TRANSPORT

LCC 03

Scheme Name:
North Hykeham Relief Road

Promoting Authority:
Lincolnshire County Council

Orders:
The Lincolnshire County Council (A1461 North Hykeham Relief Road) Compulsory Purchase Order 2024; and **The Lincolnshire County Council (A1461 North Hykeham Relief Road) (Classified Road) (Side Roads) Order 2024.**

Document Reference:
LCC 03

Subject:
Scheme Designer

Author:
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Date:
June 2025

NORTH HYKEHAM RELIEF ROAD

SCHEME DESIGNER - PROOF OF EVIDENCE

CONTENTS

TABLE OF TABLES

TABLE OF FIGURES

Appendix A
Drainage Proof of Evidence – LCC 03(i)

Appendix B
Junction Operation Proof of Evidence – LCC 03(ii)

Record of Standards

Standard	Version	Date	Description
CD 109	Version 1	Mar 2020	Highway link design
CD 116	Version 2	Apr 2020	Geometric design of roundabouts
CD 123	Version 2.1.0	Nov 2021	Geometric design of at-grade priority and signal-controlled roundabouts
CD 127	Version 1.0.1	Jul 2021	Cross-sections and headrooms
CD 143	Version 2.0.1	Mar 2021	Design for walking, cycling and horse-riding
CD 169	Version 1.0.1	Mar 2021	The design of lay-bys, maintenance hardstanding's, rest areas, service areas and observation platforms
CD 195	Version 1.0.1	Mar 2021	
CD 377	Revision 4	Jan 2021	Requirements for road restraint systems
GG 104	Version 0	Jun 2018	Requirements for safety risk assessment
GG 119	Version 2	Jan 2020	Road safety audit

Abbreviations

A.O.D.	Above Ordnance Datum
CCTV	Closed Circuit Television
CLLP	Central Lincolnshire Local Plan
D2AP	Dual 2-Lane All-Purpose carriageway (as defined in CD 127 Cross-sections and headrooms
D&B	Design and Build
DBFO	Design, Build, Finance and Operate
DfS	Departure from Standard
DJV	Design Joint Venture
DMRB	Design manual for Roads and Bridges
DMSSD	Desirable Minimum Stopping Sight Distance
EA	Environment Agency
EIA	Environmental Impact Assessment
ES	Environmental Statement
FBC	Full Business Case
HGV	Heavy Goods Vehicle
ICD	Inscribed Circle Diameter
IDB	Internal Drainage Board (Upper Witham)
Kph	Kilometers Per Hour
Km	Kilometer
KV	Kilovolt
LA	Local Authority
LCC	Lincolnshire County Council
LEB	Lincoln Eastern Bypass
LHA	Local Highway Authority
LITS	Lincoln Integrated Transport Strategy
LSB	Lincoln Southern Bypass
LNRR	Lincoln Northern Relief Road
LWRR	Lincoln Western Relief Road
MCHW	Manual of Contract Documents for Highway Works
MEWP	Mobile Elevated Work platform

MICE	Member of the Institute of Civil Engineers (Chartered Member)
Mph	Miles Per Hour
NEC3	New Engineering Contract 3rd Edition
NH	National Highways
NHRR	North Hykeham Relief Road
NMU	Non-Motorised User
OAR	Options Appraisal Report
OBC	Outline Business Case
PMA	Private Means of Access
PTSC	Project Team Scheme Consultant
RRRAP	Road Restraint Risk Assessment Process (Tool)
RSA	Road Safety Audit
SRN	Strategic Road Network
SSD	Stopping Sight Distance
SUE	Sustainable Urban Extension
SWQ	South West Quadrant
TSP	Technical Services Partnership
TSM	Traffic Signs Manual
TSRGD	Traffic Signs Regulations and General Directions (2016)
VRS	Vehicle Restraint System

1 INTRODUCTION

1.1 Qualifications

1.1.1 My name is Barry Williams (BEng, CEng, MICE). This evidence has been prepared in respect of the Scheme Design implications arising from the promotion of the North Hykeham Relief Road, by the promoting authority, Lincolnshire County Council (LCC). It is not presented in respect of the grant of planning permission, as that is not the purpose of the Inquiry, but rather it draws together relevant information in respect of the two orders, namely the A1461 North Hykeham Relief Road Compulsory Purchase Order 2024 (CPO) **[CD1.1]** and the A1461 North Hykeham Relief Road, Classified Road (Side Roads) Order 2024 (SRO) **[CD1.2]**. In terms of the CPO where land is to be acquired for a specific purpose the evidence will address that. I am the Lead of the design team responsible for the development of the Scheme proposals and overall co-ordination of all design elements. I am a Chartered Civil Engineer and have been a member of the Institution of Civil Engineers for 15 years. I graduated from the University of Bradford in 2001 and have worked in highways and transportation related works since graduating, primarily in relation to large highways infrastructure projects.

1.1.2 I am currently an Associate in Ramboll UK's highways team in Chester. I have held the post of Associate since 2017. I have been Ramboll UK Design Lead on the NHRR since May 2022.

1.2 Relevant Experience

1.2.1 I have considerable knowledge of newbuild highways infrastructure schemes, highways maintenance and highways improvement schemes, on both Local Authority (LA) road networks and on the Strategic Road Network (SRN) for National Highways and Welsh Government. My Design Management and Project

Management experience includes the management of multi-disciplinary teams and the coordination of design elements to ensure project aims are achieved and design standards are adhered to.

1.2.2 I am experienced in client liaison and collaboration with project team partners, as well as internal and external stakeholders. My experience covers all aspects of highway design, construction and construction supervision on major new build highway infrastructure projects and includes: Design, Design and Build (D&B), and Design, Build, Finance and Operate (DBFO) experience. I have extensive experience defining and implementing active travel faculties within the context of highway schemes.

1.2.3 I have a working knowledge and understanding of highway design standards, with knowledge gained through the design, technical review and approval of major highway infrastructure schemes. My knowledge and experience includes highway link design and the design and assessments of roundabouts and signal-controlled junctions. This is clear from the following matters that I have dealt with.

1.2.4 From April 2018 I have been RUK Design Lead and Project Manager, responsible for the outline design, Planning Submission and Detailed Design of the 3.2km Parkside Link Road Scheme, along with the detailed design of junction mitigation improvements to 3N° junctions requiring upgrades as a result of the Link Road. There were the M6 J22, A49/AS72 junction and AS72/AS73 Junction.

1.2.5 The Parkside Link Road Scheme included the design and construction of 3.2km of new build single carriageway, with a small section of dual carriageway, two new single carriageway, with a small section of dual carriageway, two new roundabouts and two new signal-controlled junctions at the interfaces with the existing highway network.

1.2.6 The M6 J22 improvement works required the modification of the existing priority roundabout junction into a signal controlled junction with uncreased circulatory capacity, and modifications and upgrades to the existing Mount North and Mount South bridges over the motorway to reallocate and increase road space and allow the incorporation of active travel facilities.

1.2.7 The improvement works to the A49/A572 and A572/A573 junctions comprised of upgrades to increase capacity, including, relocation of road-space and signalisation of the functions to accommodate modelled traffic flows after the opening of the Parkside Link Road Scheme. The multi-disciplinary team included highways alignment designers, geotechnical and structural engineers, contaminated land specialists and landscape and ecology specialists. I managed the design, liaising with St Helens Borough Council as Scheme promoter, Warrington Borough Council as an affected Highway Authority and National Highways, due to necessary modifications to Parkside Road Bridge, spanning the M6 Junction 22. I ensured co-ordination between disciplines and represented Ramboll UK at client and external party meetings.

1.2.8 For the A487 Caernarfon to Bont Newydd Bypass, I have been Ramboll UK Project Manager and NEC3 Supervisor since March 2019, working as part of a joint venture Employers Agent Team with Arcadis on behalf of Welsh Government. Ramboll UK provided Technical Review services of the Scheme designs. The Scheme involved the construction of 9.8km of new build 2+1 bypass with modifications to two existing roundabouts, construction of two new roundabouts and associated structures and ecology features and landscaping. I managed a multi-disciplinary team, including highways alignment, structures, geotechnical and environmental, including ecology and archaeology, to review all aspects of

the Scheme design and ensure it was in line with the Works Information and applicable standards. I also fulfilled the role of NEC3 Supervisor throughout the construction, aftercare and defects periods.

1.2.9 On the Mersey Gateway Scheme, I was Ramboll Project Manager and Technical Advisor to Mersey Gateway Crossings Board for Highways from October 2014 to March 2018. I worked proactively and collaboratively with the Scheme designers, Merseylink Design Joint Venture (DJV), Mersey Gateway Crossings Board and Halton Borough Council as the local Highway Authority to review the design proposals for the landslide and highways works. I also held the role of Project Team Scheme Consultant (PTSC), responsible for the review, management and recommendation of acceptance, or otherwise, of highways and highways related design submissions and Departure from Standard applications, with particular focus on highway geometry. The Scheme consisted of the construction of a new, 2km long, six-lane, tolled crossing of the River Mersey and the upgrading, re-alignment and modification of 7km of existing urban motorway highway, incorporating seven highway interchanges and connection to the SRN via the M56 Junction 12. In managing the review of landslide and highway related design proposals, I managed a multidisciplinary team of experts including geotechnical engineers, lighting and contaminated land specialists.

1.2.10 From July 2012 to October 2014, I was RUK Design Lead and Design Team Project Manager on the A477 St Clears to Red Roses Improvement Scheme. My responsibilities included management of the detailed design of the Scheme during the design and construction phase. This involved the co-ordination of a multi-disciplinary team including ecology and landscape professionals, geotechnical and structural experts and highways design. In addition, I was

responsible for gaining technical approval of all elements of the design proposals including necessary Departures from Standard and ensuring that the design proposals were in line with relevant standards, the works requirements and planning commitments, as well as ensuring buildability, liaising with the Contractor throughout. The Scheme of the construction of 8.7km of new build 2+1 carriageway, with associated earthworks and structures and two junctions, along with 1.8km of online improvements and de-trunking of the existing A477 between Llandowror and Red Roses.

1.3 Involvement with the Scheme and contribution made.

1.3.1 I am the Ramboll UK Design Lead, responsible for co-ordinating the delivery of the Scheme by the multi-disciplinary design team including input from the Early Contactor Involvement (ECI) contractor, Balfour Beatty. I have a client facing role working closely with the Contractor and Lincolnshire County Council, as well as internal and external stakeholders. I manage design deliverables and advise on design matters and have played a key role in producing Scheme supporting documentation for the design, Public Information Events (PIEs), the Planning Submission including the Environmental Statement (ES) **[CD7.1]** and documentation to support the discharge of Planning Conditions.

1.3.2 Upon the Scheme being passed to Balfour Beatty and Ramboll to progress, I initially reviewed the information and undertook an analysis of all the available information in order to assess the maturity of the existing design information. This included an assessment of the outline design alignment and access arrangements initially produced by the Lincolnshire Highways Alliance – as published in the 2017 Lincolnshire Local Plan **[CD4.1]** and structures options reports produced by WSP.

1.3.3 I led the initial packages of work to gather the information required to progress the Scheme to the planning application **[CD7.1]** stage including, commissioning topographical surveys, drainage surveys, GPR and trial hole surveys to locate Statutory Undertakers apparatus and allow the verification of record drawings and previous design assumptions. Ecological surveys, archaeological investigations and geotechnical ground investigations were commenced. This information was required to progress beyond the initial stage in order to bring the Scheme forward.

1.3.4 Following the review of existing information and commencement of additional surveys, I led a review of route options to identify and assess potential options, including those previously considered in the development of the Scheme, to assess potential constraints and opportunities. In terms of the route alignment, nine options were considered and assessed using the Department for Transport Early Assessment Sifting Tool (EAST) **[CD6.4]**. This allowed each route to be considered against a range of criteria and ranked. Option 3A, which ultimately became the proposal presented in the planning application, was recommended. Given that the route had to fill the gap between the A46 and the A15, the starting and end points were largely fixed and as such the various route options were limited.

1.3.5 I led the development of option 3A, comprising of 8km of dual two-lane all purpose carriageway, linking the A46 Hykeham Roundabout in the west with the A15 Sleaford Road and the Lincoln Eastern Bypass. Connections to the local road network, roundabout functions are provided at South Hykeham Road, Brant Road and Grantham Road, with Station Road realigned to maintain connectivity. This option also includes the provision of a shared footway/cycleway along the length

of the route with connectivity to existing non-motorised provision, along with the creation of additional bridleway.

1.3.6 Following collection of detailed geotechnical information in the vicinity of the escarpment, I led the development of an adjusted route between Station Road and Grantham Road with a view to improving buildability and achieving a better cut/ fill balance. In addition the extent of the stability issues connected with the escarpment slope became clear which had to be accommodated within the Scheme proposals.

1.3.7 Throughout the development of the Scheme design, I have regularly attended and chaired the Design Team meetings and meetings with external parties and stakeholders to present the design elements, discuss and resolve issues and queries and explain background information to assist decision making. The intention was to produce a design which met the Council's design ambitions in respect of the proposal in a cost effective way whilst limiting its impact and accommodating all necessary movements in a way that limited land take to that which was necessary.

1.3.8 I have been actively involved in the provision of design information to allow pricing exercises to be undertaken in October 2023 and August 2024.

1.3.9 In consultation with the Contractor and LCC, I have input into and detailed out temporary works requirements in order to ensure these were assessed withing the Environmental Impact Assessment **[CD7.1]** and ensure land-take requirements for planning permission, Compulsory Purchase Order (CPO) **[CD1.1]** and Side Road Orders (SRO) **[CD1.2]** were considered and detailed out.

1.3.10 I assisted with the development of presentation and survey material for Public Information Events (PIEs) and attended Public Information Events held

over 3 days at locations around Lincoln in September 2022, March 2023 and June 2023. These included presentation materials for traffic flows and an interactive 3D fly-through of the Scheme to enable effective discussion with those attending. The fly through model is available should anyone wish to see it but it is not part of the inquiry documentation.

1.3.11 I assisted with the co-ordination of the planning application and am responsible for the production of the outline and detailed design in accordance with the Design Manual for Roads and Bridges (DMRB) **[CD6.1]** and Lincolnshire County Council design standards and standard details **[CD6.2]**. I have worked collaboratively with the Environment Agency and the Upper Witham Internal Drainage Board, leading to co–ordinated drainage designs and agreed outfall rates, along with approved flood modelling.

1.3.12 I input into the development and making of the Orders (CPO **[CD1.1]** and SRO **[CD1.2]**).

1.3.13 Separate proofs of evidence cover the Drainage Design (LCC 03(i)) **[CD10.3(i)]** and Junction Operation (LCC 03(ii)) **[CD10.3(ii)]**. These are included in Appendix A and Appendix B respectively and have been produced by relevant experts. I will draw on and reference this material as required within this proof of evidence.

1.3.14 This Proof of Evidence is structured as follows;

Section 2 – Development of the Scheme

- Background and Scheme Development;
- Design Strategy and Philosophy;
- Planning Position.

