



Lincolnshire County Council

# LINCOLN CITY CENTRE CYCLING AND WALKING NETWORK PLAN

Draft Report





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## **APPENDICES**

### APPENDIX A

#### EXAMPLE LAYOUTS FOR WIGFORD WAY – LONG TERM INTERVENTIONS

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# 1. INTRODUCTION

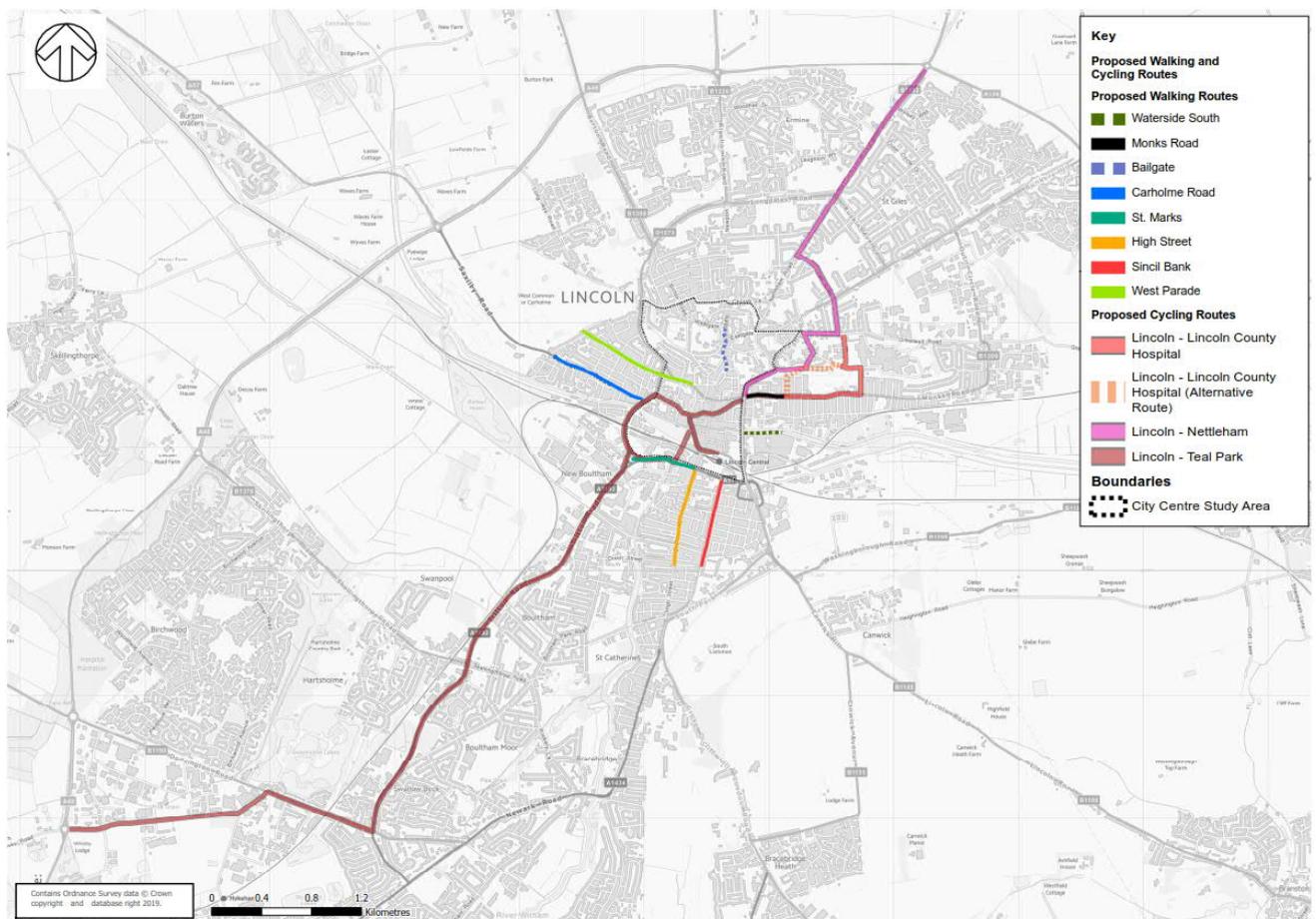
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## 1.1. OVERVIEW

- 1.1.1. Lincolnshire County Council (LCC) have requested that WSP, as part of the Lincolnshire County Council Technical Services Partnership, produce a Lincoln City Centre Cycling and Walking Network Plan (LCCCWNP) following on from the previous Lincoln Cycling and Walking Network Plan (LCWNP) developed in 2019.
- 1.1.2. The DfT's Cycling and Walking Investment Strategy (2017) set out the following ambition for England:
- "We want to make cycling and walking the natural choices for shorter journeys, or as part of a longer journey".
- 1.1.3. It states that walking and cycling for just 10 minutes a day can contribute towards the 150 minutes of physical activity for adults per week, as recommended by the UK Chief Medical Officers. Physical activity helps to prevent and manage more than 20 chronic health conditions, including cardiovascular, disease, stroke, type 2 diabetes, dementia, obesity and a variety of cancers. It is also linked to overall health benefits, such as reduced injury risk, improved quality of life, increased productivity and reduced absenteeism at work.
- 1.1.4. CWIS also sets out the benefits towards air quality and congestion.
- 1.1.5. The city centre plan will look in detail at city centre cycling and walking infrastructure and take into account both the emerging LCWNP and the emerging Lincoln Transport Strategy (LTS). Key aims of the LTS that align with the LCCCWNP are as follows:
- To rebalance movement towards walking, cycling, and multi-occupancy, share mobility and passenger transport options;
  - To enhance the health and wellbeing of communities through improved air quality, increased physical activity and safety; and
  - To reduce carbon emissions to enable the County Council to reach its zero emissions target in 2050 and mitigate the impacts of climate change.
- 1.1.6. LCC is developing this LCCCWNP for Lincoln in order to:
- Take advantage of future and additional funding streams;
  - Maximise the best opportunities for improving cycling and walking rates;
  - Make cycling and walking a priority; and
  - Make Lincoln one of the best cities in the UK for cycling and walking.
- 1.1.7. The objectives of the project are to:
- Produce an evidence-based city centre infrastructure network plan;
  - Identify preferred infrastructure options for identified cycling and walking routes;
  - Secure stakeholder "buy-in" for the infrastructure plan; and
  - Provide high-level feasibility and indicative costs for investment in the identified cycling and walking routes.

## 1.2. BACKGROUND

- 1.2.1. This project builds on work undertaken for the wider LCWNP project investigating potential cycling and walking routes across the LTS area.
- 1.2.2. Previous work was largely based on the Department for Transport (DfT) Local Cycling and Walking Infrastructure Plan (LCWIP) process where WSP were asked to undertake the first four stages of the infrastructure plan preparation: Stage 1 – Determining Scope; Stage 2 – Gathering Information; Stage 3 – Network Planning for Cycling; and Stage 4 – Network Planning for Walking.
- 1.2.3. During the plan’s development, desktop-based research was used to investigate baseline conditions and to develop plans for the cycling and walking network. Internal and external stakeholder workshops were held to assist the network development and were used to help gain the views and opinions of local stakeholders.
- 1.2.4. Site visits were used, allowing a greater understanding of existing cycling and walking infrastructure along priority routes identified in the project, which were then assessed and cycling and walking options developed.
- 1.2.5. The project identified three priority cycle routes and eight priority walking routes. These routes are shown in Figure 1-1 below.



**Figure 1-1 – Priority LCWNP Cycling and Walking Routes**

## 1.3. STRUCTURE

1.3.1. This report covers relevant policy and cycling and walking design, setting the context for cycling and walking in Lincoln. It also provides cycling and walking baseline analysis for Lincoln city centre and provides an overview framework of cycling and walking design guidance focussing on cycling and walking in city centre contexts. It identifies the city centre cycling and walking network and priority routes, and provides cycling and walking infrastructure options.

1.3.2. The report is structured as follows:

- Chapter 2: A review of the relevant cycling and walking policy and design guidance in the context of Lincoln city centre.
- Chapter 3: A baseline review of Lincoln city centre which sets out the existing conditions that will support the development of this LCCCWNP.
- Chapter 4: The development of the city centre network in Lincoln by identifying priority cycling and walking routes.
- Chapter 5: Provides the Lincoln City Centre Streets Framework upon which the interventions are based.
- Chapter 6: Development of the city centre priority routes and infrastructure option proposals.

## 2. POLICY AND DESIGN GUIDANCE REVIEW

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### 2.1. POLICY REVIEW

2.1.1. The current cycling and sustainable transport policy situation across the study area has been reviewed to ensure the LCCCWNP aligns with and considers local, regional, and national policy. The following list provides a summary of the policy and strategy documents reviewed, with emphasis placed on city centre cycling and walking policy.

- Cycling and Walking Investment Strategy (DfT, 2017);
- Local Cycling and Walking Infrastructure Plans (DfT, 2017);
- Greater Lincolnshire Strategic Economic Plan (Greater Lincolnshire Local Enterprise Partnership (GLLEP), 2016);
- Lincolnshire Local Transport Plan (LCC, 2013);
- Central Lincolnshire Local Plan (Central Lincolnshire Joint Strategic Planning Committee, 2017);
- Greater Lincolnshire Strategic Infrastructure Delivery Plan (GLSIDP) (2016);
- Joint Health and Wellbeing Strategy for Lincolnshire (LCC, 2018);
- Lincoln Transport Strategy (LCC, emerging); and
- City of Lincoln Council – Climate and Environment Emergency Declaration (City of Lincoln Council, 2019)

#### **CYCLING AND WALKING INVESTMENT STRATEGY (DfT, 2017)**

- 2.1.2. The Government published its first Cycling and Walking Investment Strategy (CWIS) in 2017. The strategy sets out the Government's ambition to make walking and cycling the natural choices for shorter journeys or as part of a longer journey, and includes targets for increasing the number of people cycling whilst also reducing the number of cycle user casualties.
- 2.1.3. The CWIS states the benefits of this would be substantial, potentially leading to cheaper travel and better health; increased productivity for business and increased footfall in shops; lower congestion levels and better air quality; and vibrant, attractive places and communities for society as a whole.
- 2.1.4. The CWIS outlines a £300 million investment in cycle training and infrastructure during the current Parliament and sets out ambitious targets for the period up to 2025, including a doubling of cycling trip stages each year (from 0.8 billion in 2013 to 1.6 billion by 2025), whilst also reversing the current year-over-year decline in walking trip stages. The CWIS also identifies a need to decrease the number of cycle user fatalities and serious injuries each year.

#### **LOCAL CYCLING AND WALKING INFRASTRUCTURE PLANS (DfT, 2017)**

- 2.1.5. The Local Cycling and Walking Infrastructure Plans (LCWIP) Guidance was published alongside the CWIS. Local Cycling and Walking Infrastructure Plans are set out in the CWIS as a new strategic approach to identifying cycling and walking improvements required at a local level.
- 2.1.6. The LCWIP guidance sets out a recommended approach to planning networks of walking and cycling routes that connect places that people need to get to, whether for work, education, shopping, or for other reasons.
- 2.1.7. The guidance brings together national and international guidance on best practice, and explains how a range of tools, such as the Propensity to Cycle Tool (PCT), can be used to help develop robust plans and schemes.

- 2.1.8. The LCWIP guidance was referred to during the development of the LCWNP and has been applied in the context of this study.

### **GREATER LINCOLNSHIRE STRATEGIC ECONOMIC PLAN (GREATER LINCOLNSHIRE LOCAL ENTERPRISE PARTNERSHIP (GLLEP), 2016)**

- 2.1.9. The Strategic Economic Plan (SEP) is the primary document developed by the Local Enterprise Partnership (LEP) reflecting the ongoing priorities for continued growth and new investment in Greater Lincolnshire.
- 2.1.10. The document mentions several projects that the Greater Lincolnshire Local Enterprise Partnership (GLLEP) have supported, including Go Skegness and the Tentercroft East-West Growth Corridor in Lincoln. In the future, GLLEP will promote sustainable transport schemes where possible in order to promote sustainability and reduce transport's negative impact on the environment.

### **LINCOLNSHIRE LOCAL TRANSPORT PLAN (LCC, 2013)**

- 2.1.11. The 4th Lincolnshire Local Transport Plan (LTP4) was published in April 2013. The document sets out the transport strategy for the county for the subsequent 10-year period to 2023, and presents a vision for Lincolnshire's Transport System in 2030.
- 2.1.12. The Lincolnshire Local Transport Plan recognised that there had been a strong focus on encouraging walking and cycling throughout Lincolnshire.
- 2.1.13. The document also describes specific transport projects that have been implemented in Lincoln itself over recent years. In the city centre, the East-West Link was recognised as a favourable scheme amongst members of the public with walking and cycling infrastructure improvements a major component of the project.
- 2.1.14. Looking forward to 2026 and beyond, the programme of transport improvements in the city centre will include small scale walking, cycling and public transport improvements; uphill and city centre traffic management schemes; and major city centre retail development.

### **CENTRAL LINCOLNSHIRE LOCAL PLAN (CENTRAL LINCOLNSHIRE JOINT STRATEGIC PLANNING COMMITTEE, 2017)**

- 2.1.15. The Central Lincolnshire Local Plan was adopted by the Central Lincolnshire Joint Strategic Planning Committee (CLJSPC) in April 2017 and supersedes the Local Plans of the City of Lincoln, West Lindsey and North Kesteven District Councils. It sets out detailed policies and proposals for the development of the combined area up to 2036.
- 2.1.16. The Local Plan recognises that managing access and movement within the city centre remains a critical issue that needs to be addressed. Several policies in the document suggest improving accessibility by encouraging more walking and cycling:
- Policy LP13: Accessibility and Transport:
    - Proposes that, where possible, walking and cycling infrastructure complements the aims of the existing Public Rights of Way Improvement Plan and the Green Infrastructure Study for Central Lincolnshire.
    - Prioritises schemes that complement gaps in the network, especially those projects that encourage more local walking and cycling prioritised.

- Recommends that any infrastructure improvements should be appropriately linked and integrated with the wider network, be well maintained, and promote walking and cycling, including Access Lincoln's 'Hirebike' scheme and 'Bikeability'.
- Policy LP18: Climate Change and Low Carbon Living:
  - States that development proposals will be considered more favourably if the scheme makes a positive and significant contribution towards reducing demand including maximising the opportunities for sustainable modes off travel
- Policy LP36: Access and Movement:
  - Proposes that within the Lincoln Area, sustainable transport initiatives should be supported, maximising the opportunities for people to make sustainable journeys.
- Policy LP37 Sub-division and multi-occupation of dwellings:
  - Proposes that student accommodation be accessible to universities/colleges, allowing journeys to be made either by walking, cycling or public transport.

**GREATER LINCOLNSHIRE STRATEGIC INFRASTRUCTURE DELIVERY PLAN  
(GREATER LINCOLNSHIRE JOINT COMMITTEE, 2016)**

2.1.17. The Greater Lincolnshire Strategic Infrastructure Delivery Plan (GLSIDP) identifies major infrastructure projects capable of enabling housing construction and increasing employment growth. Few projects relate directly to walking and cycling other than the on-going enhancement of facilities outside Lincoln railway station, which may include additional cycling and walking facilities.

**JOINT HEALTH AND WELLBEING STRATEGY FOR LINCOLNSHIRE (LCC, 2018)**

- 2.1.18. Under requirement of the 2012 Health and Social Care Act, the Lincolnshire Health and Wellbeing Board are required to publish a strategy bringing together detailed information on local health and wellbeing needs, whilst looking ahead at emerging challenges and projected future needs.
- 2.1.19. The strategy describes physical activity, amongst other health and wellbeing concerns, as one of the most pertinent issues facing the county. Objectives of the strategy include better integration of physical activity into strategic planning; improved local insight analysis, with findings used to drive service improvements; support of workforce wellbeing through physical activity; and consideration of innovative technologies aimed at increasing physical activity.
- 2.1.20. Through these objectives it is envisaged that physical activity will be safeguarded and materially considered throughout the county.

**LINCOLN TRANSPORT STRATEGY (LCC, EMERGING)**

- 2.1.21. LCC is seeking to publish a new strategy to support the economic and spatial development of the Lincoln urban area and beyond through the delivery of improvements to access and transport. The emerging Lincoln Transport Strategy (LTS) aims to provide a clear vision and direction of movement and transport across the wider Lincoln area up to 2036.
- 2.1.22. LCC and partners are committed to supporting a sustainable and future ready Lincoln that makes the most of the future challenges and opportunities. This includes a focus on cycling and walking to deliver an inclusive and accessible network.
- 2.1.23. LTS provides a vision for accessibility, travel and transport, as follows:

**By 2036, having delivered on its ambitious growth aspirations, Lincoln will be a more prosperous, attractive and healthy place to live, learn, work and visit.**

**This will be supported by an inclusive and collective approach to accessibility and movement across all communities enabling businesses to succeed, carbon emissions to be reduced, new advances in technology to be embraced and will provide an improved quality of life for all.**

**Links between the Cultural, Civic, Retail and University quarters will be strengthened and its Urban Extensions will have exemplar sustainable infrastructure to integrate with the city. There will be a change of focus in movement across the Strategy Area, with walking and cycling at the heart of the city's movement network.**

**This will be supported by a network of green corridors, multi-occupancy, shared transport and passenger transport options, and reductions in traffic within the urban area. Transport connections to satellite conurbations will be enhanced and the strategic network will be efficient in driving the city's economic growth and prosperity.**

## **CITY OF LINCOLN COUNCIL – CLIMATE AND ENVIRONMENT EMERGENCY DECLARATION**

- 2.1.24. In addition to the above policy documents, the City of Lincoln Council declared a Climate and Environment Emergency on 23<sup>rd</sup> July 2019. One of the eight resulting resolutions that the council is to abide by is to commit to the vision of a carbon neutral Lincoln by 2030. This declaration supports the LCCCWNP, which looks to increase cycling and walking journeys, targeting short trips, which are currently often made by car.

## **2.2. DESIGN GUIDANCE REVIEW**

- 2.2.1. This Design Guidance Review provides a review of the latest cycling and walking design guidance, published in the UK, which will be used in the development of infrastructure options within this study.

### **CYCLING**

#### **London Cycle Design Standards (Transport for London (TfL), 2014)**

- 2.2.2. The London Cycling Design Standards (LCDS) sets out the requirements and provides advice for cycle network planning.
- 2.2.3. LCDS is split up into eight separate sections covering different aspects of cycling design. This includes general design requirements and techniques for planning and delivering high quality infrastructure. Several design outcomes are also listed which are envisaged to help shape the design of cycling infrastructure in London:
- Safety
  - Directness
  - Comfort
  - Coherence
  - Attractiveness; and
  - Adaptability

- 2.2.4. LCDS explores user needs, and provides guidance and principles that different places should adopt in order for them to become places for everyone.
- 2.2.5. LCDS also provides detailed design guidance covering cycle lanes and tracks, junctions and crossings, signs and markings, construction and cycle parking.

**Greater Manchester Cycling Design Guidance (Transport for Greater Manchester (TfGM), 2014)**

- 2.2.6. As part of the target to achieve 10% of all trips by bicycle by 2025, TfGM's Greater Manchester Cycling Design Guidance (GMCDG) aims to promote consistency in the provision of cycling infrastructure across Greater Manchester.
- 2.2.7. The document describes the different types of links that exist across Greater Manchester: cycle tracks, cycle lanes, shared use footways/cycleways, quiet streets and cycle paths and identifies key design criteria of Safety, Coherence, Directness, Attractiveness and Comfort, which are used to determine a framework for designing effective and appropriate cycle infrastructure.
- 2.2.8. The guidance is divided into Links, Junctions and Crossings, Signs and Markings and Construction (including Surfacing). In each of the chapters, parameters are defined to assist designers in developing appropriate infrastructure for a wide range of scenarios taking into account constraints that may be present, such as cost, acceptability and deliverability.
- 2.2.9. A range of standards, look up tables and related guidance, such as cycle parking, is included in the appendices of the Design Guidance document.

**City Connect Cycle Superhighway Design Guidance (Leeds City Council and West Yorkshire Combined Authority (WYCA))**

- 2.2.10. Developed by WYCA, City Connect's Superhighway Design Guidance describes different measures that have been implemented along the Cycle Superhighway between Leeds and Bradford.
- 2.2.11. It explains how users should navigate these different spaces and which transport mode has priority. Design features covered in the document include side roads and non-signalised junctions, bus stops, bi-directional sections of track, shared spaces and diagonal crossings. Guidance on ancillary design features is also included.

**Design Manual for Roads and Bridges (DMRB) - Interim Advice Note 195/16: Cycle Traffic and the Strategic Road Network (Highways England, 2016)**

- 2.2.12. The document provides details of recommended cycling infrastructure design guidance along the Strategic Road Network (SRN). Through adoption of design principles laid out in the document, convenient and safe movement of cycle traffic crossing or travelling along the SRN should be made possible.
- 2.2.13. Different aspects of the SRN are covered, including links, junctions, crossings and roundabouts, as well as signage and construction and maintenance. For each design feature, different factors are taken into consideration (e.g. traffic volumes, speed, road dimensions) allowing the designer to make a more informed decision about the most suitable infrastructure element used.

### **Designing for Cycle Traffic: International principles and practice (DCT) (John Parkin, Institution of Civil Engineers (ICE), 2018)**

- 2.2.14. The document describes best practise design principles taking examples from UK, Dutch, Danish and US contexts. It covers different elements of cycling design, including on-carriageway and off-carriageway routes, junctions design and crossing design. A major theme running through the document is that only distinct and separate cycling provision can ensure attractive and comfortable cycling infrastructure.
- 2.2.15. The document also explains related topics, including the planning processes involved when designing for cycling, legal and policy requirements, and the monitoring and evaluation of cycling infrastructure.
- 2.2.16. Concluding chapters explore different ways of modelling and auditing cycling infrastructure as well as recent innovations in cycling design.

### **Cycling Infrastructure Design Local Transport Note 2/08 (DfT, 2008)**

- 2.2.17. This Local Transport Note (LTN) provides guidance on improving safety and reducing unnecessary delays and diversions for cyclists and pedestrians through the design of cycle infrastructure.
- 2.2.18. A hierarchy of safety measures is suggested, with measures that aim to reduce traffic volume and traffic speed recommended be considered first, and conversion of footways/footpaths to shared use for pedestrians and cyclists be considered last.
- 2.2.19. Design recommendations are included in the document covering a variety of different cycling infrastructure components: signage, cycle lanes, off-road cycle routes and junctions, as well as ancillary cycling aspects such as cycle parking and integration with public transport.

