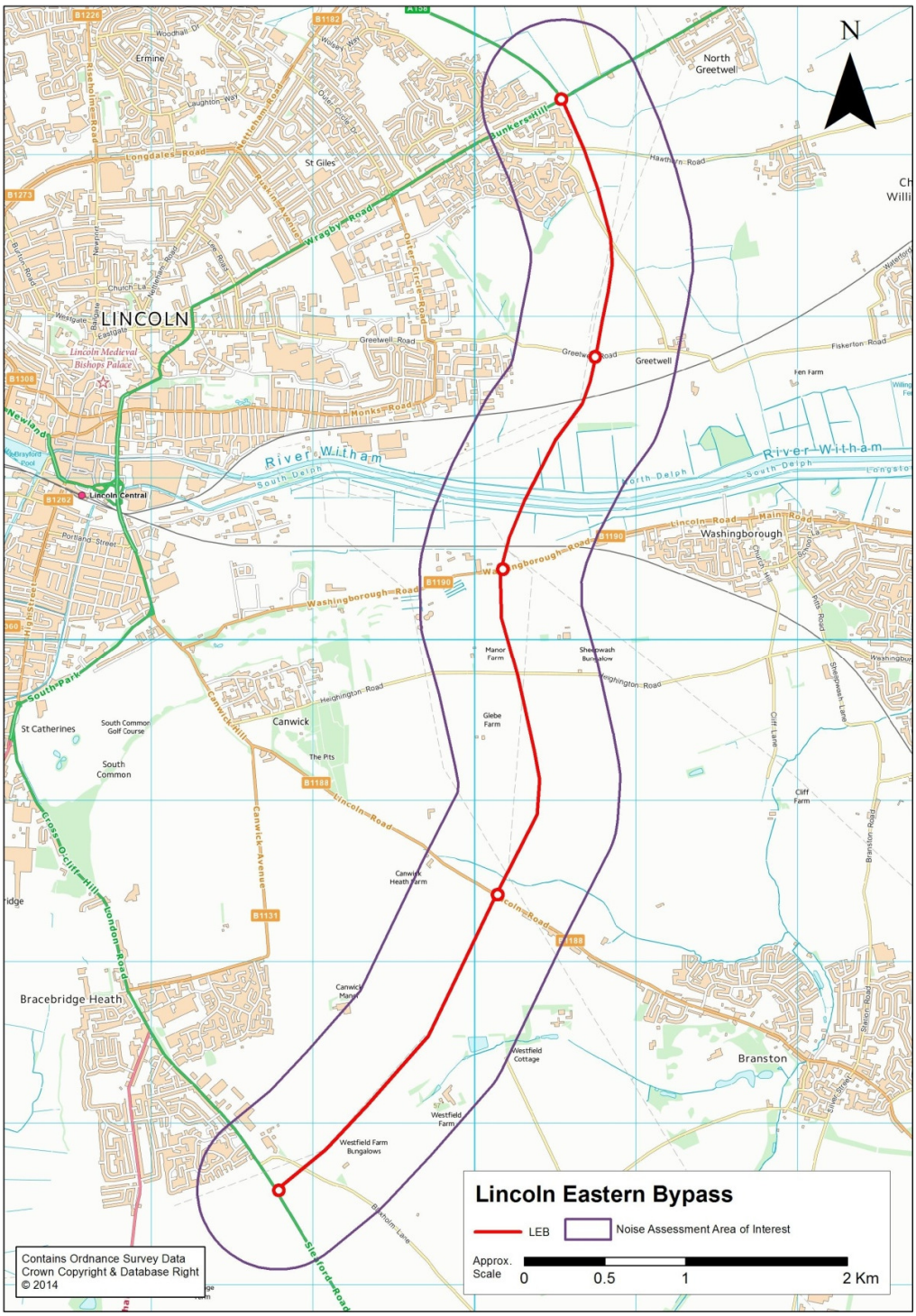
10 Appendix C – Journey Time Corridors

Figure 10-1 – Journey