Section 3 – Description of the Scheme

- Scheme Overview;
- Description of the Scheme in sections west to east.

Section 4 – Highway Engineering

- General Description;
- Description of the Scheme Highway Engineering elements in sections west to east.

Section 5 – Non-Motorised User (NMU) Provision

- NMU Strategy and PRoW

Section 6 – Justification of Land Acquisition

- Scheme wide approach to land take;
- Justification for Side Road Orders;
- Description of the Scheme Land Acquisition Justification in sections west to east.

Section 7 – Summary and Conclusions

1.3.15 To avoid doubt the Scheme has been designed to accommodate the route at a standard of provision necessary to meet the need and ambitions for the proposal indicated by Council. It has been designed in accordance with the proper application of all relevant standards, including appropriate and justified departures where necessary, which has led directly to the land required as identified within the CPO **[CD1.1]**. The land identified is that required to enable the planning permission to be implemented and for the Scheme to be brought forward.

2 DEVELOPMENT OF THE SCHEME

2.1 Background and Scheme Development

2.1.1 The North Hykeham Relief Road (NHRR) previously promoted and consulted upon as the Lincoln Southern Bypass (LSB) has been a long-term development aspiration for Lincolnshire County Council. The NHRR will link the recently constructed Lincoln Eastern Bypass (LEB) with the Lincoln Western Relief Road (LWRR) and the A46 on the Strategic Road Network.

2.1.2 Previous studies have concluded that the existing road network is under pressure, Lincoln's road network is prone to congestion (North Hykeham Relief Road Strategic and Wider Economic Benefits Report (2018)) **[CD8.37]** and that several important sections of the existing network are also operating either at capacity or are expected to reach capacity in the short to medium term. This includes the A46 LWRR, the A15 and the A1434, with congestion resulting in poor average speeds, variable journey times and delay in both peak periods and to some extent also in off peak periods. For example, peak period average speeds on the A46, which has a national speed limit, are approximately 30mph (North Hykeham Relief Road – Strategic Case – Outline Business Case (December 2018)) **[CD8.1]**.

2.1.3 Existing transport problems are likely to be exacerbated by the level of development proposed. As such, the NHRR route was included in the CLLP **[CD4.1]** as a key supporting infrastructure scheme, necessary to assist in providing highway capacity to support the viability of the development aspirations and form a key part of the Lincolnshire Coastal Highway, a route intended to access the ports.

2.1.4 The NHRR will, in forming the final section of the Lincoln Western Relief Road (LWRR), Lincoln Northern Relief Road (LNRR) and Lincoln Eastern Bypass (LEB)

and the NHRR, improve network resilience by improving east-west connectivity around the south of the Lincoln urban area for strategic and local traffic, reduce congestion and traffic levels on local urban roads in the south of the Lincoln urban area and on the road network immediately to the south, and support economic growth by improving connections between the Midlands and the Humber Ports/east coast areas, and provide the basis for delivery of Sustainable Urban Extensions (SUEs) and the South West Quadrant (SWQ).

2.1.5 A route corridor was identified in 2005 and approved in 2006 following public consultations in these years. As well as being included within the CLLP **[CD4.1]**, the NHRR is also included within the Lincolnshire Integrated Transport Strategy (LITS) **[CD4.11]** and is the last major scheme within this to be constructed.

2.1.6 The CLLP **[CD4.1]** was adopted in 2017.

2.1.7 In 2017, Lincolnshire County Council (LCC) commissioned an Option Appraisal Report (OAR) **[CD8.2]** and an Outline Business Case (OBC) **[CD8.1]**, supported by a programme of co-ordinated stakeholder and public engagement in 2018. The approach was deliberately that of an engagement exercise, not a formal consultation to provide opportunity for interested parties, external to Lincolnshire County Council to provide input into the early stages of the NHRR delivery and the development of the OAR and OBC.

2.1.8 Following the 2018 engagement exercise, the route was updated, and the amended route included in the Local Plan Review 2019. The CLLP **[CD4.1]** which contained details of the route, was adopted by the Central Lincolnshire Strategic Planning Committee in April 2023.

2.1.9 In 2022, Balfour Beatty were appointed under the Scape framework to undertake a feasibility study, with the instruction to assess the budget, programme

assumptions and timescales, and the risk profile of the 2018 route. In carrying out this study further opportunities were identified to optimise the Scheme.

2.1.10 In May 2023, RUK were appointed by Balfour Beatty to assist with the brief from LCC to further develop the optimised 2018 route, with alignment developments to facilitate the avoidance of existing infrastructure to the west of the River Witham, including a Biodigester, a 400kv pylon and the Environment Agency flood bund. The development of the design has been split into the following Scape Scheme stages;

Table 2-1: Scape Scheme stages

Stage 3A	**Surveys & Data Collection**	
	Instruction to proceed with Stage 3A	19-May 2022
Stage 3B	**Optioneering / outline design / EIA (ES) / Planning Application [CD7.1]**	
	Instruction to proceed with Stage 3B	19-May 2022
	Design and Scope freeze to enable *Contractor* budget update	12-August 2022
	Optioneering Stage complete – option selected and agreed with all parties	03-October 2022
	CPO Plans/planning red line	24-October 2022
	Issue of complete and approved outline design to inform Business Case Update	04-April 2023
	Design and Scope freeze to enable *Contractor* budget update to commence for Planning Application	26-May 2023
	Submission of Planning Application	31-October 2023
Stage 3C	Planning determination period / discharge of pre-commencement conditions	
	Instruction to proceed with Stage 3C	
Stage 3D	Compulsory Purchase Order (CPO), Side Road Order (SRO) statutory process & Public Inquiry	
	Instruction to proceed with Stage 3D	
	Land Acquisition and implementation of CPO	
Stage 4	Detailed design, production of all necessary construction information and approvals and Scope for Stage 5	

	Instruction to proceed with Stage 4	
Stage 5	Construction	
	Contract Award	

2.1.11 It is clear from that list that the Scheme has been through a detailed and comprehensive development process with all relevant and necessary matters being considered. It has been widely publicised with a significant element of public involvement leading to the grant of planning permission. The result of that has been the identification of the land required within the CPO **[CD1.1]** with changes being identified in the SRO **[CD1.2]** necessary to enable the Scheme itself to proceed.

2.2 Design Strategy and Philosophy

2.2.1 The NHRR Scheme comprises of the construction of approximately 8km of dual 2-lane all-purpose carriageway between the A46 Hykeham Roundabout and A15 Sleaford Road Roundabout, with new priority roundabout junctions constructed where the NHRR intersects the local road network at South Hykeham Road, Brant Road and A607 Grantham Road. In addition, Station Road and Somerton Gate Lane will be re-aligned to accommodate the NHRR but without a direct connection to the mainline links. The Scheme itself, and connections to the existing highway network are primarily within local highway authority areas under the ownership and operational responsibility of Lincolnshire County Council, with the exception of the A46 Trunk Road and A46 Hykeham Roundabout, which as part of the SRN are owned and operated by National Highways. Approximately 130m of both Middle Lane and A1434 Newark Road in the immediate approach to/immediate departure from the roundabout are on land owned by National Highways and as such, these sections will continue to be owned and operated by National

Highways. In this area it is necessary to meet the requirements established by National Highways.

2.2.2 The NHRR has been designed as a dual 2-lane all-purpose road with a design speed of 120km and an applied speed limit of 70mph. Design Speeds and Speed Limits are as follows;

Table 2-2: Design Speeds and Speed Limits

Road	Design Speed	Proposed Speed Limit
Middle Lane	85kph	National Speed Limit/60mph*
A1434 Newark Road	70kph	National Speed Limit/60mph**
A46 Dual (South of Hykeham R/A)	120kph	NSL/70mph*
A46 Single (North of Hykeham R/A)	100kph	NSL/60mph*
NHRR Link 2 (SHR – Brant Road)	120kph	NSL/70mph*
South Hykeham Road	70kph	NSL/60mph*
NHRR Link 2 (SHR – Brant Rd)	120kph	NSL/70mph*
Brant Road	70kph	NSL/60mph*
NHRR Link 3 (Brant Rd- Grantham Rd)	120kph	NSL/70mph*
A607 Grantham Road	70kph	40mph
NHRR Link 4 (Grantham Rd- Sleaford Rd)	120kph	NSL/70mph*
A15 Sleaford Road	100kph	NSL/60mph*
Somerton Gate Lane	50kph	30mph
Station Road	50kph	30mph

* for cars and motorcycles.
** on immediate approach to Roundabout.

2.2.3 A speed limit of 70mph is proposed for the NHRR, in line with the 'North Hykeham Relief Road – Economic Case – Outline Business Case (December 2018)' **[CD8.37]** and the aspiration of a high-speed, high quality route corridor. Speed limits on the Strategic Road Network (SRN) are consistent with the existing speed limits and have been agreed with National highways. Speed limits on the radial

roads/local roads have been set in agreement with Lincolnshire County Council Lincolnshire County Council by applying the policy set out in the Speed Limit Policy, December 2015 **[CD6.54]**.

2.2.4 The Scheme sections on the Strategic Road Network under the ownership and operational responsibility of National Highways have been designed in accordance with the nationally recognised set of standards, the Design Manual for Roads and Bridges (DMRB) **[CD6.1]**, the Manual of Contract Documents for Highway Works (MCHW) comprising of:

- Volume 0 Manual Contract Document for Major Works and Implementation Requirements;
- Volume 1 Specification for Highway Works;
- Volume 2 Notes for Guidance on the Specification for Highway Works;
- Volume 3 Highway Construction Details;

2.2.5 The Scheme sections under the ownership and operational responsibility of Lincolnshire County Council (LCC) as the Local Highway Authority have been designed in accordance with the DMRB **[CD6.1]** and the Lincolnshire Specification for Highway Works **[CD6.2]**, LCC's adapted version of the Department for transport published Volume 1 – Specification for Highway Works. Manual of Contract Documents for Highway Works (MCHW), Volumes 2 & 3 have been used in conjunction with LCC's Volume 1 – Specification for Highway Works. In addition, the following LCC Design Guidance documentation and details have been used where applicable:

- Guide to Designing Road Marking Installations in Lincolnshire 2022 **[CD6.5];**
- Guide to Designing Traffic Sign Installations in Lincolnshire 2022 **[CD6.6]**;
- Skidding Resistance Strategy 2019 **[CD6.7]**;

- Provision of Vehicle Restraint Systems in Lincolnshire 2021 **[CD6.8]**;
- Technical Services Partnership – Roads Design Guide **[CD6.9]**;
- Lincolnshire County Council – Traffic Signals Design Guide Issue 1.0,2020 **[CD6.10]**;
- Technical Services Partnership – Drainage Design Guide **[CD6.11]**;
- Lincolnshire County Council Standard Details**[CD6.2]**.

2.2.6 Across all sections, traffic signs and road markings have been detailed in line with the requirements and guidance contained within the Traffic Signs Manual (TSM) **[CD6.52]** and the Traffic Signs Regulations and General Directions 2016 (TSRGD) **[CD6.53]**.

2.2.7 In line with the developed route and Scheme proposals in the CLLP **[CD4.1]**, the NHRR Carriageway has been designed as a Dual 2 lane all-purpose road (D2AP), providing two number 3.65m wide lanes in each direction.

2.2.8 The highway design comprises the following:

a) Enlarged and signalised A46 Hykeham Roundabout incorporating 4 entry lanes from the A46 northbound and A46 Southbound carriageways;

b) Three new at grade roundabouts at the intersections of the NHRR with the existing local road network at South Hykeham Road, Brant Road and A607 Grantham Road;

c) South Hykeham Bat Bridge.

d) Wath Lane Accommodation Bridge.

e) River Witham Bridge.

f) Somerton Gate Lane Bat Culvert.

g) Viking Way Footbridge.

h) Connection of NHRR into A15 Sleaford Road Roundabout.

i) Realignment of Somerton Gate Lane.

j) Re-alignment of Station Road and construction of Station Road Bridge.

k) Earthworks slopes with a typical gradient of 1:3, with the exception of the link 3 cut slopes at 1:7.

l) A 3m wide, off carriageway shared footway/cycleway will run the length of the Scheme connecting the existing facilities at A46 with those at A15.

m) Where adjacent to the carriageway, the shared route will be separated from the carriageway by a 3m verge/separation strip and provided with a kerbed upstand.

n) A 1m verge is provided at the back of the shared footway/cycleway and a 2.5m verge on the opposite side of the NHRR. A paved central reserve of 2.5m width is provided throughout. Verge widths and central reserve widths are increased as necessary to accommodate appropriate sightlines and provide suitable forward visibility.

o) Controlled (signalised) non-motorised user (NMU) Toucan Crossings are provided at the A46, South Hykeham Road, Brant Road, A607 Grantham Road and A15 Sleaford Road. Un-controlled (un-signalised) NMU crossings are provided at Middle Lane and Station Road, with central crossing islands to minimise the number of lanes to be crossed in one go.

p) Footway-cycleway to carriageway transitions and carriageway to footway-cycleway transitions are provided on each of the local roads in the vicinity of the crossing points to allow cycles to join and leave the shared footway/cycleway facility.

q) Steel vehicle restraint systems (VRS) are provided where required in accordance with the DMRB and the results of the Road Restraints Risk Assessment Process, as well as throughout the length of the central reserve.

r) Private Means of Access (PMA)'s provided to maintain landowner access to parcels of land to reduce severance and minimise land loss.

s) Maintenance Access tracks are provided to allow Lincolnshire County Council, National Highways, Environment Agency and IDB access to Scheme features and external areas.

2.2.9 The highway alignment has been chosen to minimise conflict with identified constraints including the biodigester, pylons carrying overhead 400kv power lines, the Environment Agency Flood Bund and the Exolum Fuel Pipeline outside of the extents identified for diversion.

2.2.10 The selected horizontal and vertical alignment seeks to minimise impacts on sensitive areas, local communities and residences and ecological and heritage features, whilst complying with the application of the required standards applicable to the highway design, including appropriate flood considerations.

2.2.11 The selected highway alignment seeks to result in a balance of earthworks materials and minimising as far as practicable, the distances that the materials need to be transported. This includes allowance for the processing of site won materials into various grades of aggregates to be used in the construction of the Scheme. To facilitate this, a materials processing area is included within the Schemes overall working area.

2.2.12 The selected highway alignment is composed of a series of straight sections linked by a series of horizontal curves and vertical gradients connected by a series of vertical crest and sag curves, the combination of which has been

designed to use suitable horizontal and vertical radii to ensure that adequate forward visibility is provided to enable vehicles to stop within a safe distance for the speed limit of the individual sections of road.

2.3 Planning Position

2.3.1 Planning Permission **[CD7.1]** in respect of the proposals was applied for originally pursuant to a full application dated the 31st of October 2023 and registered as valid on the 14th of November 2023.

2.3.2 The planning application **[CD7.1]** was supported by a full Environmental Statement **[CD7.1]**, which met the requirements of the relevant Town and Country Planning (Environmental Impact Assessment) Regulations 2017 **[CD2.5]**, as well as additional information supplied at a later stage.

