1 LINCOLN SOUTHERN BYPASS: TECHNICAL NOTE – DESIGN WORKSHOP 3

Project:	Lincoln Southern Bypass	**Date:**	13/11/17
Subject:	Lincoln Southern Bypass Design Workshop 3		
Author:	JP	**TN ref:**	003
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1.1 INTRODUCTION

In preparation of the OAR a third design workshop was held on the 9th November the aim of which was to:

- Explore the level of provision for Non-Motorised Users (NMUs);
- Review past considerations for NMUs; and
- Discuss the types of crossing points for NMUs

The workshop focussed on the following:

  - Group Discussion 1 – Overall NMU Strategy & Concepts
  - Group Discussion 2 – Type of NMU Provision

The purpose of this note is to summarise key headlines and outcome of the workshop.

1.2 GROUP DISCUSSION 1 – NMU STRATEGY & CONCEPTS

The discussion aimed to:

- Review the existing NMU routes in the area surrounding the LSB;
- Review the type of user and potential level of NMU usage in the study area; and
- Discuss the level of provision that should be provided

The key points highlighted and discussed are summarised in the following sections.

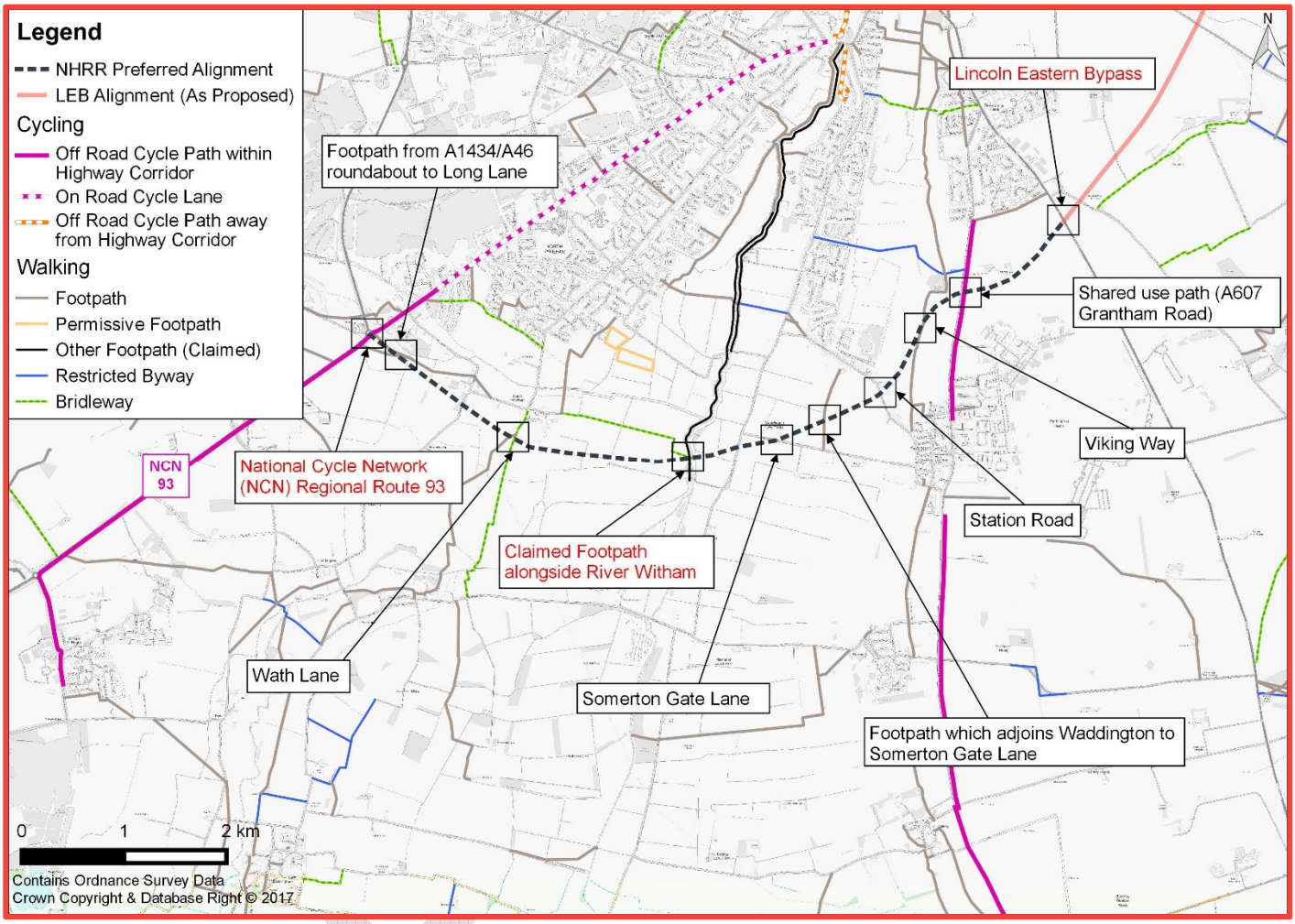
EXISTING NMU ROUTES

The existing NMU routes that intersect or cross the proposed alignment of the LSB are shown in Figure 1. The review identified the following key routes:

- A46: Off highway shared pedestrian and cycle route (NCN93);
- Footpath from A1434/A46 to Long Lane;
- Bridleway and Footpath from Wath Lane;
- Bridleway along Meadow Lane leading to the River Witham;
- Claimed footpath along the River Witham;
- Somerton Gate Lane: Not identified as a specific NMU route it is used by equestrians, pedestrians and cyclists;

- Footpath from Somerton Gate Lane north towards Waddington;
- Brant Road;
- Station Road;
- Viking Way (footpath);
- A607 Grantham Road: Off highway shared pedestrian and cycle route; and
- A15: Link into the LEB shared pedestrian and cycle route.