Time Corridors



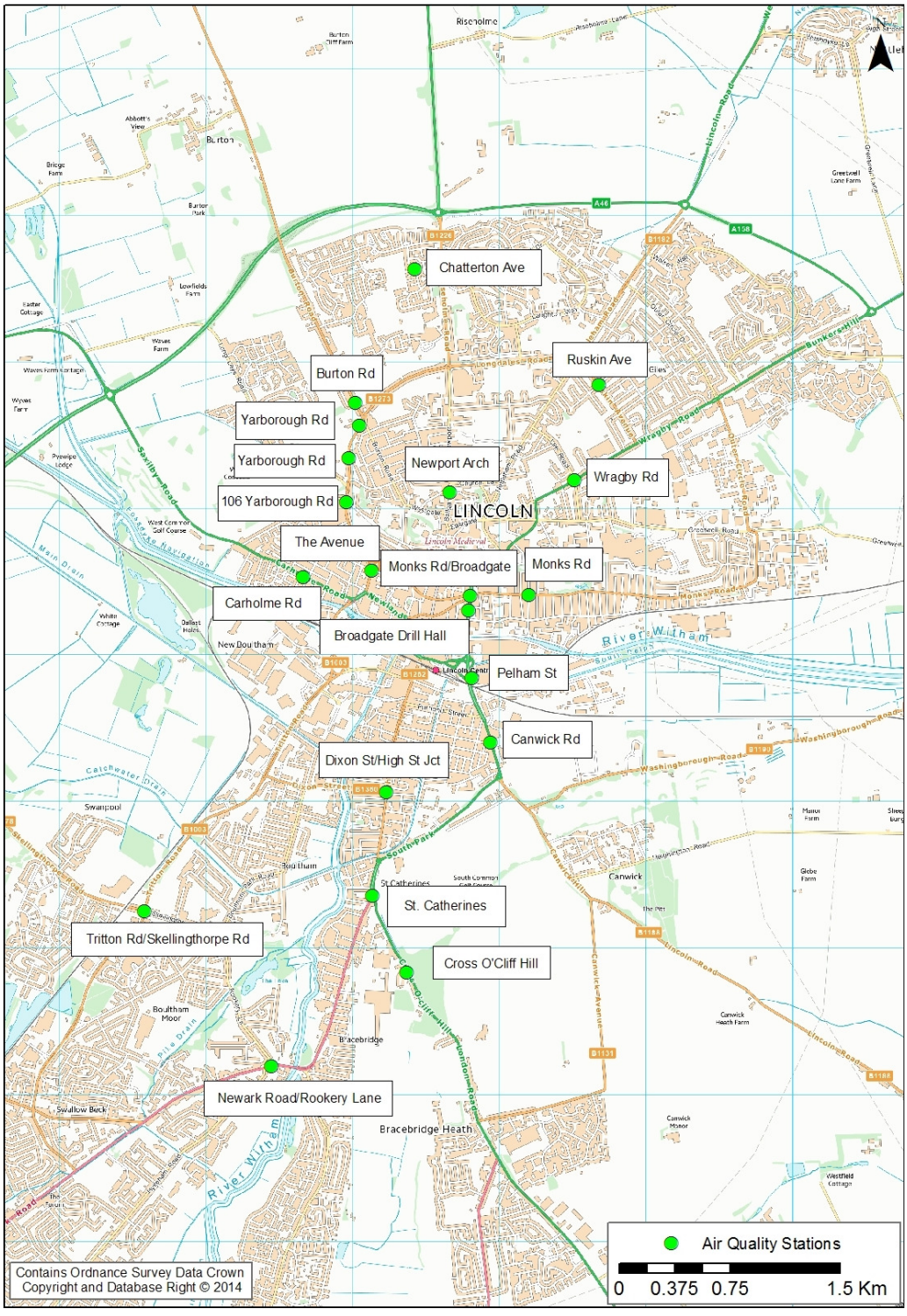
11 Appendix D – Noise Monitoring Locations