2.3.3 The application was determined at the Lincolnshire County Council Planning Committee meeting on the 13th of May 2024 with planning permission being granted on the same date, subject to 34 planning conditions, 18 of which are pre-commencement conditions.

2.3.4 On 22nd March 2024, a submission of further information was made to the Planning Authority under Regulation 25 **[CD7.1]**, in response to comments received during the consultation on the October 2023 Planning Submission **[CD7.1]**.

2.3.5 Since the original planning permission was granted, a further full planning application has been made under the provisions of Section 73 **[CD7.2]** of the Town and Country Planning Act 1990 **[CD2.4]**. This has the effect of varying Condition 16 pre-commencement Quail surveys as it is not feasible to carry out surveys to correspond with other activity which is intended.

2.3.6 This Section 73 application **[CD7.2]** was granted on the 10th of January 2025. It is therefore agreed by the Council that all and any matters that arose under the original permission by way of pre-commencement requirements would now apply to the new planning permission.

2.3.7 The Section 73 permission **[CD7.2]** does not alter the overall approach but for the one specified condition and all applicable pre-commencement conditions will be complied with within the same timescale.

3 DESCRIPTION OF THE SCHEME

3.1 Scheme Overview

3.1.1 The proposed Scheme alignment has been selected consistent with the route indicated in the adopted Central Lincolnshire Local Plan (CLLP) **[CD4.1]** and developed to avoid identified constraints and minimise adverse impacts on the local area.

3.1.2 The proposed Scheme comprises approximately 8km of dual all-purpose 2 lane carriageway with a 70mph speed limit (120kph design speed) running to the south of the existing conurbations of North and South Hykeham in an east/west direction between the A46 Hykeham Roundabout (known locally as Pennell's Roundabout) and the A15 Sleaford Road Roundabout at the west end of the Lincoln Eastern Bypass.

3.1.3 In linking the Lincoln Western Relief Road (LWRR) at the A46 Hykeham Roundabout with the Lincoln Eastern Bypass at the A15 Sleaford Road, the proposed Scheme will complete the ring road around the city of Lincoln, form a key part of the Lincolnshire Coastal Highway and improve east-west connectivity and connectivity between the Midlands and the Humber Ports and East Coast areas.

3.1.4 The proposed Scheme will reduce traffic congestion on local urban roads in the south of the Lincoln urban area and on the adjacent rural roads. The NHRR will support the delivery of Sustainable Urban Extensions (SUE's) and in particular, the development of the South West Quadrant (SWQ).

3.1.5 The proposed Scheme passes mainly through flat mixed farmland on two levels. The lower area to the west will be crossed generally at grade or on low embankment rising to cross the River Witham on a combination of embankment

and a bridge. Between Brant Road and Station Road, the proposed Scheme will be constructed on embankment. Station Road will be realigned and cross the proposed Scheme on a new bridge to ensure that connectivity is maintained, whilst allowing the proposed Scheme to pass under Station Road in cutting. Beyond Station Road, the proposed Scheme transitions into a major cutting to reach the top of the escarpment known locally as both Lincoln Cliff and Lincoln Edge, with shallow cut slopes to mitigate stability issues encountered within the escarpment area. Once the top of the escarpment is attained, the remainder of the proposed Scheme crosses the landscape generally at grade or on low embankments to tie in with the A15 Sleaford Road and the Lincoln Eastern Bypass.

3.1.6 The proposed Scheme alignment minimises the requirement for demolition of residential property over its length to six dwellings located on Station Road, all of which have been previously purchased by LCC in anticipation of the Scheme under the applicable Blight conditions.

3.1.7 The proposed Scheme alignment avoids the requirement to demolish agricultural farm buildings but will require the removal of a number of temporary livery buildings in the vicinity of Wath Lane. Key factors in developing the horizontal and vertical alignment for the proposed Scheme included;

- Achieving a cut/fill balance over the Scheme to prevent the unnecessary import/export of material;
- Maximise the use of site won material;
- Minimise lengths of haul routes where practicable;
- Minimising the visual impact of the Scheme on the surrounding locality and heritage features, including Lincoln Cathedral;

- Minimising noise impacts;
- Maintenance of access along the River Witham corridor for the Environment Agency, Upper Witham Internal Drainage Board and Landowners;
- Minimising the number of residential properties on Station Road requiring demolition;
- Maintaining connectivity for non-motorised users;
- Maintaining connectivity for identified species; &
- Ensuring that land take is limited to that required for the Scheme, its construction and proper mitigation.

3.1.8 The earthworks design is effectively balanced with material excavated from the cutting through the escarpment being used across the Scheme length to construct embankments, particularly those required either side of the River Witham. A temporary bridge will be required to facilitate the movement of earthworks materials from the east of the site to fill areas to the west of the river. The temporary bridge will be installed to the north of the Scheme and will be a 70m single span JPB Panel bridge with a 4.2m wide carriageway and a 1.5m wide side mounted walkway. The temporary bridge will be constructed in sections off-line and be launched into position across the river. Temporary culverts will be installed in the IDB ditches either side of the river to allow construction of temporary approach embankments whilst maintaining connectivity and flows. Access over bridge will be controlled by traffic lights to ensure single vehicle use and direction at any given time. The bridge will be installed in May 2026 and removed in April 2029 and so will be in place for the duration of the construction works, with removal along with the haul roads when the Scheme is completed.

3.1.9 Roundabout junctions have previously been assessed as an appropriate and cost effective at-grade junction form as they allow the safe interchange of vehicles between crossing traffic streams and can accommodate sharp changes of direction which could not be achieved by curves and require less land than would be required for a grade separated interchange. Following discussions with LCC, the roundabouts for South Hykeham Road, Brant Road and Grantham Road have been assessed with an inscribed circle diameter (ICD) of 90m with a view to ensuring consistency with the roundabout sizes on the LEB.

3.1.10 LHA and SRN elements of the NHRR Scheme have been designed such that assets including lighting, drainage and traffic signals on the SRN are independent from those on the LHA network, in order to ensure clarity in ownership, maintenance responsibilities, and adherence to the relevant design standards. This separation is critical to avoid cross-authority management conflicts and to support long-term maintainability. The split between National Highways and Lincolnshire County Council ownership and maintenance responsibility is detailed on drawing NHRR-RAM-HGN-HYKE-SK-CH-60413 **[CD8.72]** and has been agreed with National Highways and Lincolnshire County Council.

3.1.11 The NHRR is not designated as either a High Load Route or a Heavy Load Route. However, headroom clearances under the overbridges crossing the Scheme have been set at a minimum of 5.7m and the River Witham Bridge has been designed to provide for exceptional abnormal indivisible loads for all vehicles up to SOV 600.

3.1.12 The bridge structures required for the NHRR Scheme have been designed to be familial in nature with the bridge structure types and styles in place on the LEB.

3.1.13 The Scheme footprint allows for the accommodation of all permanent scheme elements including the accommodation of identified rights of way, maintenance and landowner access as well as essential environmental mitigation and landscaping needed to protect and enhance ecologically or visually important areas of existing vegetation, provide screening, enhance amenity and integrate the Scheme into the context of the wider area. Where landscaping is not required for specific mitigation or enhancement as described above, it generally comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway, wet grassland seeding in the GSWC's with scattered individual tree planting and hedgerow planting along the Scheme boundaries. Refer to Landscape Proof of Evidence, LCC 06 **[CD10.6]**for further details.

3.2 A46 Hykeham Roundabout

3.2.1 At its western end NHRR will tie-into the existing A46 Hykeham Roundabout. It currently operates as a priority roundabout and is prone to congestion and traffic delays due to lack of capacity on the roundabout and onto the A46 to the north which is a single carriageway. The existing Hykeham Roundabout has an ICD of approximately 70m, and serves A46 (D2AP) to the southwest, Middle Lane (SU2) to the west, A46 Lincoln Western Relief Road to the north and A4134 Newark Road to the east. The roundabout, trunk road to the north and south, plus approximately 130m of both Middle Lane and A1434 Newark Road are on land owned by National Highways.

3.2.2 The existing four-arm roundabout will be significantly enlarged and signalised to facilitate the incorporation of a fifth arm for the proposed Scheme and to ensure that the junction operates within capacity at both the opening and design years of 2028 and 2043, respectively. This requires significant improvements to be made to each approach and exit, as well as enlargement of the circulatory area, signalisation and incorporation of additional lanes.

3.2.3 The existing dual carriageway of the A46 to the south of Hykeham Roundabout will incorporate a four-lane approach and entry to the roundabout following engagement and consultation with National Highways in the process of gaining agreement of the outline proposals and support from National Highways for the Planning Application. This fourth lane will provide resilience and junction operational benefits. The A46 southbound exit from the roundabout will comprise a two-lane exit.

3.2.4 Middle Lane will incorporate a two-lane exit from the roundabout, with a single lane entry. The existing access and egress arrangements to the service area north of Middle Lane (known as Thorpe on the Hill Services), will be retained and upgraded, with an in only (access only) arrangement, served by a right turn lane having capacity for the safe stacking of two Heavy Goods Vehicles (HGV's), immediately to the west of the roundabout and an improved access and exit as currently located to the west of the service area.

3.2.5 The existing single carriageway of the A46 to the north of Hykeham Roundabout will see the two-to-one lane merge on the northbound exit extended northbound and lanes on the southbound approach to the roundabout increased to four in number.

3.2.6 The existing A1434 Newark Road is a single carriageway with two lane entry onto the roundabout. This will be increased to a three lane entry to accommodate traffic using the NHRR.

3.2.7 The proposed NHRR will be a two-lane dual carriageway and on the approach to the roundabout will incorporate two dedicated left turn lanes onto the southbound A46 towards Newark.

3.2.8 The roundabout will be illuminated with lighting linking back to existing lighting on the dualled section of the A46 and the A1434 Newark Road. Lighting on the A46 to the north of the roundabout will be extended to meet with the existing lighting immediately to the south of Moor Lane. On the NHRR approach, lighting will be provided on the immediate approaches to the roundabout to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. On the NHRR ewestbound approach, this corresponds to a minimum of 156m (5 seconds at 70mph).

3.2.9 Landscaping comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries.

3.3 A46 Hykeham Roundabout to South Hykeham Road (NHRR Link 1)

3.3.1 At its western end, the proposed NHRR Link 1 commences at the enlarged A46 Hykeham Roundabout and progresses in a south-southeast direction to South Hykeham Road, passing to the south of Boundary Lane Industrial Estate and to the south of the Biodigester facility, with the plan alignment selected to avoid impacting the industrial property.

3.3.2 The NHRR Link 1 is generally at grade/on a low embankment crossing agricultural fields. There is a designed low spot in the alignment, to facilitate surface water

drainage, where the Scheme crosses the South Hykeham Catchwater. Refer to Drainage Proof of Evidence, LCC 03(i) **[CD10.3(i)]** included in Appendix A for further details.

3.3.3 Link 1 surface water drainage is in the form of grassed surface water channel (GSWC) in the verges and concrete surface water channel (CSWC) in the central reserve to collect surface water run-off. It is then channelled to piped and ditch conveyancing systems into the catchments attenuation basin before being discharged at an agreed controlled rate into the existing land drainage system, with pollution control provided as necessary. Drainage across this section is split into two catchments, with catchment two to the west of the South Hykeham Catchwater and catchment three to the east.

3.3.4 Pre-earthworks drainage ditches and cut-off ditches are provided on either side of the carriageway along with culverts to maintain uninterrupted flow beneath the carriageway and to preserve existing drainage patterns. This allows the highway drainage networks to be separated from the overland flows for attenuation and pollution control purposes.

3.3.5 An ecological mitigation pond with associated hibernacula will be provided to the east of A46 Hykeham Roundabout and to the north of the Scheme in order to mitigate for the loss of the existing pond adjacent to the A1434 Newark Road which will be removed in order to allow for the provision of the required PMA/Maintenance access track.

3.3.6 Landscaping along Link 1 comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway with wet grassland seeding in the GSWC's, scattered individual tree planting and hedgerow planting along the Scheme boundaries.

3.3.7 Pedestrian and cyclist connectivity and provision along the NHRR is provided on Link 1 by a 3m wide shared footway-cycleway, which runs parallel to the eastbound carriageway between A46 Hykeham Roundabout and South Hykeham Road Roundabout. Connection is also provided to public footpath SHYK/9/2 at the western end of the link.

3.3.8 A maintenance access track/Private Means of Access (PMA), accessed from the A1434 Newark Road is provided to the north of the eastbound carriageway as far as the attenuation basin for catchment three, immediately to the east of the South Hykeham Catchwater. This fulfils the dual function of providing landowner access to agricultural fields to the north of the Scheme and LCC maintenance access to the attenuation basins for catchments two and three and their respective outfalls into the South Hykeham Catchwater. In addition, it has been agreed that the access track will also be available for use by the IDB to access the South Hykeham Catchwater, the Beck and land drainage ditches to the north of the Scheme for which the NHRR Scheme severs the historical access.

3.3.9 A second maintenance access track/PMA accessed from South Hykeham Road to the south of the proposed South Hykeham Road Roundabout, is provided to the south of the westbound carriageway. This access track runs the full length of the link. It provides landowner access to agricultural fields, LCC maintenance access to carrier ditches, culverts and cut-off ditches, and National Highways access to the attenuation basin for catchment 1, comprised of the SRN drainage for the amended sections of the A46(T), A46 Hykeham Roundabout and National Highways areas of Middle Lane and A1434 Newark Road.

3.3.10 Traffic management/Maintenance crossovers are provided at each end of Link 1, adjacent to the roundabout junctions. These are formed of an

increased pavement thickness through the central reserve and a removable section of vehicle restraint system (VRS). The Traffic Management/Maintenance crossovers will allow traffic to be placed into contraflow, with one lane operating in each direction on a single carriageway, to enable the closure for maintenance purposes of the other carriageway.

3.3.11 Low noise surfacing will be provided along the length of the link.

3.3.12 Lighting will be provided on the immediate approaches to the junctions at either end of the link to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated.

3.3.13 An ecological mitigation feature in the form of a Bat Hop-over will be provided at chainage 800, immediately to the east of the attenuation basin for catchment three. This comprises of a widened section of highway embankment and tree planting on the line of an identified Barbastelle Bat flightline, in order to direct bats up and over the road at a height above vehicles to reduce the risk of bat fatalities.

3.4 South Hykeham Roundabout

3.4.1 South Hykeham Road Roundabout is a four-arm at grade priority roundabout junction with the existing South Hykeham Road. The roundabout is positioned partially on the line of the existing road, with the majority of the roundabout being offset to the southeast. This positioning is driven by the need to provide suitable alignments to the realigned sections of South Hykeham Road and to ensure that the realigned section of South Hykeham Road can be tied into the existing road alignment prior to the residential properties to the south.

3.4.2 This positioning combined with the at-grade setting allows off-line construction of around two thirds of the roundabout whilst maintaining traffic flow of the existing road.