### **To be published – updated Local Transport Note 2/08**

- 2.2.20. The updated LTN 2/08 refresh (due 2019) will recognise and promote recent innovations in cycling infrastructure and take on board the views of a number of cycling groups and stakeholders, providing a comprehensive up-to-date design guide.

## **WALKING**

### **Creating better streets: Inclusive and accessible places – Review shared space (Chartered Institute of Highways and Transportation (CIHT), 2018)**

- 2.2.21. This CIHT document reviews the legislation and frames the debate of shared space initiatives in the UK through a review of several case studies.
- 2.2.22. The report recommends that future projects be scored against several objectives:
  - Whether a scheme represents an inclusive environment or not
  - Ease of movement for all users
  - Quality of place
  - Economic benefit.
- 2.2.23. It suggests that these criteria be used to determine the effectiveness of a scheme post-implementation.

2.2.24. The report also recognises the difficulty that defining shared space schemes has had in hampering any meaningful discussion about them. Three types of shared space schemes were identified in a review of case studies, each with different characteristics:

- Pedestrian prioritised streets
- Informal streets
- Enhanced streets.

2.2.25. It is hoped that by using these distinctions, greater clarity for designers, decision makers, stakeholders and users will be provided, with calls for these shared space, street typologies to be adopted by government.

2.2.26. The document also recommends local authorities set clearer outcomes during the design stage of a shared space scheme and that government emphasises the importance of stakeholder engagement. Calls were also made for the government to review several different elements of shared space initiatives.

### **Streetscape Guidance (TfL, 2016)**

2.2.27. TfL's Streetscape Guidance document is guided by three major functions: encouraging designers of streetscapes to use robust design methods; to highlight the level of ambition that is required to develop high quality levels of service; and to highlight best practise design principles.

2.2.28. The document provides examples from case studies in Greater London where the successful redesign of streets has taken place and where practical and appropriate, encourages the trialling and testing of new transport schemes and initiatives in order to stimulate future street improvements.

2.2.29. Different street types are recognised as supporting different functions which must balance the sometimes-competing functions of movement and place. Technical guidance on different design principles complement these considerations, with detailed information on different street components.

### **Walking Action Plan (TfL, 2018)**

2.2.30. TfL's Walking Action Plan aim is to enable *'more people to walk part or all of their journey, improve the experience of walking in London, and reduce car dependency.'*

2.2.31. The Walking Action Plan describes the benefits of walking: it is an efficient use of street space, it is safe and healthy, has no emissions or noise, and is good for business.

2.2.32. Making walking the most attractive option for short journeys will help people live healthier lives, tackling physical inactivity and obesity.

2.2.33. The Walking Action Plan is made up of the four following elements:

- Building and managing streets for people walking
  - Actions are set for prioritising people walking including reshaping the landscape, making streets safer, enhancing accessibility and inclusiveness and optimising the management of streets.
- Planning and designing for walking

- These actions address the way investment decisions are made and the approach for design of streets. It includes a commitment to the healthy streets check, an aim to design streets for people walking and improvements in the monitoring and data collection on walking.
- Integrating walking with public transport
  - Improve the public transport network in order to boost walking and the associated benefits.
- Leading a culture change
  - This includes an aim to promote walking for all, especially for children, and support a culture change towards walking. It also aims to improve wayfinding and reclaim streets from traffic.

2.2.34. Some of the key actions used by TfL as part of designing the future city around walking are set out in Table 2-1.

**Table 2-1 –Selection of Interventions from TfL’s Walking Action Plan**

Action Category	Action to increase walking levels
<b>Town Centres</b>	Improve the feel of residential streets and connect them with local destinations, delivering healthy, attractive and safe neighbourhoods.
	Reduce traffic dominance
	Enhance conditions for people walking, through: <ul style="list-style-type: none"> <li>- using infrastructure trials</li> <li>- holding ‘open street’ events</li> <li>- behaviour change activities</li> </ul>
	Targeted junction improvements
	Make streets better places to walk and spend time
	Support community initiatives such as local walking groups that can help identify improvements for walking such as new crossings, better landscaping or clearer signage.
<b>Optimise street management</b>	Timing reviews of signals to reduce wait times for people walking close to schools, hospitals and transport hubs.
	Measure ‘pedestrian time saved’ alongside other performance metrics for junctions.
	Use pedestrian countdown technology, displaying how long people have to cross the road.
	Use SCOOT (Split Cycle Offset Optimisation Technique), which lengthens the green pedestrian signal by detecting how many pedestrians are waiting to cross in order to provide more crossing time for pedestrians when it is busier. This prevents overcrowding on the pavement and ensures people have enough time to cross the road.

Action Category	Action to increase walking levels
	<p>'Green man' authority: this technique shows a green signal for pedestrians continuously, until vehicular traffic is detected, at which time pedestrians are stopped on red and vehicles signalled to move.</p> <p>Ensure that during road closures (either planned or unplanned) the traffic control centre better prioritises pedestrian movement.</p>
<b>Make Streets safer</b>	<p>Eliminate deaths and serious injury from streets as a result of collisions.</p> <p>Lower speeds – introduce 20mph speed limits.</p> <p>Increase personal security through street design, such as lighting, clear sight lines and natural surveillance.</p>
<b>Enhance accessibility and inclusiveness</b>	<p>Ensure streets have the highest standards of inclusive design in accordance with Equality Act 2010.</p> <p>Prevent crowded, obstructed streets and pavements not wide enough.</p> <p>Ensure businesses do not clutter pavements with A-boards, unlicensed retail stands or unlicensed al-fresco dining areas.</p>

### Planning for Walking (CIHT, 2015)

- 2.2.35. The Chartered Institute of Highways and Transportation's (CIHT) Planning for Walking document describes the early stages of how best to implement walking strategies. The document begins by exploring current walking trends and characteristics, before explaining the benefits of walking and the problems and barriers pedestrians face.
- 2.2.36. The legal and regulatory context of walking is examined, setting the scene for how effective strategies can be envisaged and planned, with walking catchments, desire lines, pedestrian safety and other aspects of the pedestrian environment all important factors to be considered when planning for walking.
- 2.2.37. Examples of ways in which local authorities have encouraged greater of walking are described, such as through the implementation of travel plans or promotional campaigns, before considering trends and challenges which could affect levels of walking in the future.

### Designing for Walking (CIHT, 2015)

- 2.2.38. Designing for Walking follows on from CIHT's Planning for Walking (see above), explaining how facilities for walking should be designed.
- 2.2.39. Designs considerations that affect the quality of the walking environment are considered, as are other factors including assessment of options for crossing streets, assessment of pedestrian routes, whether the use of pedestrian guardrails is necessary or not, the use of tactile paving, way finding, journey end facilities/interchanges, and the use or impact of street features and furniture.

## **Local Transport Note 1/12: Shared Use Routes for Pedestrians and Cyclists (Department for Transport, 2012)**

- 2.2.40. This LTN focuses specifically on routes within built-up areas where pedestrian and cycle use is likely to be frequent. The document uses a hierarchy of provision, developed in LTN 2/08 to encourage practitioners to develop on-carriageway solutions first, in order to prevent designers from resorting too readily to shared use interventions.
- 2.2.41. An overview of the scheme development process is provided, using a flow chart to explain how different traffic characteristics may influence design considerations and whether the adoption of shared use schemes or on-carriageway improvements may be more appropriate.
- 2.2.42. If a shared use intervention is considered the most appropriate design element, a key decision that needs to be made by practitioners is whether to segregate the route or not, ensuring that whatever interventions are proposed reflect the core design principles of being convenient, accessible, safe, comfortable and attractive. The document weighs up the advantages and drawbacks of these different design elements.
- 2.2.43. Pedestrian design considerations are examined, ensuring that the conversion of footways into shared use routes does result in the displacement of existing users and that the perception of reduced safety does not deter elderly people or disabled people from using the route. The document therefore recommends that pedestrians have sufficient width after conversion and that their particular concerns are discovered early on in the route's design.
- 2.2.44. Other design recommendations include ensuring the shared use route is clear from street clutter and aligning the cycle track so that it is placed on the carriageway side of a segregated shared-use route, improving pedestrian safety.
- 2.2.45. Related aspects of the scheme development process are also covered including how to hold effective stakeholder engagement and managing the route post-implementation.

## **Manual for Streets 2 (CIHT, 2010)**

- 2.2.46. Manual for Streets 2 (MfS 2) builds on the guidance contained in MfS 1, exploring in more detail how and where to apply its key principles. The document is guided by a wide variety of initiatives, including ensuring streets are designed with pedestrian concerns considered first, promoting collaboration and engagement between different parties, setting clear vision and objectives, and developing innovative approaches to street design.
- 2.2.47. The characteristics of different street types are explored, emphasising how town centre and city centre streets often have to serve multiple different functions and support multiple different users. Possible interventions to consider in these environments include vehicle access restrictions and adoption of an area-wide public realm strategy and streetscape manual.
- 2.2.48. The latter part of the document explores the detailed design of several streetscape elements. Regarding pedestrians, the document advises that:
  - The propensity to walk is influenced not only by distance, but also by the quality of the walking experience.
  - Good sightlines and visibility towards destinations and intermediate points are important for way-finding and personal security.

- Pedestrian routes need to be direct and match desire lines as closely as possible, including across junctions, unless site-specific reasons preclude it.
- Pedestrian networks need to be connected. Where routes are separated by heavily-trafficked routes, appropriate surface-level crossings should be provided where practicable.
- Pedestrians should generally be accommodated on multifunctional streets rather than on routes segregated from motor traffic. In situations where it is appropriate to provide traffic-free routes they should be short, well-overlooked and relatively wide.
- Obstructions on the footway should be minimised. Street furniture on footways can be a hazard for vulnerable people.
- There is no maximum width for footways; widths should take account of pedestrian volumes and composition.

2.2.49. Regarding footway provision, recommendations include:

- Providing footways along both sides of highways.
- Ensuring footways are of a sufficient width to cater for peak demand without causing crowding or potentially risking people from getting pushed into the carriageway.
- Taking space away from the carriageway in order to create a better-balanced street.
- Rationalising street furniture.

2.2.50. The document's appendices include several case studies, explaining the design elements used and whether the interventions were successful or not.

#### **Providing for Journeys on Foot (CIHT, 2000)**

2.2.51. Providing for Journeys on Foot represents one of the earliest publications exploring ways in which local authorities should plan and provide for pedestrians, maintain walking infrastructure and promote walking.

2.2.52. Planning and policy framework is outlined within the document and sets the scene for how best to implement walking infrastructure through consideration of how best to collect and understand information relating to existing walking environments.

2.2.53. The document recognises the 'The Five Cs' as being important considerations when assessing the overall quality of the existing environment and when designing new walking route infrastructure. These 'Five Cs' are:

- Connected
- Comfortable
- Convenient
- Convivial
- Conspicuous.

2.2.54. Urban design principles are also endorsed, taking into consideration the importance of multi-disciplinary working. Different aspects of the walking environment are examined in more detail, taking into consideration how pedestrian environments vary, basing design recommendations on these findings.

2.2.55. Post-construction aspects of walking provision are also examined, including footway maintenance, promoting walking, and the appraisal and monitoring of pedestrian infrastructure schemes. The document concludes with example checklists and frameworks used to assess existing walking environments and assess possible investment options.

## 3. LINCOLN CITY CENTRE CYCLING AND WALKING NETWORK PLAN – BASELINE REVIEW

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### 3.1. INTRODUCTION

3.1.1. This section covers the baseline data used in development of the LCCCWNP. This includes the following subsections:

- Identifying Trip Origin and Destinations
- Barriers
- Collisions
- Air Quality
- Existing Cycle Infrastructure
- Cycle Counts and Cycle Hire
- Core Walking Zone
- LCWNP Proposals

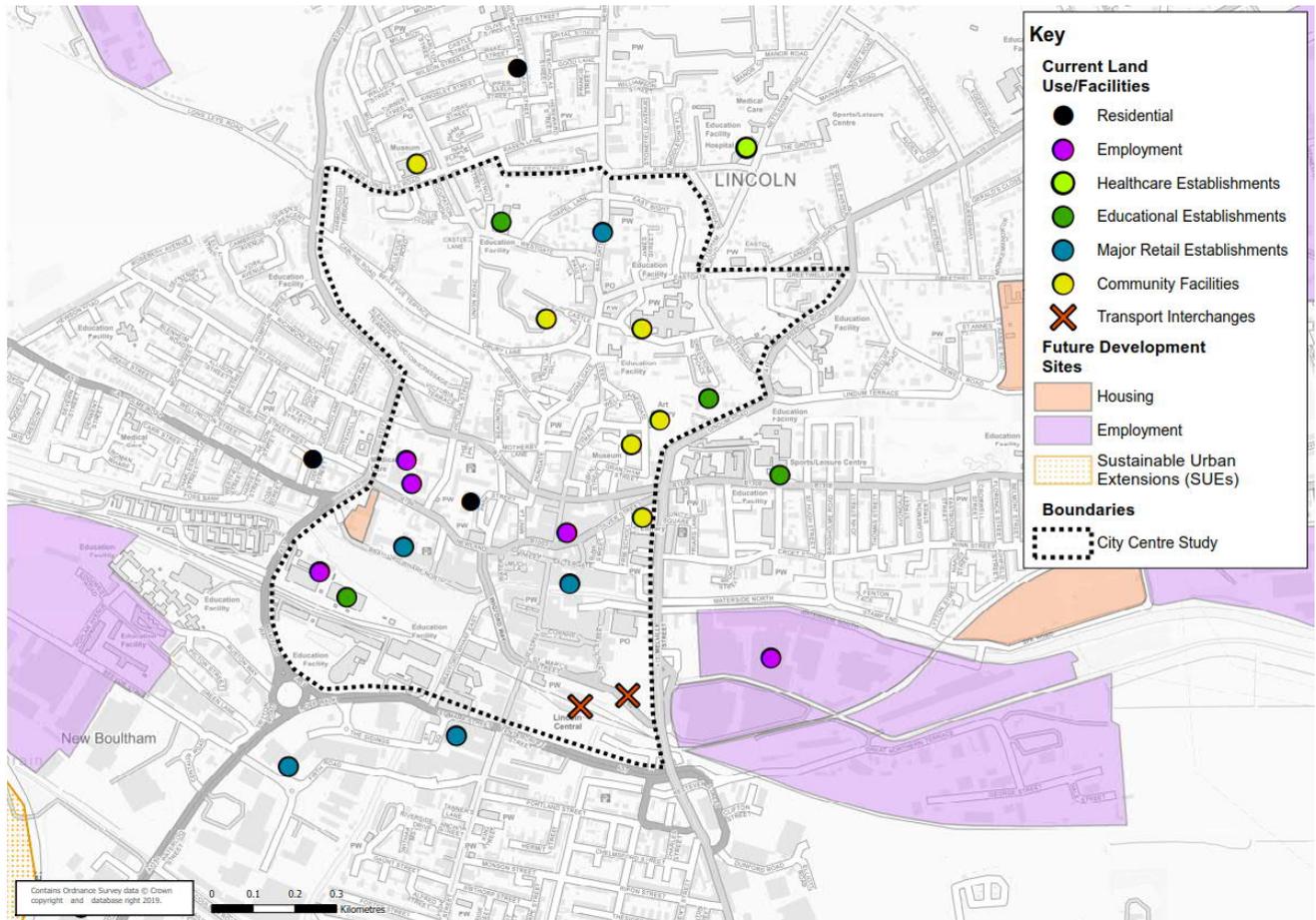
### 3.2. IDENTIFYING TRIP ORIGINS AND DESTINATIONS

3.2.1. Identifying trip origin and destination points is recommended in the DfT's LCWIP guidance, as part of the development of both the cycling and walking networks. The process carried out for this exercise was largely adopted from the previous LCWNP project, where key origin and destination points were identified.

3.2.2. Residential areas identified through Census 2011 data were recognised as major trip origin points, and the following areas significant destination points:

- Employment areas or large individual employers;
- Educational establishments (higher and further educational establishments only);
- Healthcare establishments (hospitals only);
- Retail facilities (large retail parks only);
- Community facilities (major attractions only);
- Transport interchange facilities (railway stations and bus stations only); and
- Future development sites and planned transport links (identified in Central Lincolnshire's Local Plan Policies Map)

3.2.3. LCC provided additional city centre specific origin and destinations points to those identified for the LCWNP project. Geographic Information Systems (GIS) software was used to map the LCWNP trip origin and destination points as well as the city centre specific origin and destination points and this can be seen in Figure 3-1.



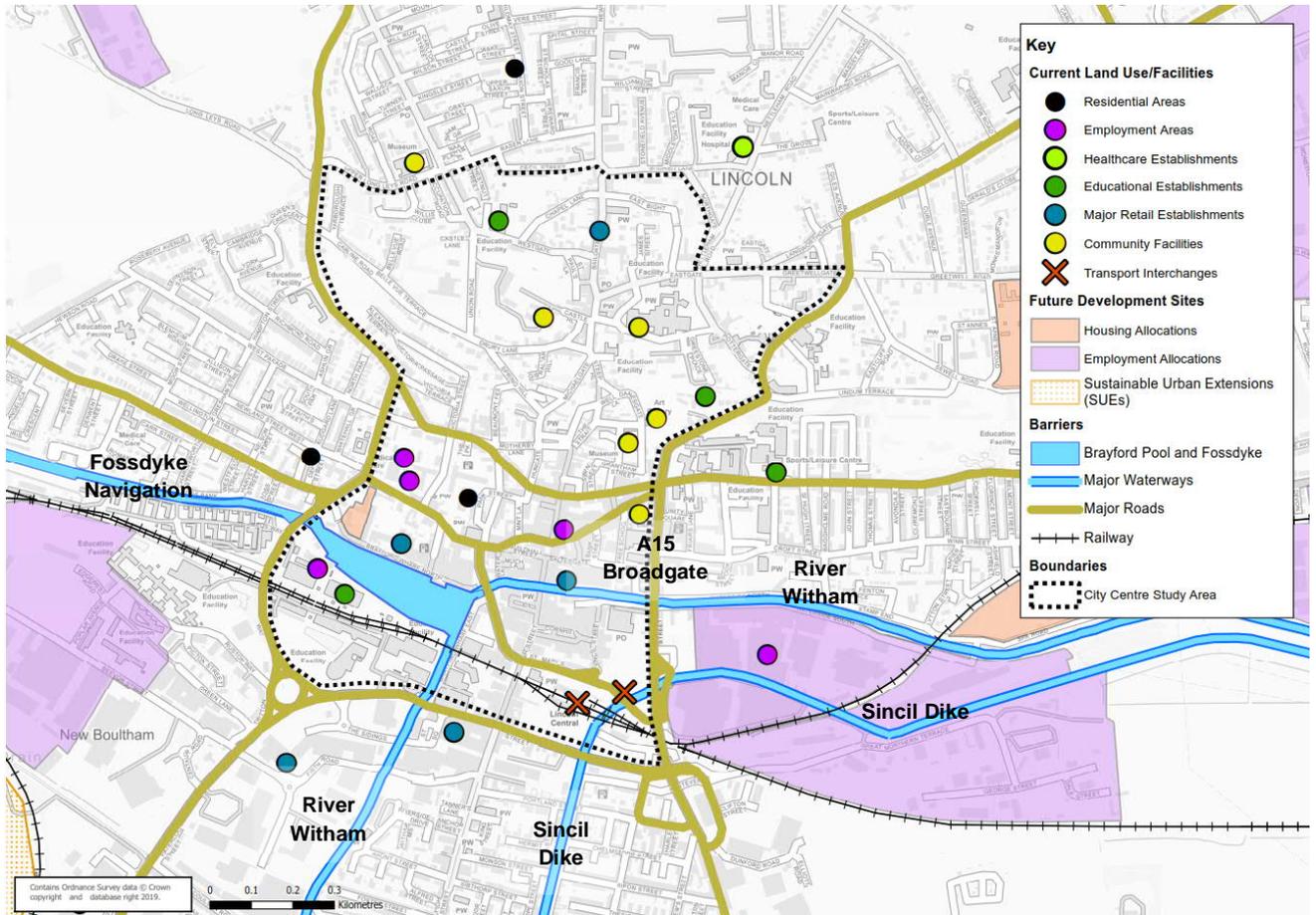
**Figure 3-1 – Trip Origin and Destination Mapping**

### 3.3. BARRIERS

- 3.3.1. Natural and man-made barriers to movement were identified to understand how they may impact on existing and potential cycling and walking movements. The LCWNP project provided the basis for this analysis, with the output plan shown in Figure 3-2.
- 3.3.2. Major roads were plotted, with the A15 running north to south through Lincoln, severing movement across the city centre. The road experiences high traffic flows, with large amounts of freight vehicles passing along the road. Few crossing facilities also exist, resulting in pedestrian and cycle users crossing at undesirable or unsafe locations, with the problem exacerbated by the presence of a central reservation guardrail, preventing users from following desire lines.
- 3.3.3. Silver Street (a one-way street running west to east) and Clasketgate/Corporation Street/West Parade (a one-way street running east to west) also cause severance and act as a barrier to cycling and walking movement in the city centre. Localised, high traffic flows and on-street parking makes access to this area increasingly difficult, and is in danger of creating an ‘island-effect’ between the historic area of the city and the shopping environment to the south.
- 3.3.4. Railway lines were also plotted, with several regional routes flowing through the city centre, with no alternative routes around the immediate urban area. As a result of this, the closure of barriers temporarily cuts off the north of the city centre with the south when trains pass through. Recent

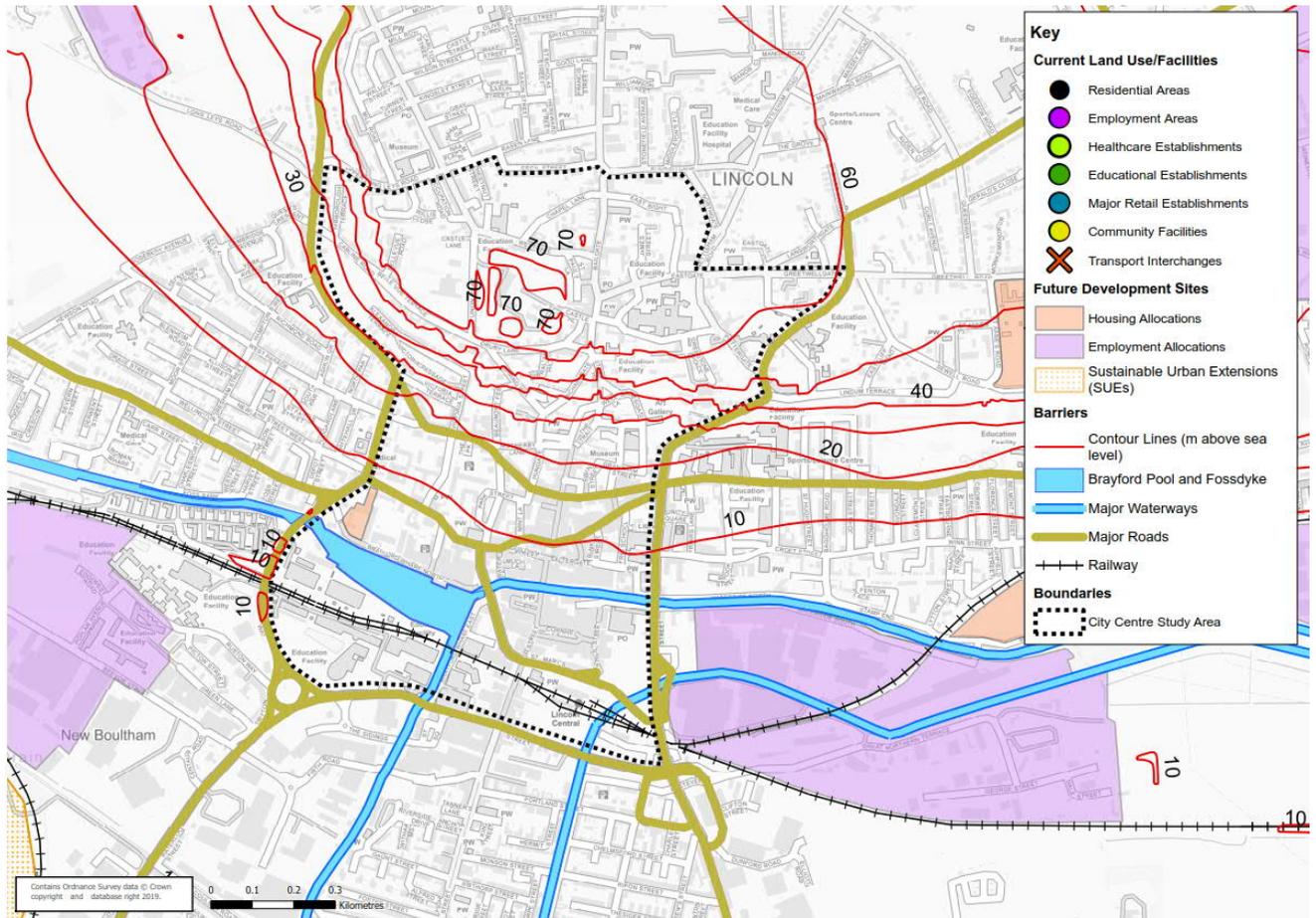
attempts have been made to improve north-south connectivity, with the recently constructed footbridge over the line on Brayford Wharf East improving levels of accessibility.