Figure 11-1 – Noise Monitoring Locations



12 Appendix E – Air Quality Monitoring Locations

Figure 12-1 – Lincoln Air Quality Monitoring Stations



13 Appendix F – Monitoring & Evaluation Stakeholders

Consultee	Type of Consultee
Executive Board	Project Management
Project Board	Project Management
Project Manager	Project Management
Highways Team Leader	Project Management
Structures Team Leader	Project Management
Modelling Team Leader	Project Management
Appraisal Team Leader	Project Management
Planning Team Leader	Project Management
Contractor	Project Management
Local Enterprise Partnership	Business Umbrella Group
Lincoln Business Improvement Group	Business Umbrella Group
Federation of Small Businesses	Business Umbrella Group
Lincoln Chamber of Commerce	Business Umbrella Group
Lincolnshire Forum for Agriculture and Horticulture	Business Umbrella Group
Bailgate Guild	Business Umbrella Group
RAF Waddington	Individual Business or Operation
Siemens	Individual Business or Operation
Lincolnshire Co-Op	Individual Business or Operation
Lincolnshire Agricultural Society	Individual Business or Operation
Lincoln County Hospital	Individual Business or Operation
Denby Transport	Individual Business or Operation
Lincolnshire County Council Tourism	Visitor/Tourism Representative
City of Lincoln Tourism	Visitor/Tourism Representative
Lincoln Cathedral	Visitor/Tourism Representative
Lincoln Hotel and Guesthouse Association	Visitor/Tourism Representative
Historic Lincoln Partnership	Visitor/Tourism Representative
Visit Lincoln	Visitor/Tourism Representative
University of Lincoln	Educational Establishment
Lincoln College	Educational Establishment
Cherry Willingham Primary School	Educational Establishment
Cherry Willingham Community School	Educational Establishment

Reepham Church of England Primary School	Educational Establishment
Lincoln Carlton Academy	Educational Establishment
Washingborough Academy	Educational Establishment
Heighington Millfield Primary Academy	Educational Establishment
The Branston Church of England Infant School	Educational Establishment
Branston Junior School	Educational Establishment
Branston Community Academy	Educational Establishment
Bracebridge Heath St. John's Primary School	Educational Establishment
Stagecoach	Public Transport Operator
PC Coaches	Public Transport Operator
Brylaine Travel	Public Transport Operator
English Heritage	Key Stakeholder
Environment Agency	Key Stakeholder
Lincolnshire Wildlife Trust	Key Stakeholder
Natural England	Key Stakeholder
Lincolnshire Joint Planning Unit	Key Stakeholder
City of Lincoln Council	District Council
West Lindsey District Council	District Council
North Kesteven District Council	District Council
Lincoln Parish Council	Parish Council
Canwick Parish Council	Parish Council
Bracebridge Heath Parish Council	Parish Council
Branston and Mere Parish Council	Parish Council
Heighington Parish Council	Parish Council
Washingborough Parish Council	Parish Council
Greetwell Parish Council	Parish Council
Cherry Willingham Parish Council	Parish Council
Reepham Parish Council	Parish Council
Lincolnshire Police	Emergency Service
Lincolnshire Fire and Rescue	Emergency Service
East Midlands Ambulance Service	Emergency Service
Primary Care Trust	Health Authorities
United Lincolnshire Hospitals	Health Authorities
Sustrans	Interest Group