3.4.3 The NHRR mainline eastbound and westbound will comprise two lane approaches and exits.

3.4.4 Both South Hykeham Road northbound and southbound will comprise of single lane approach and exits.

3.4.5 A signalised (Toucan) crossing will be provided to the north of the roundabout for pedestrian and cyclist crossing of South Hykeham Road and connectivity to the footway-cycleway on NHRR Link 2.

3.4.6 A combined maintenance access track/PMA and footway-cycleway & Bridleway access is provided off South Hykeham Road, south of the proposed roundabout to the east.

3.4.7 South Hykeham Road and South Hykeham Road Roundabout drainage is in the form of a kerb and gully system and is part of catchment four, with surface water being collected and channelled to the east into Link 2.

3.4.8 South Hykeham Road Roundabout and sections of South Hykeham Road to the north and south are lit with lighting provided on the immediate approaches to the roundabout to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. On the NHRR eastbound and westbound approaches, this corresponds to a minimum of 156m (5 seconds at 70mph). On the northbound South Hykeham Road approach, a minimum of 133m (5 seconds at 60mph) is provided. On the southbound South Hykeham Road approach, a minimum of 133m (5 seconds at 60mph) is provided prior to the roundabout.

3.4.9 Landscaping comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries.

3.5 South Hykeham Road Roundabout to Brant Road Roundabout (Link 2)

3.5.1 At its western end, the proposed NHRR Link 2 commences at South Hykeham Road Roundabout and progresses in an easterly direction towards Wath Lane, the River Witham and Brant Road, passing to the south of the conurbation of South Hykeham. The carriageway is generally at grade/ on low embankment for approximately 1km, with the vertical alignment constrained by the 400 KV overhead powerlines 200m to the east of South Hykeham Road. Continuing east, the carriageway runs to the north of the Environmental Agency flood bund, at which point the vertical alignment rises on the approach to the river and River Witham Bridge.

3.5.2 Link 2 surface water drainage is split into catchments 4, 5, 6, 7 & 8 from west to east. Link 2 surface water drainage is generally in the form of grassed surface water channel (GSWC) in the verges, carrier pipes and ditches, attenuation basin and outfall to existing surface water systems. Catchments four and five discharge into a riparian watercourse located between Wath Lane and the South Hykeham Roundabout. Catchments six and seven collect surface water runoff from the dual carriageway and discharge into the Green Lane Drain. Catchment eight discharges into the IDB ditch to the east of the River Witham.

3.5.3 In common with Link 1, pre-earthworks drainage ditches and cut-off ditches are provided on either side of the carriageway along with culverts to maintain uninterrupted flow beneath the carriageway and to preserve existing drainage

patterns and to separate highway drainage networks from the overland flows for attenuation and pollution control purposes.

3.5.4 An ecological mitigation pond will be provided to the south of the Scheme between South Hykeham Bat Bridge and Wath Lane Accommodation Bridge in order to increase amenity and habitat biodiversity.

3.5.5 Landscaping for the Scheme comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway with wet grassland seeding in the GSWC's, scattered individual tree planting and hedgerow planting along the Scheme boundaries. In addition, woodland planting is proposed on the approach embankments to South Hykeham Bat Bridge and Wath Lane Accommodation Bridge, along with woodland planting for visual amenity in areas between the Scheme and South Hykeham, between Wath Lane and the River Witham. Woodland planting is also proposed on the approach embankments to the River Witham Bridge, either side of the river.

3.5.6 Pedestrian and cyclist connectivity and provision along the NHRR is provided on Link 2 by a 3m wide shared footway-cycleway, which runs parallel to the eastbound carriageway between South Hykeham Road Roundabout and Brant Road Roundabout. At-grade connection is provided to Wath Lane (public bridleway SHYK/2/2) and Meadow Lane (public bridleway SHYK/906/1) via a link immediately to the west of the River Witham Bridge.

3.5.7 A combined maintenance access track/PMA and footway-cycleway & Bridleway is provided off South Hykeham Road heading east. This is connected to Wath Lane Accommodation Bridge, 500m from South Hykeham Road Roundabout. This facility provides landowner access to agricultural fields to the south of the Scheme, LCC maintenance access to the attenuation basins for catchments four

and five and pedestrian, cyclist and equestrian links to Wath Lane and South Hykeham.

3.5.8 Meadow Lane bridleway (bridleway SHYK/906/1) will be extended from its current end point at the River Witham, under the River Witham Bridge and westwards along the southern side of the Scheme as far as Wath Lane (bridleway SHYK/2/2), creating a new facility for equestrian use. This will also be used as a maintenance access track/PMA, providing landowner access to the fields to the south of the Scheme.

3.5.9 A 3m wide footway-cycleway link will be provided from Brant Lane to the north and south of the Scheme, under the River Witham Bridge to the east side of the river.

3.5.10 A dedicated PMA track will be provided on the north of the Scheme between Hall Farm and Wath Lane.

3.5.11 Traffic management/Maintenance crossovers are provided at each end of Link 2, adjacent to the roundabout junctions to allow traffic to be placed into contraflow and maintenance of the other carriageway.

3.5.12 Low noise surfacing will be provided along the length of the link and additional mitigation for the conurbation of South Hykeham will be provided via a combination of acoustic fencing and bunding from Wath Lane Accommodation Bridge for a length of 750m.

3.5.13 Lighting will be provided on the immediate approaches to the junctions at either end of the link to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. This corresponds to a minimum of 156m (5 seconds at 70mph).

3.5.14 Approximately 300m east of South Hykeham Roundabout, a bridge will be constructed in order to provide a route for Barbastelle Bats to cross the Scheme. Guidance planting in the form of hedgerows and trees will be provided to connect the existing landscape features north and south of the proposed Scheme to the bridge. The proposed structure is a single span integral construction with a weathering steel composite deck, with integral abutment diaphragms supported on reinforced concrete columns which transition into piled foundations.

3.5.15 A second ecological mitigation feature in the form of a Bat Hop-over will be provided at chainage 2050, to the east of Wath Lane Accommodation Bridge. This comprises of a widened section of highway embankment and tree planting on the line of an identified Barbastelle Bat flightline, to direct bats up and over the road at a height above vehicles to reduce the risk of bat fatalities.

3.5.16 Wath Lane Accommodation Bridge will be a single span integral construction with a weathering steel composite deck, with integral abutment diaphragms supported on reinforced concrete columns which transition into piled foundations. The bridge will allow pedestrian, cycle, equestrian access across the Scheme, as well as agricultural plant and machinery and facilitate general landowner access.

3.5.17 River Witham Bridge is situated approximately 2.3km from South Hykeham Road Roundabout. The proposed structure is a three-span structure weathering steel composite bridge approximately 109m long supported on reinforced concrete piers, abutments and piled foundations. It will carry the North Hykeham Relief Road across the River Witham and the IDB drainage ditches to the east and west of the river.

3.5.18 The bridge deck will be approximately 28.1m, suitable to accommodate the proposed dual carriageway and footway-cycleway. A minimum 5.0m headroom clearance will be provided above the EA access track that runs to the west of the river.

3.6 Brant Road Roundabout

3.6.1 Brant Road Roundabout is a four-arm priority roundabout junction with the existing Brant Road. The vertical alignment of the NHRR and proximity to the River Witham Bridge require the roundabout to be constructed on embankment approximately 4m above the existing ground level and 2m above the existing Brant Road. To allow traffic to be retained on Brant Road during construction of the roundabout, the roundabout will be constructed off-line to the west of the existing road.

3.6.2 The NHRR mainline eastbound and westbound will comprise two lane approaches and exits.

3.6.3 Both Brant Road northbound and southbound will comprise of single lane approach and exits.

3.6.4 A signalised (Toucan) crossing will be provided to the north of the roundabout for pedestrian and cyclist crossing of Brant Road and connectivity to the footway-cycleway on NHRR Link 3.

3.6.5 A maintenance access track/PMA is provided off Brant Road, north of the proposed roundabout to provide access to Catchment eight attenuation basin for LCC and to provide landowner access to agricultural land to the north and into Station Road Farm.

3.6.6 Brant Road and Brant Road Roundabout drainage is in the form of a kerb and gully system and is part of catchment eight, with surface water being collected and channelled to the east into Link 3.

3.6.7 Brant Road Roundabout and sections of Brant Road to the north and south are lit. Brant Road Roundabout and sections of Brant Road to the north and south are lit with lighting provided on the immediate approaches to the roundabout to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. On the NHRR eastbound and westbound approaches, this corresponds to a minimum of 156m (5 seconds at 70mph). On the northbound Brant Road approach, a minimum of 133m (5 seconds at 60mph) is provided. On the southbound Brant Road approach, a minimum of 133m (5 seconds at 60mph) is provided prior to the NMU crossing facility.

3.6.8 Landscaping comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries.

3.7 Brant Road Roundabout to Station Road (Link 3 Part 1)

3.7.1 At its western end, the proposed NHRR Link 3 commences at Brant Road Roundabout and progresses in a northeasterly direction towards Station Road and ultimately to Grantham Road Roundabout. The carriageway is on embankment.

3.7.2 Link 3 (part 1) surface water drainage is split into catchments eight and nine from west to east. Link 3 surface water drainage is generally in the form of grassed surface water channel (GSWC) in the verges, concrete V-channel, carrier pipes and ditches, attenuation basin and outfall to existing surface water systems.

Catchment eight and nine discharges into the proposed ditch at greenfield runoff rate near Somerton Gate Lane.

3.7.3 In common with Link 1, Catchment nine has proposed pre-earthworks drainage ditches and cut-off ditches on either side of the carriageway along with culverts to maintain uninterrupted flow beneath the carriageway and to preserve existing drainage patterns and to separate highway drainage networks from the overland flows for attenuation and pollution control purposes.

3.7.4 Pedestrian and cyclist connectivity and provision along the NHRR is provided on Link 3 by a 3m wide shared footway-cycleway, which runs parallel to the eastbound carriageway up until Station Road Overbridge.

3.7.5 A dedicated PMA track will be provided on the north of the Scheme from the junction of Somerton Gate Lane.

3.7.6 A new section of carriageway, similar in nature to the existing Somerton Gate Lane will be created parallel to and south of the proposed Scheme to facilitate connection onto Brant Road via a simple priority junction. The proposed width of 5.5m is similar to the existing end of Somerton Gate Lane where it meets Brant Road. This ties into the narrower section of Somerton Gate Lane, 2.75 – 3.0m, with passing places.

3.7.7 Traffic management/Maintenance crossovers are provided at the beginning of Link 3, adjacent to the roundabout junctions to allow traffic to be placed into contraflow and maintenance of the other carriageway.

3.7.8 Low noise surfacing will be provided along the length of the link and additional mitigation will be provided via a combination of acoustic fencing and bunding for a length of 305m.

3.7.9 Lighting will be provided on the immediate approaches to the junctions at either end of the link to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. This corresponds to a minimum of 156m (5 seconds at 70mph).

3.7.10 Ecological mitigation in the form of a Bat Hop-over will be provided. This comprises of a widened section of highway embankment and tree planting on the line of an identified Barbastelle Bat flightline, in order to direct bats up and over the road at a height above vehicles to reduce the risk of bat fatalities.

3.7.11 Approximately 0.5km from Brant Road Roundabout, a box culvert structure will be provided below the Scheme at the intersection of the proposed Scheme and the existing Somerton Gate Lane to accommodate bat flight lines that have been identified and provide a route across the proposed Scheme. Guidance planting in the form of hedgerows and trees will be provided to connect the existing landscape features north and south of the Proposed Scheme to the culvert. In addition to its function as a mitigation feature to cater for bats crossing the Scheme, the culvert will also accommodate a lower level channel to connect the pre-earthworks ditch system to the south of the Scheme with the ditch system to the north of the Scheme. The box culvert will be a precast reinforced concrete structure with a minimum width of 4m and an internal void of 3.5m in height.

3.7.12 Landscaping generally comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries. In addition, woodland planting is proposed to the north of the Scheme at the interface with the existing Somerton Gate Lane to tie-in with and enhance the existing vegetation. North of the Scheme, woodland planting is proposed to provide

mitigation in terms of visual screening below Station Road Farm and around the re-aligned Station Road to the north and south of the Scheme.

3.8 Station Road to Grantham Road Roundabout (Link 3 Part 2)

3.8.1 At its western end, the proposed NHRR Link 3 commences at Brant Road Roundabout and progresses in a northeasterly direction towards Station Road and ultimately to Grantham Road Roundabout. The carriageway is on embankment.

3.8.2 Link 3 (part 2) surface water drainage is generally in the form of grassed surface water channel (GSWC) in the verges, concrete V-channel, carrier pipes and ditches, attenuation basin and outfall to existing surface water systems. Catchment nine discharges into the proposed ditch at greenfield runoff rate near Somerton Gate Lane.

3.8.3 In common with Link 1, Catchment nine has proposed pre-earthworks drainage ditches and cut-off ditches on either side of the carriageway along with culverts to maintain uninterrupted flow beneath the carriageway and to preserve existing drainage patterns and to separate highway drainage networks from the overland flows for attenuation and pollution control purposes.

3.8.4 Pedestrian and cyclist connectivity and provision along the NHRR is provided on Link 3 by a 3m wide shared footway-cycleway, which runs parallel to the eastbound carriageway up until Station Road Overbridge, where the footway-cycleway is diverted up and over to the other side of the carriageway in order to provide a suitable gradient.

3.8.5 To the north, the access to Station Road Farm will be re-established, partially by using the existing Somerton Gate Lane, and partially by creating a further section of parallel trackway, which will double as a maintenance route to the second attenuation pond located north of the Proposed Scheme carriageway.

3.8.6 Traffic management/Maintenance crossovers are provided at the end of Link 3, adjacent to the roundabout junctions to allow traffic to be placed into contraflow and maintenance of the other carriageway.

3.8.7 Low noise surfacing will be provided along the length of the link and additional mitigation will be provided via a combination of acoustic fencing and bunding for a length of 395m from Station Road Overbridge.

3.8.8 Lighting will be provided on the immediate approaches to the junctions at either end of the link to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. This corresponds to a minimum of 156m (5 seconds at 70mph).

3.8.9 Ecological mitigation in the form of a Bat Hop-over will be provided. This comprises of a widened section of highway embankment and tree planting on the line of an identified Barbastelle Bat flightline, in order to direct bats up and over the road at a height above vehicles to reduce the risk of bat fatalities.

3.8.10 Landscaping in this section generally comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries. In addition, woodland planting is proposed to the north and south of the Scheme for the length cutting through the Lincoln escarpment/Lincoln Cliff area and between the Scheme and Grantham Road to the south of the proposed Grantham Road Roundabout. This woodland planting is provided both for visual screening and as replacement mitigation for the existing woodland area on the Lincoln escarpment that will be removed.