Figure 1 - Existing NMU Routes



EXISTING ROUTES REVIEW

The existing level of NMU use along the routes identified above was discussed. The volume of pedestrians, cyclists and equestrians are not known at this stage and additional consideration will be required during the next stage of the project and design development. However the discussion at the workshop did identify an indicative level of use, the key points raised from the discussion are summarised in Table 1.

Table 1 – Indicative NMU Usage Discussion

REF	LOCATION / ROUTE	CONSIDERATIONS / DISCUSSION POINTS	ACTION
1	A46: Off highway shared pedestrian and cycle route (NCN93)	It is unclear how much demand there is to use the existing shared route that runs alongside the A46. Further surveys would be required to establish the level of use. The route runs from Witham St Hughes to the A1434 and on to Lincoln.	Review existing pedestrian / cycle counts Commission pedestrian / cycle counts at feasibility stage
2	Footpath from A1434/A46 to Long Lane	The route crosses the proposed South West Quadrant development land and links through to the A46 shared pedestrian and cycle route (NCN93). The group commented that it appears to be a lightly used NMU route.	Review the SWQ Masterplan and open space strategy (if available)
3	South Hykeham Road / Long Lane	No specific NMU provision along the existing route. A new junction with the LSB is expected to be provided at this point which will provide access to the SWQ	N/A
4	Bridleway and Footpath from Wath Lane	The route provides a link out to Auborn and the open countryside to the south of Lincoln. The route also connects into Beck Lane / Mill Lane which provides a link between North and South Hykeham. This is a route used to walk / cycle to local schools. The condition of the bridleway means it is only suitable for equestrians and pedestrians. It is sometimes used by off-road cyclists.	Review of the local schools and catchments. Identification of walking and cycling routes.
5	Bridleway along Meadow Lane leading to the River Witham	There are a number of stables located within the North and South Hykeham area. The route is potentially well used by equestrians.	Commission pedestrian / cycle/equestrian counts at feasibility stage
6	Claimed footpath along the River Witham	The route is a claimed right of way. The number and type of user is unknown.	Review its status with PROW officer.
7	Somerton Gate Lane	Not identified as a specific NMU route, however it is used by equestrians, pedestrians and cyclists	Commission pedestrian / cycle/equestrian counts at feasibility stage
8	Footpath from Somerton Gate Lane north towards Waddington	Route identified as a public footpath. However it is not clear if this is a through route towards Station Road.	Review its status with PROW officer.
9	Brant Road	Not identified as a specific NMU route, however it is used by equestrians, pedestrians and cyclists	Commission pedestrian / cycle/equestrian counts at feasibility stage
10	Station Road	Footway adjacent to southbound carriageway.	N/A
11	Viking Road (Footway)	The Viking Way is a long distance (147miles) footpath which starts on the banks of the Humber and travels through Lincolnshire to finish at Rutland Water. It is a prominent route with details and route maps available through the LCC Countryside Access Website.	Consult with the PROW Officer to confirm if there are plans to upgrade sections of the route to a bridleway.

REF	LOCATION / ROUTE	CONSIDERATIONS / DISCUSSION POINTS	ACTION
	A607 Grantham Road: Off highway shared pedestrian and cycle route	Shared cycleway and footway adjacent to the southbound carriageway.	Commission pedestrian / cycle/equestrian counts at feasibility stage
12	A15 / LEB	LEB shared pedestrian and cycle route will terminate at the A15.	N/A

NMU PROVISION – EMERGING OBJECTIVES & CONCEPTS

The first design workshop considered the strategic objectives and vision for the development of the LSB, these are summarised below:

Vision

- *To provide high quality infrastructure that:*
  - *Provides a high quality strategic route;*
  - *Supports the growth of sustainable communities;*
  - *Supports the continued economic development of the Greater Lincoln urban area; and*
  - Safeguards the interests of existing communities.

Strategic objectives

- *Supporting the delivery of the SUEs will be a key function of the route*
- *Provide access to the SUEs with a particular focus on the SWQ*
- *Support the continued economic growth of the city*
- *Extend and complete the strategic route network around Lincoln*
- *Provide a consistent design and approach with the LEB*
- *Improve accessibility for all modes and the east west connectivity across Lincoln*
- *Provide the outer edge to the Greater Lincoln Urban Area*

The workshop identified and considered a number of issues and opportunities, these are as follows:

- There are few east / west NMU routes within the study area and limited orbital rights of way;
- The route of the LSB crosses a number north / south rights of way;
- This includes the Viking Way a prominent long distance footpath;
- There is an opportunity to improve the connections between the villages located within the LSB study area, this includes North Hykeham, South Hykeham, Auborn and Waddington; and
- There is an opportunity to improve access into the open country side from the Greater Lincoln urban area.