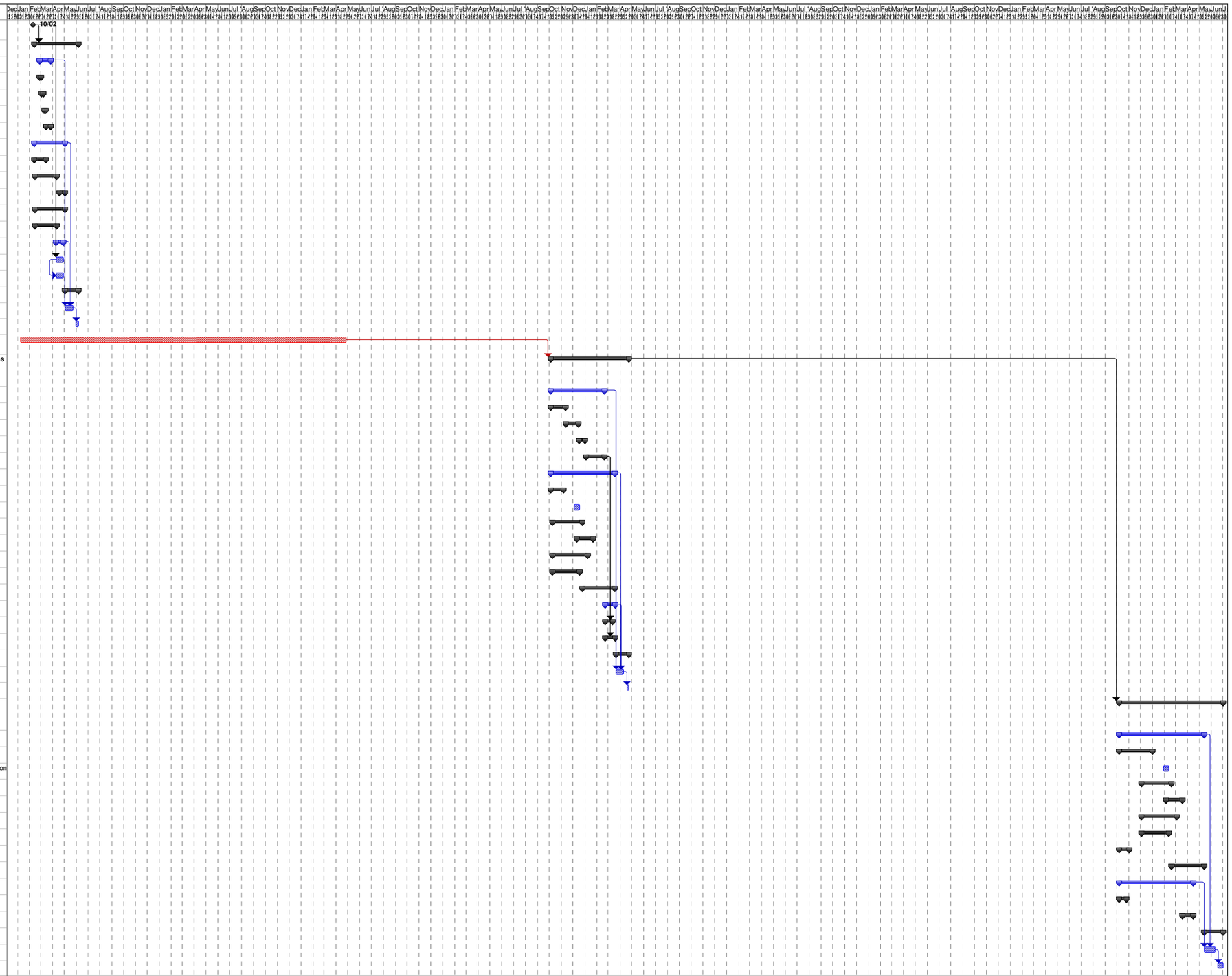
Ramblers Association	Interest Group
British Horse Society	Interest Group
Lincolnshire Cyclist Touring Club	Interest Group
Campaign for Better Transport	Interest Group