3.8.11 Approximately 2.8km from Brant Road Roundabout is the proposed Viking Way Footbridge. The structure is a single span curved steel truss footbridge

approximately 50m long supported on reinforced concrete abutments. The footbridge will serve as an access route for pedestrians, cyclists over the North Hykeham Relief Road. The deck will be simply supported at each end on four elastomeric bearings (one under each corner) which combined with an expansion joint at each end will allow for movement due to live and thermal loading. The bridge deck will have a width of 3.6m internal face of parapet to parapet (overall width of 4.0m), with 1.5m high pedestrian parapets on both sides. The headroom above the North Hykeham Relief Road will be a minimum of 5.7m during service in accordance with CD 127 **[CD6.1]** Cross Sections and Headroom.

3.9 Station Road

3.9.1 The proposed Scheme passes through Station Road and into the escarpment in a cutting. This requires the demolition of six dwellings located on Station Road. Two further residential properties are directly affected by the Proposed Scheme which infringes on the associated land titles, but without the requirement for demolition. The carriageway is generally at grade. To the east of Station Road, cutting slopes are typically 1 in 7 perpendicular to the carriageway through the Lincoln escarpment. At 1 in 7, the design cutting slopes are slacker than those typically seen around the highway network, with slopes of 1 in 2 to 1 in 3 being more common. Shallower cut slopes result from a need to deal with the geotechnical conditions encountered at the escarpment edge, which is inherently unstable. Cut slopes of 1 in 7 will ensure stability whilst avoiding the need for significant heavy engineering solutions. This has resulted in an increase in the footprint of land required for the Scheme in this area but does allow for landscaping and other mitigation features to be incorporated into the Scheme.

3.9.2 Station Roads surface water drainage consists of carrier pipes and ditches, attenuation basin and outfall to existing surface water systems.

3.9.3 Pedestrian and cyclist connectivity and provision along Station Road is provided by a 3m wide shared footway/cycleway.

3.9.4 The Proposed Scheme reflects the long-established design principles which provide for the realigned Station Road to pass over the Proposed Scheme on a bridge. The bridge will be located slightly to the west of the existing Station Road at broadly the same level as the existing carriageway, albeit on a small embankment as the ground falls away from Station Road.

3.9.5 Approximately 1.5km from Brant Road Roundabout, the proposed Station Road Overbridge superstructure will comprise a single span composite deck formed from plate girders acting compositely with a reinforced concrete deck slab constructed from precast panels. The overall length of the deck will be approximately 39m, comprising 4 no. longitudinal girders spaced at approximately 3m centres arranged in braced pairs. The overall width of the structure will be approximately 12m. 5.7m headroom plus and allowance for deflection in service shall be provided on this structure, to tie in with other bridges on the Scheme and routes in the locality.

3.10 A607 Grantham Road Roundabout

3.10.1 Grantham Road roundabout is a conventional 4-arm priority roundabout situated on the existing highway. The carriageway is generally at grade. The roundabout has been positioned as far east as feasible to allow for a compliant design and suitable connections back into Grantham Road whilst avoiding an archaeological area of interest.

3.10.2 The positioning of the roundabout allows for online construction to maintain traffic flow of the existing road.

3.10.3 The NHRR mainline eastbound and westbound will comprise two lane approaches and exits.

3.10.4 Both Grantham Road northbound and southbound will comprise of single lane approach and exits.

3.10.5 The shared use footway/cycleway crosses Grantham Road to the north of the proposed roundabout via a Toucan signalised crossing.

3.10.6 Modifications are proposed to the existing signalised junction to the south of the roundabout at A607 Grantham Road/High Dyke to incorporate NMU crossing facilities that will allow the existing NMU facility adjacent to the southbound carriageway to be repositioned adjacent to the northbound carriageway and thereby access the Viking Way footbridge and the Proposed Scheme combined footway/cycleway.

3.10.7 Grantham Road Roundabouts drainage is in the form of a kerb and gully system and part of the roundabout is catchment nine and part is catchment ten.

3.10.8 Grantham Road Roundabout is to be lit. Grantham Road Roundabout and sections of Grantham Road to the north and south are lit with lighting provided on the immediate approaches to the roundabout to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. On the NHRR eastbound and westbound approaches, this corresponds to a minimum of 156m (5 seconds at 70mph). On the northbound Grantham Road approach, lighting is provided to connect to the existing lighting to the south at the High Dyke Junction. On the southbound

Grantham Road approach, lighting is provided to connect to the existing lighting to the north, thereby ensuring that a minimum of 89m (5 seconds at 40mph) is provided prior to the NMU crossing facility.

3.10.9 Landscaping comprises of wildflower enriched grassland with amenity grassland adjacent to the carriageway and scattered individual tree planting with hedgerow planting along the Scheme boundaries.

3.11 A607 Grantham Road to A15 Sleaford Road (Link 4)

3.11.1 At its western end, the proposed Link 4 commences at Grantham Road Roundabout and progresses in a northeasterly direction to Sleaford Road Roundabout. The carriageway is generally at grade. NHRR Mainline Link 4 is designed to a 120kph design speed.

3.11.2 The entirety of Link 4 surface water drainage is catchment ten. Link 4 surface water drainage is generally in the form of grassed surface water channel in the verges, carrier pipes and ditches, attenuation basin and outfall to existing drainage systems. Catchment ten discharges into the IDB ditch.

3.11.3 Pre-excavation ditches are proposed to intercept runoff water from the uplands catchment and embankment slopes. They will preserve existing drainage patterns and separate highways drainage networks from the overland flows for attenuation and pollution purposes.

3.11.4 A Pedestrian and cyclist connectivity and provision along the NHRR is provided on Link 4 by a 3m wide shared footway-cycleway, which runs parallel to the westbound carriageway between Grantham Road Roundabout and Sleaford Road Roundabout. A short section of Footpath 3/2, known as the Viking Way, is to be stopped up at its intersection with the Proposed Scheme.

3.11.5 An unmade NMU route to the north-west of the Proposed Scheme along the top of the cutting slope will be provided to retain the section along the top of Lincoln Cliff/Lincoln Edge to the north of the Proposed Scheme, with additional sections created to provide onward connectivity from the southern end of the retained Viking Way to Station Road.

3.11.6 Traffic management/ Maintenance crossovers are provided at each end of Link 4, adjacent to the roundabout junctions to allow traffic to be placed in contraflow and maintenance of the other carriageway.

3.11.7 Low noise surfacing will be provided along the length of the link and additional mitigation will be provided via a combination of acoustic fencing and bunding from approximately midway through Link 4 up until Sleaford Road Roundabout for a length of 480m.

3.11.8 Lighting will be provided on the immediate approaches to the junctions at either end of the link to ensure that a length of carriageway corresponding to a minimum of 5 seconds of driving time at the proposed speed limit, is illuminated. This corresponds to a minimum of 156m (5 seconds at 70mph).

3.11.9 Ecological mitigation features in the form of bat hop overs have been designed to maintain bat flightline connectivity and ensure flight heights are suitable to avoid passing vehicles. This has been achieved by widening the highway embankment on the line of existing Barbastelle Bat flightlines to create a bat-hop over feature formed from the planting of extra heavy standard trees to the north and south of the proposed Scheme, as close to the carriageway as feasible.

3.12 A15 Sleaford Road Roundabout

3.12.1 The existing A15 Sleaford Road Roundabout will have an additional fifth arm added to the south-west on the circulatory area to provide for two-lane entry and exit to and from the Proposed Scheme. Minor changes to the kerb line are required to the east of the roundabout on the Lincoln Eastern Bypass arm and the existing Lincoln Eastern Bypass two to one lane merge will be extended to provide a 100m length of dual carriageway with a 90m merge length to aid traffic flow and allow more space for motorists joining the Lincoln Eastern Bypass to merge.

3.12.2 The NHRR Mainline eastbound and westbound will comprise two lane approaches and exits.

3.12.3 Sleaford Road northbound and southbound will comprise of single lane approach and exit.

3.12.4 Bloxholm Lane will remain a single lane approach and exit.

3.12.5 Lincoln Eastern Bypass (LEB) will comprise of single lane approach and exit.

3.12.6 The shared use footway/cycleway crosses Sleaford Road to the north-west of the proposed roundabout via a Toucan signalised crossing.

3.12.7 An agricultural access track is located to the south of the Proposed Scheme, which also serves as a maintenance track to the attenuation pond south-east of the roundabout.

3.12.8 Sleaford Road Roundabout drainage is in the form of kerb and gully system and is part of catchment ten.

3.12.9 Sleaford Road Roundabout is currently illuminated. This will be maintained but modified to accommodate the NHRR, with the eastbound approach being lit to ensure a minimum of 156m (5 seconds at 70mph) in advance of the roundabout. Existing lighting on the Sleaford Road, Bloxholm Road and LEB approaches will be retained.

3.13 Lincoln Eastern Bypass (LEB)

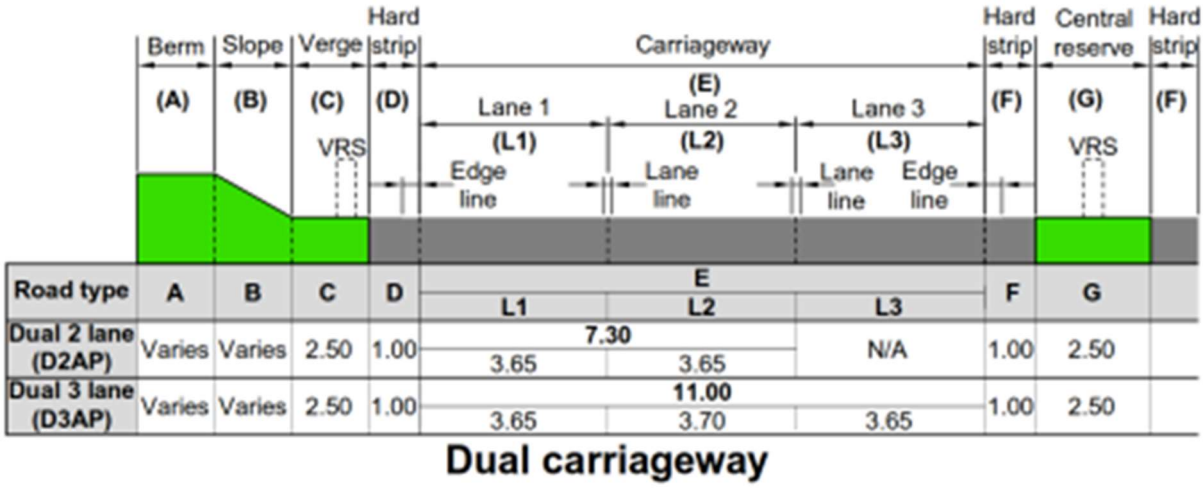
3.13.1 The existing A15 Lincoln Eastern Bypass is to be widened at the entrance of A15 Sleaford Road Roundabout in order to accommodate the expected traffic flows with the proposed NHRR Scheme. There will be a short dualled section of the LEB upon the exit from Sleaford Road Roundabout.

4 HIGHWAY ENGINEERING

4.1 General Description

4.1.1 The following is a brief description of the highway design. The information provided centres around horizontal and vertical alignment parameters as defined in CD 109 'Highway Link Design' (Revision 1, March 2020) **[CD6.1]**, CD 127 'Cross-sections and headrooms' (Version 1.0.1, July 2021) and CD 116 'Geometric design of roundabouts' (Version 2, April 2020) **[CD6.1]** of the Design Manual for Roads and Bridges (DMRB) as published by the Department for Transport (DfT).

4.1.2 The cross section for the NHRR Mainline is a standard dual 2-lane all-purpose (D2AP) carriageway as CD 127 Figure 2.1.1N1e **[CD6.1]**, comprising of dual 7.3m carriageways with 1m hard strips to the nearside and the off-side, with a minimum 2.5m central reserve and minimum 2.5m verge.



Road type	A	B	C	D	E			F	G
					L1	L2	L3		
Dual 2 lane (D2AP)	Varies	Varies	2.50	1.00	7.30		N/A	1.00	2.50
					3.65	3.65			
Dual 3 lane (D3AP)	Varies	Varies	2.50	1.00	11.00			1.00	2.50
					3.65	3.70	3.65		

Figure 4-1: NHRR Cross Section

4.1.3 All mainline sections of the NHRR have a design speed of 120kph and a proposed speed limit of 70mph.

4.1.4 A visibility assessment has been carried out to assess the forward visibility over the length of the proposed NHRR. The Scheme meets the Desirable Minimum Stopping Sight Distance (SSD) for the 120kph design speed along the route of

295m as CD 109 'Highway Link Design' **[CD6.1]**, with the exception of a small section in Link 3 (Brant Road to A607 Grantham Road) where the proposed vertical curvature restricts the stopping sight distance (SSD) achieved to below the desirable minimum stopping sight distance (DMSSD) for the 120kph design speed, on both the eastbound and westbound carriageways.

4.1.5 On the eastbound carriageway, SSD is restricted by the vertical curvature, resulting in visibility to the low object that is reduced to below DMSSD of 295m to a minimum of 170m over a 535m section between chainages 5765 and 6300. Visibility to the high object is not affected and DMSSD is achieved. The reduction does not occur within the immediate approach to the junction, which is the location in which most accidents and collisions are known to occur. In the context of CD 109 **[CD6.1]**, visibility to the low object and visibility to the high object refer to the required sight distances that drivers must have to perceive potential obstacles or hazards on the road. These requirements are crucial for ensuring road safety, particularly in situations where stopping sight distance (SSD) is a concern. Visibility to the low object relates to the driver's ability to see an object situated at a height of 0.26 metres above the carriageway and ensures visibility to small obstacles or hazards on the road surface, such as debris. Visibility to the high object involves the driver's ability to see an object at a height of 2.00 metres above the carriageway. This is important for detecting larger obstacles or hazards, such as other vehicles, road signs, or structures that may obstruct the driver's path.

4.1.6 On the westbound carriageway, SSD is restricted by the vertical curvature, resulting in visibility to the low object that is reduced to below DMSSD of 295m to a minimum of 175m over a 520m section between chainages 6105 and 6625.

Visibility to the high object is not affected and DMSSD is achieved. The reduction does not occur within the immediate approach to the junction, which is the location in which most accidents and collisions are known to occur.

4.1.7 Verge and central reserve widening has been included where necessary to achieve visibility requirements for DMSSD of 295m as CD 109 'Highway Link Design' **[CD6.1]**.

4.1.8 CD 169 'The design of lay-bys **[CD6.1]**, maintenance hardstanding's, rest areas, service areas and observation platforms', recommends that non-emergency stopping provision on dual all-purpose trunk roads should be provided at 2.5km spacing (CD 169 Table 2.2.4) **[CD6.1]**. Lay-bys are not permitted with 1 km of the start or end of dual carriageway sections. On this basis Lay-bys can only be accommodated between South Hykeham and Brant Road roundabouts without a Departure from Standard. Discussion with LCC during the design development of the proposed Scheme clarified that non-emergency stopping provision in the form of lay-bys was not to be incorporated into the Scheme, due to the Scheme's proximity to urban areas which provide access to enhanced facilities including toilets and washing facilities, and the understanding that laybys near urban areas, particularly where they lack natural surveillance, as would be the case on the South Hykeham to Brant Road link, can result in an increase in anti-social behaviour. It is noted that there are existing lay-bys on the southbound A46, approximately 350m south of Hykeham Roundabout and on the northbound A46, approximately 150m north of Hykeham Roundabout. Both of which will be retained under the proposed Scheme.