It was also identified that further consultation was required with the LCC Public Rights of Way Team to establish any rights or claimed rights of way that have not been identified in Figure 1 or in the case of claimed rights of way those routes that may be determined in the life span of the LSB project. The status of the disused railway which runs north / south in parallel to Viking Way also needs to be established.

The emerging objectives can be summarised as follows:
The LSB NMU provision should:

- Provide high quality NMU infrastructure that maintains and improves connectivity across the PROW network in southern Greater Lincoln;
- Improve orbital connectivity for NMUs and provide safe green routes in the South of Lincoln;
- Support the delivery of the sustainable urban extensions including the Southwest and Southeast Quadrants;
- Support the objectives of the LTP:
    - To improve access to employment and key services by widening travel choices, especially for those without access to a car;
    - Providing sustainable and healthy transport options such as walking, cycling, using public transport, and car sharing;
    - To improve the quality of life and health of residents and visitors by encouraging active travel;
    - Promotion of public transport and other sustainable modes for the journey to work; and
    - To build on the existing transport strategy, policies and plans within the draft Core Strategy and seek to ensure that opportunities for journeys to be made by a range of modes are maximised.

1.3 GROUP DISCUSSION 2 – TYPE OF NMU PROVISION

The following section summarises the discussions relating to the following:

- **NMU Orbital Movement Provision:** This includes the potential orbital NMU provision and concepts; and
- **NMU Crossing Provision:** At grade and grade separated crossing provision of the main LSB scheme.

ORBITAL ROUTE PROVISION - CONCEPTS

The possible type and level of orbital NMU provision was discussed and Table 2 summarises the concepts and the considerations identified during the workshop (also see Appendix A Figure 2).

Table 2 - NMU Orbital route Provision Concepts

REF	CONCEPT	CONSIDERATIONS / DISCUSSION POINTS
1	Shared Pedestrian and Cycle Route	• A shared pedestrian and cycle route would link the A46 on the western side of the scheme to the LEB on eastern side. • A single route could be located on either the north or south side of the LSB. However the north side is likely to be optimum location as the SWQ and majority of existing residential properties are located to north of the LSB alignment. • A route on the north side of the scheme would make it easier to link into the LEB route. • A shared route would be consistent with the LEB provision. • There is an opportunity to provide two orbital routes on both the north and south side of the carriageway. This would improve NMU connectivity and access to the existing north south PROW and make it easier to divert existing PROW severed by the LSB. • A route aimed at pedestrians and cyclists only would limit the access for equestrians.

REF	CONCEPT	CONSIDERATIONS / DISCUSSION POINTS
2	Segregated Pedestrian and Cycle Route	• A segregated route would also link the A46 on the western side of the LSB to the LEB on the eastern side. • A segregated route could again be positioned either on the north or south side of the LSB. • A segregated route would likely be supported by cycle and access groups. • The demand may not justify a fully segregated route • There is an opportunity to provide two orbital routes on both the north and south side of the carriageway. This would improve NMU connectivity and access to the existing north and south PROWs and make it easier to divert existing PROW severed by the LSB. • A route aimed at pedestrians and cyclists only would limit the access for equestrians.
3	Bridleway (Route suitable for Pedestrians / Cyclists / Equestrians)	• A bridleway could be developed to provide a suitable route for equestrians, pedestrians and cyclists. • This would link into the existing bridleways located towards the western end of the LSB. • There is an opportunity to provide two orbital routes on both the north and south side of the carriageway. This would improve NMU connectivity and access to the existing north south PROW. • There are few bridleways located towards the eastern end of the LSB routes. There are limited opportunities to connect into existing routes.

The discussion resulted in the following being identified for further assessment:

- The feasibility of providing two orbital NMU routes on both the north and south sides of the LSB. The new routes would link into the existing PROW network and improve NMU connectivity across the area;
- NMUs would need to cross the River Witham. NMUs could cross at the main River Witham overbridge or via a separate structure;
- The provision of two NMU routes may also aid the diversion of existing PROW and routes that will be severed by the LSB;
- The provision of a shared pedestrian and cycle route on the north side of the LSB, this will:
    - Link the A46 on the western side of the scheme to the LEB on eastern side; and
    - Link into the LEB route and be consistent with the LEB design principles.
- The provision of a bridleway on the south side of the LSB, this will:
    - This will enhance NMU connectivity across this part of Lincoln and provide a facility that can be used by equestrians; and
    - It will link into existing PROW network on the southern side of the LSB and improve access to the open countryside to the south.

LSB NMU CROSSINGS

The possible type and level of crossing provision over the LSB was also discussed and Table 3 summarises the concepts and the considerations identified during the workshop (also see Figure 3 Appendix A).