14 Appendix G – Monitoring & Evaluation Outputs

Ref	Metric/Data Collection	Timescale				
		Baseline	Construction	Pre-opening 2018 (Counter-factual)	1 yr after Spring 2020	4-5 yrs after Spring 2024
1	Scheme Build	√	√		√	
2	Scheme Costs	√	√		√	
3	Delivered Scheme	√	√		√	
4	Delivery Process				√	
5	Travel Demand	√			√	√
6	a) Traffic Volumes (screenlines and cordons)	√		√	√	√
7	b) Pedestrian and Cycle Counts	√			√	√
8	Travel Time and Reliability			√		
9	a) Journey Time Surveys	√		√	√	√
10	b) Journey Time Reliability	√		√	√	√
11	Carbon	√			√	√
12	Noise	√			√	√
13	Local Air Quality	√			√	√
14	Accidents	√				√
15	Scheme Objectives	√			√	√
16	a) Stakeholder Workshop				√	√
17	Impacts on the Economy	√			√	√
18	a) Congestion Relief & Journey Times	√			√	√
19	b) Delivery of Local Development	√			√	√
20	c) Jobs Creation & Employment	√			√	√
21	Outturn Appraisal Assumptions	√			√	√

15 Appendix H – Monitoring & Evaluation Programme

ID	Task Name	Duration	Start	Finish	Predecessors
1	**Evaluation Plan Approval from DfT**	1 day	Fri 10/02/17	Fri 10/02/17	
2	**Pre-Construction Data Collection**	**82 days**	**Mon 13/02/17**	**Tue 06/06/17**	1
3	**Process Evaluation Data Collection**	**20.5 days**	**Mon 27/02/17**	**Mon 27/03/17**	
4	**Scheme Build Information Collation**	**3.5 days**	**Mon 27/02/17**	**Thu 02/03/17**	
8	**Scheme Cost & Risk Information**	**3 days**	**Fri 03/03/17**	**Wed 08/03/17**	
11	**Delivery Process Evaluation**	**2 days**	**Fri 10/03/17**	**Tue 14/03/17**	
13	**Delivered Scheme Information**	**8 days**	**Wed 15/03/17**	**Mon 27/03/17**	
16	**Impact Evaluation**	**57 days**	**Mon 13/02/17**	**Tue 02/05/17**	
17	**Travel Demand**	**22 days**	**Mon 13/02/17**	**Tue 14/03/17**	
24	**Travel Times & Journey Reliability**	**40 days**	**Wed 15/02/17**	**Tue 11/04/17**	
28	**Carbon Data Collection**	**10 days**	**Wed 19/04/17**	**Tue 02/05/17**	
30	**Noise Assessment**	**55 days**	**Wed 15/02/17**	**Tue 02/05/17**	
34	**Air Quality Assessment**	**40 days**	**Wed 15/02/17**	**Tue 11/04/17**	
37	**Economic Evaluation**	**15 days**	**Mon 10/04/17**	**Fri 28/04/17**	
38	Collation of local development information	3 wks	Mon 10/04/17	Fri 28/04/17	1FS+8 wks
39	Collation of pre construction employment data	3 wks	Mon 10/04/17	Fri 28/04/17	38SS
40	**Pre Construction Reporting**	**25 days**	**Wed 03/05/17**	**Tue 06/06/17**	
41	Draft Report	3 wks	Wed 03/05/17	Tue 23/05/17	16,3,37
42	Pre Construction Report - Final	1 wk	Wed 31/05/17	Tue 06/06/17	41FS+1 wk
43	**Lincoln Eastern Bypass Construction**	30 mons	Mon 09/01/17	Fri 26/04/19	
44	**Post Construction 1 Year after Opening Evaluation**	**145 days**	**Mon 05/10/20**	**Fri 23/04/21**	**43FS+16.5 mons**
45	**Process Evaluation**	**100 days**	**Mon 05/10/20**	**Fri 19/02/21**	
46	**Scheme Build Information Evaluation**	**28 days**	**Mon 05/10/20**	**Wed 11/11/20**	
