Documents Supplied

- E-mail proposal background
- ADC1580 003 P11 (Traffic Signals Access Junction Layout - MfS)
- Details of an earlier Road Safety Audit on an earlier variation of the design from 2019

Terms of Reference

The terms of reference of this Road Safety Audit are as described in GG119 Road Safety Audit. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

Each of the auditors' responses is classified as a 'Problem' that is likely to result in a significant road safety hazard. All comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the plan at the end of the report.

Where recommendations are made, these do not comprise design decisions, and it remains the responsibility of the Design Team to incorporate any changes into the scheme, and consider any interactions between design elements.

Problems Raised in previous Road Safety Audits

A Road Safety Audit was previously undertaken in April 2019 by Via East Midlands. This audit reviewed an earlier scheme that included works at two other junctions. Two items highlighted as problems at the other junctions are not considered in this audit, however the four items highlighted as problems linked specifically to the development access are considered below.

PROBLEM – 3.2.1

Location:	*At junction*
Summary:	*Right turning vehicles fail to stop at red light on junction exit, injuring pedestrians on the crossing facility*

In Stage 3 of the Traffic Signal operation, right turning drivers onto Newark Road from the development arm appear to run into a red light as they are about to exit the junction, presumably to allow pedestrians to cross this exit. However this arrangement is uncommon, and most drivers when turning right will be expecting to exit the junction unimpeded. Due to their angle of approach to the signal heads they will get very little warning of the unusual layout. Drivers who do manage to spot the signals will reasonably assume that they are looking at red secondary aspects for eastbound Newark Road traffic, which is currently held to allow the right turners to emerge. According to the phasing diagram, at this point pedestrians will cross this eastbound exit, since they are presented with a Green Man. They will be at significant risk of being struck by right turning vehicles, whose drivers have unwittingly contravened the red signals, causing potentially serious injuries. Alternatively, a driver who manages to stop may be shunted by a following right turning driver, who having just entered the junction on a green light will not expect to have to brake so soon.

RECOMMENDATION

Remove this conflicting phasing arrangement from the operation of the signals

AUDIT RESPONSE

Agreed. The exit crossing on Newark Road is not expected to be called every cycle. In fact, only those pedestrians travelling to and from the north towards the development are likely to use the crossing. This equates to around 12 two-way pedestrian trips in a peak hour. As a result, the stage arrangement of the proposed access junction has been altered since the RSA was undertaken.

Drawing ADC1580-003-P10 shows the latest stage arrangement. In summary, for a large amount of the time the junction will operate three stages with both Newark Road ahead traffic in Stage 1, Newark Road eastbound and right turn traffic into the development in Stage 2 and the development traffic in Stage 3. Pedestrian phases are integrated into the first three stages except for the exit crossing on Newark Road. When this crossing is called, Stage 4 is called that gives a green signal to westbound traffic on Newark Road, allowing pedestrians to cross the approach arms of Newark Road eastbound and the site access, as well as the exit crossing on Newark Road.

Status at this Stage 1 Road Safety Audit – Closed: The current drawing ADC1580/003/P11 indicates that Stage 3 now facilitates right turning traffic from Phase C, that is not subsequently stopped at Phase J. The audit team have no further comments on this at this stage.

PROBLEM – 3.2.2

Location:	*Private Accesses on Newark Road west of the traffic signal junction.*
Summary:	*Vehicles entering or leaving private accesses involved in injury collisions with main road traffic*

There are a small number of private residential properties to the west of the traffic signal junction, on the north side of Newark Road. This may present two problems. Firstly, drivers waiting to turn right into these accesses will have to wait in the westbound exit close to the junction. At this point there are two lanes merging together, and westbound main road drivers will be concentrating on adjacent or following vehicles as they attempt to merge/overtake. Additionally, they will not anticipate that a vehicle may stop at this point, since the houses are well set back from the road. Waiting stationary right turners are likely to be shunted at speed, resulting in potentially serious injuries to vehicle occupants and riders.

Secondly, drivers emerging from these private accesses wishing to turn right will often have to negotiate a two lane eastbound queue at the traffic signals, before attempting to enter the westbound traffic stream. Their view will be hampered by the queue, and as mentioned above, westbound traffic will be merging at this point. As a result it is likely that the emerging vehicle will conflict with westbound merging vehicles, in particular motorcycles which may be overtaking as they exit the junction. These collisions will result in injuries to vehicle occupants and riders.

RECOMMENDATION

Provide a widened hatched area to allow right turners to wait out of the exit merge. This should be augmented with a central refuge to prevent its use for overtaking, although the design should accommodate the turning manoeuvres at the accesses. To assist people wishing to turn right out onto Newark Road from the residential properties, a hatched area wide enough to accommodate a vehicle waiting in the centre of the road is recommended.

AUDIT RESPONSE

Agreed. Drawing ADC1580-003-P10 provides wider central hatching to allow private cars to wait in whilst trying to negotiate a right turn into the private drives.

Status at this Stage 1 Road Safety Audit – Closed: In principle this problem appears to have been addressed. However, this particular item will require further consideration at the next stage of Road Safety Audit when the carriageway markings have been detail designed, especially in terms of the width of the central hatched ghost island area.

PROBLEM – 3.2.3

Location: *Newark Road exit merge west of the traffic signal junction*

Summary: *Short merge with reverse curve encouraging overtaking and head-on injury collisions.*

Related to the above, the layout of the exit merge for west bound traffic may encourage traffic in the offside lane to delay their merge in order to overtake nearside vehicles, by overrunning the central hatching, and entering the opposing traffic stream if it appears clear. This will result in late forced merging, or even head on collisions with opposing traffic. It will also exacerbate the situations described in 3.2.2 above

RECOMMENDATION

As part of a review of the exit merge layout provision of an extended or additional central refuge is recommended to discourage prolonged overtaking by offside lane drivers.

AUDIT RESPONSE

Agreed. Drawing ADC1580-003-P10 includes an extended central refuge to discourage prolonged overtaking by offside lane drivers. The central refuge has been cut short to allow a car to turn into the central hatching whilst waiting to turn right into the private drives.

Status at this Stage 1 Road Safety Audit – Closed: In principle this problem appears to have been addressed. However, this particular item will require further consideration at the next stage of Road Safety Audit when the traffic signs and carriageway markings have been detail designed, especially in terms of get over arrow markings and warning signs to indicate lane drop or similar.

PROBLEM – 3.2.4

Location: *Northern verge between proposed access and B6139 Coxmoor Road.*

Summary: *Hazardously severe drop close to carriageway*

Alongside the existing Newark Road's northern verge there is a significant and severe drop at the rear of the existing verge, into a neighbouring industrial property. While this may present some challenges in the construction phase, it is also worthy of assessment as regards the risks it presents in the permanent situation once construction has been completed. Drivers who left the road for whatever reason, and went over the edge along this verge would be subject to life threatening forces as they descended from the highway.

RECOMMENDATION

It is recognised that the situation is an existing one, and if anything, the realigned road is moving away from the hazard for the most part. Nonetheless the changes in use caused by the new junction and the road realignment, mean that currently unforeseen risks may be created. Therefore, although the potential of an incident occurring may be low, owing to the likely severity of such an event it is

recommended that an appropriate formal assessment of the necessity for vehicle restrain systems should be carried out, and a safety barrier on the northern verge provided where this is indicated.

AUDIT RESPONSE

Disagree. The realigned carriageway provides a 16m gap between the new kerb line and the existing and a 47m gap from the development road stop line. In addition, the alignment of the development access road will be designed as such to prohibit speeding on approach to the stop line.

Hence, it is highly unlikely that any vehicle would overshoot the junction to such an extent that the existing drop would be a cause for concern. Particularly considering the lack of safety barriers on Coxmoor Road where speeds are higher. As a result, a Road Restraints Risk Assessment has not been carried out at this stage of design. If, during detailed design, the highway authority require a RRRAP to support the technical approval, one will be undertaken by the design team.

Status at this Stage 1 Road Safety Audit – Closed: Acknowledging the existing risk and the possibility of a risk change, the audit team consider that a before and after assessment may offer an insight into the risk change presented by these proposals. The audit team have no further comments on this at this stage.

Problems Raised at this Stage 1 RSA

PROBLEM – A-01

Location: Newark Road and Coxmoor Road

Summary: Landscaping – Future growth from trees and bushes may obstruct visibility, consequentially increasing the risk of junction related collisions

The proposed development junction joins Newark Road through an existing verge area think with vegetation, similarly, the proposed changes Coxmoor Road also cut a path through existing vegetation. At this early stage the drawings do not show the extent of removal of this vegetation or if any trees, bushes or other planting will remain or be replaced. This existing vegetation including trees and bushes, have the potential to obstruct visibility around the proposed access and at the changes to the junction at Coxmoor Road. If left unmanaged, this vegetation may in future years obstruct the inter-visibility zones and forward stopping sight distance around junction corner at the proposed junctions. This may increase the risk of junction related collisions.

RECOMMENDATION

It is recommended that the extents of the junction inter-visibility zones and forward stopping sight distance are clearly marked using a highway boundary fence or similar to aid future maintenance.

PROBLEM – A-02

Location: Newark Road and Coxmoor Road

Summary: Drainage – Insufficient surface water drainage may increase the risk of skidding type collisions

At this early stage, no details have been provided on the proposed drainage arrangements. It was noted that the development access levels would fall towards Newark Road and that the increased surface area of carriageway on Newark Road may overwhelm the existing surface water drainage system at the Searby Road junction, overflowing into the side road. As such, this may require measures to manage surface water around the junction areas to consequently reduce the risk of skidding type collisions in these areas due to excessive surface water.

RECOMMENDATION

It is recommended that drainage details are provided at the next stage of road safety audit including locations of gully locations, levels and contours.

