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DECEMBER 2023

**DRAINAGE FEASIBILITY
COMBINED RSA 1 & 2
DESIGNER RESPONSES
REPORT
FOR
BURRINGHAM ROAD
SCUNTHORPE**

**PROJECT NO:
BMH/JAG/JKW-Rp004_RevA**



Alan Wood & Partners

Issuing Office

341 Beverley Road
HULL
HU5 1LD

Telephone: 01482 442138

Email: eng@alanwood.co.uk

Website: www.alanwood.co.uk

**DRAINAGE FEASIBILITY COMBINED RSA 1 & 2 DESIGNER RESPONSES
REPORT FOR BURRINGHAM ROAD, SCUNTHORPE**

Prepared by: **Ben Hawkins**, MEng (Hons), CEng, MICE
Civils Associate
For and behalf of Alan Wood & Partners



Signed:

Date: 8th December 2023

Approved by: **James Gibson**, MEng (Hons), CEng, CWEM MCIWEM
Director
For and behalf of Alan Wood & Partners



Signed:

Date: 8th December 2023

Issue	Revision	Revised by	Approved by	Revised Date
RevA	General formatting	JKW	JKW	14.12.2023

For the avoidance of doubt, the parties confirm that these conditions of engagement shall not and the parties do not intend that these conditions of engagement shall confer on any party any rights to enforce any term of this Agreement pursuant of the Contracts (Rights of third Parties) Act 1999.

The Appointment of Alan Wood & Partners shall be governed by and construed in all respects in accordance with the laws of England & Wales and each party submits to the exclusive jurisdiction of the Courts of England & Wales.

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1.0 INTRODUCTION

This report provides responses from Design Organisation (Alan Wood & Partners) and the Overseeing Organisation (North Lincolnshire Council) to the combined Stages 1 & 2 Road Safety Audit problems identified by Local Transport Projects (LTP) in document LTP/23/4182 dated 29th September 2023 reference *Section 38 Agreement Highway Works at the Keepmoat Homes Residential Development, Lincolnshire Lakes, Burringham Road, Scunthorpe Combined Stage 1&2 Road Safety Audit* and the agreed RSA actions for each.

The design organisation responses have been provided by Ben Hawkins, an Associate with over 10 years' experience in highways design.

2.0 KEY PERSONNEL

Overseeing Organisation	-	North Lincolnshire Council
RSA Team	-	Ryan Penn and Tony Kirby
Design Organisation	-	Alan Wood & Partners