51	**Scheme Cost & Risk Evaluation**	**22 days**	**Fri 13/11/20**	**Mon 14/12/20**	
55	**Delivery Process Evaluation**	**11 days**	**Thu 17/12/20**	**Thu 31/12/20**	
58	**Delivered Scheme Information**	**35 days**	**Mon 04/01/21**	**Fri 19/02/21**	
64	**Impact Evaluation**	**119 days**	**Mon 05/10/20**	**Thu 18/03/21**	
65	**Travel Demand**	**25 days**	**Mon 05/10/20**	**Fri 06/11/20**	
72	Travel Demand Evaluation & Reporting	2 wks	Fri 04/12/20	Thu 17/12/20	68,71FS+1 mon
73	**Travel Times & Journey Reliability**	**55 days**	**Fri 09/10/20**	**Thu 24/12/20**	
78	**Carbon Assessment**	**30 days**	**Fri 11/12/20**	**Thu 21/01/21**	
82	**Noise Assessment**	**65 days**	**Fri 09/10/20**	**Thu 07/01/21**	
87	**Air Quality Assessment**	**50 days**	**Fri 09/10/20**	**Thu 17/12/20**	
91	**Scheme Objectives**	**60 days**	**Fri 25/12/20**	**Thu 18/03/21**	
97	**Economic Evaluation**	**20 days**	**Mon 22/02/21**	**Fri 19/03/21**	
98	**Economic Impact**	**15 days**	**Mon 22/02/21**	**Fri 12/03/21**	58
101	**Outturn Appraisal Assumptions**	**20 days**	**Mon 22/02/21**	**Fri 19/03/21**	58
104	**Post Construction 1 Year Reporting**	**25 days**	**Mon 22/03/21**	**Fri 23/04/21**	
105	Draft Report	3 wks	Mon 22/03/21	Fri 09/04/21	45,64,97
106	Post Construction 1 Year Report - Final	1 wk	Mon 19/04/21	Fri 23/04/21	105FS+1 wk
107	**Post Construction 5 Years after Opening Evaluation**	**192 days**	**Mon 07/10/24**	**Tue 01/07/25**	**44FS+45 mons**
108	**Impact Evaluation**	**157 days**	**Mon 07/10/24**	**Tue 13/05/25**	
109	**Travel Demand**	**62 days**	**Mon 07/10/24**	**Tue 31/12/24**	
116	Travel Demand Evaluation & Reporting	2 wks	Wed 29/01/25	Tue 11/02/25	112,115FS+1 mon
117	**Travel Times & Journey Reliability**	**55 days**	**Wed 04/12/24**	**Tue 18/02/25**	
122	**Carbon Assessment**	**30 days**	**Wed 05/02/25**	**Tue 18/03/25**	
126	**Noise Assessment**	**65 days**	**Wed 04/12/24**	**Tue 04/03/25**	
131	**Air Quality Assessment**	**50 days**	**Wed 04/12/24**	**Tue 11/02/25**	
135	**Accident Analysis**	**20 days**	**Mon 07/10/24**	**Fri 01/11/24**	
140	**Scheme Objectives**	**60 days**	**Wed 19/02/25**	**Tue 13/05/25**	
146	**Economic Evaluation**	**137 days**	**Mon 07/10/24**	**Tue 15/04/25**	
147	**Economic Impact**	**15 days**	**Mon 07/10/24**	**Fri 25/10/24**	
150	**Outturn Appraisal Assumptions**	**20 days**	**Wed 19/03/25**	**Tue 15/04/25**	
153	**Post Construction 5 Year Reporting**	**35 days**	**Wed 14/05/25**	**Tue 01/07/25**	
154	Draft Report	4 wks	Wed 14/05/25	Tue 10/06/25	108,146
155	Final Evaluation Report	2 wks	Wed 18/06/25	Tue 01/07/25	154FS+1 wk



Project: 160610 LEB Monitoring & Eva
Date: Wed 27/07/16

Task | Split | Milestone | Summary | Project Summary | External Tasks | External Milestone | Inactive Task | Inactive Milestone | Inactive Summary | Manual Task | Duration-only | Manual Summary Rollup | Manual Summary | Start-only | Finish-only | Progress | Deadline