4.1.9 There are no public transport routes to be accommodated along the route of NHRR. Existing bus stops on Station Road will be re-positioned onto the re-aligned

Station Road as agreed with LCC Public Transport Network Team. The existing bus stops to the south of the proposed A607 Grantham Road Roundabout will be retained in their current locations.

4.1.10 In accordance with the requirements of CD 377 'Requirements for road restraint systems' **[CD6.1]**, road restraints have been provided on the approaches to structures to prevent direct impact with ends of the parapet system, throughout the full length of the Scheme within the central reserve and at all other locations where the risk assessment processes (RRRAP or Local Authority Risk Assessments) have identified that it is necessary.

4.1.11 Road Restraint Risk Assessment Process (RRRAP) are required on all road links with a speed limit of greater than 50mph and an annual average daily traffic flow of >8000 vehicles per day. As such, the RRRAP tool has been used to assess all sections of the proposed NHRR with a 60mph and 70mph speed limit.

4.1.12 Separate risk assessments have also been undertaken on the 30mph and 40mph sections of the Scheme to ensure that road restraint systems are provided where appropriate. These have been carried out in line with LCC's design Guidance document 'Provision of Vehicle Restraint Systems in Lincolnshire **[CD6.8]**.

4.1.13 Road Safety Audits (RSAs) have been carried out for the Scheme by an experienced independent team in accordance with the DMRB document 'GG 119 Road safety audit' **[CD6.1]**. The objective of the road safety audit process is to identify aspects of engineering interventions that could give rise to road safety problems and to suggest modifications that could improve road safety, via an independent review that considers all road users. It is important to note that road

safety audit is not intended to be a technical check of compliance with design requirements.

4.1.14 Stage 1 RSA **[CD8.103]** was undertaken at the completion of preliminary design. This particularly focussed on road safety matters which could have a bearing upon land take, licences or easements and as such was completed before the draft orders were published and before planning consent was applied for.

4.1.15 Stage 2 RSA **[CD8.108]** was undertaken at the completion of detailed design. This includes a review of the RSA actions in the stage 1 RSA response report and focused on the more detailed aspects of the highway Scheme.

4.1.16 Additional focussed Stage 1 Road Safety Audit **[CD8.103]** has been carried out specifically for the SRN elements of the proposed Scheme. A focused Stage 2 Road Safety Audit will be carried out on the SRN elements of the Scheme at the appropriate time,

4.1.17 A 'GG 104 Safety risk assessment' has been carried out for the SRN elements of the proposed Scheme in order to assess the risks to identified populations as a result of the proposed changes.

4.1.18 The cross section for the side road connections back to the existing local road network are single carriageway (SU2) as CD 127 Figure 2.1.1N1g **[CD6.1]**, comprising of two 3.65m lanes.

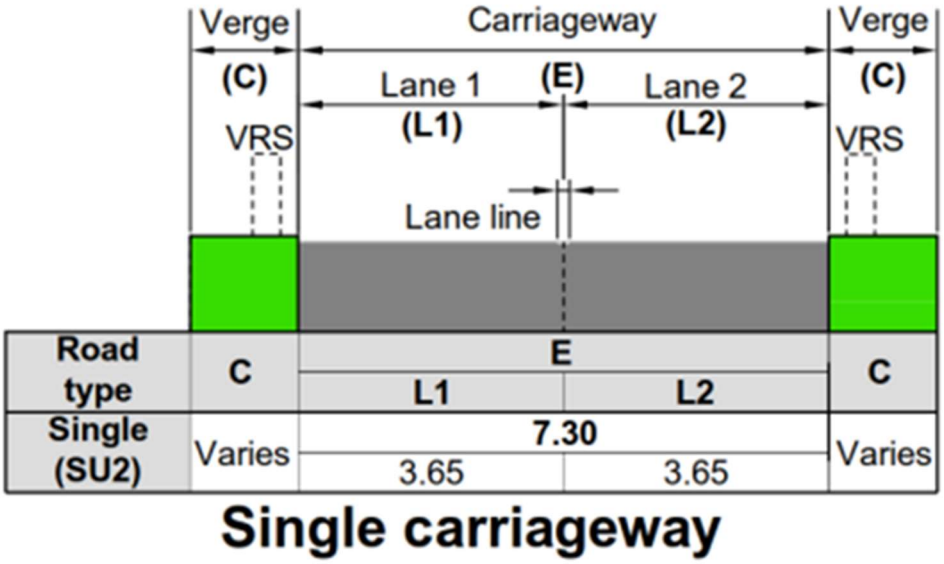


Figure 4-2: NHRR Single Carriageway Cross Section

4.2 A46 Hykeham Roundabout

4.2.1 The existing A46 Hykeham Roundabout four arm priority junction is replaced with an enlarged five arm gyratory roundabout, with all arms and movements signalised, with the exception of Middle Lane which will remain as a priority entry onto the roundabout.

4.2.2 Middle Lane is retained as a priority entry onto the roundabout, accommodated by the inter-green period within the signal phasing.

4.2.3 The existing roundabout is illuminated on the immediate approaches from Middle Lane and A46 to the north of the roundabout, and also on the A1434 Newark Road and A46 to the south of the roundabout and the gyratory. Lighting will be adjusted to suit the amended geometry and the existing unlit section of the A46(T) to the north of the roundabout up to Moor Lane will be infilled with lighting.

4.2.4 Road Lighting has been designed in accordance with DMRB document TD 501 'Road lighting design' and British Standards BS 5489-1:2020 – Design of Road

Lighting, and BS EN 13201-2:2015 – Road lighting Performance Requirements **[CD6.13]**.

4.2.5 The proposed form and layout of the junction has been formed by its relationship with the site topography and physical constraints in the vicinity including commercial properties, electrical infrastructure, and public transport infrastructure, along with the modelled traffic flows. This results in an elongated layout for the proposed roundabout, in a northwest – southeast orientation. The extended sections of the junction are largely constructed on low embankment widenings.

4.2.6 The roundabout gyratory has been designed in accordance with the requirements of CD 116 Geometric design of roundabouts **[CD6.1]**. Lanes are provided in line with the accepted traffic model design flows, varying around the gyratory as the traffic demand varies, from three to four lanes, varying the circulatory width. The layout falls outside of the requirements of CD 116 with regards to circulatory width. As such a Departure from Standard will be sought from National Highways. Spiral markings are provided to guide drivers around the roundabout to their desired exit, whilst maximising the use of the circulating space and reducing potential conflict between adjacent vehicles.

4.2.7 The Scheme provides access into the service area off Middle Lane, with an existing all movements entry/exit junction situated approximately 130m from the roundabout, with an entrance (in only) approximately 40m from the roundabout, accessed via a dedicated right turn lane immediately after the entrance onto Middle Lane. Middle Lane has a flared single lane entry onto the roundabout. These arrangements will be retained but modified in line with the requirements of CD 123 'Geometric design of at-grade priority and signal-controlled junctions'

[CD6.1], to suit the revised geometry, ensuring that the operation of the service area in terms of access and egress is maintained.

4.2.8 A design speed of 70kph has been selected for Middle Lane in accordance with the guidance provided in DMRB document CD 109 'Highway link design' **[CD6.1]**. Immediately to the west of the service area, the alignment of Middle Lane is adjusted to accommodate a 2.0m wide footway and ensure that suitable visibility to/from the access is provided, along with suitable forward visibility on approach to the stop-line for a 70kph design speed. Refer to 4.2.19 below.

4.2.9 The service area entry (in only) is repositioned to ensure that a right turn lane capable of accommodating the stacking of two heavy goods vehicles can be provided without these vehicles impinging upon the operation of the roundabout gyratory.

4.2.10 The flared single lane entry onto the roundabout has been retained as this is suitable to accommodate the modelled future year peak hour flows.

4.2.11 A46(T) mainline southbound approach the roundabout widens from the existing singe carriageway to four lanes at the stop line/roundabout entry. A physical subsidiary deflection island is provided between lanes 2 and 3 to separate the A46 southbound traffic flow from A1434 Newark Road and NHRR (A1461) traffic and to ensure that suitable entry path deflection is achieved on an approach alignment that is constrained by the presence of the existing 400kv National Grid pylon.

4.2.12 A design speed of 100kph has been agreed for the A46(T) north of the roundabout. This is consistent with the existing situation and existing speed limit. Suitable forward visibility on the approach to the stop line and visibility to the primary traffic signals is provided for the 100kph design speed.

4.2.13 The vertical alignment is similar to the existing situation and has been designed to ensure that minimum desirable curvature requirements are met, and desirable maximum gradients are not exceeded.

4.2.14 The A1434 Newark Road approach widens from the existing single carriageway into three lanes at the stop line/roundabout entry. The widening occurs after the bus stop on the westbound carriageway and the culvert passing under the carriageway.

4.2.15 A maintenance access/Private Means of Access (PMA) is provided from the westbound A1434 to allow Lincolnshire County Council (LCC) to access drainage attenuation basins situated to the north of the NHRR Link 1. The access will also allow the Upper Witham Internal Drainage Board (IDB) to access drainage ditches to the north of NHRR that are under their operation and maintenance responsibility.

4.2.16 A design speed of 70kph has been agreed for the A1434 Newark Road. Suitable forward visibility on the approach to the stop line and visibility to the primary traffic signals is provided for the 70kph design speed. Suitable visibility to/from the maintenance access/PMA is provided in line with the 70kph design speed.

4.2.17 The vertical alignment is also designed to a 70kph design speed where desirable minimum curvature requirements are met, and desirable minimum gradients not exceeded.

4.2.18 A46(T) mainline dual carriageway south of the roundabout has been designed to a 120kph design speed. The dual carriageway approach widens to four lanes at the stop line/roundabout entry. Forward visibility on approach to the stop line, visibility to primary traffic signals and desirable minimum curvature

requirements for the vertical alignment are met and desirable minimum gradients consistent with a 120kph design speed are not exceeded.

4.2.19 The roundabout gyratory has been designed in accordance with the requirements of CD 116 'Geometric design of roundabouts' **[CD6.1]**. Lanes are provided in line with the accepted traffic model design flows, varying around the gyratory as the traffic demand varies, from three to four lanes, varying the circulatory width. The layout falls outside of the requirements of CD 116 **[CD6.1]** with regards to circulatory width. As such a Departure from Standard has been discussed with National Highways Safety Engineering and Standards (SES) Team, for which no objection has been raised. This will be sought formally applied for via the Departure from Standards process in consultation with National Highways. Spiral markings are provided to guide drivers around the roundabout to their desired exit, whilst maximising the use of the circulating space and reducing potential conflict between adjacent vehicles.

4.2.20 A drive through maintenance access is provided through the southern section of the roundabout. This will provide access to the proposed CCTV mast and camera, the traffic signals controller and street lighting feeder pillar.

4.2.21 Maintenance parking areas are provided on the A1434 Newark Road splitter island and the A46(T) mainline splitter island to the north of the roundabout in order to provide access to lighting and traffic signals.

4.2.22 All maintenance areas, lay-bys and hardstandings will be signed for use by 'Authorised Vehicles Only', as required by CD 169 'The design of lay-bys, maintenance hardstanding's, rest areas, service areas and observation platforms' **[CD6.1]**, as will the existing maintenance hardstanding's of the A46(T) to the

south of the roundabout, which are retained. Pedestrian access to other sections of the roundabout will be available via the footway/cycleway.

4.2.23 Hardstanding areas are provided around each traffic signal pole in order to ensure that there is suitable surface for traffic signal engineers to set a ladder or platform and folding signal poles are provided for the 6m pole heights, with hardstanding areas extended to accommodate the fold down length.

4.2.24 Lighting columns have been positioned to the perimeter of the roundabout in locations suitable to ensure that lighting levels of the carriageway and conflict areas are met, whilst ensuring that the columns are accessible for lantern changes and adjustments via mobile elevated work platform (MEWP) from the carriageway or adjacent hardstanding areas. Lighting on the A46(T) dual carriageway section to the south of the roundabout has been moved from the central reserve into the nearside verges within the limits of the Scheme works to aid maintainability. 5m tall, hinged columns are used within the vicinity of the 400Kv overhead power lines to remove any requirement to work at height in these locations.

4.2.25 Street lighting within the Scheme extents in areas operated and maintained by National Highways as part of the SRN are operated via separate electrical connections and control systems from those within LCC areas. Lighting is not provided for the full length of the NHRR Link 1 between A46 Hykeham Roundabout and South Hykeham Road Roundabout.

4.2.26 All drainage of surface water within the Scheme extents in areas operated and maintained by National Highways as part of the SRN are attenuated in the catchment one attenuation basin, independent from those on the LHA network in order to ensure clarity in ownership, maintenance responsibilities and

avoid cross-authority management conflicts. Catchment one attenuation basin is situated between the NHRR and the A46(T). Surface water from LCC areas is collected and attenuated separately into the catchment two attenuation basin prior to discharge into the existing drainage system.

4.2.27 NHRR Mainline Link 1 is designed to a 120kph design speed. The alignment leaves the A46 Hykeham Roundabout in a south-southeasterly direction, generally at grade/on low embankment across the agricultural fields. The alignment runs to the south of the industrial estate that is accessed off Boundary Lane, passing to the south of the Biodigester Facility, with the alignment chosen to avoid impacting the industrial property. The maintenance access/PMA runs parallel to the north of the carriageway, providing landowner access to agricultural fields, LCC maintenance access to drainage attenuation ponds and IDB access to ditched and watercourses to the north of the Scheme. A second maintenance access/ PMA runs from South Hykeham Road, parallel to the south of the NHRR, providing landowner access to agricultural fields, National Highways maintenance access to the National Highways drainage attenuation basin and IDB access to ditched and watercourses to the south of the Scheme.

4.2.28 On the westbound carriageway forward visibility Stopping Sign Distance (SSD), forward visibility on approach to the stop line and visibility to primary traffic signals consistent with a 120kph design speed is achieved. Desirable minimum curvature requirements for the vertical alignment are met and desirable minimum gradients are not exceeded.

4.2.29 On the eastbound carriageway forward visibility Stopping Sign Distance (SSD), forward visibility on approach to the stop line. Desirable

minimum curvature requirements for the vertical alignment are met and desirable minimum gradients are not exceeded.

4.3 South Hykeham Road Roundabout to Brant Road Roundabout

4.3.1 South Hykeham Road Roundabout is a four-arm priority roundabout with an Inscribed Circle Diameter (ICD) of 90m, which will be constructed at grade with the existing road and topography. The roundabout is positioned online of the existing road, with the at-grade levels allowing off-line construction of around two thirds of the roundabout whilst maintaining traffic flow of the existing road. The location of the roundabout being offset to the southeast of the existing road is driven by the need to provide suitable alignments to the realigned sections of South Hykeham Road for a 70kp design speed, and to ensure that the realigned section of South Hykeham Road can be tied into the existing road alignment prior to the residential properties to the south, thereby minimising the impact of the Scheme.