PROBLEM – A-03

Location: Newark Road and Coxmoor Road

Summary: Skidding Resistance – Insufficient skidding resistance may increase the risk of collisions involving skidding

The provision of new junctions and pedestrian crossing facilities, will change the site category from a Type C to a Type Q and Type K respectively in terms of the definitions within DMRB CD 236. There have been two collisions in the vicinity of the proposed junction works, which would suggest a low investigatory level here. Commercial vehicle use is expected to be less than 250 cv/lane/day. Insufficient skidding resistance may increase the risk of collisions involving skidding, especially in wet or wintery conditions.

RECOMMENDATION

It is recommended that the carriageway on the approaches to the proposed junctions and pedestrian crossing points are provided with a skidding resistance commensurate to DMRB CD 236, Table 3.3a or Table 3.3b based on the relevant site categories and traffic levels. It is also recommended that any new surfacing is provided in full lane widths.

PROBLEM – A-04

Location: Newark Road and Coxmoor Road

Summary: Fences – A lack of boundary to the residential site may increase the risk of collisions involving child pedestrians.

The proposals appear to impact on substantial lengths of existing highway verge vegetation, requiring much of this to be removed or cut back. At this early stage it is unclear how that boundary interface will change in terms of providing a barrier between the new development and the adjacent widened road network, but it is anticipated that some green space would be provided between the new houses and the road network. These areas of greenspace may become places where children play and consequentially a lack of boundary to the residential site may increase the risk of collisions involving child pedestrians.

RECOMMENDATION

It is recommended that a highway boundary fence or similar treatment is provided along the development site frontage to Newark Road, Coxmoor Road and the junction mouth of the development access.

PROBLEM – A-05

Location: Searby Road

Summary: Specific Road Users – Lack of an interface with existing footways may increase the risk of collisions involving wheelchair, mobility scooters, pushchairs and cycles.

A footway/cycleway is proposed along the southern edge of Newark Road, this links the development with local facilities to the west of the development site. The route comes to an abrupt end on the eastern side of Searby Road, leaving it unclear where users are routed onwards. This is especially an issue in that the existing footway along Newark Road to the west of Searby Road is narrow, no crossing point currently provided, the footway along Kirkby Folly Road is overgrown and there is no obvious route between the main carriageway and the cycleway. The lack of an interface with existing footways may increase the risk of collisions involving wheelchair, mobility scooters, pushchairs and cycles.

RECOMMENDATION

It is recommended that interface points are provided to facilitate movement from the footway/cycleway onto the existing footway network and for cycles to interface with the main carriageway travelling both to and from the site.

PROBLEM – A-06

Location: Newark Road

Summary: Junction Layout – Provision of two lanes may increase the risk of lane change and merge type collisions heading westbound

Two lanes are provided westbound on Newark Road approaching the development access, it is unclear from the information provided what the capacity requirements are for this stop line, but the provision of two lanes encourages drivers travelling westbound to change lanes approaching the junction and merge beyond the junction. This may consequentially increase the risk of lane change and merge type collisions heading westbound.

RECOMMENDATION

It is recommended that lane one is dedicated to traffic turning into the development and lane two is dedicated to ahead traffic and that the lane use is supported using carriageway markings and vertical traffic lane use signs.

PROBLEM – A-07

Location: Newark Road and Coxmoor Road

Summary: Pedestrians and Cycles – Proposed route to the east may increase the risk of collisions involving pedestrians and cycles

A footway/cycleway is provided on the southern side of Newark Road to the eastern side of the development access. This route terminates at Coxmoor Road with no obvious onward connections for pedestrians or cycles. This lack of onward routing to the east may increase the risk of collisions involving pedestrians and cycles at the junction of Newark Road and Coxmoor Road.

RECOMMENDATION

It is recommended that the footway/cycleway route is directed across the signal-controlled crossing and along the northern side of Newark Road to Coxmoor Road and that appropriate measures are provided for routes onwards. This could include widened footway/cycleway, interfaces for cycles to connect to the main carriageway and some form of formal crossing facility across Coxmoor Road, ideally signal controlled.

Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with GG119.

Road Safety Audit Team Leader

Haydn Vernals FCIHT FIHE CMILT MSoRSA, Directive 2008/96/EC (Certificate of Competency)

Sevenairs Consulting Ltd
20 High Bank, Thurlstone, Sheffield,
South Yorkshire, S36 9QH

Signed: [redacted]

Date: 19th June 2022

Road Safety Audit Team Member

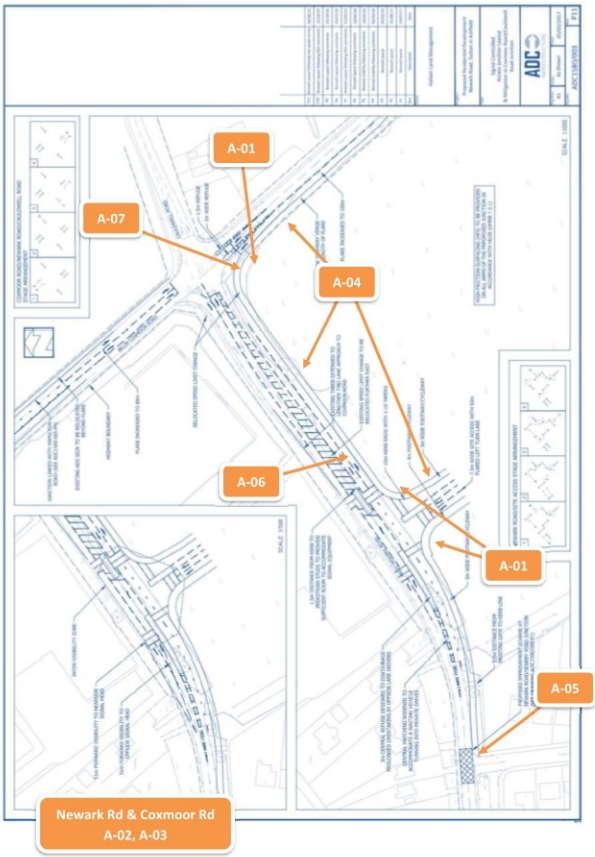
Sarah Stewart BAHonsQTS NPQH

Sevenairs Consulting Ltd
20 High Bank, Thurlstone, Sheffield,
South Yorkshire, S36 9QH

Signed: [redacted]

Date: 19th June 2022

Problem Location Plan



HALLAM LAND MANAGEMENT LTD

PROPOSED RESIDENTIAL DEVELOPMENT ON LAND SOUTH OF THE B6022 NEWARK ROAD, SUTTON IN ASHFIELD, NOTTINGHAMSHIRE

RESPONSE REPORT TO STAGE 1 ROAD SAFETY AUDIT ON COMPLETE PRELIMINARY DESIGN OF MITIGATION PACKAGE

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project number: ADC1580			report reference: ADC1580_RR1
version	date	author	comments
1		Matt Tatler	internal draft
2	16/04/2019	Matt Tatler	issued to NCC for comment

1. Appendix 2 contains the Stage 1 Road Safety Audit carried out on the complete preliminary designs of the improvement works required to mitigate the development impacts of the proposed residential development at the B6022 Newark Road. The audit report includes background information about the location and works proposed. This document is the Response Report to the findings in the Road Safety Audit.

2. The drawings that were the subject of the Road Safety Audit are as follows:
   - ADC1580-003-P9 – signal-controlled access junction layout and mitigation
   - ADC1580-DR-004-P7 – proposed improvement scheme at Newark Rd/Kirkby Folly Rd
   - ADC1580-005-P6 – proposed improvement scheme at Coxmoor Road/Hamilton Road

3. The Audit noted seven problems, listed in the table overleaf. The design team response is also included in the table.

4. The scheme has been amended in response to the Stage 1 Road Safety Audit. The amended scheme is shown on the following drawings, which are contained in Appendix 1.
   - ADC1580-003-P10 – signal-controlled access junction layout and mitigation
   - ADC1580-DR-004-P8 – proposed improvement scheme at Newark Rd/Kirkby Folly Rd
   - ADC1580-005-P7 – proposed improvement scheme at Coxmoor Road/Hamilton Road

Ref	Audit Comments	Response
2.1	Location: Eastbound Newark Road approach to Kirkby Folly Road mini-roundabout PROBLEM: The proposed removal of the central refuge on the eastbound approach to the existing mini-roundabout will reduce the visual presence of the junction for an approaching eastbound driver. The refuge and bollard arrangement has some intrinsic presence, but importantly also carries a higher level of central mini-roundabout and give way sign combination. This is of particular importance due to the following factors: • The two lane approach which allows the masking of the nearside sign by a bus, HGV etc • The 'straight ahead' alignment through the junction from this direction • The crest in the road when viewed from west of the railway line which hides the layout from a driver's view. Failure to appreciate the junction layout may lead to late braking, shunt type accidents, entry vs circulating accidents, including collisions with circulating two-wheeled vehicles. These accidents will result in injury to vehicle occupants and riders. RECOMMENDATION: Retail the refuge.	Agreed. Drawing ADC1580-004-P8 retains the central refuge within the hatching provided.

Ref	Audit Comments	Response
2.2	Location: Newark Road/Proposed Traffic Signal Development Access Junction PROBLEM: In Stage 3 of the Traffic Signal operation, right turning drivers onto Newark Road from the development arm appear to run into a red light as they are about to exit the junction, presumably to allow pedestrians to cross this exit. However, this arrangement is uncommon, and most drivers when turning right will be expecting to exit the junction unimpeded. Due to their angle of approach to the signal heads they will get very little warning of the unusual layout. Drivers who do manage to spot the signals will reasonably assume they are looking at red secondary aspects for eastbound Newark Road traffic, which is currently held to allow the right turners to emerge. According to the phasing diagram, at this point pedestrians will cross this eastbound exit, since they are presented with a green man. They will be at significant risk of being struck by right turning vehicles, whose drivers have unwittingly contravened the red signals, causing potentially serious injuries. Alternatively, a driver who manages to stop may be shunted by a following right turning driver, who having just entered the junction on a green light will not expect to have to brake so soon. RECOMMENDATION: Remove this conflicting phasing arrangement from the operation of the signals.	Agreed. The exit crossing on Newark Road is not expected to be called every cycle. In fact, only those pedestrians travelling to and from the north towards the development are likely to use the crossing. This equates to around 12 two-way pedestrian trips in a peak hour. As a result, the stage arrangement of the proposed access junction has been altered since the RSA was undertaken. Drawing ADC1580-003-P10 shows the latest stage arrangement. In summary, for a large amount of the time the junction will operate three stages with both Newark Road ahead traffic in Stage 1, Newark Road eastbound and right turn traffic into the development in Stage 2 and the development traffic in Stage 3. Pedestrian phases are integrated into the first three stages except for the exit crossing on Newark Road. When this crossing is called, Stage 4 is called that gives a green signal to westbound traffic on Newark Road, allowing pedestrians to cross the approach arms of Newark Road eastbound and the site access, as well as the exit crossing on Newark Road.