16 Appendix I – Lincoln Integrated Transport Strategy (LITS)

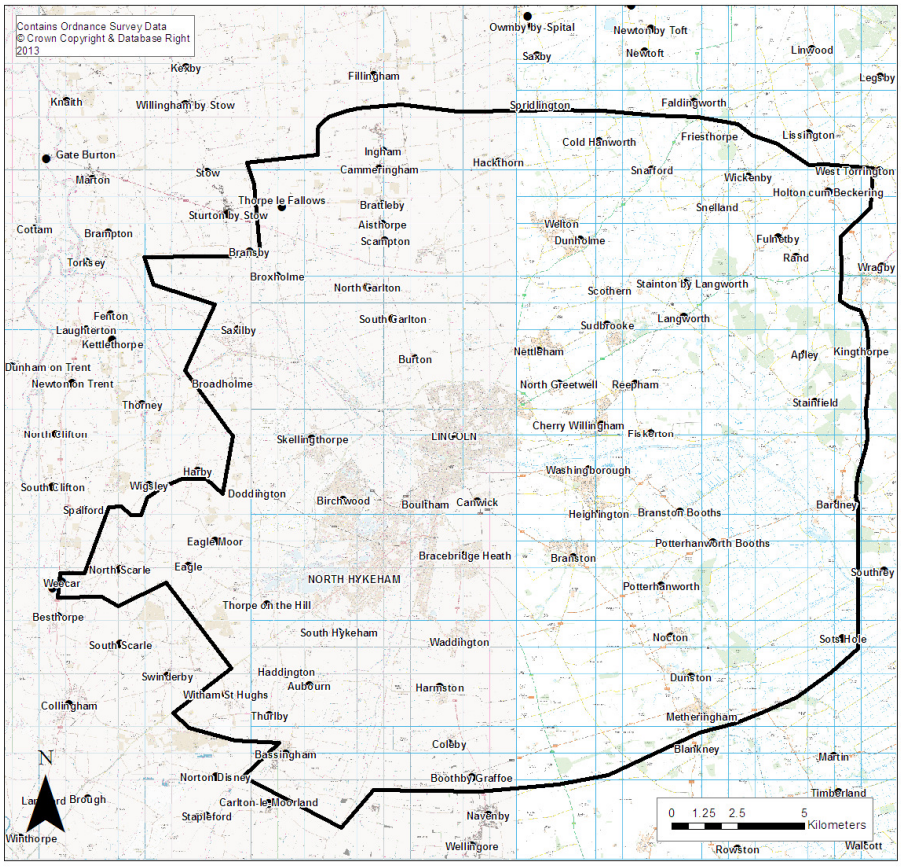
16.1 LITS Summary & Overview

The original Lincoln Transport Strategy (LITS) was published in January 2006 and endorsed by members of the four partner authorities, which were Lincolnshire County Council (LCC), City of Lincoln Council (CoLC), West Lindsey District Council (WLDC) and North Kesteven District Council (NKDC).

Following changes occurring from developments in the area, the emerging Local Development Frameworks, this original document was revised in 2008.

The strategy area is identified as the city of Lincoln and its surroundings shown on the original mapping in the figure below.

Figure 16-1 – Strategy Area



The strategy acknowledges the importance of the city of Lincoln as a cultural hub, tourist destination, centre of learning and focus for growth in the county. It recognises the important role that transport continues to play in the economic, social and cultural growth of the area. The strategy has a number of key objectives (see Table 16-1) which focus on facilitating economic growth, ensuring that Lincoln's

transport infrastructure meets the needs of the planned growth and reducing the impact of traffic on the city centre.

