

LAND NORTH OF NEW BATH ROAD, TWYFORD

Proposed Development Related Highway Works

Stage 1 Road Safety Audit
Prepared on behalf of David Wilson Homes

October 2022



Road Safety Engineering

Project: Land North of New Bath Road, Twyford
Proposed Development Related Highway Works

Document: Stage 1 Road Safety Audit

Design Organisation: Vectos

Overseeing Organisation: Borough of Wokingham

Client: David Wilson Homes

Gateway RSE ref: SG/WP/2208-07 RSA1 v1.2

Issue date: 07/10/2022

Status: Issued as Version 1.2

Authorised by: SG

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1 INTRODUCTION

1.1 This report describes a Stage 1 Road Safety Audit (RSA) of proposed development related highway works at New Bath Road, Twyford, within the Borough of Wokingham. The audit brief, dated 5th August 2022, describes the scheme as follows:

- Access Road serving approximately 250 dwellings and potentially a rugby club, running north from a proposed 4-arm roundabout on the A4 Bath Road
- Pedestrian/cycle crossing on the northern arm of the A4/A321 Wargrave Road roundabout

1.2 New Bath Road (A4) is a 2-lane single carriageway road with a central ghost island, running broadly west to east. It is lit, with a shared foot/cycleway on its northern side and is subject to the 60mph national speed limit, changing to 40mph east of Charvill. It is proposed to extend the 40mph speed limit eastwards, beyond the proposed roundabout.

1.3 Wargrave Road (A321) is a 2-lane single carriageway road running north from its roundabout junction with New Bath Road. It is lit, with a 40mph speed limit and a 7.5 tonne weight limit (except for access). A shared foot/cycleway runs along its west side.

1.4 This Road Safety Audit was carried out by Steve Giles and Wendy Palmer and consisted of a desktop study and a site visit, which was carried out between 12:30 and 13:15 on Wednesday 17th August 2022, when the weather was fine and the road surface dry. No traffic congestion was observed, whilst some pedestrian and cyclist movements occurred. No cars were observed parked on-street during the site visit.

1.5 The terms of reference for this RSA are as described in the Design Manual for Roads and Bridges (DMRB) document GG119. The Audit Team is independent of the project design team and has not been involved in the design process in any other capacity. The audit considers only the potential road safety implications of the scheme and has not verified compliance of the design with any other criteria.

1.6 The Audit Team has not been made aware of any Departures from Standard. Whilst reference may be made to design standards, this report is not intended to provide a design check.

- 1.7 Recommendations are aimed at addressing the identified potential road safety problems. However, there may be other acceptable ways to overcome a problem, considering wider constraints and opportunities; the Auditors would be pleased to discuss such alternative solutions as appropriate. The recommendations contained herein do not absolve the Designer of his/her responsibilities.

Collision Data

- 1.8 Personal Injury Collision (PIC) information was obtained from the Crashmap database (www.crashmap.co.uk). This indicates that nine PICs occurred at or close to the proposed works during the latest five-year period.
- 1.9 One collision occurred at the junction between New Bath Road and Bridge Farm Road, in August 2020, although both are described as travelling ahead. It involved a private car/taxi and a pedal cycle, resulting in slight injuries to the cyclist. Conditions were recorded as rain/wet surface/dark.
- 1.10 A further collision occurred in June 2019, to the east of Bridge Farm Road. A car appears to have lost control in fine/dry/dark conditions, causing slight injuries to the driver and a passenger.
- 1.11 The other seven PICs occurred at the New Bath Road/Wargrave Road roundabout, although none were on or directly associated with the north arm, where the pedestrian/cycle crossing is proposed.

Previous Road Safety Audit(s)

- 1.12 The Audit Team is aware of a Stage 1 Road Safety Audit carried out in May 2021 by Beth Newiss & Associates, of a 3-arm roundabout at the same location on New Bath Road. A further RSA was carried out in August 2022, by an audit team led by Steve Giles, of a proposal to add a fourth (northern) arm to that roundabout. The current design proposes substantially different geometry, hence the need for a new audit.

2 PROBLEMS IDENTIFIED BY THIS ROAD SAFETY AUDIT

General Matters

2.1 Problem

Uncertainty over the speed limit may result in non-compliance and speed-related collisions

Location: New Bath Road approaches to new roundabout

It is not clear if, when or where the New Bath Road speed limit will change to 40mph. Confusion over the speed limit may result in non-compliance and potentially speed-related collisions at the proposed roundabout, including junction overshoots, loss of control or nose/tail shunts due to heavy braking.