Ref	Audit Comments	Response
2.3	Location: Private accesses on Newark Road west of the traffic signal junction. PROBLEM: There are a small number of private residential properties to the west of the traffic signal junction, on the north side of Newark Road. This may present two problems. Firstly, drivers waiting to turn right into these accesses will have to wait in the westbound exit close to the junction. At this point there are two lanes merging together, and westbound main road drivers will be concentrating on adjacent or following vehicles as they attempt to merge/overtake. Additionally, they will not anticipate that a vehicle may stop at this point, since the houses are well set back from the road. Waiting stationary right turners are likely to be shunted at speed, resulting in potentially serious injuries to vehicle occupants and riders. Secondly, drivers emerging from these private drivers wishing to turn right will often have to negotiate a two lane eastbound queue at the traffic signals, before attempting to enter the westbound traffic stream. Their view will be hampered by the queue, and as mentioned above, westbound traffic will be merging at this point. As a result, it is likely that emerging vehicles will conflict with westbound merging vehicles, in particular motorcycles which may be overtaking as they exit the junction. These collisions will result in injuries to vehicle occupants and riders. RECOMMENDATION: Provide a widened hatched area to allow right turners to wait out of the exit merge. This should be augmented with a central refuge to prevent its use for overtaking, although the design should accommodate the turning manoeuvres at the accesses. To assist people wishing to turn right out onto Newark Road from the residential properties, a hatched area wide enough to accommodate a vehicle waiting in the centre of the road is recommended.	Agreed. Drawing ADC1580-003-P10 provides wider central hatching to allow private cars to wait in whilst trying to negotiate a right turn into the private drives.

Ref	Audit Comments	Response
2.4	Location: Newark Road exit merge west of the traffic signal junction. PROBLEM: Related to the above, the layout of the exit merge for westbound traffic may encourage traffic in the offside lane to delay their merge in order to overtake nearside vehicles by overrunning the central hatching, and entering the opposite traffic stream if it appears clear. This will result in late forced merging, or even head on collisions with opposing traffic. It will also exacerbate the situations described in problem 2.3 above. RECOMMENDATION: As part of a review of the exit merge layout provision of an extended or additional central refuge is recommended to discourage prolonged overtaking by offside lane drivers.	Agreed. Drawing ADC1580-003-P10 includes an extended central refuge to discourage prolonged overtaking by offside lane drivers. The central refuge has been cut short to allow a car to turn into the central hatching whilst waiting to turn right into the private drives.

Ref	Audit Comments	Response
2.5	Location: Northern verge between proposed access and B6139 Coxmoor Road. PROBLEM: Alongside the existing Newark Road's northern verge there is a significant and severe drop at the rear of the existing verge, onto a neighbouring industrial property. While this may present some challenges in the construction phase, it is also worth of assessment as regards the risks it presents in the permanent situation once construction has been completed. Drivers who left the road for whatever reason, and went over the edge along this verge would be subject to life threatening forces as they descended from the highway. RECOMMENDATION: It is recognised that the situation is an existing one, and if anything the realigned road is moving away from the hazard for the most part. Nonetheless the changes in use caused by the new junction and the road realignment mean that currently unforeseen risks may be created. Therefore, although the potential of an incident occurring may be low, owing to the likely severity of such an event it is recommended that an appropriate formal assessment of the necessity for vehicle restrain systems should be carried out, and a safety barrier on the northern verge provided where this is indicated.	Disagree. The realigned carriageway provides a 16m gap between the new kerb line and the existing and a 47m gap from the development road stop line. In addition, the alignment of the development access road will be designed as such to prohibit speeding on approach to the stop line. Hence, it is highly unlikely that any vehicle would overshoot the junction to such an extent that the existing drop would be a cause for concern. Particularly considering the lack of safety barriers on Coxmoor Road where speeds are higher. As a result, a Road Restraints Risk Assessment has not been carried out at this stage of design. If, during detailed design, the highway authority require a RRRAP to support the technical approval, one will be undertaken by the design team.

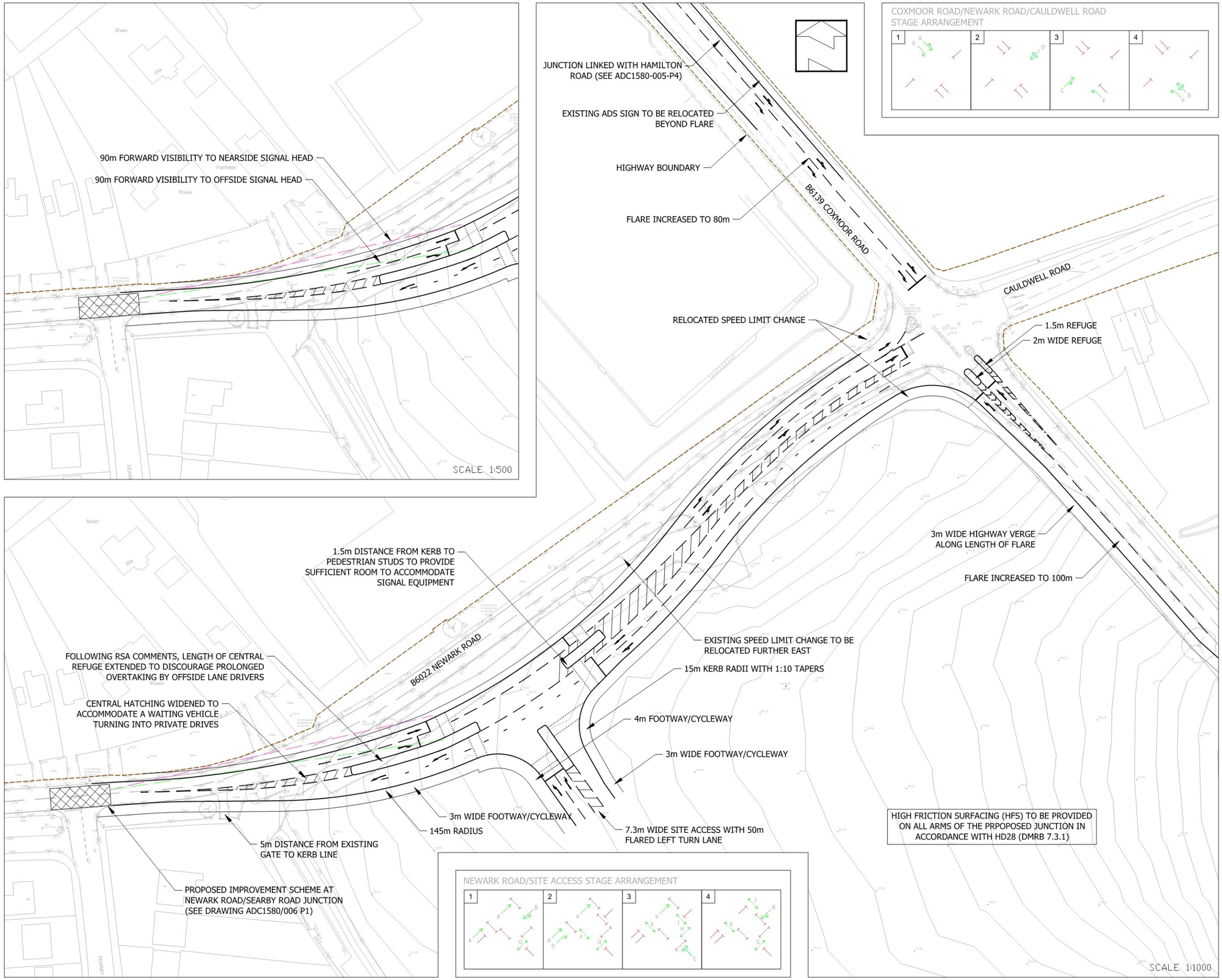
Ref	Audit Comments	Response
2.6	Location: B6139 Coxmoor Road southeast of the Hamilton Road mini-roundabout. PROBLEM: On the section of Coxmoor Road to the southeast of the Hamilton Road mini-roundabout, the revised layout includes widening and additional lanes. This is to accommodate the increased queuing traffic at both the Hamilton Road and Cauldwell Road junctions. At one point there are two lanes shown in each direction, i.e. four lanes in all. Drivers may become confused about the direction and allocation of lanes here and this may result in incorrect lane usage. This may lead to a variety of conflicts, including head on collisions, sudden lane changes and shunt type accidents. Any of these could lead to injuries to vehicle occupants and riders. RECOMMENDATION: Ensure that the thermoplastic markings offer clear guidance to road users as to the direction and designation of each traffic lane. A strengthened centre line is recommended to segregate opposing traffic, and a generous provision of directional lane arrows should be employed to illustrate the intended direction of flow. Where lanes are developed or dropped, care should be taken to ensure that road users are not inadvertently guided into opposing traffic or incorrect lanes. Situations of poor conspicuity, e.g. at night or when the road is wet, should be taken into consideration.	Agreed. Road markings to be confirmed during detailed design. Nevertheless, Drawing ADC1580-005-P7 presents revisions to the road markings between the Hamilton Road mini-roundabout and the Coxmoor Road/Newark Road signal junction.