Table 3 – LSB NMU Crossing Provision Concepts

REF	LOCATION / ROUTE	2006 CONSIDERATIONS	2006 PREFERRED OPTION	CONSIDERATIONS	OUTCOME/ACTION
1	A46 / LSB Roundabout A46: Off highway shared pedestrian and cycle route (NCN93)	No specific proposals developed for NMUs as part of the 2006 considerations	N/A	• The shared pedestrian/cycle route along the A46 will need to be maintained; • Following the introduction of the LSB the route will need to cross the new carriageway; • An at-grade crossing is unlikely to be suitable given the expected speed limit and potential impact on the operation of the junction. • An NMU bridge over the LSB will likely be the most suitable solution. An underpass was discussed but is unlikely to be appropriate given the potential land requirements and the location on the edge of the urban area and safety implications. • The location of the bridge will need to take into account the existing 144 kv overhead powerlines. • The structure will need to be suitable for both pedestrians and cyclists. • There is an opportunity to provide a single crossing over this section of the LSB and divert the footpath from A1434/A46 to Long Lane to cross the scheme at this point.	• Further assessment of the most suitable location for the bridge crossing and diversion implications. • Identification of possible form of structure and NMU requirements. • Structure feasibility review.
2	Footpath from A1434/A46 to Long Lane	Footpath would be diverted to avoid disruption to the bypass	✓	• The footpath crosses the proposed alignment of the LSB close to the junction with the A46. • The preferred approach remains to divert the footpath and combine with a single pedestrian / cycle crossing close to the junction with the A46. • The removes the need for multiple crossings of the LSB.	• Review the diversion implications.
3	South Hykeham Road / Long Lane	No specific NMU provision along the existing route. A new junction with the LSB is expected to be provided at this point which will provide access to the SWQ	N/A	• Due to the LSB design speed and likely level of traffic NMUs should be encouraged to cross the scheme at alternative location.	• Review traffic flows on the existing route.

REF	LOCATION / ROUTE	2006 CONSIDERATIONS	2006 PREFERRED OPTION	CONSIDERATIONS	OUTCOME/ACTION
4	Bridleway and Footpath from Wath Lane	Footpath would be diverted to avoid disruption to the bypass	✓	• No vehicular junction is proposed at this point. • Adding a NMU crossing at this point would maintain access out to the open country side to the south of South Hykeham. This is also considered to be a well used leisure route. • A crossing at this point would be some distance from the junction with South Hykeham Road / Long Lane and in combination with the likely speed limit an at grade crossing will not be appropriate. • A length of diversion to either the River Witham or the crossing A46 / LSB Roundabout will be significant. • The provision of an NMU structure suitable for pedestrians, cyclists and equestrians is expected to be the preferred approach.	• Identification of possible form of structure and NMU requirements. • Structure feasibility review and assess the potential visual impact on properties located to the north of Wath Lane and in South Hykham.
5	Bridleway along Meadow Lane leading to the River Witham	It is proposed that this bridleway would be diverted.	✓	• The existing bridleway provides a link from South Hykeham east towards the River Witham. At this point it joins a claimed footpath that runs north south along the river. • It is expected that an overbridge will be provided at this point to enable the LSB to cross the river. • There is an opportunity to maintain NMU access under the LSB at this point and provide sufficient headroom for equestrians (3.75m). • There are no NMU routes to the south of the bridleway at this point, however, there is an opportunity to enhance the NMU network in this area by providing a link under the scheme to the new orbital NMU routes on the north and south side of the scheme.	• Identification of possible form of structure and NMU requirements. • Structure feasibility review.

REF	LOCATION / ROUTE	2006 CONSIDERATIONS	2006 PREFERRED OPTION	CONSIDERATIONS	OUTCOME/ACTION
6	Claimed footpath along the River Witham	No specific proposals developed for NMUs as part of the 2006 considerations	N/A	• Land is clearly used by NMUs but is not recognised as a PROW despite being signed as a permissive path and has therefore not been previously considered for mitigation. • Opportunity to link this to the orbital LSB NMU routes. • It is expected that an overbridge will be provided at this point to enable the LSB to cross the river. • There is an opportunity to maintain NMU access under the LSB at this point and provide sufficient headroom for equestrians (3.75m). • Link down to the River Witham from the LSB.	• Review status of the claimed footpath.
7	Brant Road	At-grade roundabout	✓	• An at-grade roundabout is proposed at the intersection of the LSB and Brant Road. • There is no specific NMU infrastructure currently along Brant Road. • An at-grade NMU crossing over the LSB at the junction is unlikely to be appropriate given the potential impact on the operation of the junction, strategic nature of the route and speed limit. • NMUs could be diverted and use the route under the proposed River Witham bridge. This would remove the need for a separate structure.	• Review the diversion distance
8	Somerton Gate Lane	Terminate Somerton Gate Lane & add Private Access. Somerton Gate Lane would not have a junction with the bypass. It would become a 'No Through Road' for vehicles, but links would be provided for non-motorised users with appropriate alternative access arranged for farmers.	✓	• The stopping up of Somerton Gate Lane remains the preferred approach. • It is a minor single track road with no specific NMU infrastructure but is used by equestrians. • Somerton Gate Lane could provide access to an orbital NMU route. • As above NMUs could be diverted and use the route under the proposed River Witham bridge. This would remove the need for a separate structure.	• Review the diversion distance