- 3.3.5. Water bodies were also plotted, including Brayford Pool, dissecting the central area of the city in two and the River Witham, intersecting the city centre study area boundary to the south, and flowing east towards Boston.



**Figure 3-2 - Natural and Man-made Barriers**

- 3.3.6. In addition, the topography of Lincoln includes a steep gradient between the central Lincoln shopping area and the historic uphill area of Lincoln, making travel between these two areas difficult, especially for people with restricted mobility or young children.
- 3.3.7. The topographical levels of Lincoln city centre are shown on the plan in Figure 3-3.



**Figure 3-3 - Lincoln City Centre Topography**

### 3.4. COLLISIONS

- 3.4.1. WSP received collision data from the Lincolnshire Road Safety Partnership (LRSP) during the baseline analysis phase of the in-progress Lincoln Transport Strategy. This dataset was analysed for the LCWNP project and was clipped to the city centre study area boundary to identify the location, severity of incidents and user types involved in the collision, within the city centre study area.
- 3.4.2. Table 3-1 and Table 3-2 show the breakdown of collisions within the city centre study area that involved cycle users and pedestrians between 2013 and 2017. They show that a significantly greater number of collisions involved pedestrians (61) rather than cycle users (24), with slight incidents more common than serious collisions, however the proportion of serious collisions was higher for cycle users than pedestrians at 29% for cycle users compared to 23% for pedestrians. There were no fatal collisions recorded for either cycle users or pedestrians within the period in the city centre study area.

**Table 3-1 - Collisions Involving Cycle Users Between 2013 and 2017**

Severity	Number of Collisions	Percentage of Total
Slight	17	71%
Serious	7	29%
Fatal	0	0%
<b>TOTAL</b>	<b>24</b>	<b>100%</b>

**Table 3-2 - Collisions Involving Pedestrians Between 2013 and 2017**

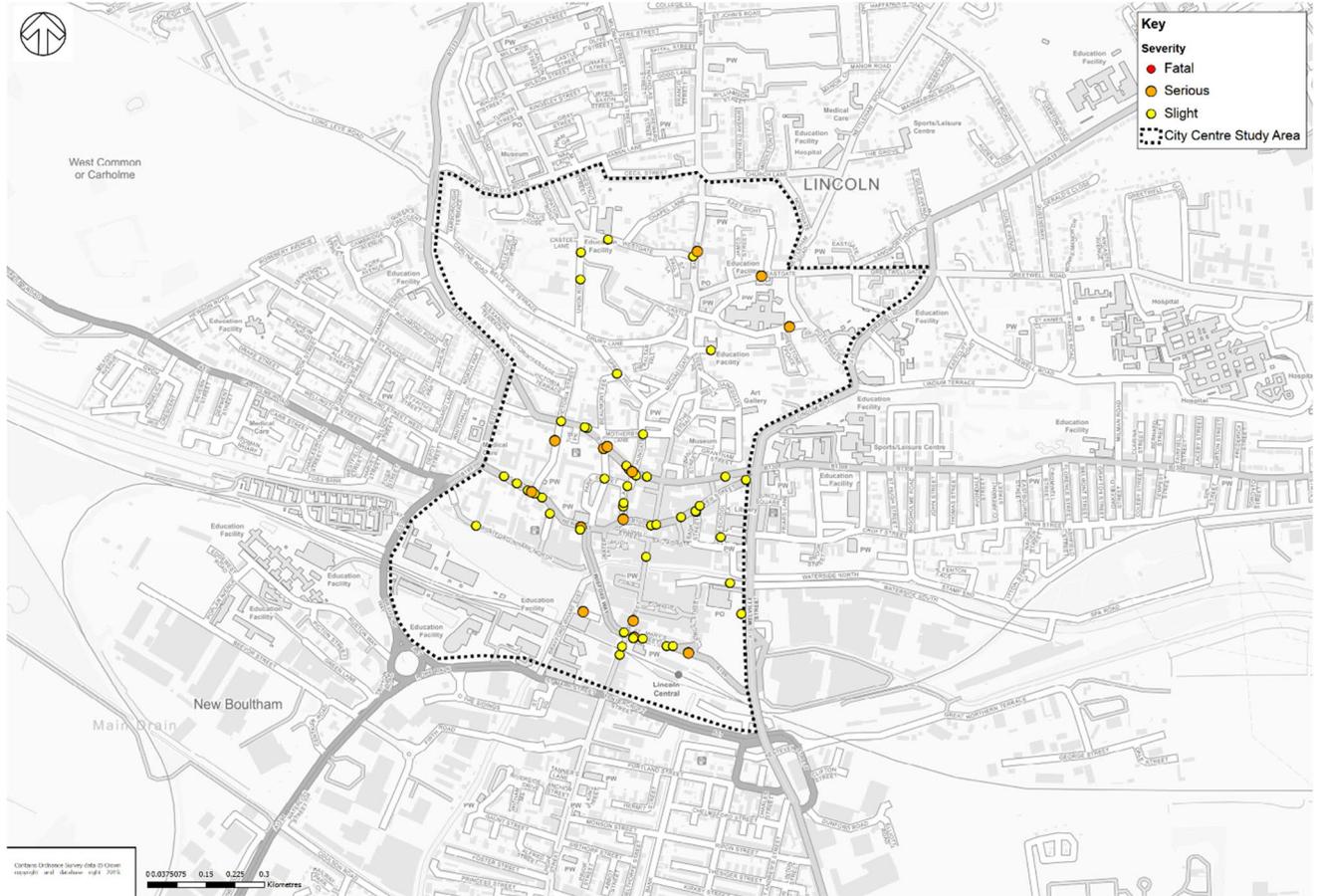
Severity	Number of Collisions	Percentage of Total
Slight	47	77%
Serious	14	23%
Fatal	0	0%
<b>TOTAL</b>	<b>61</b>	<b>100%</b>

- 3.4.3. Figure 3-4 shows the spatial distribution and severity of collisions involving cycle users between 2013 and 2017. Collisions involving cycle users often occur at junctions, with severe collisions occurring on Wigford Way, Park Street/Beaumont Fee junction, Spring Hill/Michaelgate junction and Eastgate/Priory Gate junction.



**Figure 3-4 - Cycle User Collision Location by Severity**

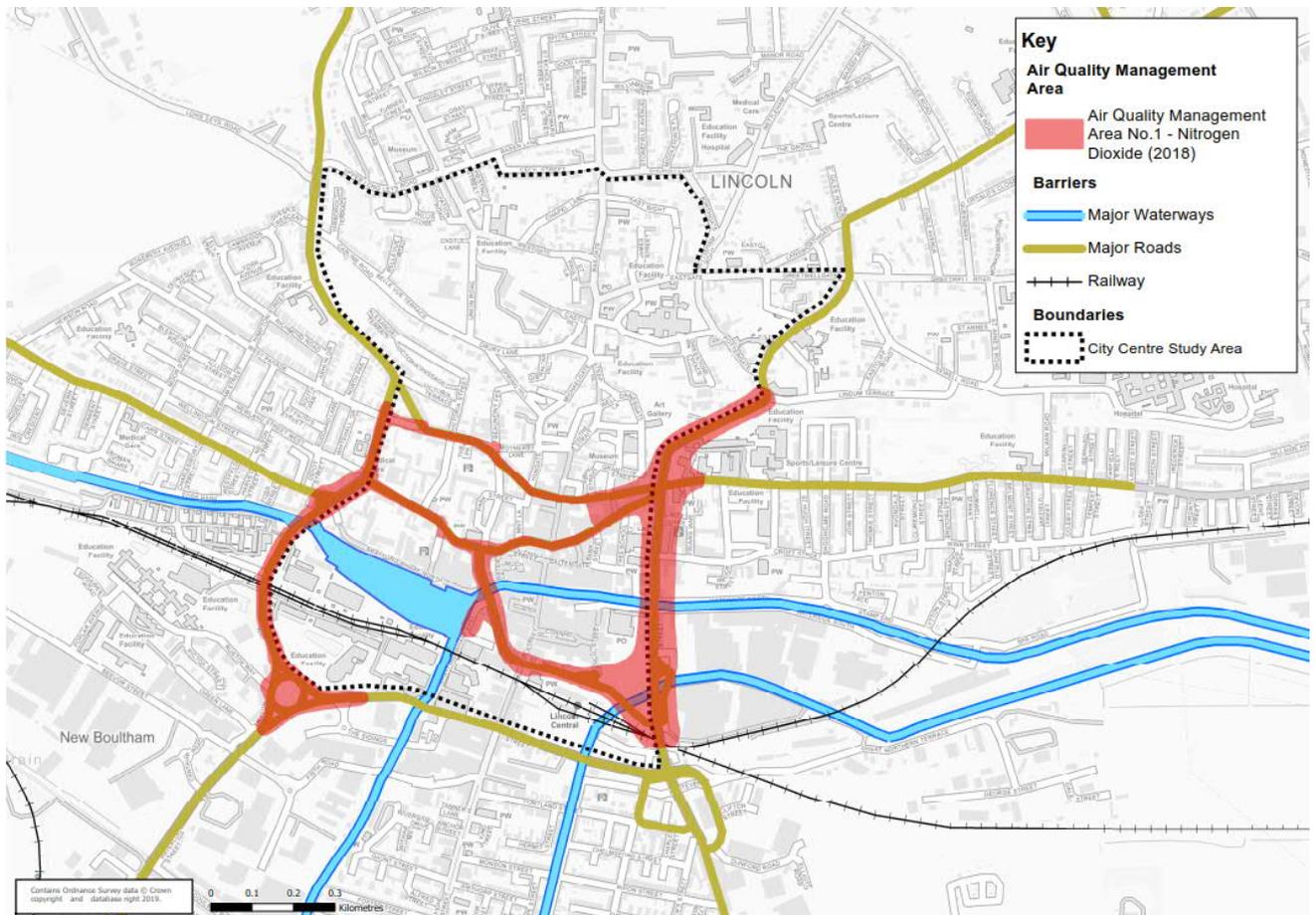
- 3.4.4. Figure 3-5 shows the spatial distribution and severity of collisions involving pedestrians between 2013 and 2017. Slight and serious collisions involving pedestrians have occurred at several junctions and links along prominent streets in the city centre. This includes Wigford Way and the specifically the Wigford Way/High Street junction, the length of Silver Street/Newland and Corporation Street/West Parade, with Corporation Street/West Parade/Hungate and Motherby Lane/West Parade/Beaumont Fee particular hotspots.
- 3.4.5. In the north area of the city centre, several serious collisions were recorded around Lincoln Cathedral, including along Bailgate, Eastgate and Minster Yard. Several collisions had also taken place around residential streets towards the northern periphery of the city centre boundary.



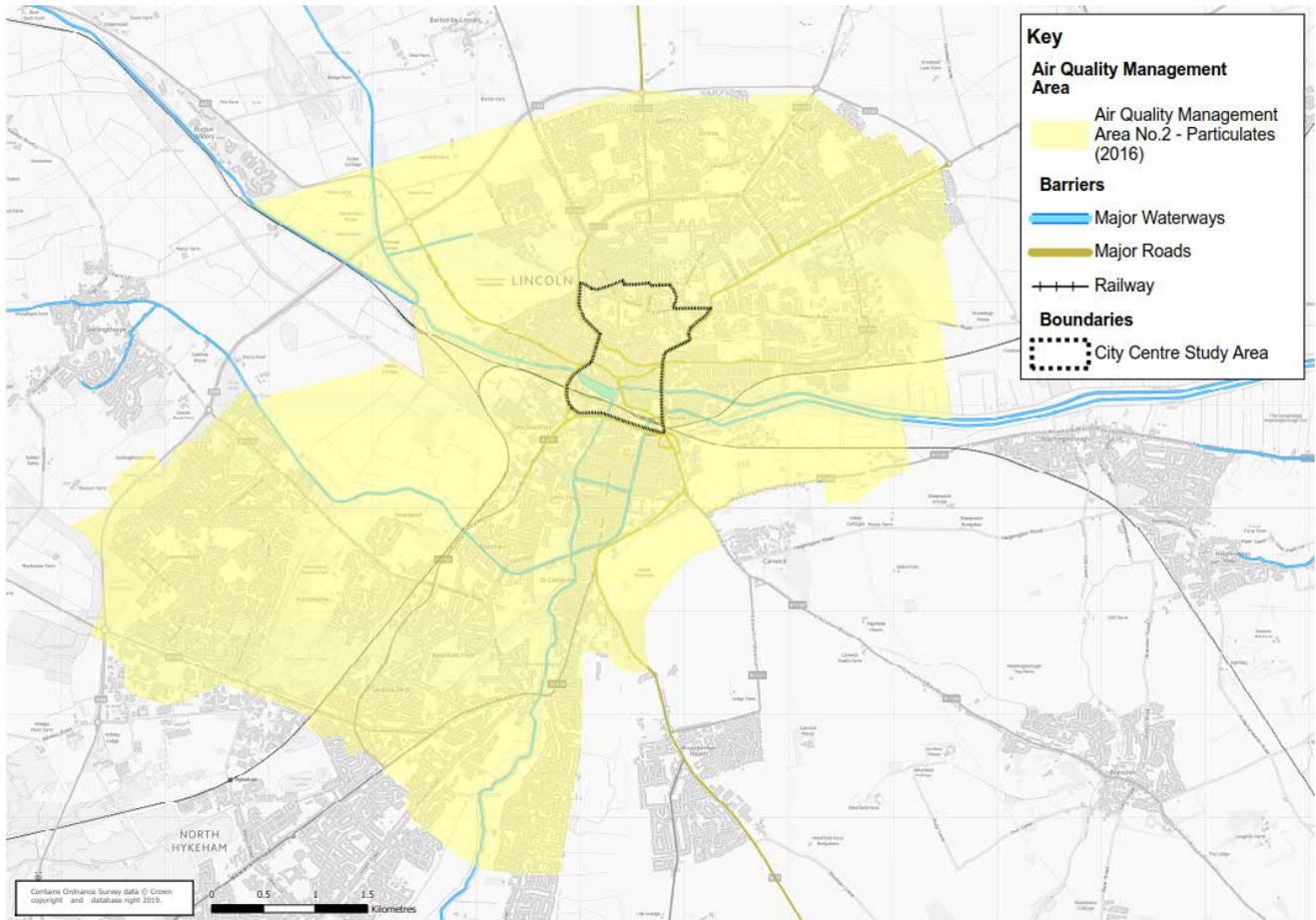
**Figure 3-5 - Pedestrian Collision Location by Severity**

### 3.5. AIR QUALITY

- 3.5.1. The latest available Air Quality Annual Status Report (2018) for Lincoln states that the main source of air pollution within the city is road transport. Both nitrogen dioxide and particulates are assessed within the Lincoln air quality assessments and are two of the main pollutants that central government is focused on eliminating.
- 3.5.2. There are two existing air quality management areas (AQMAs) in Lincoln relating to nitrogen dioxide and particulates. An AQMA is an area that monitoring data shows will not meet the required national air quality objectives. Lincoln City Council feeds this evidence into an its Air Quality Action Plan with the aim of improving overall air quality.
- 3.5.3. AQMA No.1 is based on nitrogen dioxide air pollution and is shown in Figure 3-6. AQMA No. 2 is based on pollution from particulates and is shown in Figure 3-7.



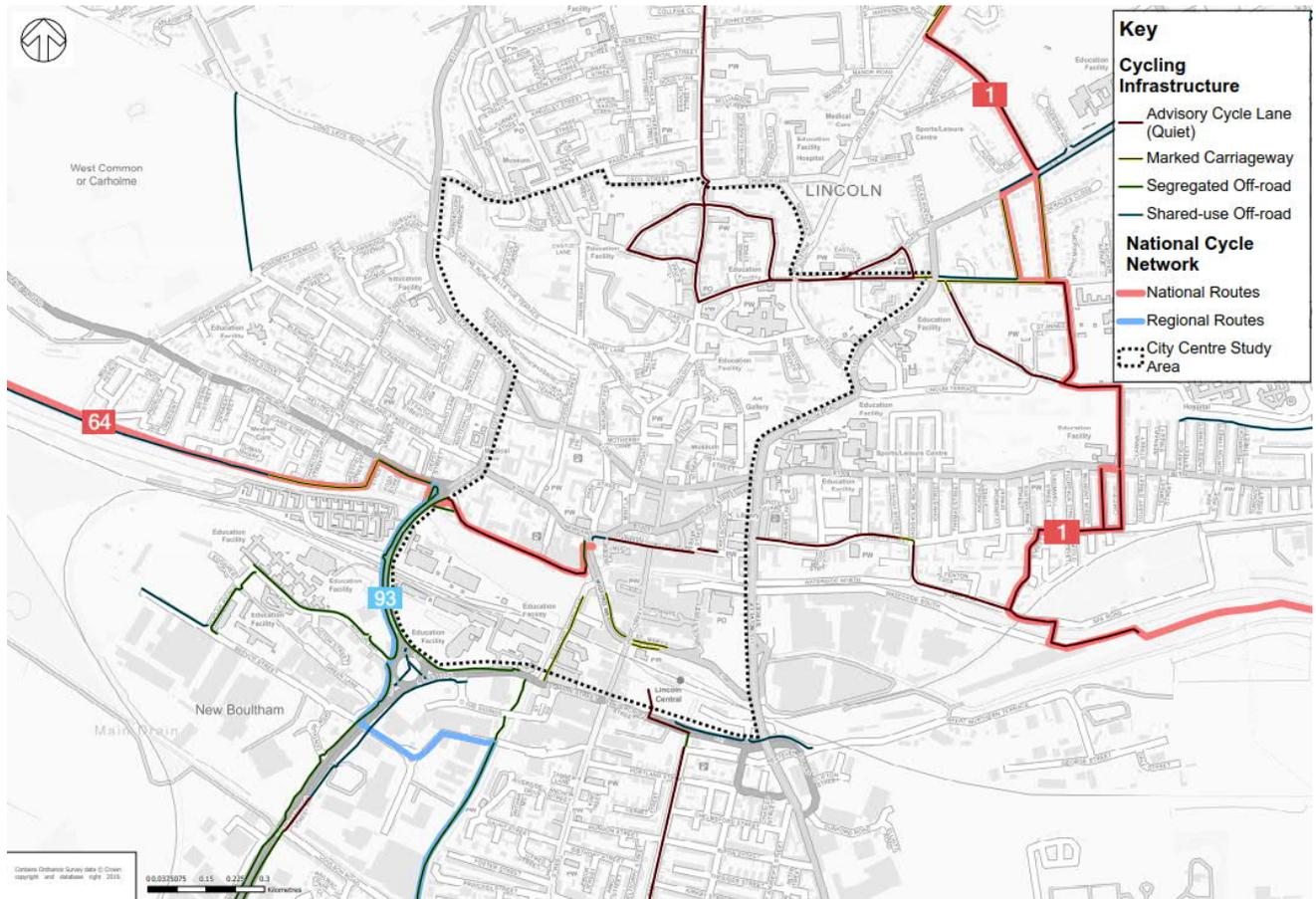
**Figure 3-6 – AQMA No.1 for nitrogen dioxide - Lincoln City Centre**



**Figure 3-7 - AQMA No.2 for Particulates - Lincoln City Centre**

### 3.6. EXISTING CYCLE INFRASTRUCTURE

- 3.6.1. Figure 3-8 shows the existing cycle infrastructure identified as part of the previous work, for the development of the LTS and for the LCWNP.
- 3.6.2. Figure 3-8 indicates that Sustrans National Cycle Network (NCN) Routes 1 and 64 intersect the city centre boundary, revealing that connections between these two routes is limited: an intermittent advisory cycle lane along Brayford Wharf North is the only dedicated infrastructure connecting these two cycle routes. Advisory cycle lanes also run north of the Cathedral with road links of varied cycling provision connecting Scampton in the north with Lincoln, and National Cycle Route 1 to the east.
- 3.6.3. Figure 3-8 also reveals that no designated cycle route exists north-south within the city centre, with users having to navigate narrow streets with other transport modes or having to make an extended journey east towards NCN Route 1, before continuing their journey northwards.