Ref	Audit Comments	Response
2.7	Location: Throughout ISSUE: Many of the dropped crossings in the existing junctions are not constructed to modern standards, and include high kerb upstands, a lack of tactile paving, and in some cases are poorly located or aligned. SUGGESTIONS: It is suggested that where possible advantage is taken of the works to relay / provide crossing points which conform to modern standards of access provision.	Agreed. Note added to Drawing ADC1580-005-P7 stating that existing dropped crossings to be upgraded to modern standards and include suitable upstands and tactile paving. Suitable crossings to be examined during detailed design.

APPENDIX 1

DRAWING NUMBERS

ADC1580-003-P10
ADC1580- 004-P8
ADC1580-005-P7



COXMOOR ROAD/NEWARK ROAD/CAULDWELL ROAD
STAGE ARRANGEMENT

NEWARK ROAD/SITE ACCESS STAGE ARRANGEMENT

Rev	Description	Date
P10	Revised Layout following RSA comments	15/04/19
P9	Revised Layout following comments	22/10/18
P8	Revised Layout following comments	25/07/18
P7	Revised Layout following RSA comments	01/05/18
P6	Revised layout following comments	10/04/18
P5	Revised visibility following comments	19/03/18
P4	Revised visibility following comments	06/03/18
P3	Revised Layout	05/02/18
P2	Revised Layout	01/08/17
P1	Revised Layout	20/07/17

Client:
Hallam Land Management

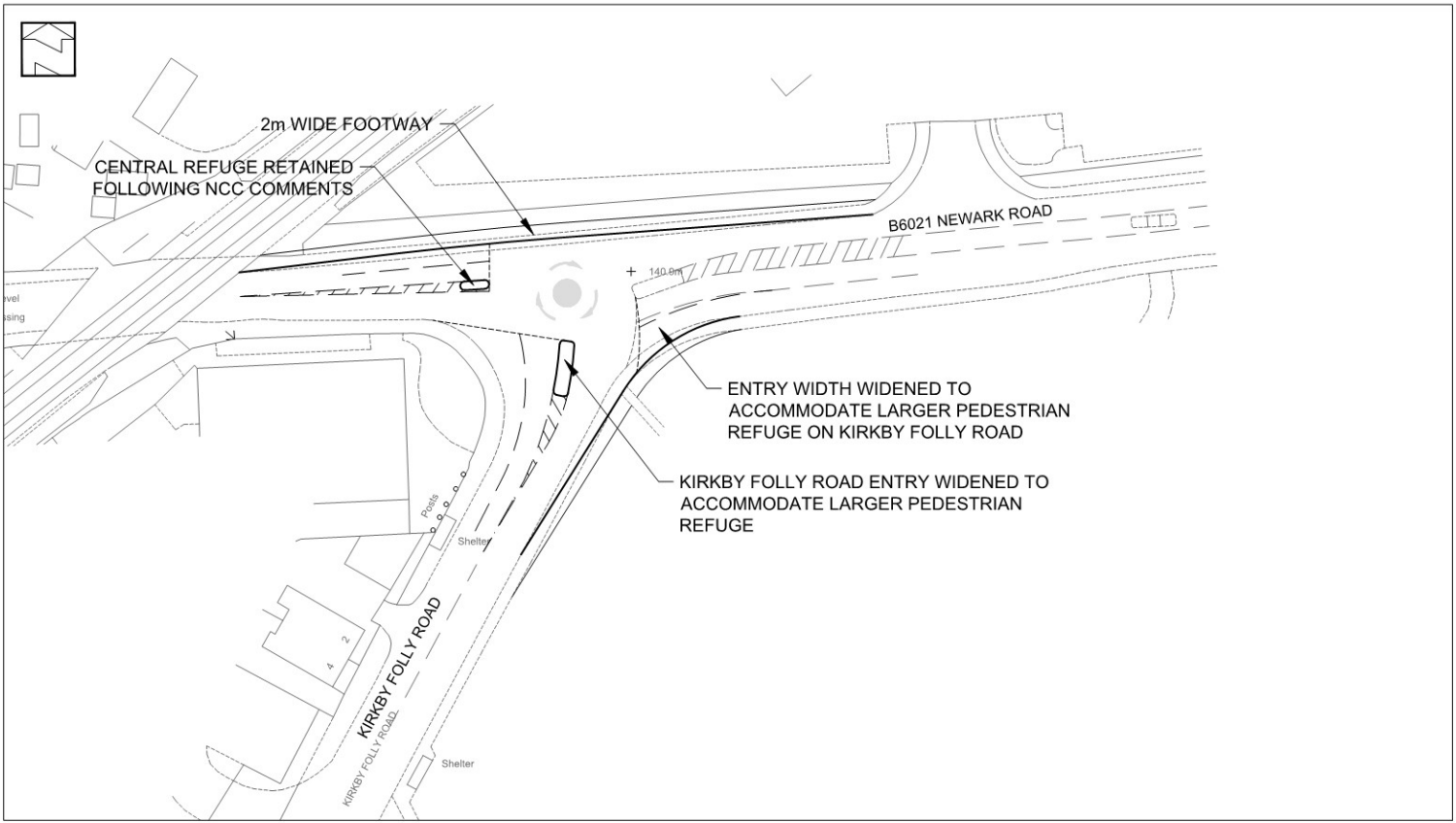
Project:
Proposed Residential Development
Newark Road, Sutton in Ashfield

Title:
Signal Controlled
Access Junction Layout
& Mitigation at Coxmoor Road/Cauldwell Road Junction

ADC INFRASTRUCTURE

Drg Size:	Scale:	Date:
A1	As Shown	05/05/2017

Drg No: ADC1580/003
Rev: P10



Rev	Description	Date
P8	Revised layout following NCC comments	01/04/19
P7	Revised to accommodate HGVs	12/02/19
P6	Revised layout following comments	31/01/19
P5	Revised layout following comments	30/08/18
P4	Revised layout following RSA comments	02/05/18
P3	Revised Junction Layout	11/04/18

Project:

Proposed Residential Development
Newark Road, Sutton in Ashfield

Title:

Proposed Improvement Scheme
Newark Road / Kirkby Folly Road

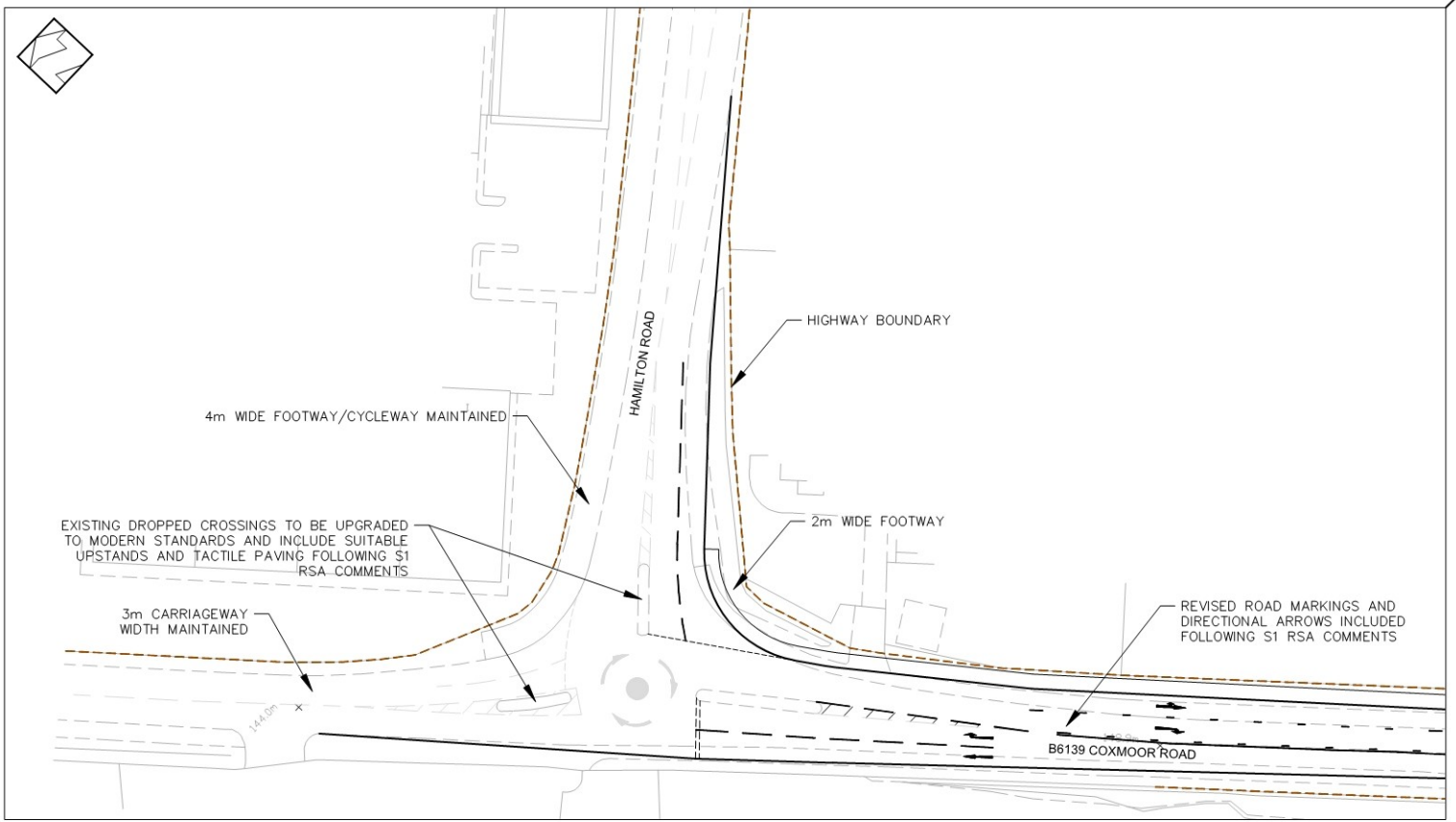
Client:

Hallam Land Management

ADC INFRASTRUCTURE

Drg Size:	Scale:	Date:
A3	1:500	15/06/2017

Drg No:	Rev:
ADC1580-DR-004	P8



P7	Revised following RSA comments	15/04/19
P6	Revised Scheme	25/01/19
Rev	Description	Date