REF	LOCATION / ROUTE	2006 CONSIDERATIONS	2006 PREFERRED OPTION	CONSIDERATIONS	OUTCOME/ACTION
9	Footpath from Somerton Gate Lane north towards Waddington	It is proposed that this footpath would be shortened to avoid interference with the bypass	✓	• Route identified as a public footpath. However it is not clear if this is a through route towards Station Road. • As above NMUs could be diverted and use the route under the proposed River Witham bridge or via the Station Road overbridge. • This would remove the need for a separate structure.	• Review its status with PROW officer.
10	Station Road	No Junction with Bypass (Station Road maintained as a through route)	✓	• An underbridge will be provided at Station Road. • NMU access over the LSB will be maintained via Station Road. • Further consideration required regarding the connection between NMU orbital routes and Station Road.	• Further assessment of the options for the links from the NMU orbital routes and Station Road.
11	Viking Road (pedestrian)	Diversion of the route to the A607 Grantham Road to cross the bypass via at-grade crossing facilities or a bridge depending on the junction arrangement selected at the A607		• The Viking Way is a high profile route and there is an opportunity to enhance its accessibility through the LSB NMU design. • It will be important to maintain the alignment of the route and minimise any diversion. • The LSB will be in cut at the point it crosses the route and a structure will be required to cross the LSB. The importance of the route justifies a high quality structure. • A possible green bridge structure may be appropriate • Although the Viking Way is currently defined as a footpath the structure should be able to accommodate cyclists and equestrians. This would future proof the structure against any upgrades to the Viking Way (to accommodate wider uses).	• Identification of possible form of structure and NMU requirements.
		Provision of a footbridge along the existing line of the path (crossing the bypass at an angle)			
		A short diversion of the route and provision of a footbridge crossing the bypass perpendicularly.	✓		
12	A607 Grantham Road: Off highway shared pedestrian and cycle route	At-grade roundabout (Modifications to the junction at the A607 could avoid effects on the cycle-way along Grantham Road)		• The junction options for the LSB and A607 are being reviewed as part of the junction strategy.	• NMU provision to be further assessed once the junction strategy has been refined.

REF	LOCATION / ROUTE	2006 CONSIDERATIONS	2006 PREFERRED OPTION	CONSIDERATIONS	OUTCOME/ACTION
		Grade separated junction – bypass passing beneath Grantham Road (Modifications to the junction at the A607 could avoid effects on the cycle-way along Grantham Road)	✓	• If a grade separated junction is provides the shared pedestrian and cycle route over the LSB can be maintained. Access would need to be provided from the LSB NMU orbital route to Grantham Road. • If an offline roundabout junction is provided further consideration will need to be given to maintaining NMU connectivity along Grantham Road.	
		No junction with the bypass – connection to the bypass provided via a parallel link constructed between the A15 Sleaford Road and the A607 Grantham Road (No considerations for NMUs)			
13	A15	No direct links from LEB NMU route to LSB	N/A	The LSB will join the A15 at the junction with the LEB. The LEB proposals include a shared cycle/footway around A15/LEB junction. This ties in to the existing footways on the northern side of the junction. The LSB orbital route on the northern side of the scheme will join into the footway / cycleway provision that will be constructed as part of the LEB. A crossing will need to be provided over the A15 Sleaford Road to connect into the LEB shared pedestrian and cycleway. At the junction with Bloxham Lane the speed limit reduces to 30mph and an at-grade crossing would be appropriate subject to further junction modelling. An additional crossing will also be required over the LSB. An at-grade crossing is unlikely to be suitable given the expected speed limit and potential impact on the operation of the junction.	• Further assessment of the most suitable location for the bridge crossing and diversion implications. • Identification of possible form of structure and NMU requirements.

RADIAL ROUTE NMU CROSSINGS

The possible type and level of crossing provision over the radial routes was also discussed and Table 4 summarises the concepts and the considerations identified during the workshop (see Appendix A Figure 4).

Table 4 – Radial Route NMU Crossings

REF	ROUTE	WORKSHOP REVIEW	OUTCOME / ACTION
1	A46 / A1434	• There are no existing crossings of the A46 or A1434 at the junction. • It is not proposed to add any crossings at this location.	• The LSB NMU route will link into the off highway pedestrian and cycle route. • No further crossing provision required.
2	South Hykeham Road	• The LSB will cross South Hykeham Road and it is expected that an at-grade roundabout will be provided. • South Hykeham Road Northern Arm: The orbital cycle/pedestrian route will cross Brant Road and depending on the level of traffic two options may be appropriate: o Toucan Crossing: Signalised Crossing for pedestrians and cyclists. o Uncontrolled crossing • South Hykeham Road Southern Arm: The orbital NMU route will cross Brant Road, if this is to be adopted as a bridleway two options may be appropriate: o Toucan Crossing: Signalised Crossing for pedestrians, cyclists and equestrians. o Uncontrolled crossing	• Assessment of the likely traffic flow changes along South Hykeham Road.
3	Brant Road	• The LSB will cross Brant Road and it is expected that an at-grade roundabout will be provided. • Brant Road Northern Arm: The orbital cycle/pedestrian route will cross Brant Road and depending on the level of traffic two options may be appropriate: o Toucan Crossing: Signalised Crossing for pedestrians and cyclists. o Uncontrolled crossing • Brant Road Southern Arm: The orbital NMU route will cross Brant Road, if this is to be adopted as a bridleway two options may be appropriate: o Toucan Crossing: Signalised Crossing for pedestrians, cyclists and equestrians. o Uncontrolled crossing	• Assessment of the likely traffic flow changes along Brant Road.
4	Somerton Gate Lane	Somerton Gate Lane will be stopped become a 'No Through Road' for vehicles. No further crossings required.	N/A
5	Station Road	Station Road will cross the LSB via an underbridge. The NMU orbital routes could pass under Station Road alongside the LSB carriageway or be diverted north and south to Station Road.	o Further assessment of the NMU orbital route alignment options.