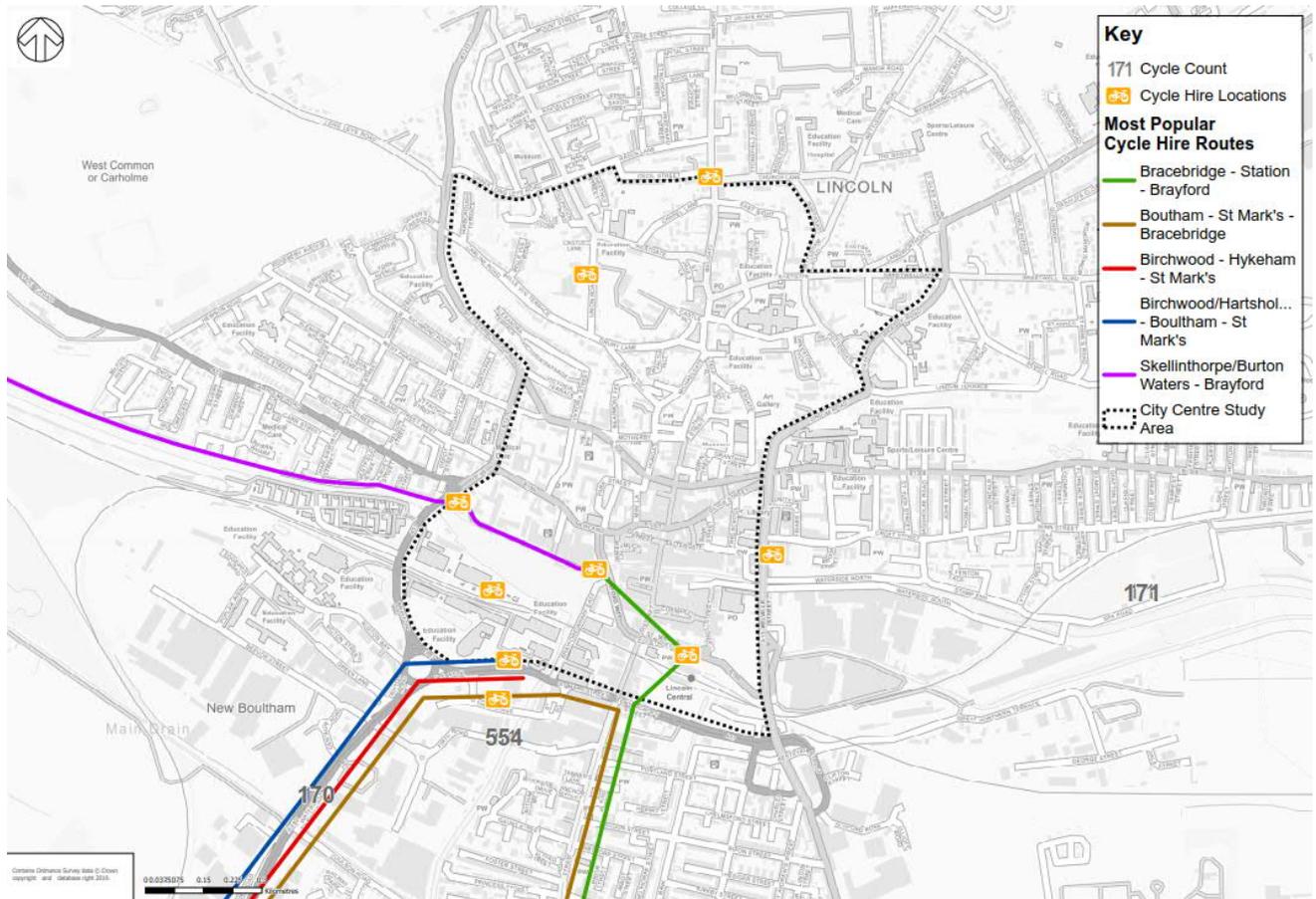
**Figure 3-8 - Existing Cycle Infrastructure**

### 3.7. CYCLE COUNTS AND CYCLE HIRE

3.7.1. Figure 3-9 shows the available 2-way cycle counts that are known on some routes around the city centre. These are summarised as follows:

- B1003 Tritton Road: 170
- Firth Road: 554
- Spa Road: 171

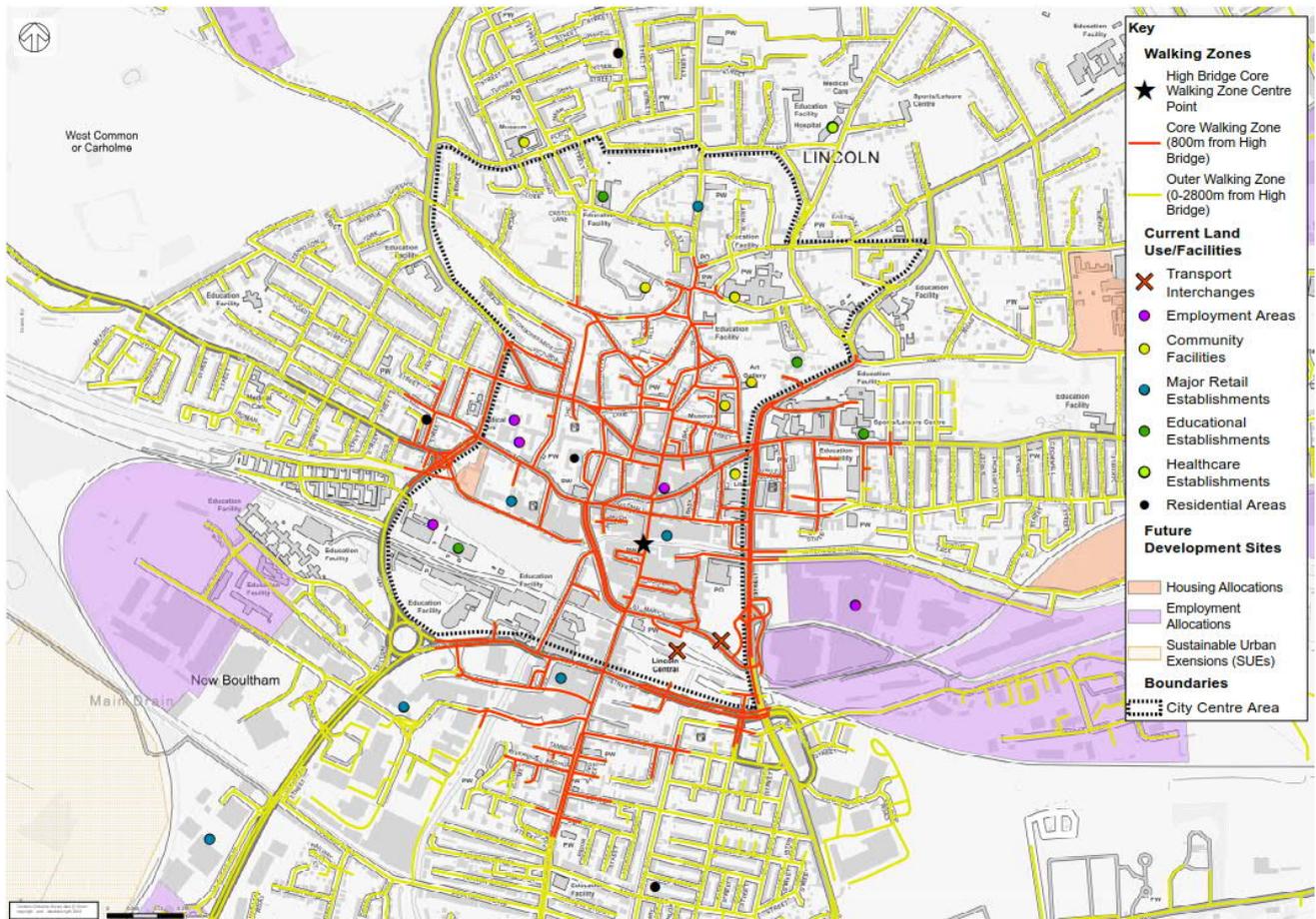
3.7.2. It also shows the cycle hire locations around the city centre for the Lincoln Hirebike scheme and the most popular cycle routes between cycle hire locations, as provided by LCC. It shows that the north-south trips and trips generally in the north of the city centre are limited.



**Figure 3-9 - Cycle Counts and Most Popular Cycle Hire Routes**

### 3.8. CORE WALKING ZONE

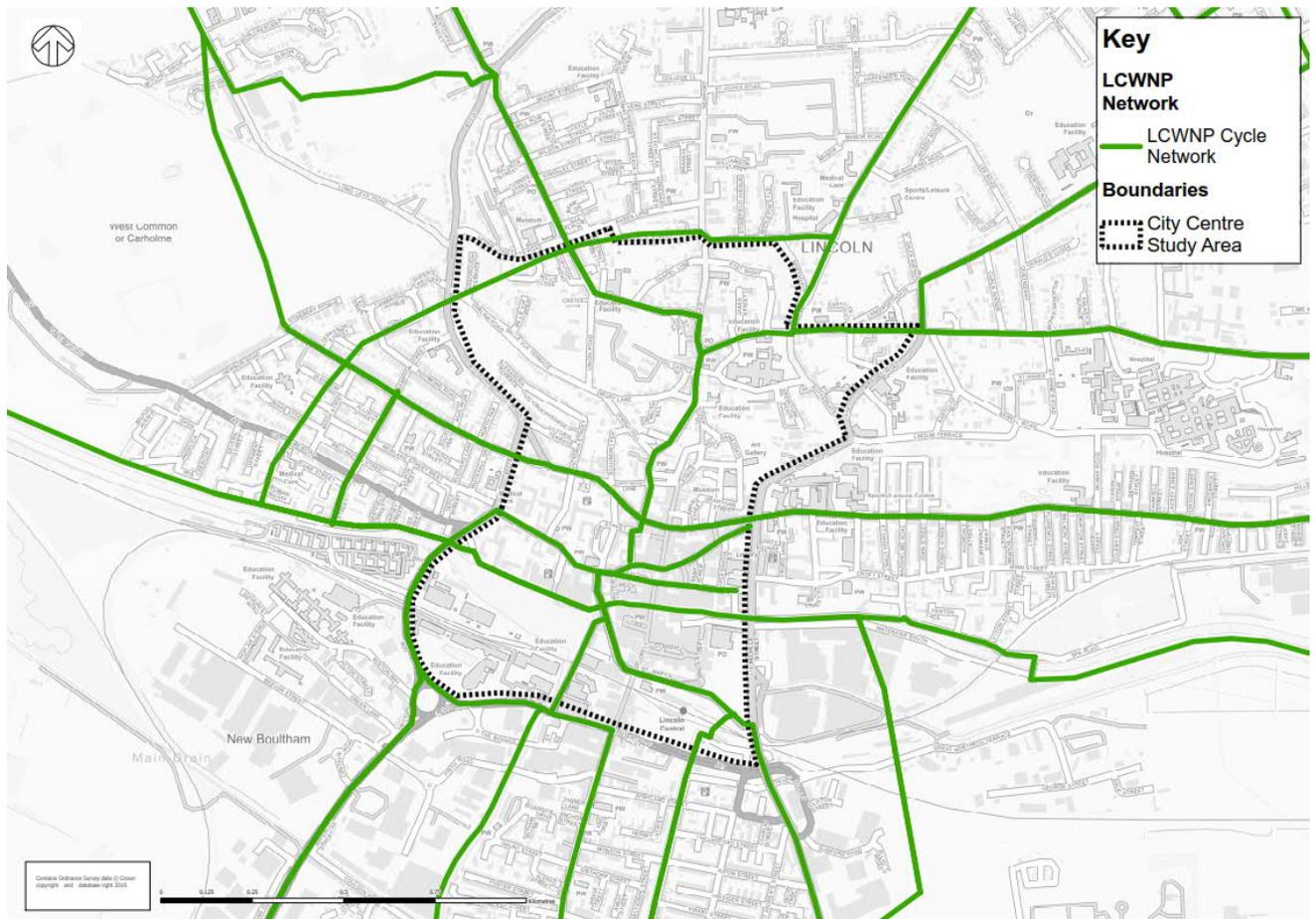
3.8.1. The plan in Figure 3-10 displays the Core Walking Zone (CWZ) in Lincoln city centre. The CWZ centre point was identified within the LCWNP project as High Bridge, crossing the River Witham, and from here an 800m isochrone was assigned to the road network to form the CWZ. The outer walking zone is also shown in Figure 3-10, based on a walking distance to the CWZ of up to 2km.



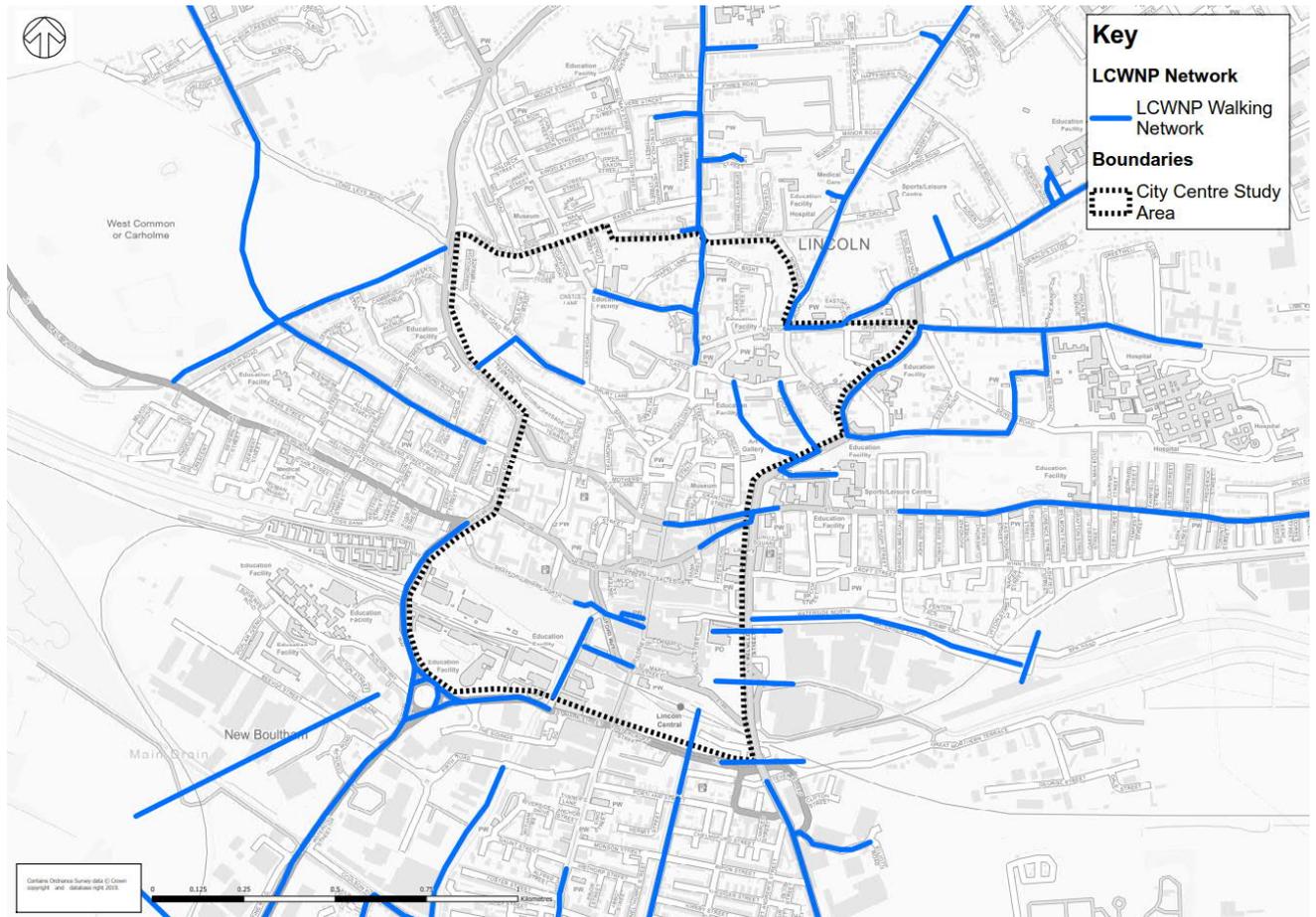
**Figure 3-10 - Core Walking Zone**

### 3.9. LCWNP PROPOSALS

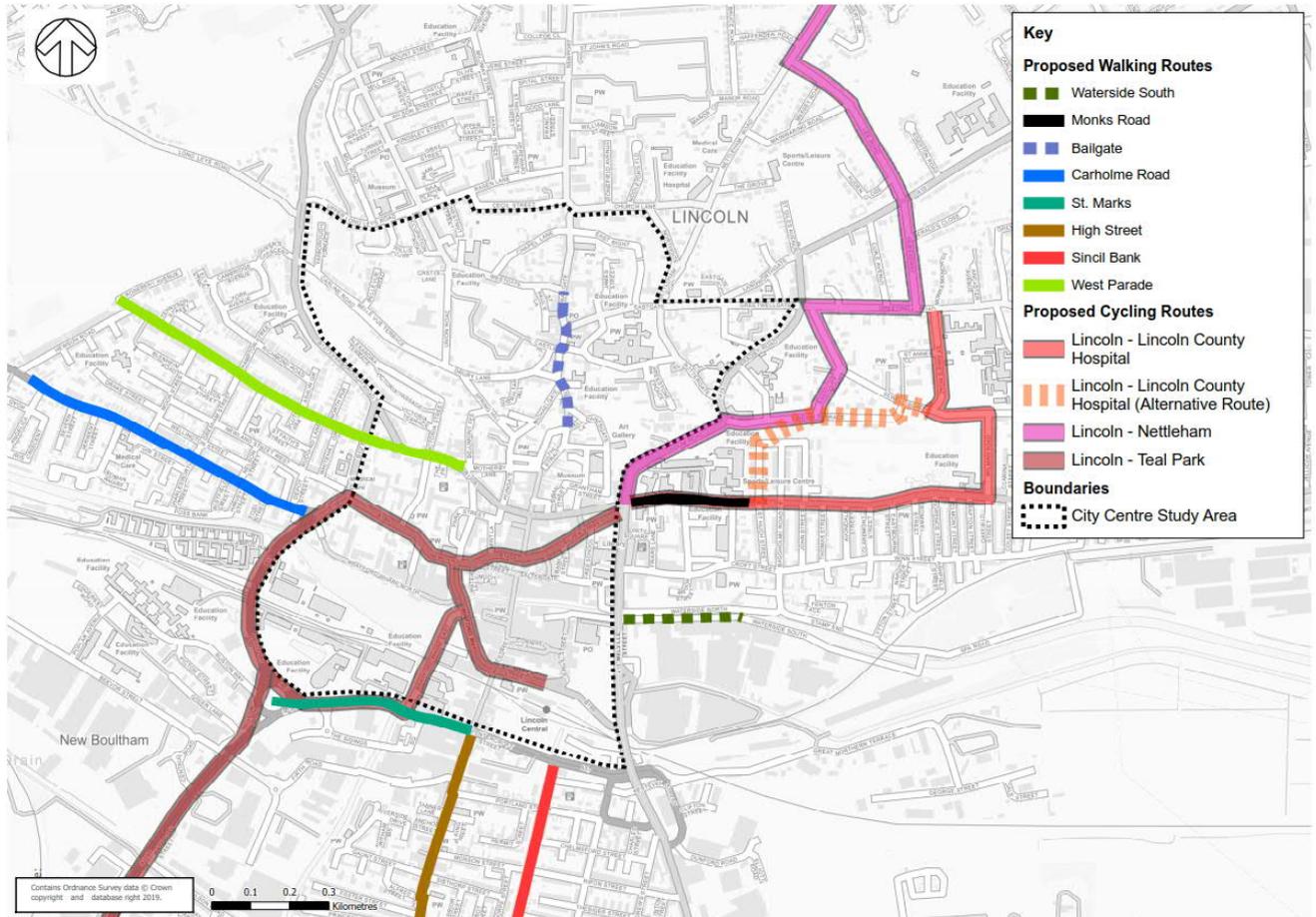
- 3.9.1. The cycling and walking network outlined within the LCWNP project can be seen in Figure 3-11 and Figure 3-12. The cycling network, although outlined within the Lincoln city centre study boundary within the LCWNP project, is reassessed in detail within this focussed city centre project as it was identified that this required further analysis in order to define routes. The walking network highlights the most important walking routes to the CWZ as outlined within the LCWNP project.
- 3.9.2. Figure 3-13 shows the priority cycling and walking routes identified within the LCWNP project, where more focused analysis of the cycling and walking infrastructure requirements was undertaken. It was appreciated within the study that further analysis was required for the city centre infrastructure interventions, which this project provides.



**Figure 3-11 - LCWNP Cycling Network**



**Figure 3-12 - LCWNP Walking Network**



**Figure 3-13 - Proposed City Centre Walking and Cycling Network**

## 4. LINCOLN CITY CENTRE CYCLING AND WALKING NETWORK DEVELOPMENT

### 4.1. DESIRE LINE ANALYSIS

4.1.1. The identification of priority cycling and walking routes for Lincoln city centre has been developed methodically, firstly with the identification of city centre zones in agreement with LCC, as follows:

- Brayford Waterfront
- Cultural Quarter
- Cathedral Quarter
- High Street Quarter
- Lincoln West

4.1.2. Proxy central points were then added to the city centre zones. Desire lines were then added between the city centre zone proxy points and the points where the cycle network intersects with the city centre boundary. The cycle network used was that developed within the LCWNP project.

4.1.3. The city centre zones and resulting desire lines are shown in Figure 4-1 alongside the origin and destination points.