4.3.2 A signalised crossing facility is provided on the northern section of the South Hykeham Road to accommodate the footway/cycleway. This is set back from the roundabout to a location greater than 60m as the advice in CD 116 'Geometric design of roundabouts' **[CD6.1]**. The crossing point incorporates footway-cycleway to carriageway transitions to the north of the crossing.

4.3.3 NHRR Mainline Link 2 is designed to a 120kph design speed. The alignment leaves South Hykeham Road Roundabout in an easterly direction, travelling to the south of the conurbation of South Hykeham. The carriageway is generally at grade/ on low embankment for approximately 1km, with the vertical alignment constrained by the 400 KV overhead powerlines 200m to the east of South Hykeham Road. Continuing east, the carriageway runs to the north of the Environmental Agency

flood bund, at which point the vertical alignment rises on the approach to the river and River Witham Bridge.

4.3.4 A minimum carriageway level of 8.0m A.O.D. is provided where the Scheme crosses the IDB drainage ditch known as Green Lane Drain in order to provide a minimum road level in the flood plain, greater than the modelled 100 year plus climate change flood level of 7.628m A.O.D. plus 0.3m freeboard.

4.3.5 The River Witham Bridge forms the high point on the Link 2 alignment, with the crest being the centre of the bridge and the road level determined by the maintenance access clearances required for the EA and IDB under the bridge. A minimum headroom clearance of 5m is provided for the width of the EA maintenance access track/PMA under the western back span.

4.3.6 To the east of the river, the alignment drops on the approach to Brant Road Roundabout.

4.4 Brant Road Roundabout to A607 Grantham Road Roundabout

4.4.1 Brant Road Roundabout is a four-arm priority roundabout with an ICD of 90m, situated to the west of the existing Brant Road. The vertical alignment of the NHRR and proximity to the River Witham Bridge require the roundabout to be constructed on embankment approximately 4m above the existing ground level and 2m above the existing Brant Road. To allow traffic to be retained on Brant Road during construction of the roundabout, the roundabout will be constructed off-line to the west of the existing road.

4.4.2 Brant Road is designed to a 70kp design speed. The section to the north has an at-grade signalised crossing approximately 100m north of the roundabout entry/exit. The crossing is 4m wide and incorporates footway-cycleway to carriageway transitions to the north of the crossing.

4.4.3 NHRR Mainline Link 3 is designed to a 120kph design speed.

4.4.4 The alignment leaves Brant Road Roundabout in a northeasterly direction, crossing, then travelling to the north of Somerton Gate Lane on the approach to Station Road. The carriageway is on embankment for 1.3km, with the vertical alignment driven by the need to accommodate the Somerton Gate Lane Bat Culvert.

4.4.5 The alignment passes under Station Road in cutting before turning slightly to the north to cut into the escarpment/Lincoln Cliff, cutting into the hillside with a maximum gradient of 8%, transitioning into a crest curve of 5500m radius in order to reduce the cutting required at the top of the escarpment and minimise the impact on identified areas of archaeology to the west of Grantham Road. The 8% gradient is a permitted relaxation and the maximum allowable gradient without the need for a Departure from Standard. The application of a 5500m radius crest curve results in a reduction in SSD for both the eastbound and the westbound carriageways and the requirement for a Departure from Standards as discussed in paragraphs 4.1.4, 4.1.5 and 4.1.6.

4.4.6 Somerton Gate Lane will be re-aligned to run parallel to the westbound carriageway of the NHRR from the point that the NHRR intersects the existing Somerton Gate Lane, to tie-in with Brant Road, in order to maintain access to the properties to the south of the NHRR from the west. This is following consultation with residents who identified concerns with winter access and egress from Somerton Gate Lane onto Hillside, if Somerton Gate Lane were to be stopped up at the west end. Somerton Gate Lane has been designed to a design speed of 50kph, with a single carriageway (SU2) cross-section, narrowing to tie in with the existing 3m to 3.5m width.

4.4.7 Station Road will be re-aligned to the west of the existing alignment to maintain connectivity across the NHRR. Off-line construction of Station Road Bridge will enable the existing road to be retained until the new carriageway is constructed. Station Road has been designed to a 50kph design speed. The desirable minimum requirements of CD 109 'Highway link design' **[CD6.1]** are met.

4.5 A607 Grantham Road Roundabout to A15 Sleaford Road Roundabout

4.5.1 Grantham Road Roundabout is a four-arm priority roundabout with an ICD of 90m. The roundabout will be constructed on the line of the existing A607 Grantham Road and will be at-grade with the existing topography. This will allow construction of half of the roundabout whilst maintaining traffic flows.

4.5.2 Grantham Road is designed to a 70kp design speed. The section to the north has an at-grade signalised crossing approximately 700m north of the roundabout entry/exit. The crossing is 4m wide and incorporates footway-cycleway to carriageway transitions to the north of the crossing.

4.5.3 NHRR Mainline Link 4 is designed to a 120kph design speed.

5 NON-MOTORISED USER (NMU) PROVISION

5.1 NMU Strategy and Rights of Way

5.1.1 The NMU provision for the Scheme has been designed in accordance with DMRB design standards CD 143 'Designing for walking, cycling and horse-riding' and CD 195 'Designing for cycle traffic' **[CD6.1]**.

5.1.2 The Scheme will significantly increase the length of NMU routes within the vicinity of the Scheme and increase NMU connectivity in the locality. It will create over 11km of new footway-cycleway and 3.2km of new bridleway.

5.1.3 The Scheme will provide;

- A new 3m wide shared use footway-cycleway with crossing facilities at the local road crossings between the A46 Hykeham Roundabout and A15 Sleaford Road Roundabout;
- Controlled (Signalised) crossings will be provided on A46 Hykeham Roundabout, South Hykeham Road, Brant Road, Grantham Road and A15 Sleaford Road;
- Uncontrolled crossings will be provided on Middle Lane and Station Road;
- NMU crossing facilities across the A46(T) between Thorpe on the Hill (Middle Lane) and North Hykeham;
- Connection between footway-cycleway and PRoW SHYK/9/2;
- Connection between new footway-cycleway (South Hykeham Road to Wath Lane) and PRoW SHYK/1/1;
- NMU connectivity from South Hykeham Road south of the Scheme, to South Hykeham – Long Lane/Beck Lane to the north of the Scheme via a dedicated footway-cycleway link to Wath Lane Accommodation Bridge;

- Additional equestrian facility/New Bridleway between South Hykeham Road and Wath Lane;
- Additional equestrian facility/New Bridleway between Wath Lane and Meadow Lane (Bridleway SHYK/901/1) at the River Witham;
- Creation of new Public Right of Way along the north of the Scheme between Viking Way (PRoW WDGN/3/2) and Station Road;

5.1.4 The combined footway/cycleway will run adjacent to the eastbound carriageway between the A46 and Station Road, crossing the proposed Scheme via the new Station Road bridge before traversing the escarpment slope on a route remote from the carriageway. Immediately to the west of Grantham Road, the combined footway/cycleway will cross the proposed Scheme via Viking Way Bridge from where it will run adjacent to the eastbound carriageway to the A15. Where the footway/cycleway is adjacent to the carriageway, there will be a minimum setback of 4m from the edge of carriageway (including the hard-strip), except for the section across the proposed River Witham Bridge where this will be reduced to 2.5m.

5.1.5 The existing signalised junction at the Grantham Road/High Dyke junction will be modified to include a pedestrian phase to enable crossing to the proposed combined footway/cycleway adjacent to the northbound carriageway of Grantham Road. A footway/cycleway and a separate bridleway facility, doubling as an access track, will be provided between South Hykeham Road to the south of the proposed roundabout and Wath Lane.

5.1.6 The Viking Way will be rerouted along the top of the cutting that is required in order for the proposed Scheme to attain the top of Lincoln Cliff/Lincoln Edge, to

the south of the proposed Scheme to connect to the proposed bridge adjacent to Grantham Road.

5.1.7 Additional amenity footpaths will be created to the north of the proposed Scheme, east of Station Road, in order to ensure that access along the top of the existing escarpment is maintained as far as possible, with a connection provided back down to Station Road.

5.1.8 An accommodation bridge will be provided at Wath Lane to allow landowner access and enable continuity of the bridleway. Access tracks necessary for maintenance operations and to accommodate the access requirements of adjacent landowners will also be designated as a Public Bridleway between Wath Lane and the River Witham to create a circular route and additional amenity facilities.

6 JUSTIFICATION OF LAND ACQUISITION

6.1 Scheme wide approach to land take

6.1.1 This section of my proof follows a similar format to that used in sections 3, 4 & 5 and builds upon the information previously presented in these sections. Where the term "engineering Scheme footprint" is used, this refers to all works required for the construction of the Scheme including, but not limited to, the carriageway, drainage, lighting, kerbs, signs, embankments and necessary landscape and other mitigation measures.

6.1.2 The making and confirmation of the A1461 North Hykeham Relief Road Compulsory Purchase Order 2024 (CPO) **[CD1.1]** is to enable LCC to acquire the land and rights necessary for the construction and maintenance of the Scheme. The purpose of seeking to acquire land and new rights compulsorily is to enable the NHRR to be constructed and enable LCC to meet its statutory purposes within the shortest realistic timescale in the most appropriate way. Given the history of the development of the Scheme proposals, including the extensive public consultation exercises that have been undertaken, as well as other publicity of the proposals the Council's intentions will be well known. The Council has responded to the service of Statutory and Discretionary Blight Notices and has acquired some property directly affected by the Scheme as detailed in Section 4 above. In addition, discussions have taken place with others. This includes the known owners of land, statutory undertakers and others where possible. The CPO remains necessary to ensure that the NHRR can proceed.

6.1.3 The Scheme has attempted, where possible and practicable, to reduce the impact on landowners and the land within the engineering Scheme footprint, that is needed to allow the works to be built along with land required for all other

purposes. This applies for those plots taken for permanent title and those plots where rights are only required.

6.1.4 The Council has had discussions with all landowners affected in order to provide updates on the Scheme design and land take requirements and the extents of the engineering Scheme footprint. Where appropriate, the Scheme design has been developed in response to landowner discussions and landowner requests or requirements for access from the Scheme, through the Scheme or for the creation of access from existing highway infrastructure. Landowner access requirements including gate location and sizing has been discussed with individual landowners to ensure that the impact of the Scheme on their current activities is minimised.

6.1.5 The engineering Scheme footprint defines the land requirements for construction elements necessary for the efficient and effective construction of the NHRR Scheme, including haul routes, construction compound and lay-down areas, topsoil and earthworks material storage, and earthworks material processing areas have been included within the CPO Plot plans **[CD1.1]**and where appropriate, within the Side Road Orders (SRO) **[CD1.2]**. Key compound and material processing areas have been identified in the submitted planning documents and the impacts of such assessed within the submitted Environmental Impact Assessment (EIA) **[CD7.1]**.

6.1.6 The overarching philosophy for the construction haul routes is to, where possible, keep these within the engineering Scheme footprint to minimise land take and to ensure that site wide coverage is achieved in order to allow construction traffic to access the site via the primary road network and use the haul routes to access works areas and distribute construction materials, thereby minimising the use of the local road network by construction related traffic. The haul route will also

allow the efficient distribution of site won and site processed earthworks materials from the east of the site to all required locations with minimal use of and impact to the surrounding highway networks. For the safe and effective construction of the Scheme, haul roads will be wide enough to allow two construction vehicles to safely pass by each other travelling in opposite directions.

6.1.7 Storage of excavated earth is required at key locations across the Scheme. These areas have been included within the plot acquiring permanent title. It is likely that these storage areas will be required for a lengthy and continuous period during the construction activity for the Scheme from the construction start date.

6.1.8 In locations where no land title information was found for the land beneath the existing highways, riparian rights of adjacent landowners for the ownership of the subsoil have been assumed up to the midpoint of the existing highway. As such, these lands form part of the compulsory purchase for title.

6.2 Justification for Side Road Orders (SRO)

6.2.1 The making and confirmation of the A1461 North Hykeham Relief Road, Classified Road (Side Roads) Order 2024 (SRO) **[CD1.2]** enables LCC to improve, raise, lower, direct or otherwise alter highways; stop up highways; stop up private means of access to premises required as a consequence of the construction of the Scheme; and to provide new private means of access to premises. The detail of highways and PMA's to be created, altered or stopped up is contained within the A1461 North Hykeham Relief Road, Classified Road (Side Roads) Order 2024 plans, NHRR-RAM-LSI-HYKE-DR-CH-00001 to NHRR-RAM-LSI-HYKE-DR-CH-00014. **[CD1.2]**

6.2.2 The A46(T) and the NHRR mainline, formed of the mainline dual carriageway and roundabout junctions form the Classified Road. Together the Side Roads Orders

(SRO) plans and schedule **[CD1.2]** show and describe where sections of existing highway are to be stopped up or where sections will be improved in order to allow the new road to tie into the existing infrastructure. They also show and describe where new highway rights are to be created and where existing public rights of way are to be maintained, outside of the extents of the Classified Road, as well as where landowners will require new Private Means of Access (PMA) to their lands which may have been impacted by the Scheme and the locations where their existing access will be stopped up.

6.2.3 Much of the SRO **[CD1.2]** is within lands which are required for the construction, operation or maintenance of the Scheme or within the existing highway boundary.

6.2.4 This section is not intended to reproduce the information contained within the SRO, but will summarise the proposals along the route where existing highways are to be stopped up and created, and where PMA are to be stopped up and created. The details presented on the plans are correct at the time of publishing the orders. Minor proposed modifications are currently being considered following Department for Transport (DfT) review.

6.2.5 Highways to be Stopped Up;

- S1 – Public footpath TOTH/17/1. Reprovision is included within the scheme (see N2 – New Highways to be provided).
- S2 - Public footpath TOTH/17/2. The footpath will be extinguished as it links to 17/1 which is also to be extinguished.
- S3 - Public footpath SHYK/20/1. The footpath will be extinguished as it is not required. The Scheme will allow users to access SHYK/9/2 which will remain.
- S4 - Public footpath SHYK/9/2. The final section is extinguished to accommodate the scheme.