REF	ROUTE	WORKSHOP REVIEW	OUTCOME / ACTION
6	A607 Grantham Road	• The junction options for the LSB and A607 are being reviewed as part of the junction strategy. Once this is defined the crossing provision can be determined.	• Further review of the junction options.

1.4 LESSONS LEARNT

Following the main discussion topics, a brief overview of lessons learnt from previous major schemes delivered by LCC were discussed. This included lessons learnt from the delivery of the LEB and East West Link and the development of the Spalding Western Relief Road and Gratham Southern Relief Road. Table 4 summarises the lessons learnt discussed at the design workshop. These will be added to the LSB lessons learnt register.

Table 5 – Lessons Learnt Register

REF	AREA	LESSONS LEARNT	REASON	ACTION
1	**Design Process**	Early development of the NMU Strategy	Development of the strategy at the concept stage will ensure that the proposals become integrated into the design proposals.	Develop a high level strategy for refinement at the feasibility stage.
2	• **Early Engagement with interest groups**	NMU Groups / Input into NMU Strategy development	Early engagement with key interest groups will help to develop their 'buy-in' to the LSB scheme.	To be reviewed at the feasibility design stage.

1.5 SUMMARY

The design workshop aimed to explore level of NMU provision for the LSB. In particular it aimed to review the existing NMU routes within the LSB study area, review the NMU requirements and discuss the level of provision that should be incorporated into the design. A summary of the key points have been identified during the design workshop are summarised in table below.

<table>
<tr><th colspan="2">Summary of Key Points</th></tr>
<tr><td rowspan="2">NMU Strategy & Concepts</td><td>Existing NMU Routes
The actions for the existing NMU routes that intersect or cross the proposed alignment of the LSB as a result of discussion 1 are as follows:</td></tr>
<tr><td>

A46: Off highway shared pedestrian and cycle route (NCN93):

Review existing pedestrian / cycle counts
Commission pedestrian / cycle counts at feasibility stage

Footpath from A1434/A46 to Long Lane:

Review the SWQ Masterplan and open space strategy (if available)

Bridleway and Footpath from Wath Lane:

Review of the local schools and catchments.
Identification of walking and cycling routes.

Bridleway along Meadow Lane leading to the River Witham:

Commission pedestrian / cycle/equestrian counts at feasibility stage

Claimed footpath along the River Witham:

Review its status with PROW officer.

Somerton Gate Lane: Not identified as a specific NMU route it is used by equestrians, pedestrians and cyclists:

Commission pedestrian / cycle/equestrian counts at feasibility stage

Footpath from Somerton Gate Lane north towards Waddington:

Review its status with PROW officer.

Brant Road:

Commission pedestrian / cycle/equestrian counts at feasibility stage

Viking Road (footpath):

Consult with the PROW Officer to confirm if there are plans to upgrade sections of the route to a bridleway.

A607 Grantham Road / Off highway shared pedestrian and cycle route:

Commission pedestrian / cycle/equestrian counts at feasibility stage

</td></tr>
<tr><td rowspan="2">Type of NMU Provision</td><td>Orbital Route Provision – Concepts
The possible type and level of orbital NMU provision was discussed where following the concepts and considerations were identified:</td></tr>
<tr><td>

Shared Pedestrian and Cycle Route:

A shared pedestrian and cycle route would link the A46 on the western side of the scheme to the LEB on eastern side.
A single route could be located on either the north or south side of the LSB. However the north side is likely to be optimum location.

</td></tr>
</table>

Summary of Key Points	
	○ A route on the north side of the scheme would make it easier to link into the LEB route. ○ A shared route would be consistent with the LEB provision. ○ There is an opportunity to provide two orbital routes on both the north and south side of the carriageway to improve NMU connectivity. ○ A route aimed at pedestrians and cyclists only would limit the access for equestrians.
	2. Segregated Pedestrian and Cycle Route: ○ A segregated route would also link the A46 on the western side of the LSB to the LEB on the eastern side. ○ A segregated route could again be positioned either on the north or south side of the LSB. ○ A segregated route would likely be supported by cycle and access groups. ○ The demand may not justify a fully segregated route ○ There is an opportunity to provide two orbital routes on both the north and south side of the carriageway to improve NMU connectivity. ○ A route aimed at pedestrians and cyclists only would limit the access for equestrians.
	3. Bridleway (Route suitable for Pedestrians / Cyclists / Equestrians): ○ A bridleway could be developed to provide a suitable route for equestrians, pedestrians and cyclists. ○ This would link into the existing bridleways located towards the western end of the LSB. ○ There is an opportunity to provide two orbital routes on both the north and south side of the carriageway to improve NMU connectivity. ○ There are few bridleways located towards the eastern end of the LSB routes. There are limited opportunities to connect into existing routes.
	The discussion resulted in the following being identified for further assessment: • The feasibility of providing two orbital NMU routes on both the north and south sides of the LSB; • NMUs could cross at the main River Witham overbridge or via a separate structure; • The provision of two NMU routes may also aid the diversion of existing PROW and routes that will be severed by the LSB; • The provision of a shared pedestrian and cycle route on the north side of the LSB • The provision of a bridleway on the south side of the LSB