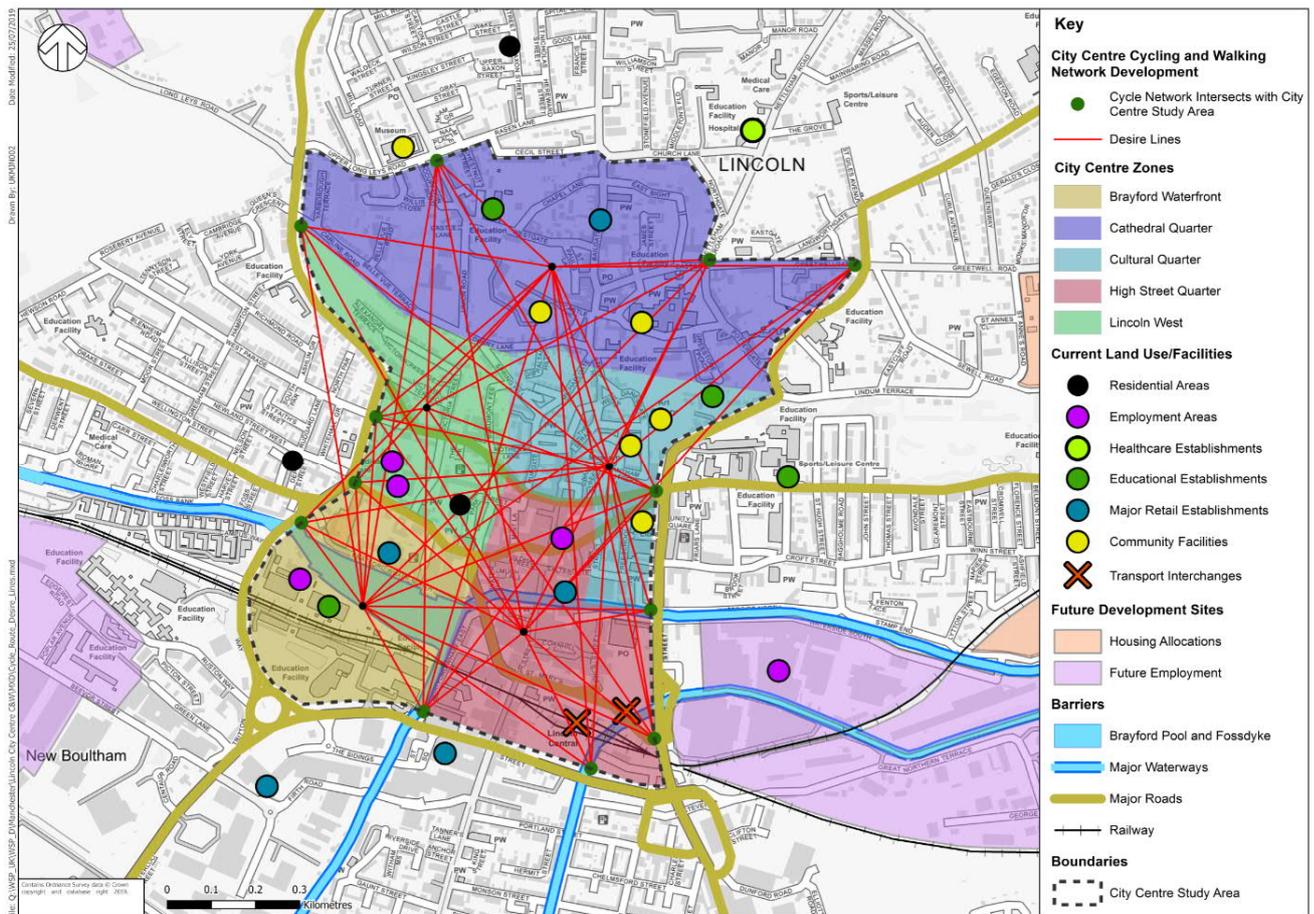
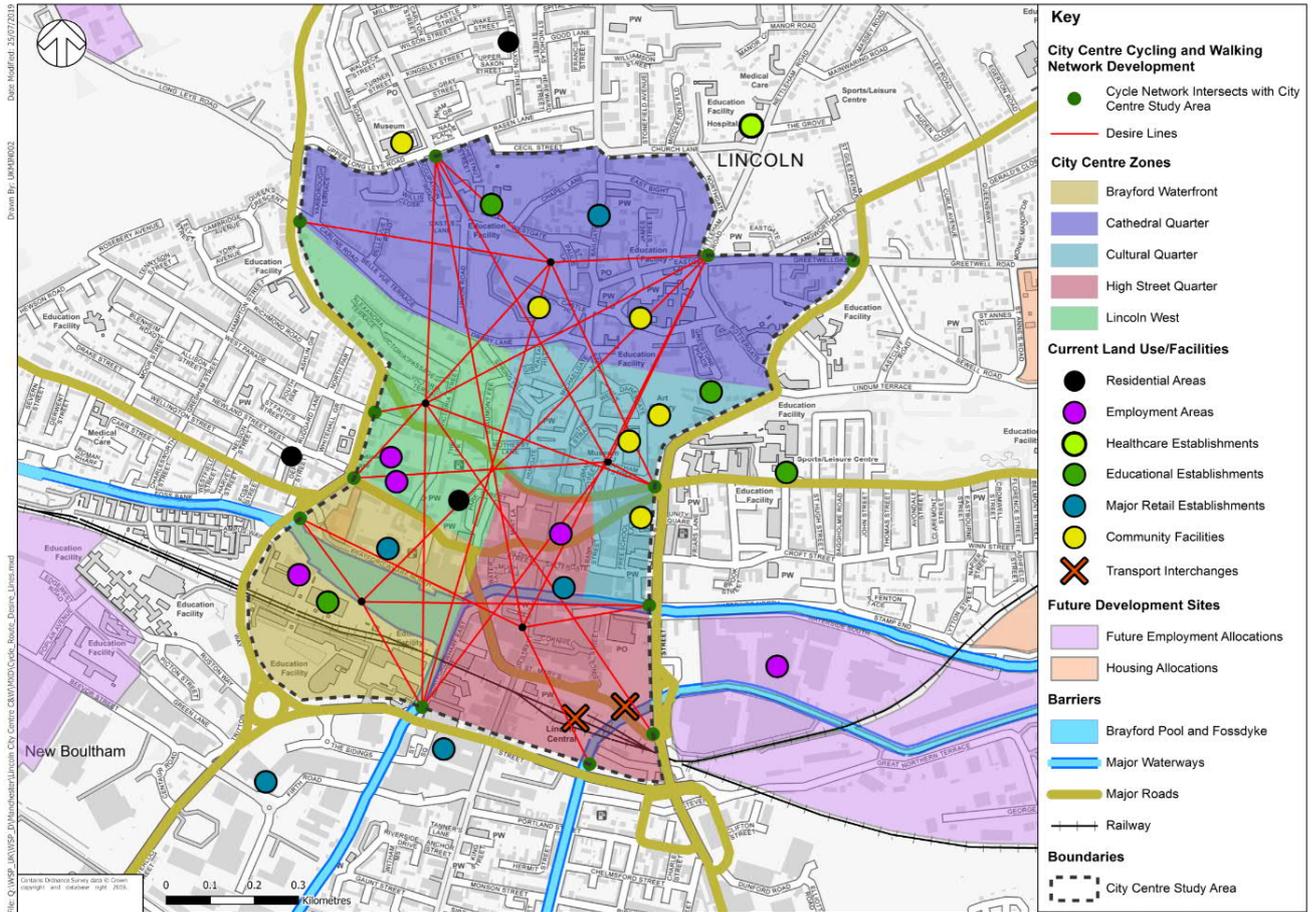


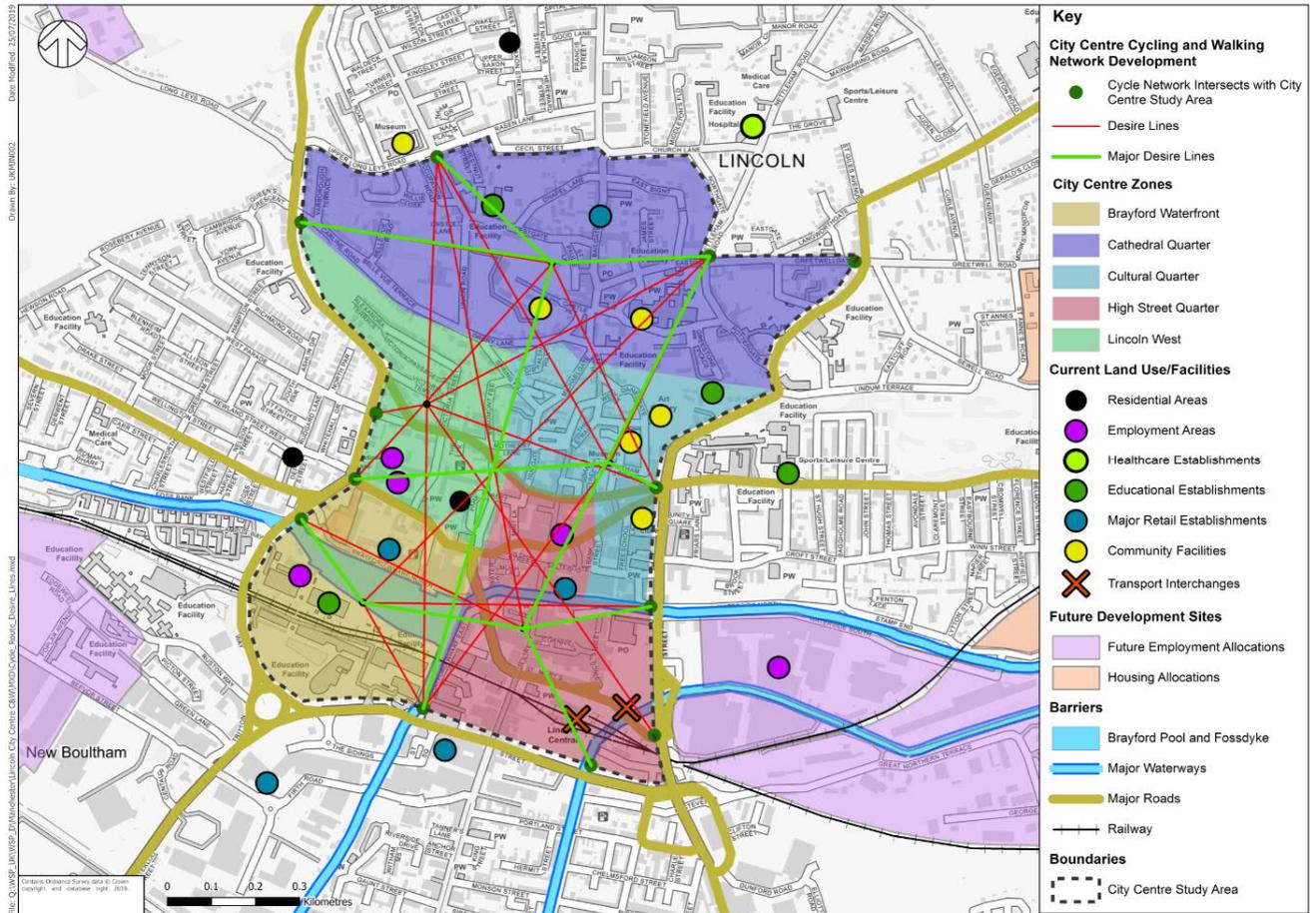
Figure 4-1 - City Centre Zones and Desire Lines

4.1.4. A second iteration of the plan was produced, as shown in Figure 4-2, with a reduced number of desire lines using only those from each major direction, in order to simplify the plan and identify strong patterns of movement.



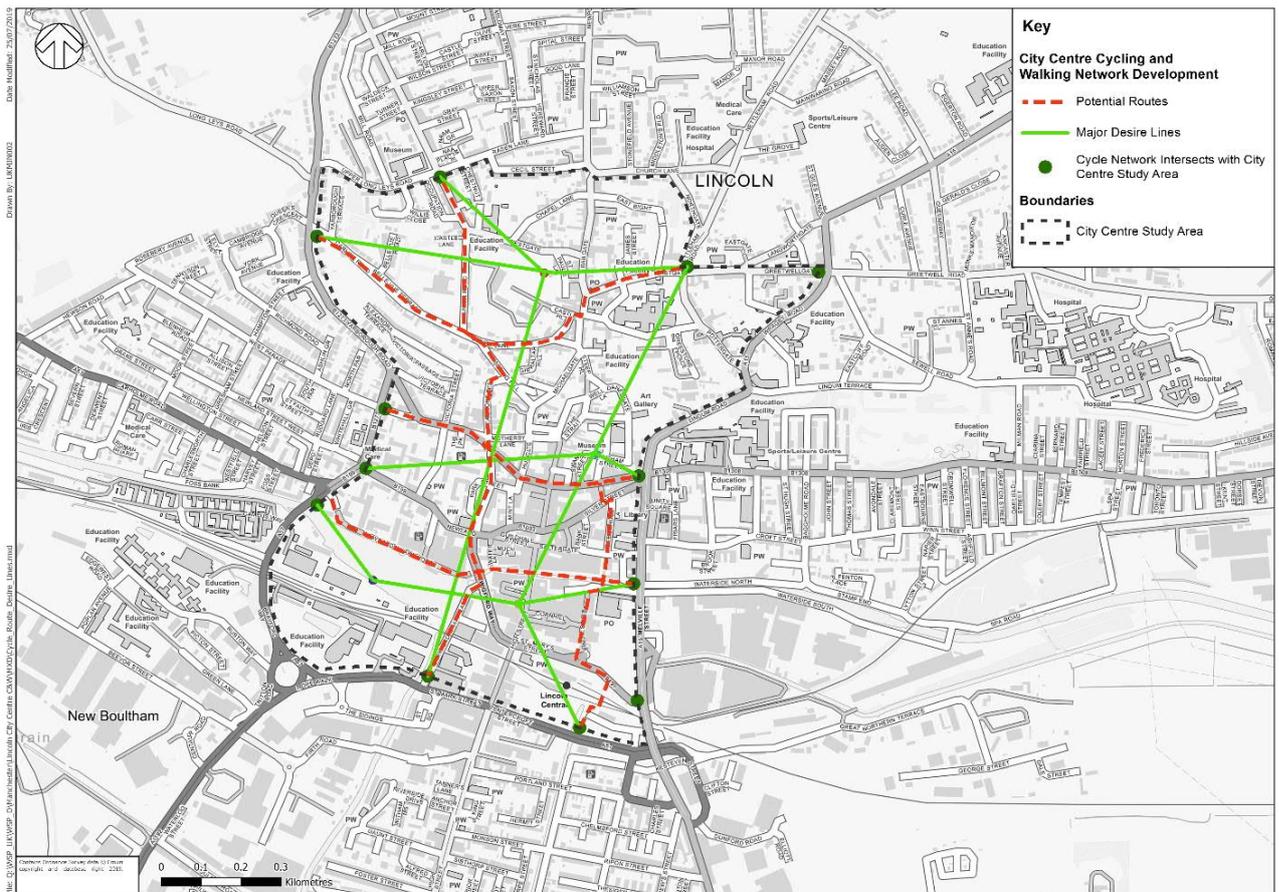
**Figure 4-2 - Second Iteration Showing City Centre Desire Lines**

4.1.5. From the second iteration of the plan, two north-south and three east-west desire lines were marked on to further consolidate the desire lines. This is presented in Figure 4-3. This approach was taken to create a mesh of desire lines from which to design the network. The mesh is based on the DfT LCWIP technical guidance advising that cycle users should typically not have to travel more than 400m to get between cycle routes of similar quality.



**Figure 4-3 - Consolidated City Centre Desire Lines**

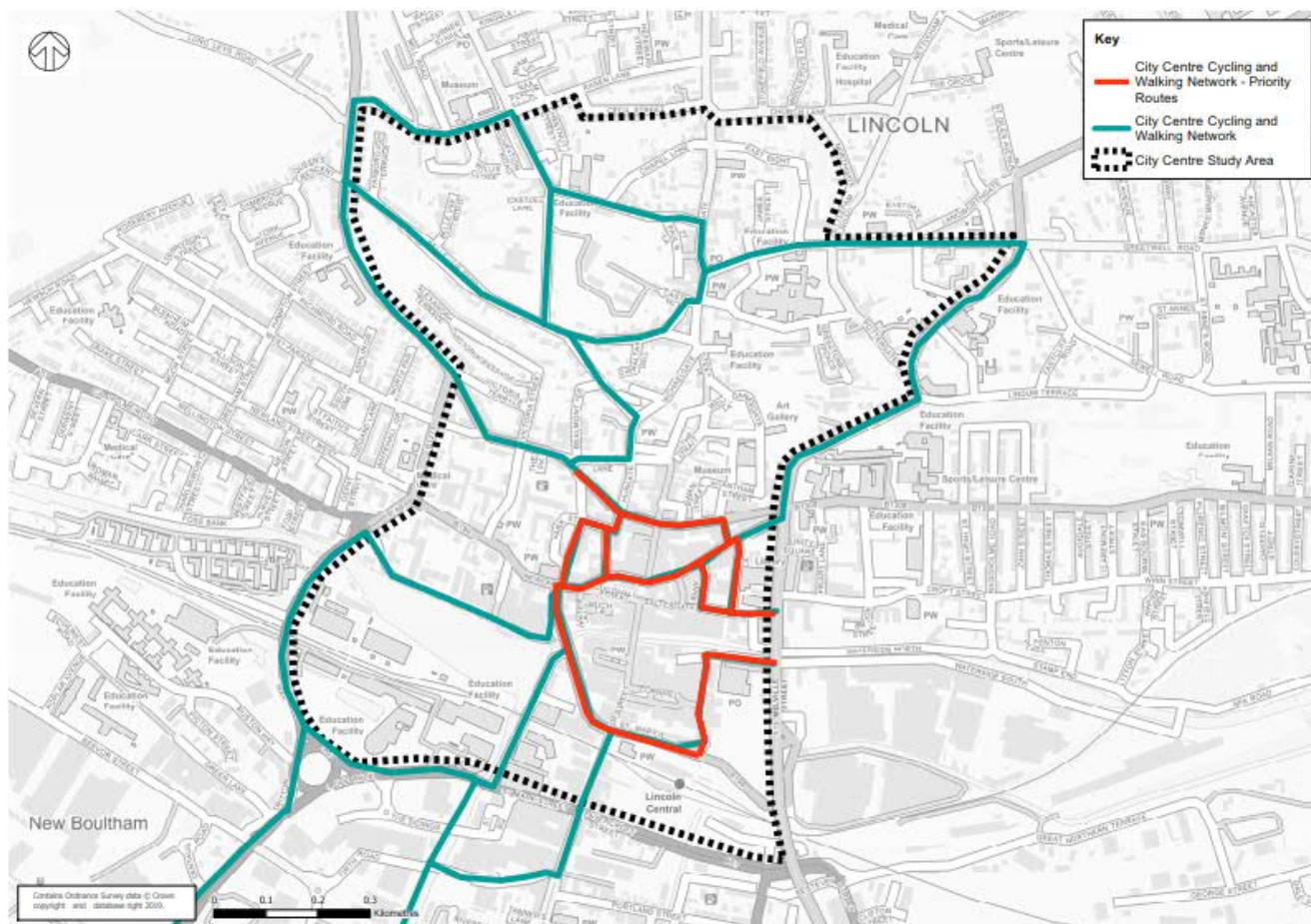
- 4.1.6. Lastly, the consolidated desire lines were converted into potential cycling and walking routes on the existing road network. Figure 4-4 shows these potential cycling and walking routes.
- 4.1.7. The potential east-west routes pass along the following streets:
- the north embankment of the Brayford Pool and River Witham
  - Western Parade, Corporation Street and Clasketgate
  - Drury Lane and Eastgate
- 4.1.8. The potential north-south routes pass along the following streets:
- Oxford Street, Sincil Street, Free School Lane, Flaxengate
  - Brayford Wharf, Wigford Way, Beaumont Fee, Spring Hill, Union Road, Burton Road



**Figure 4-4 – Potential Cycling and Walking Routes**

## 4.2. LINCOLNSHIRE COUNTY COUNCIL VALIDATION

- 4.2.1. Reviewing the above, a proposal was developed with LCC for the city centre cycling and walking network including the identified priority routes. The proposed Lincoln city centre cycling and walking network and priority routes are shown in Figure 4-5.



**Figure 4-5 - City Centre Cycling and Walking Network**

### 4.3. SITE VISIT OVERVIEW

- 4.3.1. Lincoln city centre site visits were held on Tuesday 30th July 2019 and Wednesday 31st July 2019. These were attended by Philip Watt (LCC), Sam Fleming (WSP) and Andrew Binder (WSP). The focus of the site visit was on the agreed city centre cycling and walking network (as shown in Figure 4-5).
- 4.3.2. The site visit was held to develop an understanding of the existing transport infrastructure along the proposed Lincoln city centre cycling and walking network in order to develop cycling and walking infrastructure options.
- 4.3.3. It was agreed with LCC that although the whole city centre cycling and walking network would be considered, the focus would be on the city centre cycling and walking priority routes shown in red in Figure 4-5, as it was agreed that these sections of the network are likely to be the most deliverable and effective in terms of increasing cycling and walking levels.
- 4.3.4. The priority routes were therefore looked at in more detail on the site visit, in order to provide high-level cycling and walking infrastructure options, provided in Section 6.3 of this report.

- 4.3.5. The priority city centre cycling and walking network was assessed by WSP with consideration of the core cycling and walking design outcomes, the Healthy Streets approach and street function.
- 4.3.6. The five core design outcomes for cycling and walking infrastructure that were considered are as follows:
- Attractiveness
  - Comfort
  - Directness
  - Safety
  - Coherence
- 4.3.7. Gradient was also considered as this is an important factor on the propensity to cycle.
- 4.3.8. Transport for London's (TfL) Healthy Streets approach which evaluates 10 key indicators of healthy streets was also considered:
- Pedestrians from all walks of life
  - People choose to walk, cycle and use public transport.
  - Clean air
  - People feel safe
  - Not too noisy
  - Easy to cross
  - Places to stop and rest
  - Shade and shelter
  - People feel relaxed
  - Things to see and do
- 4.3.9. The street function (movement vs place) was also assessed with the site visit used to understand the street function – how the streets are currently used, considering their role in place and movement and how this might change. Place and movement are defined as follows:
- Place – a focus on living and function
  - Movement – a focus on moving people efficiently and reliably.
- 4.3.10. The cycling and walking infrastructure core design outcomes, Healthy Streets approach and movement and place street function were used to develop a street-type intervention framework, which is detailed in Section 5.

## 4.4. CYCLE PARKING

- 4.4.1. Cycle parking is an essential part of cycle infrastructure and a sufficient number of convenient cycle parking spaces should be provided. When considering cycle parking, particular attention should be provided to the following:
- Close proximity to the destination (of particular importance in a short duration context, for example shopping), and
  - Security related to the parking duration context – higher security for longer duration
- 4.4.2. Cycle parking provision has been considered along the identified city centre priority routes using up-to-date guidance. Key cycle parking principles are set out below.
- 4.4.3. LCDS states that cycle parking should be:

- Fit-for-purpose – meeting future demand, accommodating short and long stays and different cycle types.
- Secure – either in secure compounds or outdoor places that have plenty of natural surveillance.
- Well-located – convenient, accessible, close to the destination, and preferably sheltered.

4.4.4. These primary requirements were assessed as part of this study, with recommendation provided in Section 6.5.

4.4.5. In addition to these primary requirements, cycle parking should also have an inclusive design for cycle users who have physical, sensory or cognitive impairments and the following approach is recommended:

- Step free access
- Signing to accessible facilities
- Adequate space for larger cycle models

4.4.6. Cycle parking is necessary at various locations and the provision will vary at these locations. These include places of residence; short stay destinations such as shops and cafes; or long-stay destinations such as work and education. They also include transport interchanges.