Recommendation

Extend the 40mph speed limit on New Bath Road, ensuring compatibility with any other proposed speed limit changes including a potential 30mph speed limit to accommodate the parallel cycle crossing on the north arm (problem/recommendation 2.5).

Local Alignment

2.2 Problem

Siting of roundabout island may lead to 'failure to give way' or head on collisions

Location: New Bath Road approaches to new roundabout

Visibility of the roundabout island may be reduced as the roundabout is offset from the approaching carriageway. Roundabout chevron signing would not be visible until a driver is within a short distance from the give-way line and circulatory carriageway. The audit team is concerned that this may create a 'see through' effect and lead to failure to give way collisions.

Recommendation

The approach lane alignment and chevron sign siting should ensure adequate visibility of the roundabout. Map type direction signs and warning signs should be provided on the approaches.

2.3 Problem

Stationary buses may encourage drivers to overtake where forward visibility is limited

Location: New Bath Road approaches to new roundabout

There are bus stop flags close to the new roundabout and it is not clear if or where they might be re-provided. A stationary bus on the New Bath Road roundabout approaches may encourage drivers to overtake where forward visibility is limited, into the path of oncoming vehicles.

Recommendation

Locate any retained bus stops away from the roundabout and where the carriageway alignment provides adequate forward visibility beyond any stationary bus.

Junctions

2.4 Problem

Vehicle side-impact collisions due to parallel circulating

Location: Circulatory carriageway of proposed roundabout

All arms of the proposed roundabout provide two entry lanes, but only the south arm incorporate lane destination arrows on the carriageway. It is not clear whether two light vehicles will be able to circulate simultaneously. Insufficient circulating carriageway width could lead to side impact collisions.

Recommendation

Carry out vehicle swept path analysis for side-by-side turning movements for vehicles entering the roundabout on the proposed north, west and east arms and, if appropriate, provide lane destination arrow markings within each lane on the approaches, including a left turn arrow within the nearside lane.

Walking, Cycling and Horse Riding

2.5 Problem

Vehicle speeds may lead to collisions on the raised parallel crossing

Location: proposed parallel crossings on development access road and Wargrave Road

The proposed speed limit throughout the scheme is 40mph which is unsuitable for provision of a parallel crossing and a raised table (ref LTN 1/20 table 10-2). Vehicles exiting the roundabouts may lose control or brake hard, leading to nose/tail shunt type collisions.

Recommendation

The speed limit should be further reduced on the approaches to the roundabouts, allowing suitable distance for drivers to reduce speed before negotiating the raised crossing. Alternatively, the location and method of pedestrian/cycle crossings should be amended.

2.6

Problem

Pedestrian/cyclists may be struck by vehicles

Location: Parallel crossing on Wargrave Road

The audit team is concerned that traffic volumes on the Wargrave Road, combined with the relatively low conspicuity of the proposed cycle/pedestrian priority crossing (compared with a zebra crossing, for example), may result in drivers of motorised vehicles failing to give way, leading to vehicles striking pedestrians and cyclists.

Recommendation

Conspicuity of the proposed parallel cycle/pedestrian crossing on Wargrave Road should be increased.

Road Signs, Carriageway Markings and Lighting

2.7

The Audit Team raises no concerns in respect of road signs, carriageway markings and lighting.

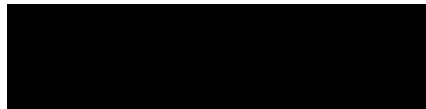
3 AUDIT TEAM STATEMENT

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

Audit Team Leader

Steve Giles
BEng (Hons), IEng, FIHE, MCIHT, MICE, CMILT, MSoRSA, HE Cert Comp
Senior Road Safety Engineer

Signed:

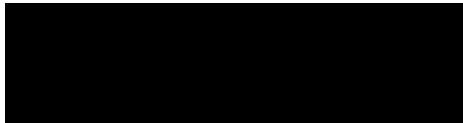


Date: 21st October 2022

Audit Team Member(s)