Project:
Proposed Residential Development
Newark Road, Sutton in Ashfield

Title:
Proposed Improvement Scheme
B6139 Coxmoor Road/Hamilton Road

Client:
Hallam Land Management

ADC INFRASTRUCTURE

Drg Size:	Scale:	Date:
A3	1:500	17/07/2017

Drg No: ADC1580/005

Rev: P7

APPENDIX 2

STAGE 1
ROAD SAFETY AUDIT REPORT

B6022 Newark Road Sutton-in-Ashfield Residential Development

Newark Road / Kirkby Folly Road
Newark Road / Proposed Site Access
Newark Road / Coxmoor Road
Coxmoor Road / Hamilton Road

Road Safety Audit

Stage 1 - Completion of Preliminary Design

in partnership with

Nottinghamshire County Council

SA2269A
April 2019

B6022 Newark Road Sutton-in-Ashfield Residential Development

Stage 1 Road Safety Audit

Prepared for:

Sarah Hancock

Highways Development Control
Nottinghamshire County Council

Via East Midlands Ltd
Trent Bridge House, Fox Road, West Bridgford, Nottingham NG2 6BJ

Registered Office: Bilsthorpe Highways Depot, Bilsthorpe Business Park, Eakring Road, Bilsthorpe, Newark NG22 8ST

1. Introduction

1.1 This report results from a Stage 1 Road Safety Audit carried out on amending 3 existing junctions (nominal widening at 2 existing mini roundabouts and an existing traffic signal junction) plus a new traffic signal access junction, in association with a proposed residential development on B6022 Newark Road Sutton-in-Ashfield, Nottinghamshire.

1.2 The Road Safety Audit has been carried out following a request received from Sarah Hancock of Nottinghamshire County Council Highways Development Control on 27/03/2019.

1.3 The Road Safety Audit Team membership approved by Sonya Hurt, Service Manager for Safer Highways at Via East Midlands, consisted of:

Gareth Coles - Audit Team Leader, Via East Midlands
Phil Gow - Audit Team Member, Via East Midlands

1.4 The Road Safety Audit comprised an examination of the following documents provided:

ADC1580 003 P9 (Traffic Signals Access Junction Layout - 90m)
ADC1580-DR-004 P7 Proposed Improvement Scheme Newark Rd / Kirkby Folly Rd
ADC1580/005 P6 Proposed Imp Scheme B6139 Coxmoor Rd / Hamilton Rd

1.5 The Road Safety Audit took place at Trent Bridge House, the Via East Midlands Ltd offices in West Bridgford, Nottingham 02.04.2019. The Audit Team visited the site of the proposed junction improvements on 02.04.2019 at around 10:00 hrs. During the site visit the weather was overcast with rain, and the road surface was wet.

1.6 At the time of the visit there were temporary traffic lights in operation on B6021 Newark between Kirkby Folly Road and Coxmoor Road (near Searby Road). This resulted in some congestion throughout the immediate area, and affected the assessment of free flowing traffic conditions to some degree.

1.7 The site visit was undertaken in accordance with Via Highways Risk Assessment H25 completed for "Safer Highways; Site Visits for Accident Investigations and Road Safety Audits".

1.8 The audit has been carried out in accordance with Nottinghamshire County Council's Road Safety Audit Policy, following the principles of DMRB GG119. The audit has been carried out with the sole purpose of identifying features of the scheme which could, in our view, lead to road safety problems. The Road Safety Audit Team has examined and reported only on the road safety implications of the scheme as presented and has not examined or verified the compliance of the designs to any other criteria.

1.9 All comments and recommendations are referenced to the design drawings and the locations are indicated on a plan within this report.

2. Items raised in previous road safety audit(s)

2.1 The Audit Team is not aware of any other Road Safety Audits having been carried out on this proposal.

3. Items raised at this Stage 1 Audit

3.1 Newark Road / Kirkby Folly Road - Existing Mini Roundabout

3.1.1 Problem

Location: 3.1.1 – Eastbound Newark Road approach to Mini-Roundabout

Summary: Reduced junction presence caused by removal of central refuge, resulting in injury accidents at the junction.

The proposed removal of the central refuge on the eastbound approach to the existing Mini-Roundabout will reduce the visual presence of the junction for an approaching eastbound driver. The refuge and bollard arrangement has some intrinsic presence, but importantly also carries a higher level central Mini-Roundabout and Give Way sign combination.

This is of particular importance due to the following factors:

- The two lane approach which allows the masking of the nearside sign by a bus HGV etc.
- The 'straight ahead' alignment through the junction from this direction.
- The crest in the road when viewed from west of the railway line which hides the layout from a driver's view.

Failure to appreciate the junction layout may lead to late braking, shunt type accidents, entry vs circulating accidents, including collisions with circulating two -wheeled vehicles. These accidents will result in injury to vehicle occupants and riders

Recommendation

Retain the refuge.

3.2 Newark Road / Proposed Traffic Signal Development Access Junction

3.2.1 Problem

Location: 3.2.1 – At junction.

Summary: Right turning vehicles fail to stop at red light on junction exit, injuring pedestrians on the crossing facility.

In Stage 3 of the Traffic Signal operation, right turning drivers onto Newark Road from the development arm appear to run into a red light as they are about to exit the junction, presumably to allow pedestrians to cross this exit. However this arrangement is uncommon, and most drivers when turning right will be expecting to exit the junction unimpeded. Due to their angle of approach to the signal heads they will get very little warning of the unusual layout. Drivers who do manage to spot the signals will reasonably assume that they are looking at red secondary aspects for eastbound Newark Road traffic, which is currently held to allow the right turners to emerge. According to the phasing diagram, at this point pedestrians will cross this eastbound exit, since they are presented with a Green Man. They will be at significant risk of being struck by right turning vehicles, whose drivers have unwittingly contravened the red signals, causing potentially serious injuries. Alternatively, a driver who manages to stop may be shunted by a following right turning driver, who having just entered the junction on a green light will not expect to have to brake so soon.

Recommendation

Remove this conflicting phasing arrangement from the operation of the signals.

3.2.2 Problem

Location: 3.2.2 – Private Accesses on Newark Road west of the traffic signal junction.

Summary: Vehicles entering or leaving private accesses involved in injury collisions with main road traffic.

There are a small number of private residential properties to the west of the traffic signal junction, on the north side of Newark Road. This may present two problems.
Firstly, drivers waiting to turn right into these accesses will have to wait in the westbound exit close to the junction. At this point there are two lanes merging together, and westbound main road drivers will be concentrating on adjacent or following vehicles as they attempt to merge/overtake. Additionally, they will not anticipate that a vehicle may stop at this point, since the houses are well set back from the road. Waiting stationary right

turners are likely to be shunted at speed, resulting in potentially serious injuries to vehicle occupants and riders.
Secondly, drivers emerging from these private accesses wishing to turn right will often have to negotiate a two lane eastbound queue at the traffic signals, before attempting to enter the westbound traffic stream. Their view will be hampered by the queue, and as mentioned above, westbound traffic will be merging at this point. As a result it is likely that the emerging vehicle will conflict with westbound merging vehicles, in particular motorcycles which may be overtaking as they exit the junction. These collisions will result in injuries to vehicle occupants and riders.

Recommendation

Provide a widened hatched area to allow right turners to wait out of the exit merge. This should be augmented with a central refuge to prevent its use for overtaking, although the design should accommodate the turning manoeuvres at the accesses.
To assist people wishing to turn right out onto Newark Road from the residential properties, a hatched area wide enough to accommodate a vehicle waiting in the centre of the road is recommended.

3.2.3 Problem

Location: 3.2.3 - Newark Road exit merge west of the traffic signal junction.

Summary: Short merge with reverse curve encouraging overtaking and head-on injury collisions.

Related to the above, the layout of the exit merge for west bound traffic may encourage traffic in the offside lane to delay their merge in order to overtake nearside vehicles, by overrunning the central hatching, and entering the opposing traffic stream if it appears clear. This will result in late forced merging, or even head on collisions with opposing traffic. It will also exacerbate the situations described in 3.2.2 above

Recommendation

As part of a review of the exit merge layout provision of an extended or additional central refuge is recommended to discourage prolonged overtaking by offside lane drivers.

3.2.4 Problem

Location: 3.2.4 – Northern verge between proposed access and B6139 Coxmoor Road.

Summary: Hazardously severe drop close to carriageway.

Alongside the existing Newark Road's northern verge there is a significant and severe drop at the rear of the existing verge, into a neighbouring industrial property. While this may present some challenges in the construction phase, it is also worthy of assessment as regards the risks it presents in the permanent situation once construction has been completed. Drivers who left the road for whatever reason, and went over the edge along this verge would be subject to life threatening forces as they descended from the highway.

Recommendation

It is recognised that the situation is an existing one, and if anything the realigned road is moving away from the hazard for the most part. Nonetheless the changes in use caused by the new junction and the road realignment, mean that currently unforeseen risks may be created. Therefore, although the potential of an incident occurring may be low, owing to the likely severity of such an event it is recommended that an appropriate formal assessment of the necessity for vehicle restrain systems should be carried out, and a safety barrier on the northern verge provided where this is indicated.

3.3 Coxmoor Road / Hamilton Road - Existing Mini-Roundabout

3.3.1 Problem

Location: 3.1.1 – B6139 Coxmoor Road southeast of Mini-Roundabout.

Summary: Driver confusion over multiple lanes leading to variety of injury accidents.

On the section of Coxmoor Road to the southeast of the Hamilton Road mini-roundabout, the revised layout includes widening and additional lanes. This is to accommodate increased queuing traffic at both the Hamilton Road and Cauldwell Road junctions. At one point there are two lanes shown in each direction, i.e. four lanes in all. Drivers may become confused about the direction and allocation of lanes here and this may result in incorrect lane usage. This may lead to a variety of conflicts, including head-on collisions, sudden lane changes and shunt type accidents. Any of these could lead to injuries to vehicle occupant and riders.