4.4.7. Design of short stay parking is heavily focussed on proximity to the destination. Longer stay parking is mainly concerned with security as users are expected to be further away from their cycles for longer periods. Yet longer stay parking should also consider use of shelter, ease of access, and walking distances to the final destination.

4.4.8. Section 6.5 presents a proposal for cycle parking along the priority city centre cycling and walking routes.

## 5. LINCOLN CITY CENTRE STREETS FRAMEWORK

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- 5.1.1. To consider the role of movement and place on Lincoln city centre's streets, a Lincoln City Centre Streets Framework has been developed. This Framework is based and adapted from the TfL Streetscape Classification and from LCDS, whereby streets are categorised based on the relative strength of the place and movement functions of a street. The Framework allows cycling infrastructure interventions to be approached based on their street classification.
- 5.1.2. The Framework is presented in Table 5-1, which provides examples of where each street classification can be found in Lincoln city centre, accompanied by a description of each street type and the cycle infrastructure applicable. The street type categories are as follows and are explained in more detail in Table 5-1:
- City Place
  - Square
  - Local Street
  - City Street
  - Commercial Street
  - Connector
- 5.1.3. Table 5-1 provides examples of intervention which are based on the typical features of the street type. When choosing the type of infrastructure to be implemented, the traffic flow and traffic speed should be primary considerations. Figure 5-1 provides guidance on what level of protection should be provided for cycling dependent on the traffic flow and speed.
- 5.1.4. Table 5-1 and Figure 5-1 are used to advise the infrastructure options provided in Section 6.

Table 5-1 - Lincoln City Centre Streets Framework

Greater Place Function ↑					Greater Movement Function →					
Street Type	Location Examples	Typical Features	Examples of Intervention	Lincoln City Centre Example	Street Type	Location Examples	Typical Features	Examples of Intervention	Lincoln City Centre Example	
<b>City Place</b>	Steep Hill	Pedestrian priority	Integration (cycle street, mixed traffic)		<b>City Street</b>	High Street	Pedestrianisation	Integration (cycle street)		
	Lincoln Castle	Very limited vehicle access				Steep Hill	High footfall			Vehicle access restricted
Brayford Wharf North	Some active frontages	Brayford North Wharf	Active frontages (retail) with activity spilling onto street in places							
<b>Square</b>	Grantham Street	Higher quality streetscape and carriageway surfacing	Integration (cycle street, mixed traffic)			Mint Street	Active frontages (mainly commercial, but some office)	Dedicated cycle tracks		
	Flaxengate	Limited access to residential properties and car parks				Silver Street	Little vehicle access restrictions			
	Danes Terrace	Residential roads primarily consisting on terraced or semi-detached properties.				Clasketgate	Parking/loading bays present			
	The Strait					Residential and employment land uses. Few active frontages. Dominance of car reflected by car parks and parking restrictions.	Corporation Street			
	Lincoln Cathedral	Integration (cycle street, mixed traffic)					West Parade			
<b>Local Street</b>	Greetwell Gate		Integration (cycle street, mixed traffic)	Wigford Way		Dedicated cycle tracks				
	West Parade			Oxford Street (St Mary's Street)	General traffic movement focus reinforced by infrastructure design, such as guardrail					
	Beaumont Fee	Broadgate								
Saxon Street	Integration (cycle street, mixed traffic)	Pelham Street	Dedicated cycle tracks							
East West Link Road		Newland								

**Figure 5-1 - Protected Space for Cycling - Relationship with Speed and Traffic Flow**

Speed Limit <sup>1</sup>	Motor Traffic Flow (pcu/24 hour) <sup>2</sup>	Protected Space for Cycling			Cycle Lane (mandatory/ advisory)	Mixed Traffic
		Fully Kerbed Cycle Track	Stepped Cycle Track	Light Segregation		
20 mph <sup>3</sup>	0					
	2000					
	4000					
	6000+					
30 mph	0					
	2000					
	4000					
	6000+					
40 mph	Any					
50+ mph	Any					

- Provision suitable for most people
- Provision not suitable for all people and will exclude some potential users and/or have safety concerns
- Provision suitable for few people and will exclude most potential users and/or have safety concerns

**Notes:**

1. If the 85<sup>th</sup> percentile speed is more than 10% above the speed limit the next highest speed limit should be applied
2. The recommended provision assumes that the peak hour motor traffic flow is no more than 10% of the 24 hour flow
3. In rural areas achieving speeds of 20mph may be difficult, and so shared routes with speeds of up to 30mph will be generally acceptable with motor vehicle flows of up to 1,000 pcu per day

## 6. CITY CENTRE ROUTE OPTION DEVELOPMENT

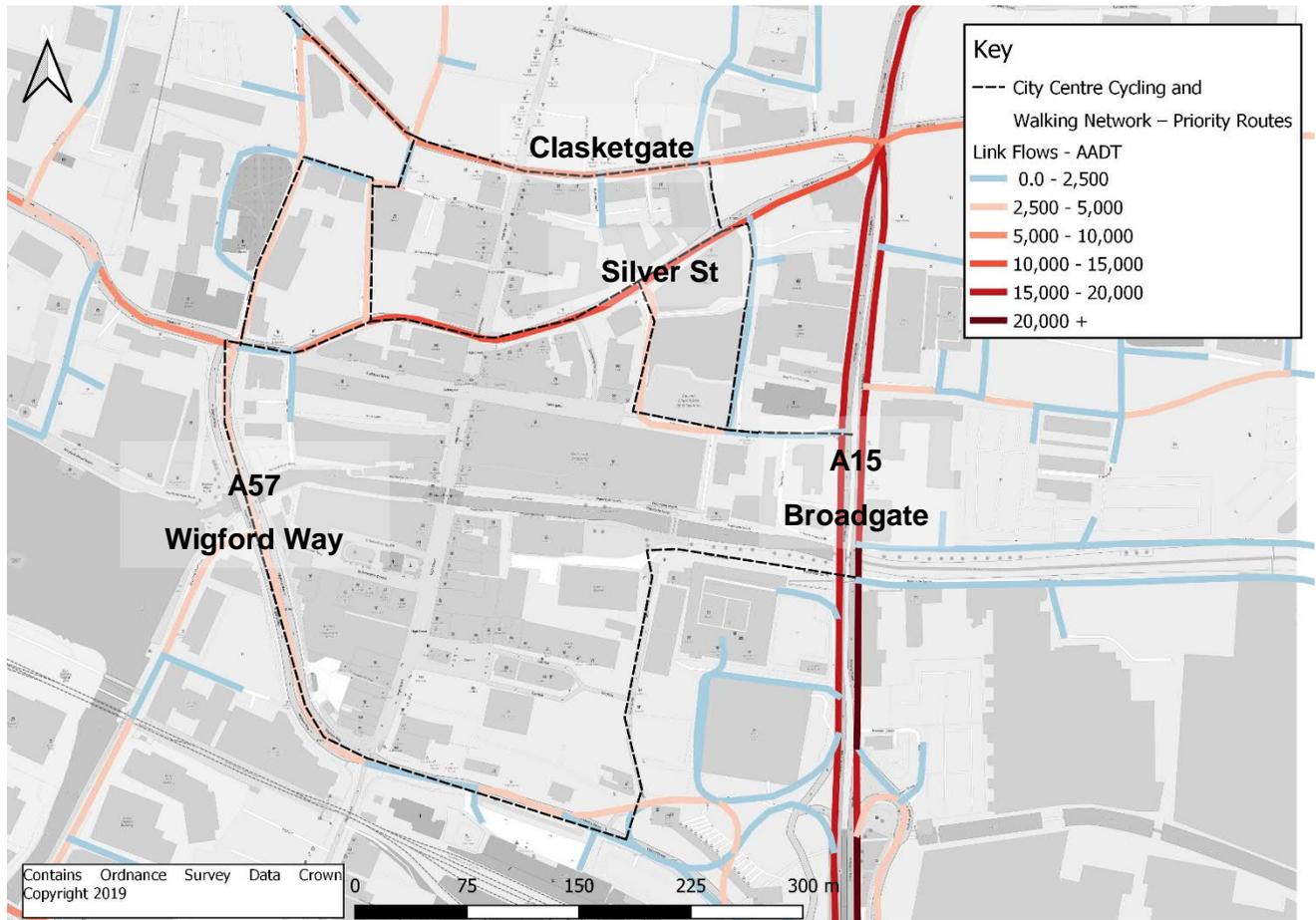
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- 6.1.1. This section provides data analysis and option development for the priority city centre cycling and walking routes.
- 6.1.2. The data analysis includes datasets that have particular relevance when considering appropriate cycling and walking infrastructure options. This includes:
  - Traffic Flows
  - Traffic Speed
  - Bus Routes and Stops
  - Local Access and Loading/Parking
  - Street Types of Priority Routes

### 6.2. PRIORITY ROUTE DATA ANALYSIS

#### TRAFFIC FLOWS

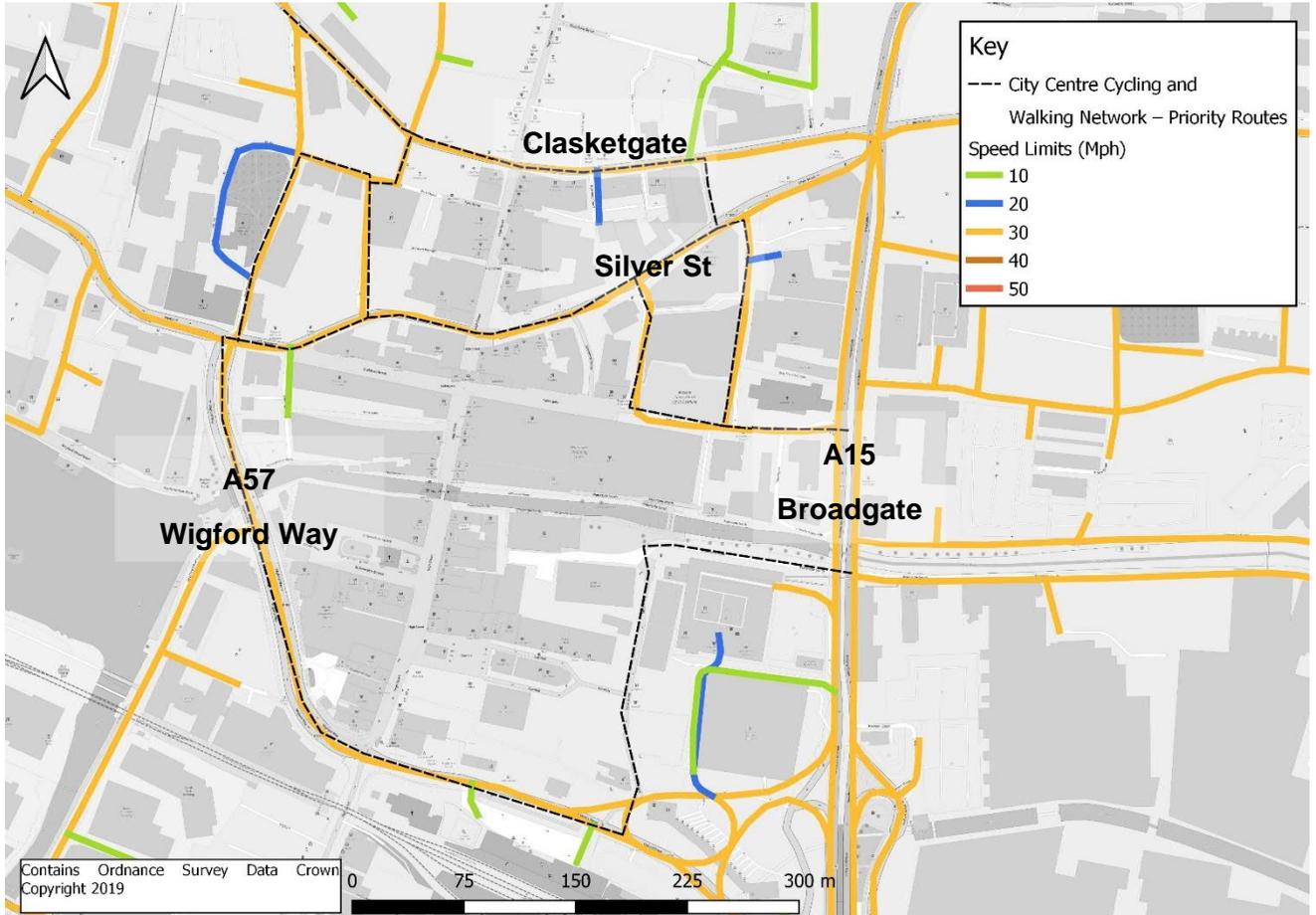
- 6.2.1. In order to understand the volume of traffic on Lincoln city centre's streets, The Greater Lincolnshire Transport Model (GLTM) has been used. The model provides the Annual Average Daily Traffic (AADT) flows for the model base year of 2016. As seen in Figure 5-1, AADT flow impacts on what level of cycle infrastructure should be provided.
- 6.2.2. The Lincoln city centre AADT flows can be seen in Figure 6-1. It shows the highest flows are along the A15 Broadgate and along Silver Street. These existing high AADT flows of above 5,000 require protected space for cycling, as seen in Figure 5-1. Alternatively a plan for reducing the traffic flow is required, in order for mixing with traffic to be acceptable. It is anticipated that with the introduction of the Lincoln Eastern Bypass, that traffic levels on the A15 Broadgate will reduce, presenting an opportunity for cycling and walking.



**Figure 6-1 - Lincoln City Centre AADT Flows**

**TRAFFIC SPEED**

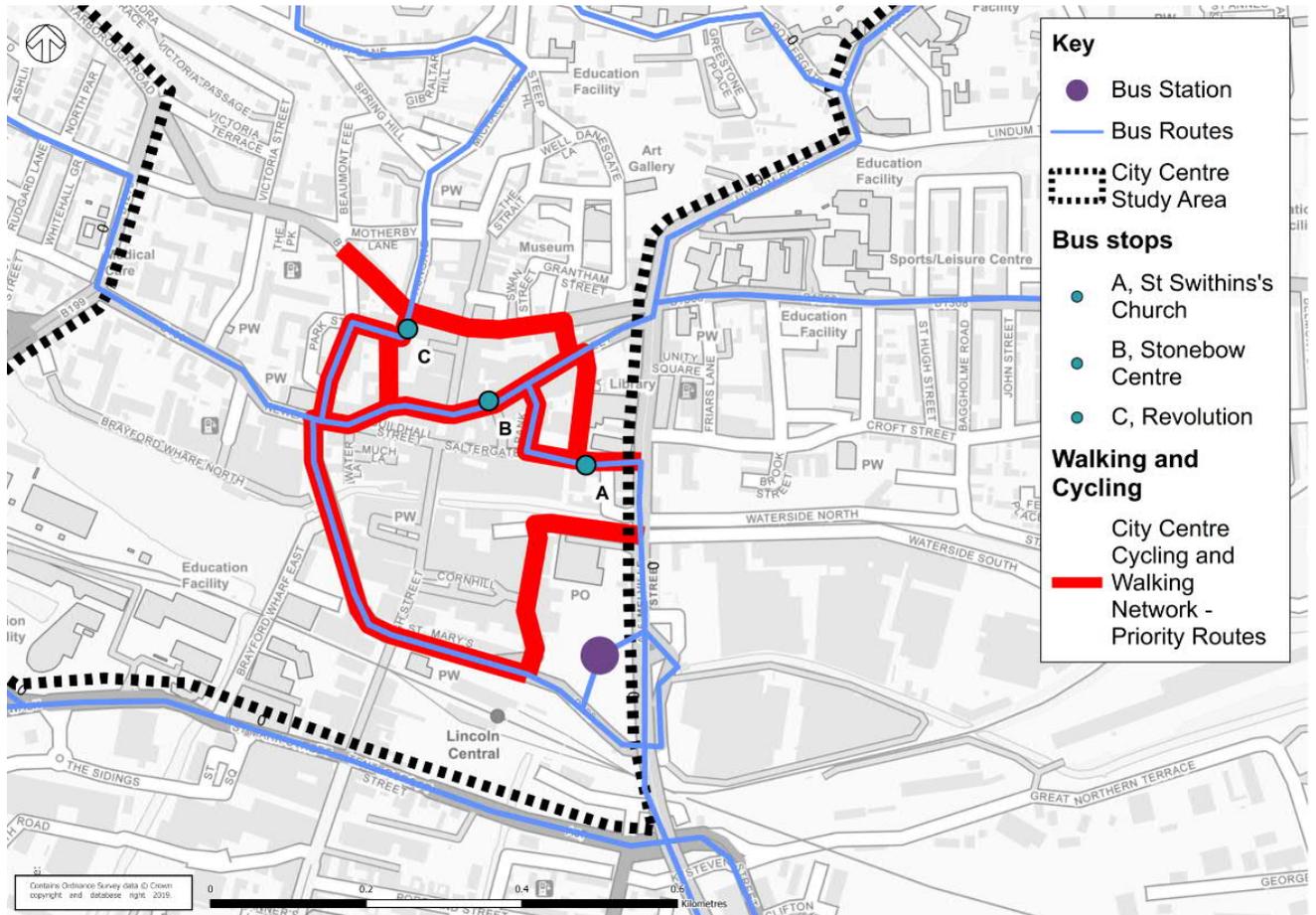
- 6.2.3. The GLTM includes speed limits, which also provide an indication of the cycle infrastructure requirements, referencing against Figure 5-1.
- 6.2.4. The Lincoln city centre speed limits can be seen in Figure 6-2. It shows that there are a limited number of 20mph speed limits within Lincoln city centre. In order to provide an attractive environment for cycling and walking within this defined CWZ, a 20mph zone should be applied across the city centre.
- 6.2.5. With a view to traffic entering the city centre primarily for access to parking and deliveries, there should be no requirement for speeds above 20mph. A 20mph speed limit would reduce the requirement to provide separated infrastructure for different modes.



**Figure 6-2 - Lincoln City Centre Speed Limits**

**BUS ROUTES AND STOPS**

6.2.6. The bus stops and bus routes along the priority network for cycling and walking, are shown in Figure 6-3.



**Figure 6-3 - Bus Stops along Priority Cycling Routes**

6.2.7. The bus stops and the bus routes they serve are detailed in Table 6-1, Table 6-2 and Table 6-3. The Walk & Ride shuttle bus runs within the centre of the city, throughout the day, six days a week.

**Table 6-1 - Bus Stop A – ‘St Swithin’s Church’, St Swithin’s Square – Westbound**

Bus Service	Route	Maximum Weekday Services	Maximum Weekend Services
4	Central Bus Station - Nettleham	6 / day	16 / day
4 - Simplibus	Central Bus Station - County Hospital	24 / day	46 / day
17 - Simplibus	Lincoln North Circular	3 / day	36 / day
18 - Simplibus	Lincoln North Circular	1 / day	36 / day
29	Bardney War Memorial - Central Bus Station	1 / day	No Service
510	Central Bus Station - William Farr School Bus Park	1 / day	No Service
535	Lincoln South Circular	1 / day	No Service

Bus Service	Route	Maximum Weekday Services	Maximum Weekend Services
551	Cherry Willingham – Washingborough	1 / day	No Service
CT1 (City Tour),	CT1 (City Tour),	1 / day	No Service
M1	Anwick - North Hykeham	1 / day	1 / day
M2	Anwick – Lincoln	3 / day	2 / day

**Table 6-2 - Bus Stop B - ‘Stonebow Centre’, B1003 Silver Street - Eastbound**

Bus Service	Route	Maximum Weekday Services	Maximum Weekend Services
23	Market Rasen - Sudbrooke – Lincoln	2 / day	No Service
9811	Brigg – Lincoln	1 / day	No Service
Lincoln Walk and Ride (Circular)	The Stonebow Centre – Park Street	24 / day	48 / day

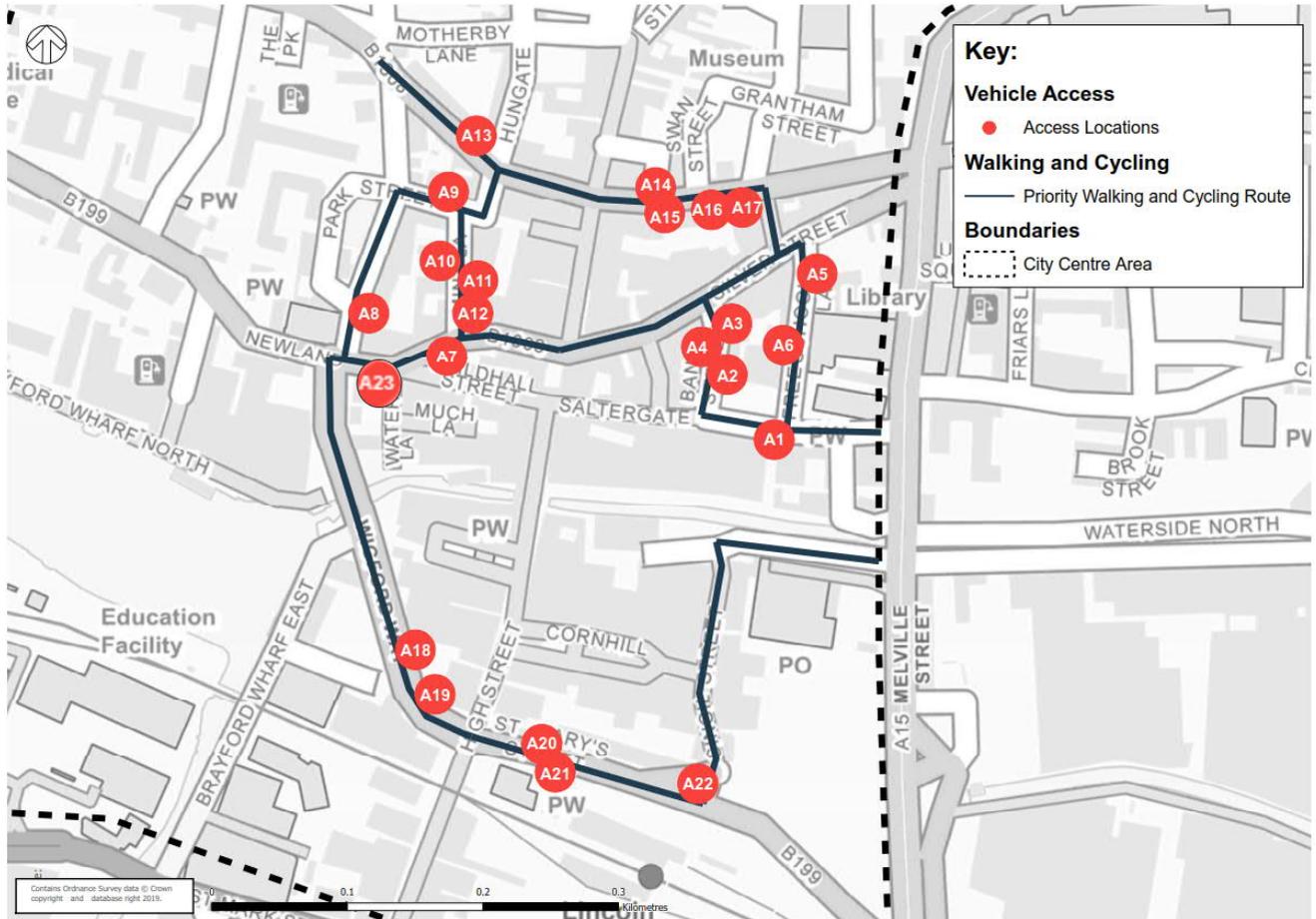
**Table 6-3 - Bus Stop C - ‘Revolution’, Hungate - Southbound**

Bus Service	Route	Maximum Weekday Services	Maximum Weekend Services
Lincoln Walk and Ride (Circular)	The Stonebow Centre – Park Street	24 / day	48 / day

## LOCAL ACCESS AND LOADING/PARKING

### Local Access

- 6.2.8. Table 6-4 identifies the local vehicles accesses along the priority cycle and walking routes, excluding side roads. This is carried out on a street by street basis with locations referenced on the plan shown in Figure 6-4.