LSB NMU CROSSINGS

The possible type and level of crossings over the LSB was also discussed where the following actions were identified:

- **A46 / LSB Roundabout / Off highway shared pedestrian and cycle route (NCN93):**
  - Further assessment of the most suitable location for the bridge crossing and diversion implications.
  - Identification of possible form of structure and NMU requirements.
  - Structure feasibility review.
- **Footpath from A1434/A46 to Long Lane:**
  - Review the diversion implications.
- **South Hykeham Road / Long Lane:**
  - Review traffic flows on the existing route.
- **Bridleway and Footpath from Wath Lane:**
  - Identification of possible form of structure and NMU requirements.
  - Structure feasibility review and assess the potential visual impact on properties located to the north of Wath Lane and in South Hykham.
- **Bridleway along Meadow Lane leading to the River Witham:**
  - Identification of possible form of structure and NMU requirements.
  - Structure feasibility review.
- **Claimed footpath along the River Witham:**
  - Review status of the claimed footpath.
- **Brant Road:**
  - Review the diversion distance
- **Somerton Gate Lane:**
  - Review the diversion distance
- **Footpath from Somerton Gate Lane north towards Waddington:**
  - Review its status with PROW officer.
- **Station Road:**
  - Further assessment of the options for the links from the NMU orbital routes and Station Road.
- **Viking Road (pedestrian):**
  - Identification of possible form of structure and NMU requirements.
- **A607 Grantham Road: Off highway shared pedestrian and cycle route:**
  - NMU provision to be further assessed once the junction strategy has been refined.
- **A15:**
  - Further assessment of the most suitable location for the bridge crossing and diversion implications.
  - Identification of possible form of structure and NMU requirements.

Summary of Key Points	

	Radial Route NMU Crossings
	The possible type and level of crossings over the radial routes was also discussed where the following actions were identified:
	• **A46 / A1434:**
	  ○ The LSB NMU route will link into the off highway pedestrian and cycle route.
	  ○ No further crossing provision required.
	• **South Hykeham Road:**
	  ○ Assessment of the likely traffic flow changes along South Hykeham Road.
	• **Brant Road:**
	  ○ Assessment of the likely traffic flow changes along Brant Road.
	• **Somerton Gate Lane:**
	  ○ N/A
	• **Station Road:**
	  ○ Further assessment of the NMU orbital route alignment options.
	• **A607 Grantham Road:**
	  ○ Further review of the junction options.