Recommendation

Ensure that the thermoplastic markings offer clear guidance to road users as to the direction and designation of each traffic lane. A strengthened centre line is recommended to segregate opposing traffic, and a generous provision of directional lane arrows should be employed to illustrate the intended directions of flow. Where lanes are developed or dropped, care should be taken to ensure that road users are not inadvertently guided into opposing traffic or incorrect lanes. Situations of poor conspicuity, e.g. at night or when the road is wet, should be taken into consideration.

4. Issues outside the Terms of Reference

This section describes any safety issues identified during this audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Designer and Client Organisation. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

4.1 Issue

Location: Throughout

Reason considered outside the Terms of Reference: Not shown on Stage 1 design.

Many of the dropped crossings in the existing junctions are not constructed to modern standards, and include high kerb upstands, a lack of tactile paving, and in some cases are poorly located or aligned. It is suggested that where possible advantage is taken of the works to relay / provide crossing points which conform to modern standards of access provision.

5. Reference Locations

6. Audit Team Statement

We certify that this Road Safety Audit has been carried out in accordance with Nottinghamshire County Council policy.

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APPENDIX G

TRICS OUTPUTS

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	2 days
	HC	HAMPSHIRE	4 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	2 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	3 days
04	**EAST ANGLIA**		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	5 days
05	**EAST MIDLANDS**		
	DS	DERBYSHIRE	1 days
06	**WEST MIDLANDS**		
	ST	STAFFORDSHIRE	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NE	NORTH EAST LINCOLNSHIRE	1 days
09	**NORTH**		
	DH	DURHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 125 to 514 (units:)
Range Selected by User: 125 to 600 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 23/11/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	6 days
Tuesday	5 days
Wednesday	6 days
Thursday	4 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	20 days
Directional ATC Count	3 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	19
Neighbourhood Centre (PPS6 Local Centre)	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	23 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included
Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	5 days
5,001 to 10,000	7 days
10,001 to 15,000	7 days
15,001 to 20,000	2 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	5 days
25,001 to 50,000	4 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
125,001 to 250,000	6 days
250,001 to 500,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	17 days
1.6 to 2.0	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	14 days
No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	23 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 **CA-03-A-06** **MIXED HOUSES** **CAMBRIDGESHIRE**
CRAFT'S WAY
NEAR CAMBRIDGE
BAR HILL
Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 207
Survey date: FRIDAY *22/06/18* *Survey Type: MANUAL*

2 **DH-03-A-02** **MIXED HOUSES** **DURHAM**
LEAZES LANE
BISHOP AUCKLAND
ST HELEN AUCKLAND
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY *27/03/17* *Survey Type: MANUAL*

3 **DS-03-A-02** **MIXED HOUSES** **DERBYSHIRE**
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

4 **ES-03-A-03** **MIXED HOUSES & FLATS** **EAST SUSSEX**
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

5 **ES-03-A-04** **MIXED HOUSES & FLATS** **EAST SUSSEX**
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

6 **HC-03-A-24** **MIXED HOUSES & FLATS** **HAMPSHIRE**
STONEHAM LANE
EASTLEIGH

Edge of Town
Residential Zone
Total No of Dwellings: 243
Survey date: WEDNESDAY *10/11/21* *Survey Type: MANUAL*

7 **HC-03-A-25** **MIXED HOUSES & FLATS** **HAMPSHIRE**
BARNFIELD WAY
NEAR SOUTHAMPTON
HEDGE END
Edge of Town
Out of Town
Total No of Dwellings: 250
Survey date: TUESDAY *12/10/21* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

8 **HC-03-A-26** **MIXED HOUSES & FLATS** **HAMPSHIRE**
BOTLEY ROAD
WHITELEY

Edge of Town
Out of Town
Total No of Dwellings: 270
Survey date: THURSDAY *24/06/21* *Survey Type: MANUAL*

9 **HC-03-A-28** **MIXED HOUSES & FLATS** **HAMPSHIRE**
EAGLE AVENUE
WATERLOOVILLE
LOVEDEAN
Edge of Town
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY *08/11/21* *Survey Type: MANUAL*

10 **HF-03-A-03** **MIXED HOUSES** **HERTFORDSHIRE**
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

11 **KC-03-A-07** **MIXED HOUSES** **KENT**
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

12 **KC-03-A-08** **MIXED HOUSES** **KENT**
MAIDSTONE ROAD
CHARING

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 159
Survey date: TUESDAY *22/05/18* *Survey Type: MANUAL*

13 **NE-03-A-02** **SEMI DETACHED & DETACHED** **NORTH EAST LINCOLNSHIRE**
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total No of Dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

14 **NF-03-A-16** **MIXED HOUSES & FLATS** **NORFOLK**
NORWICH COMMON
WYMONDHAM

Edge of Town
Residential Zone
Total No of Dwellings: 138
Survey date: TUESDAY *20/10/15* *Survey Type: DIRECTIONAL ATC COUNT*

LIST OF SITES relevant to selection parameters (Cont.)

15 **NF-03-A-23** **MIXED HOUSES & FLATS** **NORFOLK**
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total No of Dwellings: 514
Survey date: WEDNESDAY *22/09/21* *Survey Type: MANUAL*

16 **NF-03-A-24** **MIXED HOUSES & FLATS** **NORFOLK**
HUNSTANTON ROAD
HUNSTANTON

Edge of Town
Residential Zone
Total No of Dwellings: 127
Survey date: WEDNESDAY *22/09/21* *Survey Type: DIRECTIONAL ATC COUNT*

17 **NF-03-A-29** **MIXED HOUSES** **NORFOLK**
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 486
Survey date: WEDNESDAY *22/09/21* *Survey Type: DIRECTIONAL ATC COUNT*

18 **NF-03-A-30** **MIXED HOUSES** **NORFOLK**
BRANDON ROAD
SWAFFHAM

Edge of Town
Residential Zone
Total No of Dwellings: 266
Survey date: THURSDAY *23/09/21* *Survey Type: MANUAL*

19 **SC-03-A-05** **MIXED HOUSES** **SURREY**
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 207
Survey date: MONDAY *01/04/19* *Survey Type: MANUAL*

20 **ST-03-A-07** **DETACHED & SEMI-DETACHED** **STAFFORDSHIRE**
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total No of Dwellings: 248
Survey date: WEDNESDAY *22/11/17* *Survey Type: MANUAL*

21 **WS-03-A-04** **MIXED HOUSES** **WEST SUSSEX**
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 151
Survey date: THURSDAY *11/12/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

22 WS-03-A-08 MIXED HOUSES WEST SUSSEX
ROUNDSTONE LANE
ANGMERING

Edge of Town
Residential Zone
Total No of Dwellings: 180
Survey date: THURSDAY *19/04/18* *Survey Type: MANUAL*

23 WS-03-A-15 MIXED HOUSES WEST SUSSEX
HILLAND ROAD
BILLINGSHURST

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 380
Survey date: TUESDAY *23/11/21* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
SF-03-A-10	Covid
WS-03-A-12	Covid
WS-03-A-13	Covid

RANK ORDER for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

TOTAL VEHICLES

Ranking Type: **TOTALS** Time Range: 08:00-09:00
15th Percentile = No. **20** KC-03-A-08 Tot: 0.327
85th Percentile = No. **4** ES-03-A-03 Tot: 0.627

Median Values
Arrivals: 0.092
Departures: 0.362
Totals: 0.454

Mean Values
Arrivals: 0.126
Departures: 0.342
Totals: 0.468

Rank	Site-Ref	Description	Town/City	Area	DWELLS	Day	Date	Trip Rate (Sorted by Totals)			Park Spaces Per Dwelling
								Arrivals	Departures	Totals	
1	HC-03-A-25	MIXED HOUSES &	NEAR SOUTHAMPTON	HAMPSHIRE	250	Tue	12/10/21	0.184	0.584	0.768	2.44
2	NF-03-A-29	MIXED HOUSES	GREAT YARMOUTH	NORFOLK	486	Wed	22/09/21	0.193	0.473	0.666	2.15
3	NF-03-A-16	MIXED HOUSES &	WYMONDHAM	NORFOLK	138	Tue	20/10/15	0.210	0.449	0.659	2.01
4	**ES-03-A-03**	**MIXED HOUSES &**	**POLEGATE**	**EAST SUSSEX**	**212**	**Mon**	**11/07/16**	**0.165**	**0.462**	**0.627**	**1.68**
5	KC-03-A-07	MIXED HOUSES	HERNE BAY	KENT	288	Wed	27/09/17	0.240	0.385	0.625	3.09
6	NF-03-A-23	MIXED HOUSES &	WYMONDHAM	NORFOLK	514	Wed	22/09/21	0.183	0.422	0.605	2.48
7	CA-03-A-06	MIXED HOUSES	NEAR CAMBRIDGE	CAMBRIDGESHIRE	207	Fri	22/06/18	0.184	0.401	0.585	3.75
8	DS-03-A-02	MIXED HOUSES	DERBY	DERBYSHIRE	371	Tue	10/07/18	0.089	0.402	0.491	2.92
9	ST-03-A-07	DETACHED & SEM	STAFFORD	STAFFORDSHIRE	248	Wed	22/11/17	0.105	0.383	0.488	3.55
10	HC-03-A-26	MIXED HOUSES &	WHITELEY	HAMPSHIRE	270	Thu	24/06/21	0.111	0.374	0.485	2.06
11	WS-03-A-08	MIXED HOUSES	ANGMERING	WEST SUSSEX	180	Thu	19/04/18	0.106	0.367	0.473	2.93
12	SC-03-A-05	MIXED HOUSES	HORLEY	SURREY	207	Mon	01/04/19	0.092	0.362	0.454	3.14
13	WS-03-A-15	MIXED HOUSES	BILLINGSHURST	WEST SUSSEX	380	Tue	23/11/21	0.132	0.311	0.443	2.47
14	HF-03-A-03	MIXED HOUSES	BUNTINGFORD	HERTFORDSHIRE	160	Mon	08/07/19	0.119	0.319	0.438	3.95
15	HC-03-A-28	MIXED HOUSES &	WATERLOOVILLE	HAMPSHIRE	125	Mon	08/11/21	0.128	0.304	0.432	2.58
16	NE-03-A-02	SEMI DETACHED	SCUNTHORPE	NORTH EAST LINCOLNS	432	Mon	12/05/14	0.067	0.354	0.421	1.00
17	WS-03-A-04	MIXED HOUSES	HORSHAM	WEST SUSSEX	151	Thu	11/12/14	0.139	0.278	0.417	2.28
18	HC-03-A-24	MIXED HOUSES &	EASTLEIGH	HAMPSHIRE	243	Wed	10/11/21	0.049	0.366	0.415	2.19
19	NF-03-A-24	MIXED HOUSES &	HUNSTANTON	NORFOLK	127	Wed	22/09/21	0.126	0.260	0.386	2.37
20	**KC-03-A-08**	**MIXED HOUSES**	**CHARING**	**KENT**	**159**	**Tue**	**22/05/18**	**0.113**	**0.214**	**0.327**	**3.02**
21	NF-03-A-30	MIXED HOUSES	SWAFFHAM	NORFOLK	266	Thu	23/09/21	0.075	0.158	0.233	2.99
22	ES-03-A-04	MIXED HOUSES &	CAMBER	EAST SUSSEX	134	Fri	15/07/16	0.052	0.134	0.186	1.91
23	DH-03-A-02	MIXED HOUSES	BISHOP AUCKLAND	DURHAM	125	Mon	27/03/17	0.032	0.104	0.136	0.99