3.0 ROAD SAFETY AUDIT DECISION LOG

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.1 Location: Interface between footways and shared surface areas at various locations. Summary: Risk of pedestrian trip/fall injuries due to lack of suitable connection between footway and shared surface areas. Across the development, there are a number of locations where footways connect with shared surface roads. However, a suitable transition for pedestrians is not provided between the two areas as the footways meet the shared surface areas at ramp locations. This will provide an uneven surface for pedestrians and is likely to increase the risk of trip/fall injuries. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 2 – Roads 27, 36, 38, and 41; • Sheet 3 – Roads 21, 24 and 25; • Sheet 4 – Road 34; • Sheet 5 – Roads 3, 6, 19, 29 and 33; • Sheet 6 – Road 16; 	<p>It is recommended that the footways are suitably extended beyond the ramps and a flush transition provided at the interface of the footway and shared surface areas.</p>	<p>Accept the RSA problem and recommendation made by the RSA Team According to 4.1.11 of the North Lincolnshire Council Residential Roads Design Guide, footways should extend to a point 2m beyond the top of ramp into the Shared Access Road so that pedestrian access to the carriageway can be taken directly from the footway network. Therefore, it is proposed to extend the footways 2m beyond the ramps with a flush transition at shared surface areas.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.1 Cont'd</p> <ul style="list-style-type: none"> • Sheet 7 – Road 8; and • Sheet 8 – Road 12 and 14. 				
<p>Problem 3.2</p> <p>Location: Interface between the end of shared surface areas and onward unadopted routes for pedestrians at various locations.</p> <p>Summary: Risk of pedestrian trip/fall injuries due to lack of suitable connection between shared surface and unadopted areas. At various locations across the development, shared surface areas connect with unadopted private drives which typically serve a small number of dwellings. It is unclear if pedestrians (including those in wheelchairs, mobility scooters and those pushing prams) would be able to easily walk between the two areas as a KMC splay kerb with a 50mm upstand is proposed to separate the two areas. Pedestrians are likely to be at an increased risk of tripping/falling over the kerb and potentially sustaining injury when walking between the two areas.</p>		<p>Disagree with the RSA problem and recommendation raised</p> <p>Clause 3.5.9 k) of the North Lincolnshire Council Residential Roads Design Guide states that 'The adopted area will be defined by a kerb upstand, normally of 25mm – 60mm approx'. Therefore, the design is in accordance with adoptable standards, and it is not proposed to change the design.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.2 Cont'd.....</p> <p>The kerb is also likely to make it difficult in general for wheelchair/mobility scooter users to access the unadopted areas. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 2 – Roads 28, 37, 40 and 42; • Sheet 3 – Roads 22, 26 and 27 (route to open space); • Sheet 4 – Roads 31 and 34; • Sheet 5 – Roads 5, 6, 30 and 35; • Sheet 6 – Roads 17 and 20; • Sheet 7 – Road 9; and • Sheet 8 – Roads 13 and 14. 				
<p>Problem 3.3</p> <p>Location: Interface between shared surface streets which have narrow service strips and shared private driveways serving a small number of properties.</p>	<p>It is recommended that visibility splays from shared private driveways which correspond to the stopping sight distance</p>	<p>Accept the RSA problem and recommendation made by the RSA Team</p> <p>Visibility splays from shared private driveways are to be added to the relevant drawings to inform</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.3 Cont'd..... Summary: Risk of fail to give way collisions due to restricted sideways visibility from shared private driveways. There are various locations across the scheme where shared private driveways which typically serve around five properties are located behind a narrow service strip, meaning that the required visibility splay corresponding to the stopping sight distance for the design speed of the street is unlikely to be achieved within the highway boundary. Approaching vehicles on the nearside would be travelling close to the private drives due to the narrow service strip, and any vertical obstructions within the visibility splay (such as building lines, planting, fencing, walls, bin stores or parked vehicles) would mask the view of drivers exiting the shared private drives, thereby increasing the risk of fail to give collisions. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 2 – Roads 27 and 28; • Sheet 3 – Road 24; and • Sheet 8 – Roads 12, 14 and 16. 	<p>for the design speed of the street, are maintained either entirely within the public highway or secured through covenant over private areas.</p>	<p>provision of a covenant over private areas. Any physical obstructions to visibility at shared private driveways, such as at Road 12, will be resolved by changing the plot type or layout.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.4 Location: Interface between shared surface streets which have narrow service strips and single private driveways. Summary: Risk of fail to give way collisions due to restricted sideways visibility from single private driveways. Although considered lower risk than at shared private driveways which serve a small number of properties (see Problem 2.3), there are various locations across the scheme where single private driveways are located behind a narrow service strip, meaning that the required visibility splay corresponding to the stopping sight distance for the design speed of the street is unlikely to be achieved within the highway boundary. Approaching vehicles on the nearside would be travelling close to the private drives due to the narrow service strip, and any vertical obstructions within the visibility splay (such as building lines, planting, fencing, walls, bin stores or parked vehicles) would mask the view of drivers exiting the private</p>	<p>It is recommended that visibility splays from single private drives which correspond to the stopping sight distance for the design speed of the street, are maintained either entirely within the public highway or secured through covenant over private areas.</p>	<p>Accept the RSA problem raised, but suggest an alternative solution, giving appropriate reasoning. Whilst it is acknowledged that some private driveways have reduced visibility, this is considered acceptable due to other various mitigations in place. This includes the very low expected traffic numbers and low speed environment within the residential development. Traffic calming measures are in place throughout the development including raised tables/ speed ramps, narrow carriageways, tight radii, reduced visibility and shared access roads. All of these features will encourage road users to travel at low speeds, ensuring that vehicles can safely</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.4 Cont'd..... drives, thereby increasing the risk of fail to give collisions. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 2 – Road 27; • Sheet 3 – Roads 21 and 24; • Sheet 4 – Roads 31 and 34; • Sheet 5 – Roads 5, 6, 19, 29 and 33; • Sheet 6 – Road 16; • Road 7 – Road 8; and • Road 8 – Roads 12 and 14. 		<p>exit private driveways. Furthermore, it is not reasonable to provide full visibility from private driveways to other parked vehicles, as this is not practicable. Therefore, it is considered acceptable to have isolated locations where private driveways do not have the full 33m visibility.</p>		