1.6 APPENDIX

Figure 2- NMU Orbital Route Provision Concepts

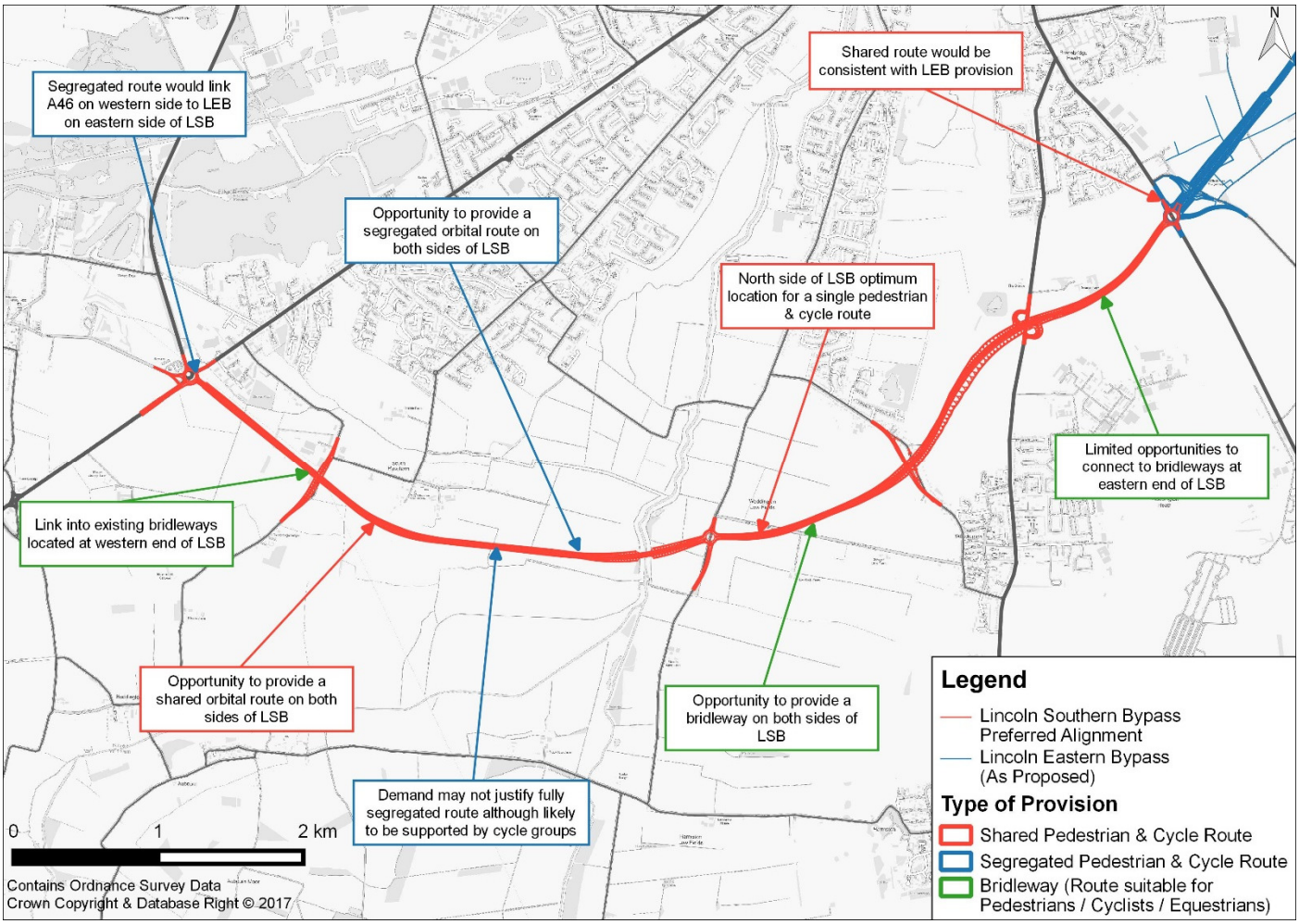


Figure 3 – LSB NMU Crossing Provision Concepts

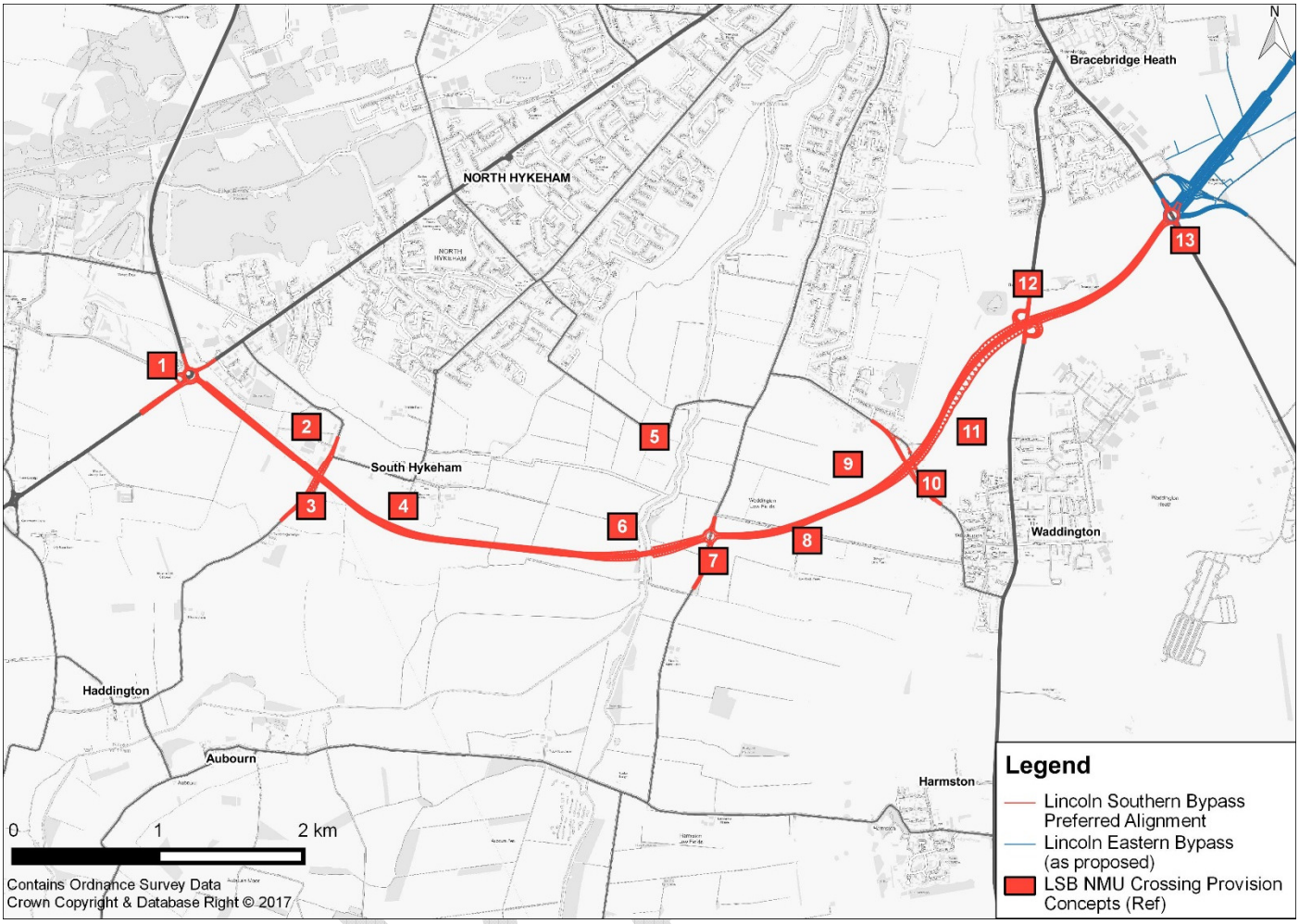


Figure 4 – Radial Route NMU Crossing Concepts