This section displays actual (not average) trip rates for each of the survey days in the selected set, and ranks them in order of relative trip rate intensity, for a given time period (or peak period irrespective of time) selected by the user. The count type and direction are both displayed just above the table, along with the rows within the table representing the 85th and 15th percentile trip rate figures (highlighted in bold within the table itself).

The table itself displays details of each individual survey, alongside arrivals, departures and totals trip rates, sorted by whichever of the three directional options has been chosen by the user. As with the preceeding trip rate calculation results table, the trip rates shown are per the calculation factor (e.g. per 100m2 GFA, per employee, per hectare, etc). Note that if the peak period option has been selected (as opposed to a specific chosen time period), the peak period for each individual survey day in the table is also displayed.

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
TOTAL VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	2 days
	HC	HAMPSHIRE	4 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	2 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	3 days
04	**EAST ANGLIA**		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	5 days
05	**EAST MIDLANDS**		
	DS	DERBYSHIRE	1 days
06	**WEST MIDLANDS**		
	ST	STAFFORDSHIRE	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NE	NORTH EAST LINCOLNSHIRE	1 days
09	**NORTH**		
	DH	DURHAM	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Primary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: No of Dwellings
Actual Range: 125 to 514 (units:)
Range Selected by User: 125 to 600 (units:)

Parking Spaces Range: All Surveys Included

Parking Spaces per Dwelling Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/14 to 23/11/21

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	6 days
Tuesday	5 days
Wednesday	6 days
Thursday	4 days
Friday	2 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	20 days
Directional ATC Count	3 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Edge of Town	19
Neighbourhood Centre (PPS6 Local Centre)	4

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	23 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 500m Range:
All Surveys Included
Population within 1 mile:

1,000 or Less	1 days
1,001 to 5,000	5 days
5,001 to 10,000	7 days
10,001 to 15,000	7 days
15,001 to 20,000	2 days
20,001 to 25,000	1 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	5 days
25,001 to 50,000	4 days
50,001 to 75,000	3 days
75,001 to 100,000	3 days
125,001 to 250,000	6 days
250,001 to 500,000	2 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	4 days
1.1 to 1.5	17 days
1.6 to 2.0	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	14 days
No	9 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	23 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 **CA-03-A-06** **MIXED HOUSES** **CAMBRIDGESHIRE**
CRAFT'S WAY
NEAR CAMBRIDGE
BAR HILL
Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 207
Survey date: FRIDAY *22/06/18* *Survey Type: MANUAL*

2 **DH-03-A-02** **MIXED HOUSES** **DURHAM**
LEAZES LANE
BISHOP AUCKLAND
ST HELEN AUCKLAND
Neighbourhood Centre (PPS6 Local Centre)
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY *27/03/17* *Survey Type: MANUAL*

3 **DS-03-A-02** **MIXED HOUSES** **DERBYSHIRE**
RADBOURNE LANE
DERBY

Edge of Town
Residential Zone
Total No of Dwellings: 371
Survey date: TUESDAY *10/07/18* *Survey Type: MANUAL*

4 **ES-03-A-03** **MIXED HOUSES & FLATS** **EAST SUSSEX**
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total No of Dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

5 **ES-03-A-04** **MIXED HOUSES & FLATS** **EAST SUSSEX**
NEW LYDD ROAD
CAMBER

Edge of Town
Residential Zone
Total No of Dwellings: 134
Survey date: FRIDAY *15/07/16* *Survey Type: MANUAL*

6 **HC-03-A-24** **MIXED HOUSES & FLATS** **HAMPSHIRE**
STONEHAM LANE
EASTLEIGH

Edge of Town
Residential Zone
Total No of Dwellings: 243
Survey date: WEDNESDAY *10/11/21* *Survey Type: MANUAL*

7 **HC-03-A-25** **MIXED HOUSES & FLATS** **HAMPSHIRE**
BARNFIELD WAY
NEAR SOUTHAMPTON
HEDGE END
Edge of Town
Out of Town
Total No of Dwellings: 250
Survey date: TUESDAY *12/10/21* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

8 **HC-03-A-26** **MIXED HOUSES & FLATS** **HAMPSHIRE**
BOTLEY ROAD
WHITELEY

Edge of Town
Out of Town
Total No of Dwellings: 270
Survey date: THURSDAY *24/06/21* *Survey Type: MANUAL*

9 **HC-03-A-28** **MIXED HOUSES & FLATS** **HAMPSHIRE**
EAGLE AVENUE
WATERLOOVILLE
LOVEDEAN
Edge of Town
Residential Zone
Total No of Dwellings: 125
Survey date: MONDAY *08/11/21* *Survey Type: MANUAL*

10 **HF-03-A-03** **MIXED HOUSES** **HERTFORDSHIRE**
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total No of Dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

11 **KC-03-A-07** **MIXED HOUSES** **KENT**
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total No of Dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

12 **KC-03-A-08** **MIXED HOUSES** **KENT**
MAIDSTONE ROAD
CHARING

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 159
Survey date: TUESDAY *22/05/18* *Survey Type: MANUAL*

13 **NE-03-A-02** **SEMI DETACHED & DETACHED** **NORTH EAST LINCOLNSHIRE**
HANOVER WALK
SCUNTHORPE

Edge of Town
No Sub Category
Total No of Dwellings: 432
Survey date: MONDAY *12/05/14* *Survey Type: MANUAL*

14 **NF-03-A-16** **MIXED HOUSES & FLATS** **NORFOLK**
NORWICH COMMON
WYMONDHAM

Edge of Town
Residential Zone
Total No of Dwellings: 138
Survey date: TUESDAY *20/10/15* *Survey Type: DIRECTIONAL ATC COUNT*

LIST OF SITES relevant to selection parameters (Cont.)

15 **NF-03-A-23** **MIXED HOUSES & FLATS** **NORFOLK**
SILFIELD ROAD
WYMONDHAM

Edge of Town
Out of Town
Total No of Dwellings: 514
Survey date: WEDNESDAY *22/09/21* *Survey Type: MANUAL*

16 **NF-03-A-24** **MIXED HOUSES & FLATS** **NORFOLK**
HUNSTANTON ROAD
HUNSTANTON

Edge of Town
Residential Zone
Total No of Dwellings: 127
Survey date: WEDNESDAY *22/09/21* *Survey Type: DIRECTIONAL ATC COUNT*

17 **NF-03-A-29** **MIXED HOUSES** **NORFOLK**
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total No of Dwellings: 486
Survey date: WEDNESDAY *22/09/21* *Survey Type: DIRECTIONAL ATC COUNT*

18 **NF-03-A-30** **MIXED HOUSES** **NORFOLK**
BRANDON ROAD
SWAFFHAM

Edge of Town
Residential Zone
Total No of Dwellings: 266
Survey date: THURSDAY *23/09/21* *Survey Type: MANUAL*

19 **SC-03-A-05** **MIXED HOUSES** **SURREY**
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total No of Dwellings: 207
Survey date: MONDAY *01/04/19* *Survey Type: MANUAL*

20 **ST-03-A-07** **DETACHED & SEMI-DETACHED** **STAFFORDSHIRE**
BEACONSIDE
STAFFORD
MARSTON GATE
Edge of Town
Residential Zone
Total No of Dwellings: 248
Survey date: WEDNESDAY *22/11/17* *Survey Type: MANUAL*

21 **WS-03-A-04** **MIXED HOUSES** **WEST SUSSEX**
HILLS FARM LANE
HORSHAM
BROADBRIDGE HEATH
Edge of Town
Residential Zone
Total No of Dwellings: 151
Survey date: THURSDAY *11/12/14* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

22 WS-03-A-08 MIXED HOUSES WEST SUSSEX
ROUNDSTONE LANE
ANGMERING

Edge of Town
Residential Zone
Total No of Dwellings: 180
Survey date: THURSDAY *19/04/18* *Survey Type: MANUAL*

23 WS-03-A-15 MIXED HOUSES WEST SUSSEX
HILLAND ROAD
BILLINGSHURST

Neighbourhood Centre (PPS6 Local Centre)
Village
Total No of Dwellings: 380
Survey date: TUESDAY *23/11/21* *Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
SF-03-A-10	Covid
WS-03-A-12	Covid
WS-03-A-13	Covid

RANK ORDER for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED

TOTAL VEHICLES

Ranking Type: **TOTALS** Time Range: 17:00-18:00
15th Percentile = No. **20** WS-03-A-04 Tot: 0.371
85th Percentile = No. **4** KC-03-A-07 Tot: 0.593