<p>Problem 3.5 Location: Private driveways and traffic calming ramps at various locations. Summary: Risk of loss of control collisions as turning drivers have to negotiate ramps when accessing/egress private driveways.</p>	<p>It is recommended that the ramps are suitably positioned away from private driveway accesses.</p>	<p>Accept the RSA problem and recommendation made by the RSA Team In accordance with Note 3 of Table 3.1 in the North Lincolnshire Council Residential Roads Design Guide, on Shared Access Roads, no accesses will be permitted within</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.5 Cont'd.....</p> <p>There are a number of locations across the development where traffic calming ramps are proposed directly in front of private driveway accesses. This is likely to obstruct drivers accessing/egressing private driveways and increase the risk of drivers losing control of their vehicle and potentially sustaining injury as they turn in/out of driveways. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 2 – Plots 417, 420 and 481; • Sheet 3 – Plot 252; and • Sheet 8 – Plots 13 and 58. 		<p>2.0m of a ramp. Therefore, it is proposed to relocate the ramps as required. Whilst these are not shared access roads, the principle should remain for safety and operational reasons.</p>		
<p>Problem 3.6</p> <p>Location: Major/minor road junctions at various locations.</p> <p>Summary: Risk of pedestrians tripping/falling over full height kerbs and sustaining injury due to an absence of pedestrian crossing facilities.</p>	<p>It is recommended that on-desire line pedestrian crossing points consisting of dropped kerbs and tactile paving are provided across the identified junctions.</p>	<p>Accept the RSA problem and recommendation made by the RSA Team</p> <p>Uncontrolled crossings with dropped kerbs and tactiles are to be provided at all junctions to suit pedestrian desire lines.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.6 Cont'd..... No crossing facilities for pedestrians (e.g. dropped kerbs and tactile paving) are proposed across some junctions within the site. The absence of these facilities could be expected to result in an increased risk of pedestrians tripping/falling over full height kerbs as they attempt to cross the road and sustaining injury as a result. The absence of such facilities is also likely to make it difficult for elderly pedestrians and those with mobility/visual impairments to cross these roads. This item applies at the following locations:</p> <ul style="list-style-type: none"> • Sheet 3 – Roads 21 and 25; • Sheet 5 – Road 29; and • Sheet 8 – Road 6. 				
<p>Problem 3.7 Location: Extents of Section 38 Agreement area. Summary: Risk of collisions involving vehicles travelling at excessive speeds and collisions with vulnerable road users.</p>	<p>It is recommended that the streets within the residential site are covered by an appropriate speed limit.</p>	<p>Accept the RSA problem and recommendation made by the RSA Team</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.7 Cont'd..... Burringham Road is currently subject to the national 60mph speed limit within the vicinity of the residential site (it is noted that the speed limit may be subject to change as part of the adjacent roundabout proposals on Burringham Road). No speed limit signing appears to be proposed for the residential sites itself (typically, a 20mph or 30mph speed limit would be expected). In the absence of any speed limit signing, some motorists may attempt to drive at higher than desirable speeds within the site which would be inappropriate for the street geometry and could be expected to increase the risk of speed related collisions and collisions with vulnerable road users.</p>		<p>It is proposed that speed limit signs be included at the access to the development as required.</p>		
<p>Problem 3.8 Location: Lake at the western end of the development and open ditches and shallow swales throughout the development.</p>	<p>It is recommended that a risk assessment is undertaken at all watercourse areas within the site and, if deemed necessary,</p>	<p>Accept the RSA problem and recommendation made by the RSA Team Please refer to "45822_Tn002_RRS Risk Assessment_Burringham Rd_BMH_JKW_</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.8 Cont'd..... Summary: Risk of errant pedestrians, cyclists and motorised users entering watercourse areas and sustaining injury (including possible drowning) due to lack of edge restraint. A watercourse in the form of a lake is proposed at the western end of the development site. Roads 31, 34 and 43 run close to the edge of the lake and will accommodate vehicular and non-motorised user movements. No details have been provided with regards to any edge restraint that may be provided at the lake. In the absence of this, there is risk that errant motorised users and non-motorised users enter the watercourse and sustain injury (including possible drowning). As an assumed open feature with no edge restraint, an assessment of risk should be undertaken to establish what, or indeed if any, barrier treatments are required at the watercourse. Linked to the above, both open ditches and shallow swales are proposed at streetside locations throughout the site. These run next to areas that are to be used by vehicles, cyclists and pedestrians.</p>	<p>appropriate barrier treatments proportionate to the level of risk provided. If required, this could be as simple as a fence or hedgerow or, if established as appropriate, a road restraint system.</p>	<p>24.08.2023” which summarises a risk assessment undertaken according to the “<i>Provision for Road Restrain Systems on Local Authority Roads</i>”. The assessment confirms that the proposed ditches and lake are classified as ‘Lower Priority Sites’, primarily due to the type of roads and compliant geometry, thus they do not require any road restraint systems as protection. However, where roads (private or otherwise) are considered particularly close to the circa 3m deep ditches with 1 in 1 side slopes, it is proposed to provide N1 containment Trief kerbs. At other roads that are not quite so close to the proposed ditches and/or lake, it is proposed to use HB2 kerbs which should have sufficient re-directional properties.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.8 Cont'd..... The ditches are to have a depth of up to 3.0m, with 1 in 1 side slopes. Although likely to be much less deep than the ditches and representing a reduced level of risk, no information has been provided with regards to the likely depth of the shallow swales or their design. In the absence of further information and any obvious edge restraint measures, there is a risk that errant motorised users, pedestrians and cyclists fall from adjacent routes into the ditches/swales and sustain injury (including possible drowning).</p>				