Wendy Palmer
MCIHT, MSoRSA, FIHE, HE Cert Comp
Senior Road Safety Engineer

Signed



Date: 21st October 2022

APPENDIX A

Items Considered by this RSA

Items Considered by this Road Safety Audit

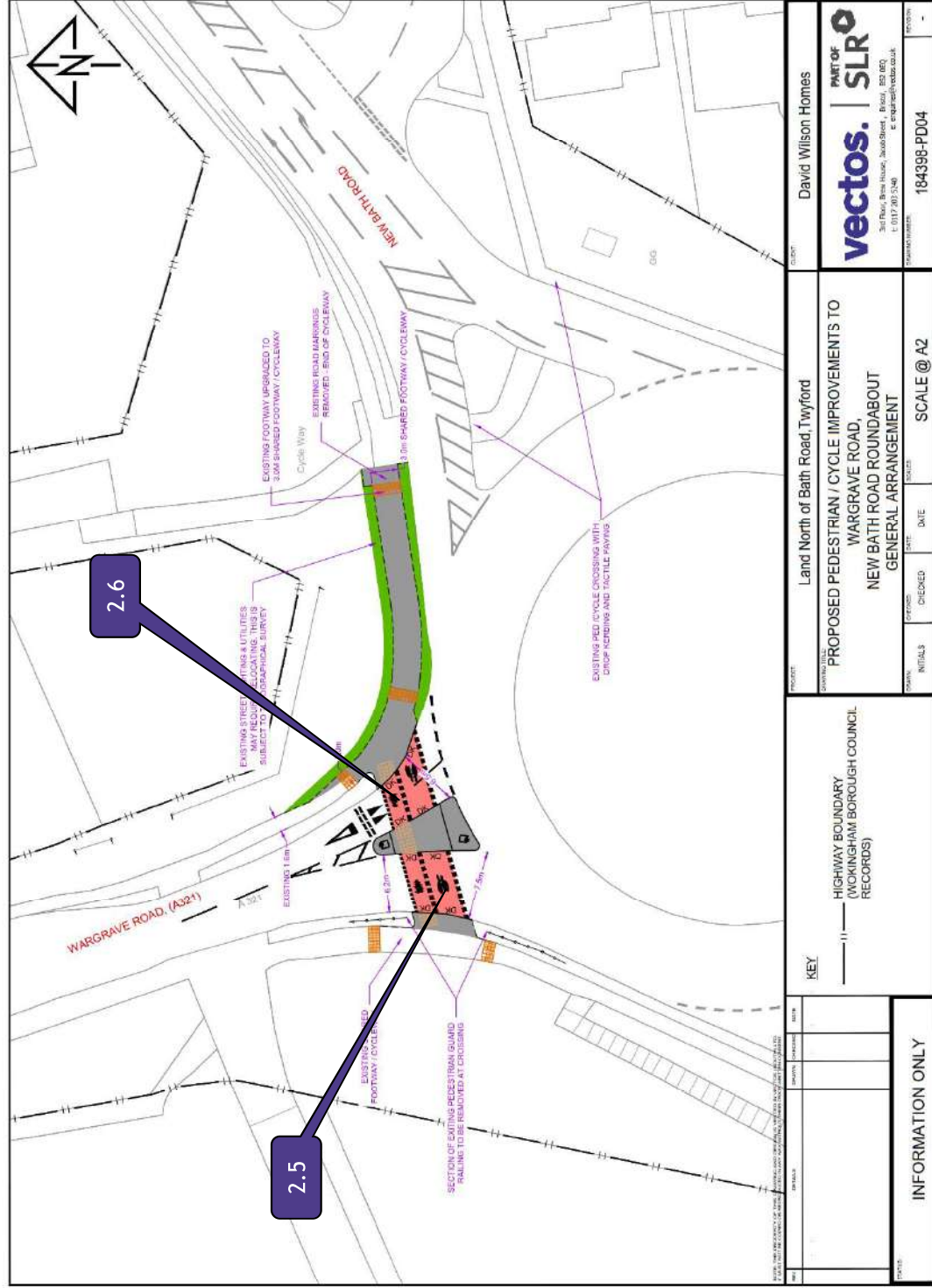
Document ref.	Rev.	Originator	Title
184398/PD04	-	Vectos	Proposed Pedestrian/Cycle Improvements to Wargrave Road, New Bath Road Roundabout. General Arrangement
184398-PD09.1	-	Vectos	Proposed 35m ICD Roundabout (Normal), New Bath Road. General Arrangement
184398-PD09-AT01	-	Vectos	Proposed 35m ICD Roundabout (Normal), New Bath Road. Swept Path Analysis, Max Legal Length HGV

Additional/background information provided to the Audit Team

- Audit Brief dated 5th August 2022 and updated 21st October 2022 (Vectos)

APPENDIX B

Location Plan(s)