Median Values		Mean Values	
Arrivals:	0.363	Arrivals:	0.323
Departures:	0.104	Departures:	0.148
Totals:	0.467	Totals:	0.471

Rank	Site-Ref	Description	Town/City	Area	DWELLS	Day	Date	Trip Rate (Sorted by Totals)			Park Spaces Per Dwelling
								Arrivals	Departures	Totals	
1	HC-03-A-25	MIXED HOUSES &	NEAR SOUTHAMPTON	HAMPSHIRE	250	Tue	12/10/21	0.528	0.216	0.744	2.44
2	NF-03-A-16	MIXED HOUSES &	WYMONDHAM	NORFOLK	138	Tue	20/10/15	0.435	0.275	0.710	2.01
3	ES-03-A-03	MIXED HOUSES &	POLEGATE	EAST SUSSEX	212	Mon	11/07/16	0.434	0.217	0.651	1.68
4	**KC-03-A-07**	**MIXED HOUSES**	**HERNE BAY**	**KENT**	**288**	**Wed**	**27/09/17**	**0.444**	**0.149**	**0.593**	**3.09**
5	NF-03-A-23	MIXED HOUSES &	WYMONDHAM	NORFOLK	514	Wed	22/09/21	0.393	0.198	0.591	2.48
6	NF-03-A-24	MIXED HOUSES &	HUNSTANTON	NORFOLK	127	Wed	22/09/21	0.331	0.244	0.575	2.37
7	NF-03-A-29	MIXED HOUSES	GREAT YARMOUTH	NORFOLK	486	Wed	22/09/21	0.368	0.204	0.572	2.15
8	DS-03-A-02	MIXED HOUSES	DERBY	DERBYSHIRE	371	Tue	10/07/18	0.407	0.084	0.491	2.92
9	CA-03-A-06	MIXED HOUSES	NEAR CAMBRIDGE	CAMBRIDGESHIRE	207	Fri	22/06/18	0.348	0.140	0.488	3.75
10	WS-03-A-08	MIXED HOUSES	ANGMERING	WEST SUSSEX	180	Thu	19/04/18	0.278	0.206	0.484	2.93
11	SC-03-A-05	MIXED HOUSES	HORLEY	SURREY	207	Mon	01/04/19	0.377	0.097	0.474	3.14
12	HC-03-A-26	MIXED HOUSES &	WHITELEY	HAMPSHIRE	270	Thu	24/06/21	0.363	0.104	0.467	2.06
13	HF-03-A-03	MIXED HOUSES	BUNTINGFORD	HERTFORDSHIRE	160	Mon	08/07/19	0.287	0.169	0.456	3.95
14	WS-03-A-15	MIXED HOUSES	BILLINGSHURST	WEST SUSSEX	380	Tue	23/11/21	0.274	0.176	0.450	2.47
15	ST-03-A-07	DETACHED & SEM	STAFFORD	STAFFORDSHIRE	248	Wed	22/11/17	0.319	0.125	0.444	3.55
16	NE-03-A-02	SEMI DETACHED	SCUNTHORPE	NORTH EAST LINCOLNS	432	Mon	12/05/14	0.257	0.162	0.419	1.00
17	HC-03-A-28	MIXED HOUSES &	WATERLOOVILLE	HAMPSHIRE	125	Mon	08/11/21	0.304	0.112	0.416	2.58
18	NF-03-A-30	MIXED HOUSES	SWAFFHAM	NORFOLK	266	Thu	23/09/21	0.271	0.120	0.391	2.99
19	HC-03-A-24	MIXED HOUSES &	EASTLEIGH	HAMPSHIRE	243	Wed	10/11/21	0.309	0.074	0.383	2.19
20	**WS-03-A-04**	**MIXED HOUSES**	**HORSHAM**	**WEST SUSSEX**	**151**	**Thu**	**11/12/14**	**0.252**	**0.119**	**0.371**	**2.28**
21	KC-03-A-08	MIXED HOUSES	CHARING	KENT	159	Tue	22/05/18	0.220	0.088	0.308	3.02
22	ES-03-A-04	MIXED HOUSES &	CAMBER	EAST SUSSEX	134	Fri	15/07/16	0.157	0.112	0.269	1.91
23	DH-03-A-02	MIXED HOUSES	BISHOP AUCKLAND	DURHAM	125	Mon	27/03/17	0.064	0.016	0.080	0.99

This section displays actual (not average) trip rates for each of the survey days in the selected set, and ranks them in order of relative trip rate intensity, for a given time period (or peak period irrespective of time) selected by the user. The count type and direction are both displayed just above the table, along with the rows within the table representing the 85th and 15th percentile trip rate figures (highlighted in bold within the table itself).

The table itself displays details of each individual survey, alongside arrivals, departures and totals trip rates, sorted by whichever of the three directional options has been chosen by the user. As with the preceeding trip rate calculation results table, the trip rates shown are per the calculation factor (e.g. per 100m2 GFA, per employee, per hectare, etc). Note that if the peak period option has been selected (as opposed to a specific chosen time period), the peak period for each individual survey day in the table is also displayed.

APPENDIX H

2011 CENSUS MODAL SPLIT

Method of Travel to Work (QS701EW)

				Sutton in A Ward
All Usual R	Count	Persons	Mar-11	9149
Work Main	Count	Persons	Mar-11	183
Undergrou	Count	Persons	Mar-11	11
Train	Count	Persons	Mar-11	41
Bus, Minib	Count	Persons	Mar-11	342
Taxi	Count	Persons	Mar-11	11
Motorcycle	Count	Persons	Mar-11	49
Driving a C	Count	Persons	Mar-11	3534
Passenger i	Count	Persons	Mar-11	433
Bicycle	Count	Persons	Mar-11	151
On Foot	Count	Persons	Mar-11	745
Other Metl	Count	Persons	Mar-11	35
Not in Emp	Count	Persons	Mar-11	3614
Method of	LastUpdate	30-Jan-13		

APPENDIX I

ASHLAND ROAD COMMITTED DEVELOPMENT TRAFFIC FLOW EXTRACTS

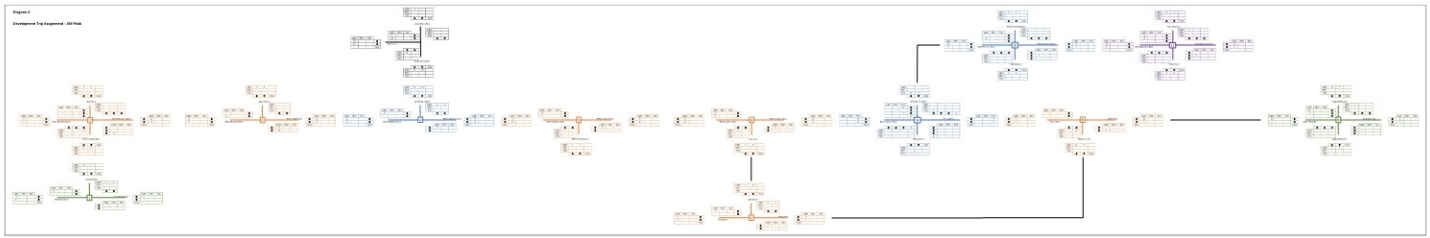


Diagram 2
Development Trip Assignment - AM Peak

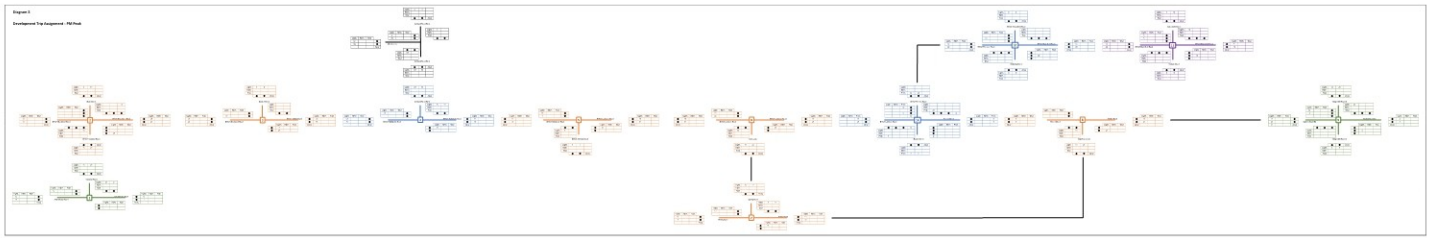
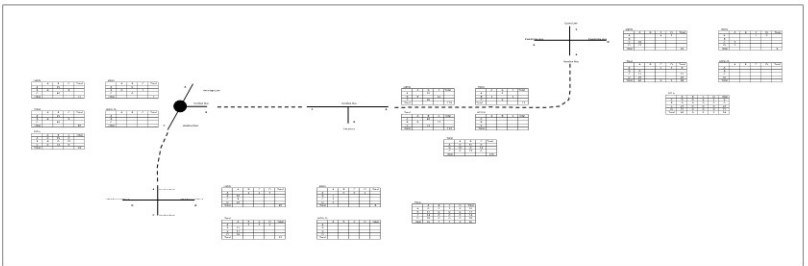


Diagram 3
Development Trip Assignment - PM Peak

APPENDIX J

HAMILTON WAY COMMITTED DEVELOPMENT TRAFFIC FLOW EXTRACTS



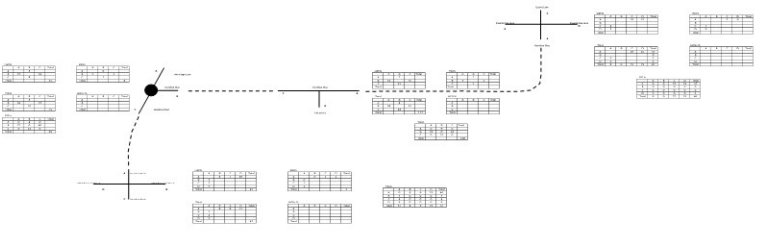


Diagram A

Development Traffic Flows (PM)

ADC