<p>Problem 3.9 Location: Bend in Road 38 Summary: Risk of head-on type collisions due to potentially restricted forwards visibility.</p>	<p>It is recommended that the forward visibility splay at the bend is checked with reference to expected vehicle</p>	<p>Accept the RSA problem raised, but suggest an alternative solution, giving appropriate reasoning.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.9 Cont'd..... A reasonably tight bend is proposed on Road 38 close to plot 479. The bend should help to control vehicle speeds, but it is not known if the required forward visibility splay at the bend can be fully achieved within the extents of the adopted highway. If the forward visibility splay encroaches into private land (i.e., plot 479), then there is potential for forward visibility to be restricted by boundary features such as walls/fences/hedges, thereby increasing the risk of head-on type collisions around the bend.</p>	<p>approach speeds and, if required, the bend design suitably modified so that the required forward visibility splay can be wholly located within the extents of the highway boundary.</p>	<p>Whilst it is acknowledged that the radius on road 38 results in reduced forward visibility (circa 22m of the required 33m is achieved), this is considered acceptable due to other various mitigations in place. This includes the very low expected traffic numbers and low speed environment of the residential development. Rumble strips are proposed at the entry to the tight radius in both directions to further reduce speed. Furthermore, the narrow carriageway, reduced visibility and tight radii will in themselves encourage lower speeds. Therefore, it is considered acceptable to have reduced forward visibility at this location.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.10 Location: Private driveway serving plot 480 (Road 38) Summary: Risk of fail to give way and late braking collisions due to restricted rightwards visibility. The rightwards visibility splay out of the driveway serving plot 480 is expected to be restricted by any vertical boundary features (e.g., wall/fence/hedge) provided within the garden of plot 479 as well as the reasonably tight bend in Road 38. A restricted level of rightwards visibility is likely to lead to an increased risk of fail to give way collisions within the vicinity of the driveway serving plot 480 as emerging drivers are not suitably aware of vehicles approaching around the bend.</p>	<p>It is recommended that the rightwards visibility splay, which corresponds to the stopping sight distance for the design speed of the street, from the driveway serving plot 480 is maintained either entirely within the public highway or secured through covenant over private garden areas.</p>	<p>Accept the RSA problem raised, but suggest an alternative solution, giving appropriate reasoning.</p> <p>Whilst it is acknowledged that the radius on road 38 results in reduced visibility from the private drives of plots 479 and 480 on Road 38 (circa 24m and 16m respectively of the required 33m is achieved), this is considered acceptable due to other various mitigations in place. This includes the very low expected traffic numbers and low speed environment of the residential development. Rumble strips are proposed at the entry to the tight radius in both directions to further reduce speed. Furthermore, the narrow carriageway, reduced visibility and tight radii will in</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.10 Cont'd.....</p>		<p>themselves encourage lower speeds. Therefore, it is considered acceptable to have reduced visibility from private driveways at this location.</p>		
<p>Problem 3.11 Location: Eastern side of Road 1, Western side of Road 11 and southern side of Road 23. Summary: Risk of pedestrian/cyclist collisions due to pedestrians not expecting to encounter cyclists. A wider footway (generally 3.0m plus) appears to be provided on Road 1 (eastern side), Road 11 (southern side) and Road 23 (southern side). It is assumed that these wider paths will accommodate both pedestrians and cyclists, rather than just forming a pedestrian-only footway.</p>	<p>It is recommended that any shared foot/cycleway facilities are provided with suitable pedestrian/cycle signing and tactile paving to ensure that users are aware that these facilities are to be shared by pedestrians and cyclists.</p>	<p>Disagree with the RSA problem and recommendation raised The 3m wide facilities are not proposed to be shared footway/cycleways, they are proposed to be footways only, therefore no signing or tactile paving is required.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.11 Cont'd..... If this is the case, no signing or tactile paving appears to be proposed to indicate that these paths are to be shared by pedestrians and cyclists. As such, pedestrians, particularly those with visual impairments, may be unaware that cyclists will also be using the paths and being unaware of the potential presence of cyclists could increase a pedestrian's risk of colliding with cyclists using the routes.</p>				
<p>Problem 3.12 Location: Southern side of Road 29. Summary: Risk of vehicle occupants stepping out of a vehicle and falling down the embankment due to proximity of the top of the embankment to the carriageway. The southern side of Road 29 abuts the top of an embankment, with a narrow (0.5m wide) service strip separating the edge of the road from the top of the embankment (no details of embankment steepness provided).</p>	<p>It is recommended that, if not already undertaken, a Road Restraint Risk Assessment is undertaken, were the carriageway runs adjacent to the embankment and, if deemed necessary,</p>	<p>Accept the RSA problem and recommendation made by the RSA Team Please refer to "45822_Tn002_RRS Risk Assessment_Burringham Rd_BMH_JKW_24.08.2023" which summarises a risk assessment undertaken according to the "Provision for Road Restrain Systems on Local Authority Roads".</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.12 Cont'd..... If on-street parking takes place on the southern side of Road 29, a vehicle occupant is unlikely to have sufficient room to comfortably exit the vehicle and would be at risk of falling down the embankment and sustaining injury, particularly in wet/poor/dark weather conditions. Although considered relatively unlikely given the envisaged low speed environment, only minimal restraint (a splay kerb with a 50mm upstand) is provided to prevent an errant vehicle falling down the embankment.</p>	<p>appropriate restraint measures provided.</p>	<p>The assessment confirms that the proposed embankments are classified as 'Lower Priority Sites', primarily due to the type of roads and compliant geometry, thus they do not require any road restraint systems as protection. However, where roads (private or otherwise) are considered particularly close to the embankment, it is proposed to provide HB2 kerbs which should have sufficient re-directional properties.</p>		
<p>Problem 3.13 Location: Scheme extents. Summary: Risk of collisions during periods of darkness due to reduced road user visibility.</p>	<p>It is recommended that a suitable street lighting design is produced and implemented for the extents of the S38 works.</p>	<p>Accept the RSA problem and recommendation made by the RSA Team A suitable road lighting design is now available as part of the proposed design.</p>		