**Figure 6-4 – Local Access Locations**

**Table 6-4 – Local Access Information**

Street Name	Description of Access
Saltergate/ St Swithin’s Square	A1 - Waterside shopping servicing and delivery access
Bank Street	A2 - Private access to front of St. Swithin’s House A3- Private access to loading area behind Bank Street apartments A4 - Access to car park behind Queensgate house
Free School Lane	A5 - Access to Lincoln Central Car Park A6 - Access to Loading Bay linking Free School lane to Bank Street
Mint Street	A7 - Access to small gated area on south side of Mint Street
Beaumont Fee	A8 - Access to car park beside 4A Beaumont Fee
Park Street	A9 - Access to indoor ground-floor car park beside Age UK
Mint Lane	A10 - Access to car park on west side of Mint Lane A11 - Access to House of Fraser loading bay

Street Name	Description of Access
	A12 - Access to small private car park at Mint Street end of Mint Lane
West Parade	A13 - Access to NCP
Clasketgate	A14 - Access along Kings Arms Yard to parking area at rear of buildings A15 - Access to car parking areas on Butchery Court A16 - Access to car park opposite Swan Street A17 - Access into garage opposite Flaxengate
Wigford Way	A18 - First access to car park in front of Boots A19 - Second access to car park in front of Boots
St Mary's Street	A20 - Staff parking access for Nationwide A21 - Access to short stay car park of Lincoln station A22 - Access for servicing at the front of Lincoln bus station
Newland	A23 – Water Lane

## Parking

6.2.9. The following streets include restricted parking facilities:

- Silver Street – disabled parking bays exist at intervals, and short stay standard bays available for approximately five vehicles.
- West Parade, Corporation Street and Clasketgate – each have several short stay standard parking bays.
- Free School Lane – a number of short stays bays and disabled parking bays.
- St Swithin's Square – approximately seven short stay parking bays outside of the Church.
- Mint Lane – disabled bays for approximately three vehicles.

## Loading

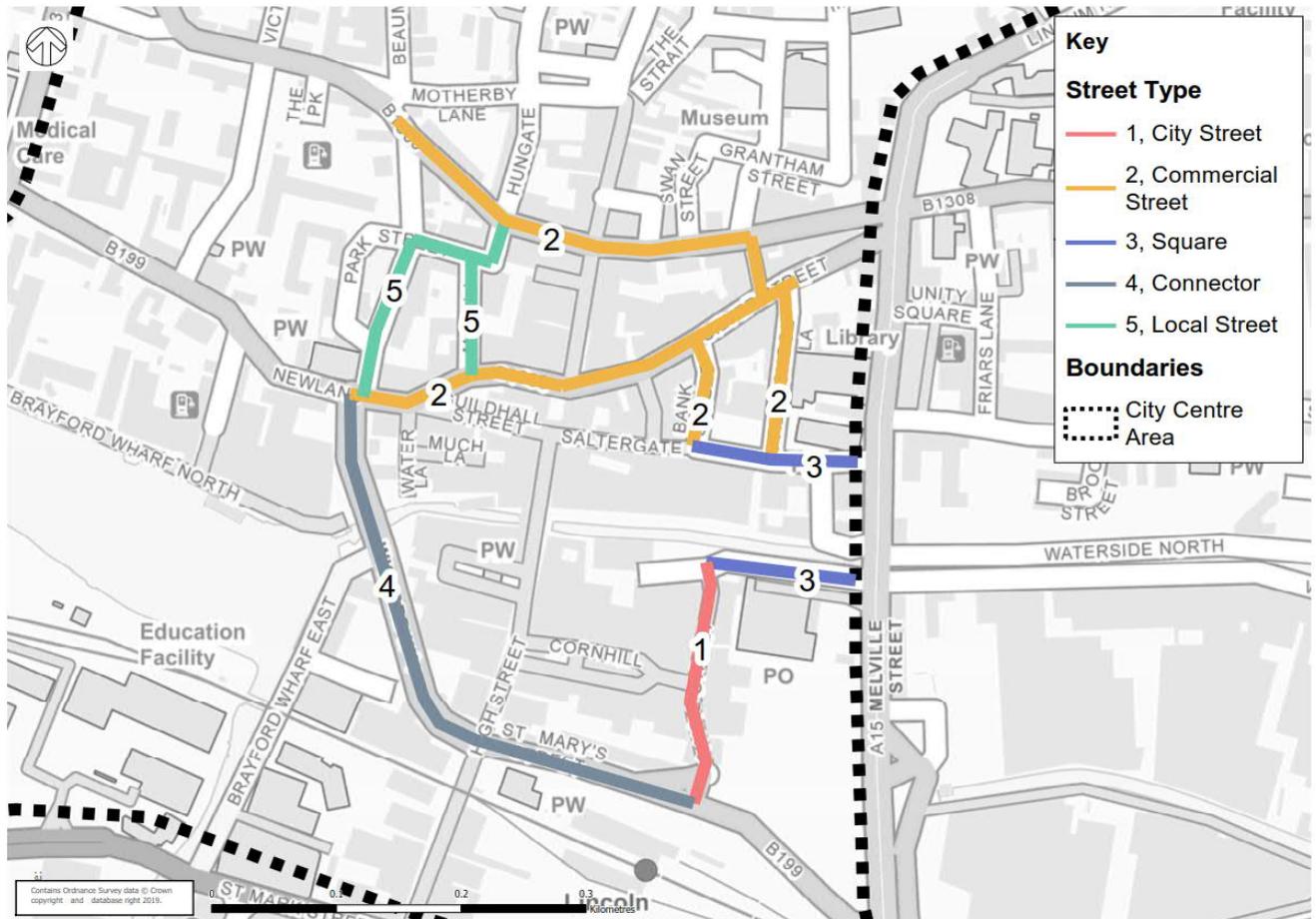
6.2.10. Loading is provided for several vehicles on Silver Street opposite Stonebrow Centre bus stop, and east of the bus stop on a built-out footway. There is additionally a loading bay area for two vehicles on Corporation Street.

## STREET TYPES OF PRIORITY ROUTES

6.2.11. Table 6-5 classifies the street types within the priority city centre routes of the cycling and walking network, based on the street type classification provided in Table 5-1. None of the priority routes include a street of type 'City Place', so this is not listed. Figure 6-5 shows a plan of these street classifications.

**Table 6-5 – Street Types within Priority City Centre Cycling and Walking Network**

<b>Street Type</b>	<b>Street</b>
<b>Connector</b>	Wigford Way St Mary's Street
<b>Commercial Street</b>	Newland/Mint Street Silver Street West Parade Corporation Street Clasketgate Free School Lane Bank Street Flaxengate
<b>City Street</b>	Sincil Street
<b>Local Street</b>	Beaumont Fee Mint Lane Park Street Hungate
<b>Square</b>	Saltergate/ St. Swithins Square Waterside South



**Figure 6-5 - Street Types within Priority City Centre Cycling and Walking Network**

### 6.3. CITY CENTRE CYCLING AND WALKING ROUTE INFRASTRUCTURE OPTIONS

- 6.3.1. Using the data analysis provided above, short and long-term improvements are provided in Table 6-7, including comprehensive cycle route signage and automatic cycle counters. Short term improvements could typically be implemented in up to 5 years and long-term improvements are likely to take up to 10 years to implement. A plan of the interventions is shown in Figure 6-6.
- 6.3.2. It is proposed that a 20mph speed limit is applied to all routes.
- 6.3.3. The infrastructure options provided in this LCCCWNP are for use in high level network planning and do not constitute design in a CDM context. Feasibility studies will need to be undertaken by the relevant authorities to assess whether the proposals are viable, which should take account of the CDM regulations.
- 6.3.4. Figure 6-7 provides examples of the proposed interventions.

#### COST ESTIMATES

- 6.3.5. The LCWIP Technical Guidance for Local Authorities provides indicative costs for cycling infrastructure that can be applied to the priority routes. The indicative costing applied in Table 6-7 can be seen in Table 6-6. It should be noted that the costs applied are at 2014-15 prices.



- 6.3.6. The costs provided are intended to provide for high quality cycling and walking facilities and therefore, top end costs have generally been provided. This is to ensure adequate costings are provided to cover the infrastructure required to make a step change in the number of cycling and walking journeys.

**Table 6-6 – Indicative Costs of Cycling Infrastructure at 2014-15 Prices**

<b>Scheme Type</b>	<b>Range of costs</b>	<b>Comments</b>
Cycle Superhighway	£1.15-1.45m/km £0.74m/km	Two-way physically segregated Two-way lightly segregated
Mixed Strategic Cycle Route	£0.46-0.88m/km	
Resurfaced cycle route	£0.14-0.19m/km	Canalside routes
Cycle bridge	£0.10-0.50m	Bridge upgrades not whole new bridges
20 mph zone	£10,000-15,000/km £2,000-3,000/km	Including traffic calming measures Without any traffic calming measures
Remodelled major junction	£1.56-1.61m £0.24m	Cycling-specific schemes Cycling piggybacking on traffic measures
Cycle crossing at major road	£0.14-0.41m	
Area-wide workplace cycle facilities	£0.20-0.75m £6,000-7,000	Programme cost Cost per workplace grant
Area-wide school and college cycle facilities	£0.22-1.16m £8,000-110,000	Programme cost Cost per school
Large-scale cycle parking	£2.5m £0.12-0.70m	For a very large bike park For 3,000 bikes for secure bike parks for 10-1000+ bikes, including changing and showers at the largest
Large-scale provision of bicycles	£1.41m £350	Programme cost Cost per bike provided
Comprehensive cycle route signage	£6,000/km	
Automatic cycle counters	£28,000 £6,000	Programme cost for one cross-city route Cost per counter

**Source: LCWIP Technical Guidance for Local Authorities (2017)**

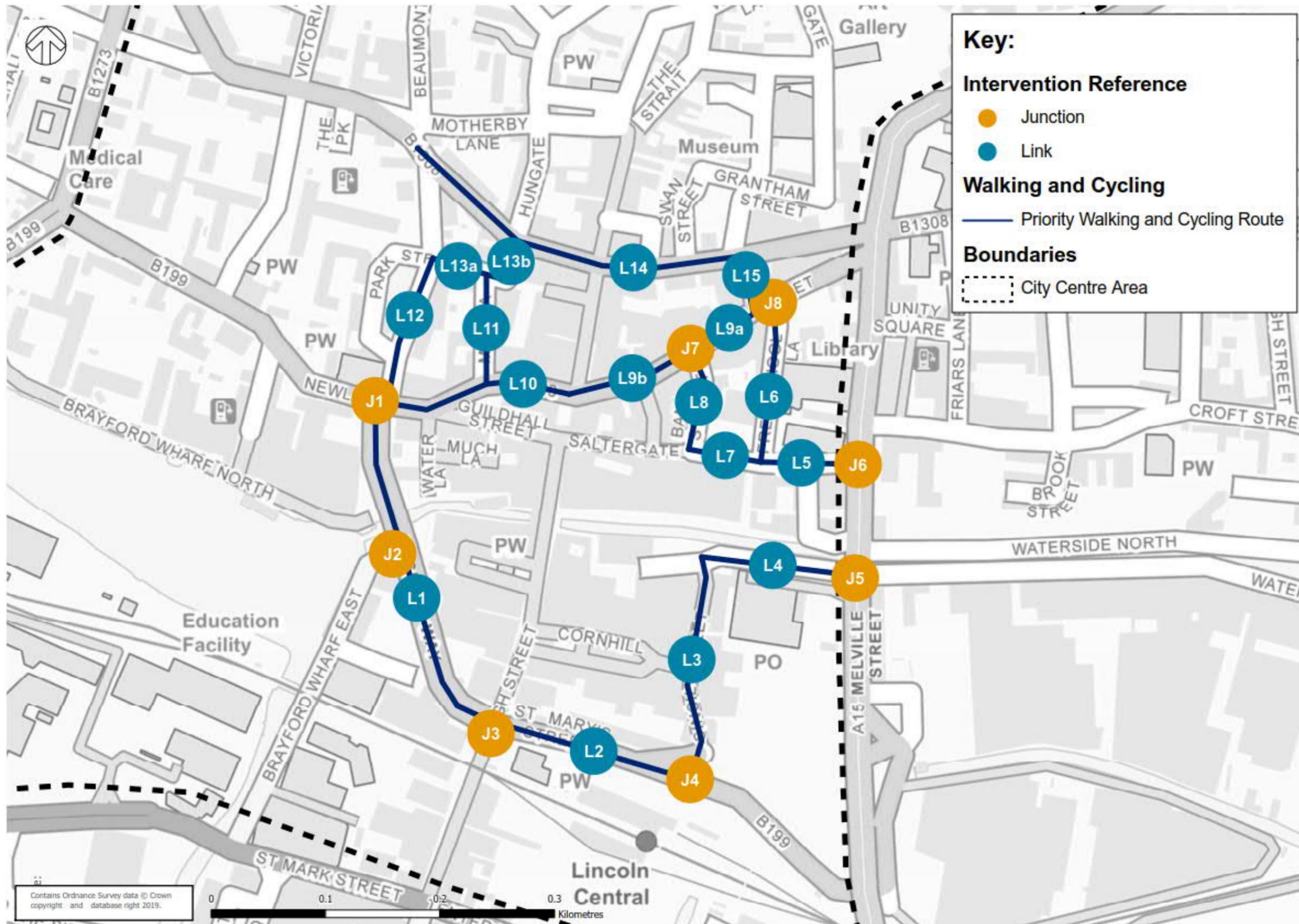


Figure 6-6 - Proposed Intervention Location Plan

Table 6-7 – Priority Cycling and Walking Route Infrastructure Options

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
J1	Wigford Way/Newland	Junction			<ul style="list-style-type: none"> <li>Advanced Stop Line (ASL) introduced at Beaumont Fee with advanced green signal for cycles</li> <li>Single stage crossing provided at Toucan crossing</li> <li>Pedestrian Countdown at Traffic Signals (PCaTS) provided where appropriate</li> <li>Removal of guard rail</li> </ul>	Light segregation links to existing Toucan crossing and off-carriageway cycle track.  PCaTS provides better, more consistent information about the time pedestrians available to cross.	140,000	<ul style="list-style-type: none"> <li>Provide cycle protected CYCLOPS<sup>1</sup> junction</li> </ul>	Requires significant junction remodelling.	1,610,000
L1	Wigford Way between Newland and High Street	Connector	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Light segregation – both sides of the road</li> </ul>	Requires conversion of one lane in each direction to cycle track.	300,000	<ul style="list-style-type: none"> <li>Kerb segregated cycle track – either on both sides of the road or as bi-directional on one side of the road</li> <li>Maximising footway width and green infrastructure</li> </ul>	Intervention based on existing street type. Potential future reshaping of Wigford Way including active frontages may convert the street type to Commercial Street but with high flows will still require segregated cycle tracks.	460,000
J2	Wigford Way / Brayford Wharf East	Junction			<ul style="list-style-type: none"> <li>Introduce ASLs where not provided</li> <li>Advanced green signals for cycles</li> </ul>		140,000	<ul style="list-style-type: none"> <li>Potential closure of Brayford Wharf East to general traffic</li> <li>Cycle only signal on Brayford Wharf East arm</li> <li>Parallel cycle and pedestrian crossing across Wigford Way with PCaTS</li> </ul>		410,000

<sup>1</sup> See report published by TfGM, for further detail on CYCLOPS junctions ([https://assets.ctfassets.net/nv7y93idf4jq/20Kq0JNhFmtp5vm9glsQn/ea4b299c69522e526b03180caaaa0b2/19-1369\\_CYCLOPS\\_technical\\_guide\\_A4\\_v3\\_Hi-Res.pdf](https://assets.ctfassets.net/nv7y93idf4jq/20Kq0JNhFmtp5vm9glsQn/ea4b299c69522e526b03180caaaa0b2/19-1369_CYCLOPS_technical_guide_A4_v3_Hi-Res.pdf))

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
J3	Wigford Way / High Street junction	Junction			<ul style="list-style-type: none"> <li>Provide Advanced Stop Line for cycles</li> <li>Introduce east-west advanced green signal for cycles</li> </ul>		140,000	<ul style="list-style-type: none"> <li>Remove High Street street clutter and improve pedestrian crossing to better serve desire lines</li> <li>Closure of subway to be replaced by suitable at-grade infrastructure</li> <li>Clearly marked east-west cycle track</li> </ul>	<p>Pedestrian crossing width should adequately accommodate pedestrian flows – consider raised table to reduce traffic speed.</p> <p>Provide further physical restrictions to motor vehicle access to High Street.</p>	1,560,000
L2	St Mary's Street between High Street and Sincil Street	Connector	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Light segregation</li> <li>Cycle symbols used on road surface where segregation not available, i.e. bus/taxi layoff</li> </ul>	Light segregation subject to width requirements.	150,000	<ul style="list-style-type: none"> <li>Remove centreline and narrow lanes</li> <li>Segregated cycle tracks and bypass of laybys</li> </ul>		260,000
J4	St Mary's Street/Sincil Street	Junction			<ul style="list-style-type: none"> <li>N/A</li> </ul>	Recent intervention provides suitable environment for requirements in the short term.	N/A	<ul style="list-style-type: none"> <li>Off-road cycle track linking St Mary's Street with Sincil Street</li> <li>Upgrade existing Puffin crossing to Toucan crossing</li> </ul>		Costs not available
L3	Sincil Street between St Mary's Street and Waterside South	City Street	N/A	N/A	<ul style="list-style-type: none"> <li>Vehicle Restricted Area (VRA) - Pedestrian and Cycle Zone (cycles restricted at certain times of day if required)</li> <li>'Share with care' signage</li> </ul>	It is acknowledged that the restricted street width may adversely affect the comfort of walking when mixing with cycle traffic. Trials and user feedback is encouraged to identify an arrangement that offers the maximum comfort for users.	N/A	<ul style="list-style-type: none"> <li>Vehicle Restricted Area (VRA) - Pedestrian and Cycle Zone</li> <li>Cycle and pedestrian route with suitable design subject to trials</li> </ul>	<p>It is acknowledged that the restricted street width may adversely affect the comfort of walking when mixing with cycle traffic. Trials and user feedback is encouraged to identify an arrangement that offers the maximum comfort for users.</p> <p>Guidance paving can help create a legible environment for visually-impaired users within level surfaces.</p> <p>If a suitable solution is unable to be found, an alternative route should be sought. This could be provided around the bus station and along</p>	180,000

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
									Broadgate. This should be investigated with any proposal to improve Broadgate.	
L4	Waterside South	Square	<2,500	30mph	<ul style="list-style-type: none"> <li>Further traffic calming features, e.g. raised table at entrance</li> </ul>		2,000	<ul style="list-style-type: none"> <li>Narrow carriageway and widen footway with potential removal of parking bays to accommodate this</li> <li>Public realm and landscape improvements</li> </ul>	Footbridge over Broadgate impairs enjoyment of the street.	100,000
J5	Broadgate crossing at Waterside South	Junction			<ul style="list-style-type: none"> <li>Artwork/visual enhancement of existing footbridge</li> </ul>		Costs not available	<ul style="list-style-type: none"> <li>Demolition of existing footbridge</li> <li>Dedicated cycle and pedestrian crossings</li> </ul>	Reliant on more place-focused street type change to Broadgate.	410,000
J6	Broadgate crossing at St Swithins Square	Junction			<ul style="list-style-type: none"> <li>Pedestrian Countdown at Traffic Signals (PCaTS) provided where appropriate</li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Straight across parallel cycle and pedestrian crossing</li> </ul>	Reliant on more place-focused street type change to Broadgate.	410,000
L5	St Swithins Square	Square	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Install bollards</li> <li>Visual narrowing</li> <li>Further traffic calming features, e.g. raised table at entrance</li> <li>Remove guardrail</li> </ul>	Bollards to prevent off-road parking and driving across footway.	2,000	<ul style="list-style-type: none"> <li>Narrow carriageway and widen footway with potential removal of parking bays to accommodate this</li> <li>Remove guardrail</li> </ul>		60,000
L6	Free School Lane	Commercial Street	<2,500	30mph	<ul style="list-style-type: none"> <li>Contraflow mandatory cycle lane on west side of the street</li> <li>Remove guardrail</li> </ul>	May require removal of parking bays on east side of the street.	30,000	<ul style="list-style-type: none"> <li>Contraflow cycle track on west side of the street</li> <li>Public realm and landscape improvements</li> </ul>	May require removal of parking bays on east side of the street. Private accesses on west side of the street to be accommodated into the design.	30,000
L7	Saltergate	Square	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Add cycle symbols to carriageway to reinforce cycle route and presence of cycle user to motor vehicle users</li> </ul>	Bollards to prevent off-road parking and driving across footway.	2,000	<ul style="list-style-type: none"> <li>Public realm and landscape improvements</li> <li>Remove guardrail</li> </ul>		30,000
L8	Bank Street	Commercial Street	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Add cycle symbols to carriageway to reinforce cycle route</li> </ul>		2,000	<ul style="list-style-type: none"> <li>Contraflow cycle track on west side the street</li> </ul>		20,000