- S5 – Footway / cycleway on A46. Reprovision is included within the scheme.
- S6 – South Hykeham Road. Replaced by South Hykeham Road Roundabout.
- S7 - Public Footpath SHYK/1/1. Section of footpath extinguished and replaced by the Wath Lane overbridge.
- S8 – Public Bridleway SHYK/2/2. Replaced by the Wath Lane overbridge.
- S9 - Public Bridleway SYYK/906/1. Eastern end of the bridleway will be extinguished and connected to the re-routed bridleway under the River Witham Bridge to continue on the south side and parallel to the NHRR to connect back to Wath Lane.
- S10 – Brant Road. Replaced by Brant Road Roundabout.
- S11 – Brant Road. Realigned to connect to Brant Road Roundabout.
- S12 – Somerton Gate Lane. Part of the existing road is then re-purposed to provide a private means of access.
- S13 – Public Footpath WDGN/9/1. Extinguished for its entire length as it terminates at 101 Station Road Farm and therefore provides no public utility.
- S14 – Station Road. Replaced by Station Road overbridge.
- S15 – Public Footpath WDGN3/2, known as Viking Way. Reprovision is provided by a new route including by use of Grantham Road overbridge.
- S16 – Grantham Road footway. Reprovision is included within the scheme on the opposite side of Grantham Road.
- S17 – Grantham Road. Replaced by Grantham Road Roundabout.

6.2.6 New Highways to be Provided;

- N2 - New public footpath to replace public footpath TOTH/17/1 with the A46.
- N3 - New public bridleway to link South Hykeham Road with Wath Lane.

- N4 – New public bridleway to replace Wath Lane with a bridge over the NHRR.
- N6 – New public bridleway including realignment of eastern extent of Meadow Lane under the River Witham bridge and continue on the south side and parallel to the NHRR to connect back to Wath Lane.
- N7 – New public footpath to connect existing footpath WDGN/3/2 (Viking Way) to Station Road.
- N8 – New public footpath to connect the existing public rights of way, WDGN/3/3 & WDGN/13/1 with NHRR combined footway/cycleway south of NHRR.
- N9 – New public footpath to connect the existing public right of way WDGN/3/2 (Viking Way) with NHRR combined footway/cycleway north of NHRR.
- N10 – New public footpath to connect the existing public right of way WDGN/3/2 (Viking Way) with NHRR combined footway/cycleway north of NHRR.

6.2.7 Private Means of Access to be Stopped Up;

- X1 – Access to agricultural land north-east of Hykeham Roundabout. Reprovision is included within the scheme via a new access off Newark Road and also South Hykeham Road.
- X1c – Access to Lincoln Enterprise Park. Replaced by a widened access.
- X2 – Access to paddocks south of South Hykeham. Replaced by new access to paddocks south of NHRR.

- X3a – Farm track from Hall Farm, South Hykeham to agricultural land to the south. Replaced by alternative access via new farm track to Wath Lane, over the new bridge and via new access to the south of NHRR.
- X4 – Access to agricultural land west of Brant Road. Reprovision is included within the scheme off Brant Road.
- X5 – Access to agricultural land west of Brant Road. Reprovision is included within the scheme off Brant Road.
- X6 – Access to agricultural land east of Brant Road. Replacement access is not required.
- X7 – Access to agricultural land west of Brant Road. Replacement access is not required.
- X8 – Access to agricultural land west of Brant Road. Replacement access is not required.
- X9 – Access to agricultural land west of Brant Road. Reprovision is included within the scheme off Brant Road.
- X9A, X9B – Access to agricultural north of Somerton Gate Lane. Reprovision is included within the scheme off Brant Road.
- X10, X11, X12 – Access to residential properties to be demolished, Station Road. Replacement access is not required.
- X13 – Access to land south-west of Station Road. Reprovision is included from the realigned Station Road.
- X14 – Access to residential property previously demolished, Station Road. Replacement access is not required.
- X15, X16, X17 - Access to residential properties to be demolished, Station Road. Replacement access is not required.

- X18 – Access to former Pennells Nurseries Site, Station Road. Reprovision is provided from the realigned Station Road.
- X19 – Access to agricultural land east of Grantham Road. Reprovision is provided from the realigned Grantham Road.
- X20 – Access to agricultural land west of Grantham Road. Replacement access is not required.
- X21 – Farm track from Grange Farm, Bracebridge Heath to agricultural land to the east. Replacement access is provided via the access from Sleaford Road.

6.2.8 New Private Means of Access;

- 1, 1A, 1B, 1C, 1D, 1E – Replacement access to agricultural land north-east of Hykeham Roundabout and also for maintenance of balancing pond and drainage ditches.
- 1G – Replacement and widening of existing access to Lincoln Enterprise Park
- 2, 2A, 2B, 2C – Replacement access to agricultural land south-west of NHRR between the A46 and South Hykeham Road and also for maintenance of balancing pond.
- 3, 3A, 3B - Replacement access to agricultural land south of NHRR between South Hykeham Road and Lath Wane.
- 4 – Replacement access to agricultural land to the west of South Hykeham Road, north of NHRR.
- 4A – Replacement access to agricultural land to the east of South Hykeham Road, north of NHRR.
- 5, 5A - Replacement access to agricultural land to the east of Wath Lane, north of NHRR.

- 6, 6A, 6B, 6C, 6D, 6E - Replacement access to agricultural between Wath Lane and River Witham, south of NHRR.
- 6X, 6Y – Replacement access to the River Witham for the Environment Agency, north and south of NHRR respectively.
- 7 – Access for maintenance of balancing ponds.
- 7A – Replacement access to agricultural land to the west of Brant Road and to maintain access to the River Witham for the Environment Agency to access their flood control facilities.
- 8, 8A, 8B, 8X, 8Y – Replacement access to agricultural land east of Brant Road, north of NHRR.
- 8C – Replacement access to agricultural land to the north of Somerton Gate Lane, south of NHRR.
- 8G – Replacement access to Former Pennells Nurseries Site, Station Road
- 8H – Replacement access to land south-west of Station Road.
- 9, 9A - Replacement access to agricultural land west of Brant Road, north of NHRR.
- 10 – Replacement access to agricultural land east of Brant Road, north of NHRR.
- 11 – Replacement access to agricultural land east of Grantham Road, south of NHRR.
- 13, 13A - Replacement access to agricultural land west of A15 Sleaford Road, south of NHRR and for maintenance of balancing pond.

6.2.9 Highway to be Improved;

- H1 – Middle Lane – Extent will include for improvements to both entrances to Thorpe on the Hill Services.

- H2 – A1434 Newark Road – Improvement to accommodate revised carriageway alignment.
- H3 – South Hykeham Road (north section) – Improvement to accommodate revised carriageway alignment.
- H4 – South Hykeham Road (south section) – Improvement to accommodate revised carriageway alignment.
- H4a/H4b – Wath Lane – Improvement to accommodate revised alignment.
- H5, H6, H7 & H8 – Brant Road – Improvement to accommodate revised carriageway alignment.
- H9 – Somerton Gate Lane – Improvement to accommodate revised carriageway alignment.
- H10, H11a & H11b – Improvement to accommodate revised carriageway alignment.
- H12 – Grantham Road – Improvement to accommodate revised carriageway alignment.
- H12a – Grantham Road – Improvement to accommodate provision of new footway/cycleway.
- H14, H14a & H14b – Improvement to accommodate revised carriageway alignment.

6.2.10 The following Public Rights of Way (PRoW) are detailed on the SRO **[CD1.2]** as 'Highway to be stopped up' and are outside of the extents of the CPO **[CD1.1]**;

- PRoW TOTH/17/1 – Middle Lane to A46(T);
- PRoW TOTH/17/2 – A46(T) to A1434 Newark Road;
- North section of PRoW SHYK/9/2; &

- Extents of PRoW WDGN/9/1 north and south of the Scheme.

6.2.11 The stopping up of existing PMAs has been included where necessary in locations where the adjacent highway is also to be stopped up. New highway rights have been included between the edge of the existing carriageway and existing footpaths to maintain connectivity to all footpath routes across the Scheme.

7 SUMMARY AND CONCLUSION

7.1.1 The North Hykeham Relief Road (NHRR), previously known as the Lincoln Southern Bypass (LSB), is the final segment of the Lincoln Ring Road. It is designed to alleviate traffic congestion, improve connectivity, and support growth and development across the Lincoln area, specifically integrating with the Lincoln Eastern Bypass (LEB), Western Relief Road (LWRR), and Lincoln Northern Relief Road (LNRR).

7.1.2 The Scheme has been developed from the decisions made following the various studies undertaken which resulted in its incorporation in the CLLP **[CD4.1]**, plus an understanding of scheme constraints and design standards. The Scheme has received planning permission following the submission of an application containing all relevant detail including ae extensive and comprehensive EIA **[CD7.1]**.

7.1.3 The design approach focused on the provision of a dual 2-lane all-purpose carriageway (D2AP) to connect the A46 Hykeham Roundabout in the west to the A15 Sleaford Road in the east in order to meet the need and ambitions put forwards by LCC. This included a need for the Scheme to be;

- Safe and functional: Design speeds up to 120 kph and a 70 mph speed limit were applied to support efficient vehicle flow while complying with safety standards.
- Integrated with existing network: The design integrated with both the Strategic Road Network (SRN) and Lincolnshire County Council's local road network. Notably, National Highways' assets have been kept operationally separate from LCC's to clarify maintenance responsibilities.

- Sustainable: Earthwork balance was prioritised to reduce material imports/exports, and efforts were made to avoid demolition and related matters where possible.
- Value for money and affordability: The design balances the connections, facilities, mitigations and land-take required, along with the standards adhered to, with a route option that minimises material movements, maximises material re-use and minimises properties affected.
- Non-motorised user (NMU) support: A continuous shared-use footway/cycleway was included along the route, with Toucan crossings at all major junctions.

7.1.4 The Scheme design has applied a comprehensive set of technical standards and statutory guidance, including:

National Standards

- Design Manual for Roads and Bridges (DMRB): Core design framework for highways. **[CD6.1]**
- Manual of Contract Documents for Highway Works (MCHW): Specifications and construction requirements. **[CD6.1]**
- Traffic Signs Manual (TSM) **[CD6.52]** and TSRGD 2016: For road signage and markings. **[CD6.53]**
- CD series documents: Specifics for geometric design (CD 109, CD 123), cross-sections (CD 127), active travel (CD 143), and safety (CD 377, GG 104, GG 119). **[CD6.1]**

Local Guidance

- Lincolnshire County Council Design Documents **[CD6.2]**, including:
- Speed Limit Policy **[CD6.54]**

- Skid resistance strategy **[CD6.7]**

7.1.5 Despite complex geotechnical, ecological, and operational constraints the Scheme navigates these with carefully justified design adaptations. Notably, it maintains a commitment to minimising land take and environmental impact, while ensuring buildability, resilience, and longevity.

7.1.6 The application of both national and local standards reinforces the robustness of the design. The coordinated approach between Ramboll, Balfour Beatty, Lincolnshire County Council, and various statutory bodies, including National Highways and the Environment Agency, has resulted in a scheme that is technically sound, publicly supported, and aligned with planning objectives.

7.1.7 The Scheme design proposals have been developed and optimised through the outline and detailed design phases in order to ensure that the horizontal and vertical alignment is compliant with the design standards contained within the relevant sections of the DMRB and where this is not the case, acceptable departures from standard have been agreed with the relevant highway authority.

7.1.8 Impacts on key constraints including, but not limited to, the biodigester facility at South Hykeham, the Exolum Fuel Pipeline outside of the extents proposed for diversion and the EA flood bund have been avoided via adjustments to the horizontal alignment, with further adjustments minimising the impact on identified areas of archaeology adjacent to Grantham Road and reducing the number of residential properties requiring demolition on Station Road.

7.1.9 Coupled with the above, the vertical alignment has been optimised to ensure that along the length of the Scheme, surface water can be suitably collected, attenuated, treated and discharges into existing surface water systems, overhead 400KV power lines are not affected by the Scheme proposals and suitable

clearances and headroom under the River Witham Bridge is achieved to allow IDB, EA and landowner access routes to be maintained. In addition, the Scheme's vertical alignment seeks to ensure that the visual impacts of the Scheme from adjacent properties, public rights of way and heritage assets are minimised as far as possible and that an effective cut to fill balance is achieved for the earthworks materials required for the scheme.

7.1.10 The Scheme design proposals account for the land required temporarily to safely and efficiently construct the Scheme and include areas for topsoil and material stockpiles, laydown and compound areas along with construction space for the various bridge structures required. Furthermore, the Scheme allows for an earthworks materials processing area, haul roads and a temporary bridge crossing of the River Witham in order to minimise construction effects on the local area and local communities by reducing the volume of construction traffic on the local road network.

7.1.11 The Scheme proposals also allow for suitable access for maintenance of the Scheme assets for both National Highways and the Local Highway Authority and accommodate IDB and EA access to assets along the Scheme length. PMA ensure that landowner access to adjacent land and properties is maintained along with access to parcels of land severed by the NHRR route.

7.1.12 The Scheme provides for NMU usage along the length of the NHRR route, connecting the existing facilities at the A46 and North Hykeham with South Hykeham, Station Road, Grantham Road (Waddington and Bracebridge Heath) and those at the Lincoln Eastern Bypass on A15 Sleaford Road. Affected public rights of way have been re-routed where appropriate to ensure connectivity is maintained and where possible, amenity is enhanced. This has been achieved by

the creation of new lengths of bridleway to the west of the River Witham to create a circular bridleway route to/from Wath Lane, plus a connection to South Hykeham Road, and new lengths of footpath, particularly around the Lincoln escarpment area, connecting to and enhancing the routes around the Viking Way.

7.1.13 The Scheme proposals and land take allow for landscape provision for mitigation and visual screening and replacement of vegetation that will be removed to facilitate the construction, as well as the creation of ecological features to both mitigate loss of habitat resulting from the Scheme as well as delivering ecological enhancements and providing for biodiversity net gain. This is achieved by providing wildlife ponds and hibernacula, woodland planting and species rich grassland as part of a comprehensive landscape mitigation scheme as well as providing measures to accommodate the movement of bats .

7.1.14 Based on my knowledge of the Scheme and the development of the design proposals through outline design, planning submission and detailed design, it is my professional judgement that the Scheme as proposed is justified and has completed all necessary stages of the planning process.

7.1.15 The CPO **[CD1.1]** and SRO **[CD1.2]** are required in order to acquire the land to construct the proposed Scheme sections and to amend the existing highway network to accommodate the NHRR. As such, both the SRO and the CPO are required.

7.1.16 The land included within the CPO **[CD1.1]** allows for the necessary working room for safe construction, operation and maintenance of the Scheme and provides for suitable material storage and processing areas, along with the necessary accommodation for site accesses, haul roads, temporary works and compound areas.

7.1.17 The SROs **[CD1.2]** are necessary to enable LCC to improve, amend, raise or lower highways, stop up highways and private means of access where the need arises as a consequence of the NHRR Scheme proposals, as well as the ability to create new highway and provide new private means of access.

7.1.18 The NHRR is included in the Central Lincolnshire Local Plan **[CD4.1]** as a key supporting infrastructure Scheme, necessary to assist in providing highway capacity to support the viability of the development aspirations within the plan.

7.1.19 In conclusion, it is my professional opinion that there is a justifiable and compelling case in the interests of the local area to confirm the orders.

APPENDIX A
DRAINAGE PROOF OF EVIDENCE – LCC 03(I)

APPENDIX B
JUNCTION OPERATION PROOF OF EVIDENCE – LCC 03(II)