RSA problem	RSA recommendation	Design Organisation response	Overseeing Organisation response	Agreed RSA action
<p>Problem 3.13 Cont'd..... Whilst it is assumed that the development will have appropriate levels of lighting, no details have been provided. An absence of suitable street lighting would lead to reduced road user visibility and an increased risk of collisions during periods of darkness.</p>				

4.0 DESIGN ORGANISATION AND OVERSEEING ORGANISATION STATEMENTS

4.1 On behalf of the design organisation I certify that:

- 1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the Overseeing Organisation

Name: Ben Hawkins, MEng (Hons), CEng, MICE
Civils Associate

Position: Associate

Organisation: For and behalf of Alan Wood & Partners



Signed:

Date: 8th December 2023

4.2 On behalf of the Overseeing Organisation I certify that:

- 1) the RSA actions identified in response to the road safety audit problems in this road safety audit have been discussed and agreed with the design organisation; and
- 2) the agreed RSA actions will be progressed.

Name:

Position:

Organisation:

Signed:

Date:

Alan Wood & Partners

**Hull Office
(Registered Office)**
341 Beverley Road
Hull
HU5 1LD
Telephone
01482.442138

Leeds Office 18
Howley Park
Business Village
Pullan Way Morley
Leeds LS27 0BZ
Telephone
0113 531 1098

Lincoln Office
Unit H
The Quays
Burton Waters
Lincoln LN1 2XG
Telephone
01522.300210

Scarborough Office
Kingsley House
7 Pickering Road
West Ayton
Scarborough YO13 9JE
Telephone
01723.865484

Sheffield Office
Hallamshire House
Meadow Court
Hayland Street
Sheffield S9 1BY
Telephone
01142.440077

York Office
Omega 2
Monks Cross Drive
York
YO32 9GZ
Telephone
01904 611594

Email
eng@alanwood.co.uk

Website
www.alanwood.co.uk

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