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
					and presence of cycle user to motor vehicle users					
<b>J7</b>	Bank Street/Silver Street	Junction			<ul style="list-style-type: none"> <li>and presence of cycle user to motor vehicle users</li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Westbound direction (of the two-way cycle track on Silver Street) to enter give-way to allow cycle traffic to access contraflow cycle track on Bank Street.</li> </ul>	Silver Street to be reduced to single lane with parking provision reduced and/or reallocated.	Costs not available
<b>L9a</b>	Silver Street (Free School Lane to Bank Street)	Commercial Street	5,000–10,000	30mph	<ul style="list-style-type: none"> <li>and presence of cycle user to motor vehicle users</li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Two-way cycle track on north side of Silver Street</li> <li>Continuous footway at Bank Street</li> </ul>	Silver Street to be reduced to single lane with parking provision reduced and/or reallocated.	120,000
<b>L9b</b>	Silver Street (Bank Street to High Street)	Commercial Street	10,000–15,000	30mph	<ul style="list-style-type: none"> <li>and presence of cycle user to motor vehicle users</li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Segregated cycle track on north side of the street</li> </ul>	Silver Street to be reduced to single lane for motor vehicle traffic with parking provision reduced and/or reallocated.	80,000
<b>L10</b>	Mint Street	Commercial Street	10,000–15,000	30mph	<ul style="list-style-type: none"> <li>and presence of cycle user to motor vehicle users</li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Reduce carriageway width to 3m, use street design to create visual narrowing of the carriageway to promote low speeds.</li> <li>Provide continuous footway across Mint Lane</li> </ul>	Current motor vehicle flows would need to be reduced through traffic management measures to make it appropriate to mix bicycle and motor vehicle traffic.  Potential removal of parking bays outside House of Fraser.	160,000
<b>L11</b>	Mint Lane	Local Street	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Add cycle symbols to carriageway to reinforce cycle route and presence of cycle user to motor vehicle users</li> </ul>		2,000	<ul style="list-style-type: none"> <li>Reduce carriageway width to 3m, use street design to create visual narrowing of the carriageway to promote low speeds.</li> </ul>	Current motor vehicle flows would need to be reduced through traffic management measures to make it appropriate to mixing bicycle and motor vehicle traffic.	90,000
<b>L12</b>	Beaumont Fee	Local Street	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Mandatory cycle lane</li> </ul>	Remove left turn lane and left turn permission for motor vehicle traffic	25,000	<ul style="list-style-type: none"> <li>Two-way segregated cycle track</li> </ul>	Remove left turn lane and left turn permission for motor vehicle traffic	200,000

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
						at the junction with Wigford Way.			at the junction with Wigford Way. Two-way segregated cycle track would provide additional accessibility for bicycle traffic. It would require the arrangement at the Beaumont Fee/West Parade junction to be amended. Linkages with any future interventions on West Parade (part of the wider city centre network) would be key to connecting the two-way track to the wider network.	
<b>L13a</b>	Park Street (between Beaumont Fee and Mint Lane)	Local Street	<2,500	30mph	<ul style="list-style-type: none"> <li>Close street to through traffic using filtered permeability to maintain access for pedestrian and bicycle traffic.</li> </ul>	Access to be maintained to Age UK vehicle entrance. Low cost, temporary installations, such as planters, to be used to restrict access to motor vehicles.	15,000	<ul style="list-style-type: none"> <li>Close street to through traffic using filtered permeability to maintain access for pedestrian and bicycle traffic</li> </ul>	Access to be maintained to Age UK vehicle entrance. Permanent installations and public realm improvements for a more complete street enhancement.	15,000
<b>L13b</b>	Park Street and Hungate	Local Street	2,500–5,000	30mph	<ul style="list-style-type: none"> <li>Add cycle symbols to carriageway to reinforce cycle route and presence of cycle user to motor vehicle users.</li> </ul>		1,000	<ul style="list-style-type: none"> <li>Linking to the proposal for Mint Lane, use street design to create visual narrowing of the carriageway to promote low speeds and increase footway width.</li> </ul>		50,000
<b>L14</b>	Corporation Street and Clasketgate	Commercial Street	5,000–10,000	30mph	<ul style="list-style-type: none"> <li></li> </ul>	Limited short-term options.	N/A	<ul style="list-style-type: none"> <li>Segregated cycle track, breaking for the pedestrian crossing at High Street and entrance to Hungate.</li> <li>Widening of footway with continuous footways across side roads</li> </ul>	Would require the removal of parking bays along both sides of the street. The street would be reduced to a single lane for motor vehicle traffic.	500,000
<b>L15</b>	Flaxengate		n/a	n/a	<ul style="list-style-type: none"> <li>Designation of Flaxengate as</li> </ul>		1,000	<ul style="list-style-type: none"> <li>Cycle track segregated from pedestrian space linking the</li> </ul>		45,000

Reference	Location	Street Type/Junction	AADT	Current Speed Limit	Short Term			Long term		
					Description of the intervention	Comments	Indicative Cost (£)	Description of the intervention	Comments	Indicative Cost (£)
					shared pedestrian and cycle route.			parallel cycle crossings across Silver Street (J8) and segregated cycle track on Clasketgate (L14).		
<b>J8</b>	Free School Lane/Flaxengate				<ul style="list-style-type: none"> <li>Small area of shared footway/cycleway on corner of Free School Lane and Silver Street linking to new Toucan crossing to Flaxengate.</li> </ul>	<p>Shared footways for cycling and walking are not an ideal approach and this area is constrained in terms of space.</p> <p>An option for cycle users to dismount at the top of Free School Lane to access the pedestrian crossing has been considered. However, in practice cycle users are unlikely to dismount for this short distance due to the inconvenience this would cause.</p>	140,000	<ul style="list-style-type: none"> <li>Space from reducing the carriageway width on Silver Street (see L9c) can be utilised to accommodate parallel pedestrian and cycle crossing into Flaxengate.</li> <li>A cycle track to link the crossing with the contraflow cycle track on Free School Lane (see L6).</li> </ul>	Reduction of carriageway to one or two lanes.	410,000
<b>A</b>	All Priority Routes	N/A			<ul style="list-style-type: none"> <li>Comprehensive cycle route signage</li> </ul>		15,000	<ul style="list-style-type: none"> <li>Comprehensive cycle route signage</li> </ul>		15,000
<b>B</b>	City Centre	N/A			<ul style="list-style-type: none"> <li>Automatic Cycle counter</li> </ul>		6,000	<ul style="list-style-type: none"> <li>Automatic cycle counter</li> </ul>		28,000

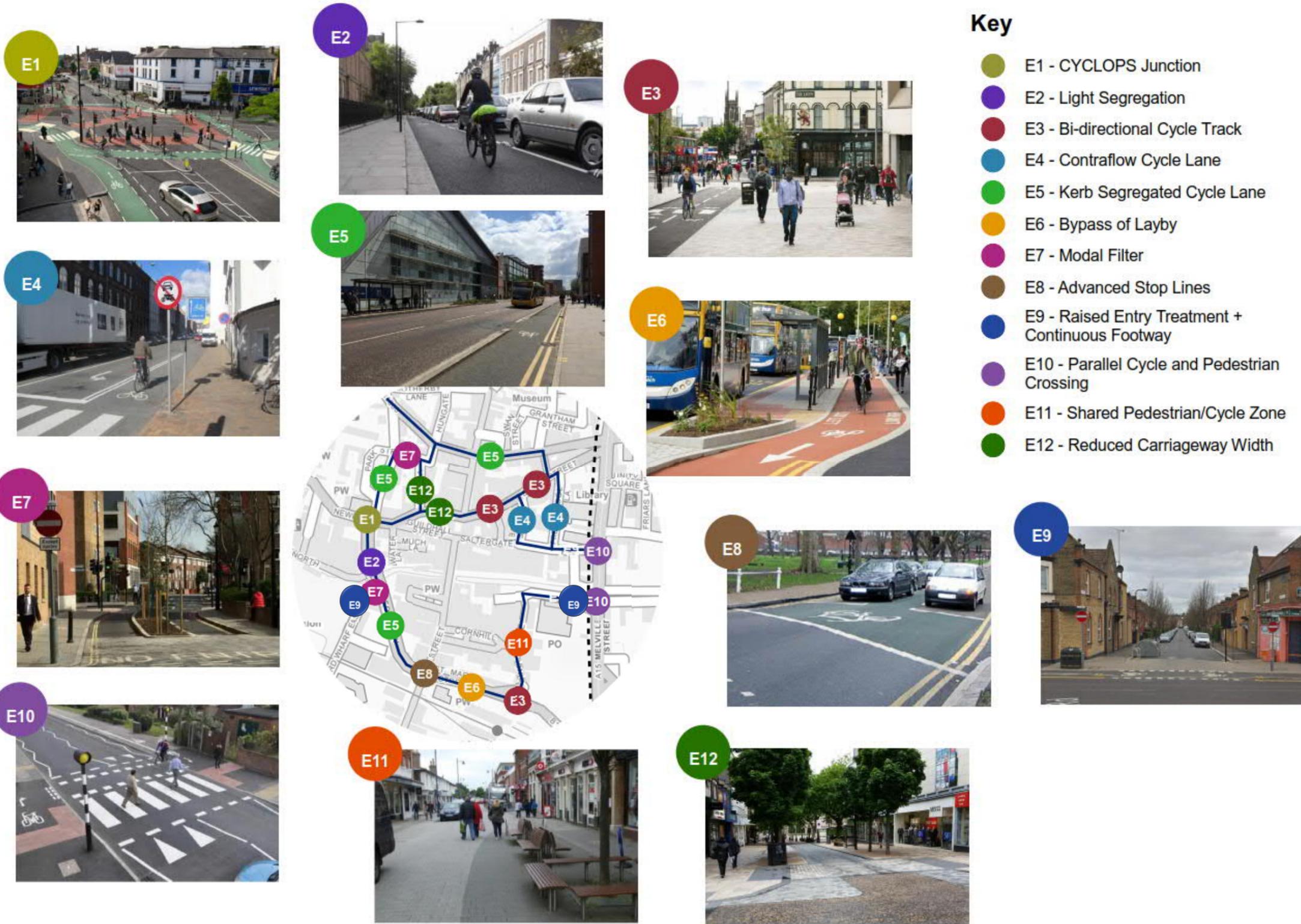


Figure 6-7 - Intervention Examples for Lincoln City Centre

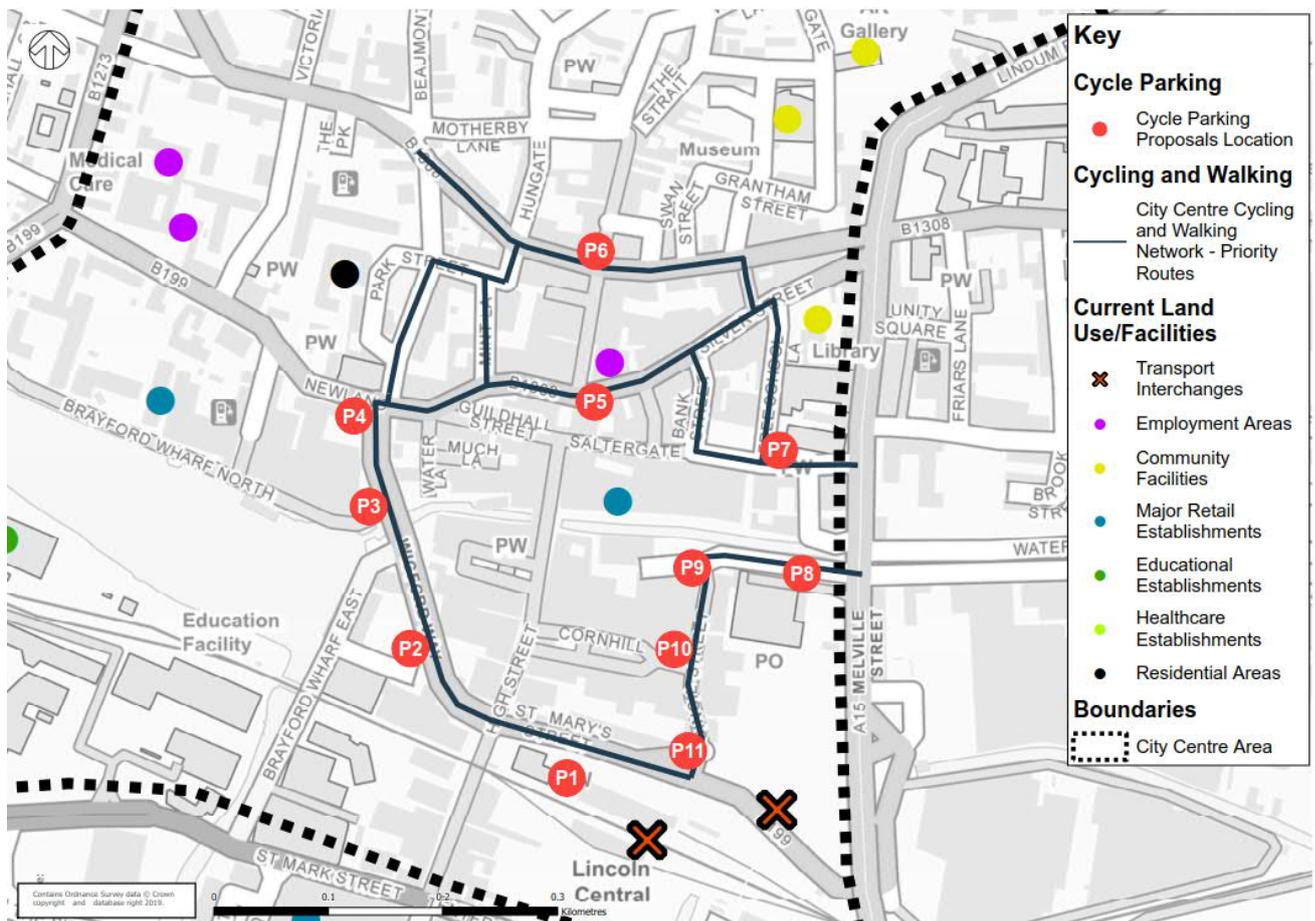
## 6.4. EXAMPLE DRAWINGS

6.4.1. Example cross sections and general arrangement drawing are provided in Appendix A, demonstrating a potential layout for Wigford Way. The cross sections include two stepped cycle track arrangements and one kerb-separated cycle track arrangement. The general arrangement plan shows a kerb-separated cycle track.

## 6.5. CYCLE PARKING

6.5.1. Table 6-8 presents a proposal for cycle parking along the priority city centre cycling and walking network. It identifies existing cycle parking provision and recommends additional, if applicable, cycle parking at these sites. It also identifies sites that currently do not have cycle parking but where provision should be made.

6.5.2. The location of each existing and proposed site is referenced on the plan in Figure 6-8.



**Figure 6-8 - Cycle Parking Proposed Locations**

6.5.3. The cycle parking proposal is aimed at serving those destinations that lie close to the priority city centre cycling route, providing mostly short-stay parking of cycles.

6.5.4. The cycle parking proposed here is not generally suitable for long-stay cycle parking. Employers in the area are advised to provide cycle parking on the site of their premises, which is more secure, is likely to be sheltered and is suited to long-stay parking.

6.5.5. Figure 6-8 shows that proposed cycle parking is close to major origins and destinations, including the employment areas on Silver Street, the bus station and the library. It is likely to be used predominantly for retail and leisure purposes.

**Table 6-8 – Lincoln City Centre Priority Routes – Cycle Parking Locations**

Ref.	Location	Status	Existing Spaces <sup>2</sup>	Proposed Additional Spaces (approximate)	Existing/ Proposed Type	Reason for number of spaces proposed
Cycle Hub	Lincoln Train Station	Existing	198	0	<ul style="list-style-type: none"> <li>■ 24hr secure with fob access</li> <li>■ Two-tier racks</li> <li>■ Changing facilities and toilets</li> </ul>	Existing cycle parking provision is likely to be suitable for existing demand.
P1	Wigford Way / Brayford Street junction	Existing	16	0	Sheffield Stands	Existing cycle parking provision is likely to be suitable for existing demand.
P2	Wigford Way / Brayford Wharf North	Existing	10	6	Sheffield Stands	The Brayford Pool waterfront would benefit from further cycle parking provision as a shared cycling/walking environment.
P3	Wigford Way / Newland	Proposed	0	20	Sheffield Stands	Cycle parking should serve the commercial areas of Newland and Guildhall Street.
P4	Silver Street	Existing	10	10	Sheffield Stands	A cycle parking increase will serve Silver Street, as a busier commercial street.

<sup>2</sup> One cycle stand can accommodate 2 spaces, subject to suitable clearance

Ref.	Location	Status	Existing Spaces <sup>2</sup>	Proposed Additional Spaces (approximate)	Existing/ Proposed Type	Reason for number of spaces proposed
P5	Corporation Street / High Street / Clasketgate	Existing	2	8	Sheffield Stands	Additional stands to serve busier commercial streets of Corporation Street, High Street and Clasketgate.
P6	St Swithin's Square / Free School Lane	Proposed	0	20	Sheffield Stands	There is an absence of cycle parking in the east of the city centre particularly at the city centre boundary.
P7	Waterside South	Existing	12	12	Sheffield Stands	This street provides access to popular Sincil Street and would benefit from additional cycle parking.
P8	Sincil Street / Waterside South	Proposed	0	20	Sheffield Stands	A central pedestrianised public area should cater for parking of cycles.
P9	Sincil Street / Cornhill	Proposed	0	20	Sheffield Stands	A busy pedestrianised street that requires storage for cycles.
P10	St Mary's Street / Sincil Street	Proposed	0	20	Sheffield Stands	There is a lack of cycle parking in front of the bus station and as a gateway to the city centre.

## 7. SUMMARY AND NEXT STEPS

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- 7.1.1. As well as the interventions detailed in Table 6-7 and Table 6-8, with regards to next steps and developing further initiatives the LCCCWNP can also be used within the LTS to support and facilitate the following aspects of improvement within the city centre:
- Humanising the streets of the city centre and increasing accessibility and safety;
  - Contributing to improving air pollution, reducing traffic levels and producing healthier streets overall;
  - Promoting the use of light freight and delivery movements via cargo and e-cargo bikes;
  - Supporting reduction in traffic speeds and reducing collisions – especially those involving pedestrians and cycle-users;
  - Supporting the promotion of active travel via the cycling and walking plan and improving access to public transport;
  - Reduce conflict between modes of transport, including cycling and walking;
  - Generating commercial activity within areas previously dominated by road traffic e.g. road and/or parking spaces given over to outside eating and retail spaces; and
  - Programmes of tactical urbanism to try out ideas and concepts aimed at improving the environments for active modes and generating commercial / social activity.

### HUMANISING THE STREETS

- 7.1.2. A key aspect to consider in developing next steps is how best to progress humanising the streets of Lincoln city centre. This requires giving more space and priority to cycling and walking movements over motor vehicles, which allows for the natural occupation of these areas by people and activities. Providing people with the knowledge that they are safe to wander throughout the city and not corralled to the sides will allow for greater usage and dwell times in these areas by active modes.
- 7.1.3. Better management of traffic flows, better access to public transport and reallocation of road space to provide more generous public realm and access to commercial activity all contribute to streets where local businesses thrive. However, it is people, not pedestrians, who are the lifeblood of the city centre. Streets should become places for people rather than being purely thoroughfares for pedestrians. Ensuring streets have well designed areas and places to linger, sit and chat will ensure places where people want to come and spend time.
- 7.1.4. With local businesses suffering the two-fold impacts of the ‘death of the high street’ and the negative characteristics of streetscapes dominated by vehicles, solutions as adopted in other cities and towns should be explored. By encouraging public-facing activities (commercial and civic) into well linked and accessible concentrated areas, that are free from vehicular activity, there can be ‘strength in numbers’ to boost the viability of local businesses and organisations.

### CYCLE HIRE

- 7.1.5. Lincoln’s existing Hirebike scheme will benefit from upgrades and increases in bikes and docking stations, as the cycle network is developed and cycle demand increases. This will ensure the benefits of additional cycle infrastructure are complemented with access to bicycles. Cycle hire offers an opportunity for those without a bicycle, to trial the experience. It also offers visitors and permanent residents that cannot store a bicycle, or who do not wish to own a bicycle, the opportunity to cycle.

- 7.1.6. The additional benefit of an improved cycle hire scheme is normalising cycling. The more bicycles that are seen on the street, the more normal and everyday it becomes, making it the natural choice for short journeys. It will also help improve the case for further investment in cycling, through the increased cycle flows and the health and further benefits that this brings.

## **E-BIKES**

- 7.1.7. The topography of Lincoln city centre with Steep Hill make the increased usage and market of e-bikes for both residents and tourists a more likely scenario over the next 5 years.
- 7.1.8. The general usage and growth of e-bikes is likely to increase as costs decrease and technology improves. Opportunities should be sought to improve the e-bike offer in Lincoln, through the Hirebike scheme and supporting businesses and shops selling and servicing e-bikes.

## **FUNDING MECHANISMS**

- 7.1.1. High level consideration has been given to the potential funding sources that could be pursued in the delivery of the LCCCWNP interventions and associated next steps. The schemes identified could potentially be supported by multiple funders and future funding opportunities including, but not limited to:

- Future High Streets Funding;
- Heritage Horizon Awards and other National Lottery Heritage Fund opportunities;
- Transforming Cities Fund / TV investment Fund;
- Network Rail 'Access for All' Programme;
- Towns Fund;
- DfT eCargo Bike Grant funding;
- Private developer contributions (e.g. Section 106);
- Future iterations of Access Fund-type funding;
- Synergies with ongoing workstreams within Lincoln ;
- Integrated Transport Block;
- Maintenance funding;
- Local Growth Fund and synergies with potential large local major schemes;
- National Productivity Investment Fund (NPIF);
- Housing Infrastructure Fund (HIF);
- Private financing initiatives;
- Other innovative fiscal mechanisms to help fund investment in infrastructure, including:
  - Business rates retention;
  - Reprioritisation of Vehicle Excise Duty;
- Other government funding streams not yet announced.

## **MONITORING AND EVALUATION**

- 7.1.2. There has been a historic lack of adequate cycling and walking monitoring and evaluation to effectively inform cycling and walking scheme business cases. A monitoring and evaluation strategy will need to be developed alongside cycling and walking interventions to assess the delivery process, the outcome and the benefits and impact of the schemes. It is recommended that a monitoring and evaluation strategy is developed in line with DfT guidance which will provide greater accountability and a stronger evidence base for future decision making.

# Appendix A

EXAMPLE LAYOUTS FOR WIGFORD  
WAY - LONG TERM INTERVENTIONS





8 First Street  
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[wsp.com](http://wsp.com)

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