Table 16-1 – LITS Objectives

Ref:	Objectives
SO1	To assist the sustainable economic growth of Lincolnshire through infrastructure improvements to the following: • The Strategic Road Network & Non-Strategic Road Network
SO2	To remove strategic road-based freight from Lincoln and other adversely affected communities through: • Encouraging the use of alternative modes • Improving links to the Primary/Trans-European Road Network
SO3	To ensure that the transport infrastructure meets the needs of existing and proposed developments especially: • In the regeneration priorities in the Lincoln Policy Area • Including minimising congestion through the promotion of walking, cycling and public transport • Managing parking
SO4	To reduce the number and severity of road traffic accidents by reducing the potential for conflict between different modes and improving the facilities for convenient and safe alternatives.
SO5	To maximise accessibility and reduce peripherality by improving the range of travel options especially for those without access to the private car.
SO6	To increase Public Transport usage by improving: • Reliability, frequency and journey time of bus services.
SO7	To improve overall air and noise quality within the study area, especially in the Air Quality Management Area in Lincoln by the removal of unnecessary traffic by: • Removing through traffic • Reducing local journeys in Community Travel Zones • Other traffic management measures
SO8	Protect and enhance the built environment by reducing the adverse impacts from traffic, through improvements to the transport infrastructure.
SO9	Improve the attractiveness and liveability of central Lincoln for residents, workers and visitors by creating a safe, attractive and accessible environment for pedestrians.
SO10	To support the effective implementation and delivery of both the emerging Sub-Regional Strategy and the new Growth Point agenda of the Lincoln Policy Area.

LITS identified many short and long term improvement measures in order to support the promotion of sustainable growth in the area and these are listed in the following table.

Table 16-2 – LITS Transport Improvement Schemes and Measures

Transport Improvement – Scheme or Measure	Short-term (2008-2016)	Longer Term (2016-2026+)
Small -scale walking/cycling/public transport schemes	x	x
Quality Bus Corridors	x	x
Real Time Passenger Information	x	
Public Transport Interchange	x	
Park and Ride	x	x
Parking Strategy	x	x
Rail Service Improvements	x	x
Lincoln Eastern Bypass	x	
Traffic Management Measures	x	x
City Centre Pedestrian Improvements	x	x
East-West Link	x	x
Swanpool Link	x	
Lincoln Southern Bypass		x
Relief Road Improvements		x

The Strategy goes on to explain the expected outcomes of these improvement measures, which are as follows:

Table 16-3 – LITS Outcomes

Outcome	Description
1	A reduction of 'through trips' within the urban area, particularly: • Trips passing though the city centre • HGV trips
2	A reduction in the modal share for the private car for: • Trips into Lincoln city centre • Trips on the 'school run'
3	A reduction in the impact of car trips resulting from development
4	An improvement in air quality within the urban area (particularly the AQMA within central Lincoln)
5	A reduction in casualties, particularly: • Involving vulnerable road users • At sites with known accident issues
6	An increase in public transport trips into and through the city centre
7	The provision of appropriate parking options for all users of the city centre

Outcome	Description
8	Sufficient freedom of movement for all modes to and within the Lincoln Area
9	An increase in levels of walking and cycling within the Lincoln Area, particularly: • Parents and children travelling to and from school • Short trips of less than two miles • Trips into the city centre
10	An improvement in the liveability quality of life within the Lincoln area
11	A reduction in noise levels caused by traffic (particularly for sensitive receptors such as schools and hospitals)
12	An increase in the vitality of Lincoln as a sub-regional centre by encouraging trips for tourism, leisure, business and shopping.
13	A city that operates effectively for trade and service vehicles
14	The provision of appropriate access to development sites with minimised impact of increased traffic on the local area
15	The protection of the historic environment from traffic impacts
16	The sub-regional strategy delivered by 2016

These outcomes are summarised into five key areas:

- City centre benefits brought through the reallocation of road space following the removal of unnecessary traffic
- Accessibility benefits for all transport users associated with providing more options to travel throughout the Lincoln area
- Environmental benefits for the Lincoln area
- Safety benefits associated with the Revised Strategy
- Economic and regeneration benefits for Lincoln, the County and the East Midlands

It is important to note that the LEB is fundamental to delivering the outcomes listed above as it will remove strategic traffic from the centre of Lincoln. This will allow road space to be reallocated and the other schemes the form the strategy to be progressed.

17 Appendix J – LEB Risk Register