ROAD SAFETY AUDIT RESPONSE REPORT

Project Details

Project: Land North of New Bath Road, Twyford
 Proposed Development Related Highway Works
 GRSE Ref: SG/WP/2208-07 RSA1 v1.2
 Status: Issued as Version 1.2
 Issue date: 07/10/2022
 Design Organisation: Vectos
 Overseeing Organisation: Borough of Wokingham
 Client: David Wilson Homes

Authorisation

Prepared by:
 Name: Simon Jones
 Position: Principal Technician
 Organisation: Vectos

Approved by:
 Name: James Bancroft
 Position: Director
 Organisation: Vectos
 Signed:

The Scheme

The highway works considered by the Road Safety Audit comprise:

- Main site access roundabout on New Bath Road, serving approximately 250 dwellings and a rugby club
- Pedestrian/cycle crossing on the northern arm of the A4/A321 roundabout

Key Personnel

Overseeing Organisation:	[NAME (press F9)], [TITLE (press F9)] Borough of Wokingham
RSA Team:	Steve Giles, Senior Road Safety Engineer, Gateway RSE
	Wendy Palmer, Senior Road Safety Engineer, Gateway RSE
Design Organisation:	James Bancroft, Director, Vectos
	Simon Jones, Principal Technician, Vectos

RSA Decision Log				
Item No.	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
2.1	Extend the 40mph speed limit on New Bath Road, ensuring compatibility with any other proposed speed limit changes including a potential 30mph speed limit to accommodate the parallel cycle crossing on the north arm (problem/recommendation 2.5).	We agree that the posted speed limit could be reduced subject to discussions with the highway authority.		
2.2	The approach lane alignment and chevron sign siting should ensure adequate visibility of the roundabout. Map type direction signs and warning signs should be provided on the approaches.	Visibility on approaches is in accordance with DMRB CD 116 geometric design of roundabout per criteria. Arm A and C (SITE ACCESS) SSD 90m for 30mph design speed (Table 2.10, CD 109). Arm B and C (NEW BATH ROAD) Visibility is based upon 85th %tile recorded traffic speeds of 50mph. SSD 149.1m see drawing 184398-PD09.2 Location of signage to be agreed at detailed design stage and located outside of visibility envelope.		
2.3	Locate any retained bus stops away from the roundabout and where the carriageway alignment provides adequate forward visibility beyond any stationary bus.	There is no existing or proposed Bus stops in the vicinity of the proposal.		

RSA Decision Log				
Item No.	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
2.4	Carry out vehicle swept path analysis for side-by-side turning movements for vehicles entering the roundabout on the proposed north, west and east arms and, if appropriate, provide lane destination arrow markings within each lane on the approaches, including a left turn arrow within the nearside lane.	See drawing 184398-PD09-AT02 Rev-side-by-side turning movements max legal length hgv & car, for all arms. Road marking to be reviewed at detail design stage. See drawing 184398-PD09-AT01 Rev-for all HGV movements.		
2.5	The speed limit should be further reduced on the approaches to the roundabouts, allowing suitable distance for drivers to reduce speed before negotiating the raised crossing. Alternatively, the location and method of pedestrian/cycle crossings should be amended.	Pedestrian intervisibility has been provided on drawings 184398-PD04 Rev B & 184398-PD09.1 Rev-. The plans show that at the give-way line drivers can see the full width of the crossing. We agree that the posted speed limit could be reduced subject to discussions with the highway authority.		
2.6	Conspicuity of the proposed parallel cycle/pedestrian crossing on Wargrave Road should be increased.	Designers' response: We disagree, on the following grounds - The raised coloured surfacing provides a tonal contrast to both pedestrian, cyclists and drivers. The crossings points are indicated by contrasting coloured tactile surfaces. Combined with signing and		

RSA Decision Log				
Item No.	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
		lining makes the proposal prominent to all user groups. - The raised table work as a traffic calming measure. - The design, location of the crossings has been designed in accordance / are consistent with LTN 120 guidance. - The RSA stage 1 has raised no issues with Road Signs, Carriageway Markings and Lighting. However, signage may be provided if deemed necessary following discussions with the local highway authority during the detailed design stage.		

Design Organisation Statement:

On behalf of the design organisation, I certify that:

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: James

Organisation: Vectos

Position: Error! Reference source not found.

Date: [DATE]

Overseeing Organisation Statement:

On behalf of the overseeing organisation, I certify that:

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.

The agreed RSA actions will be progressed.

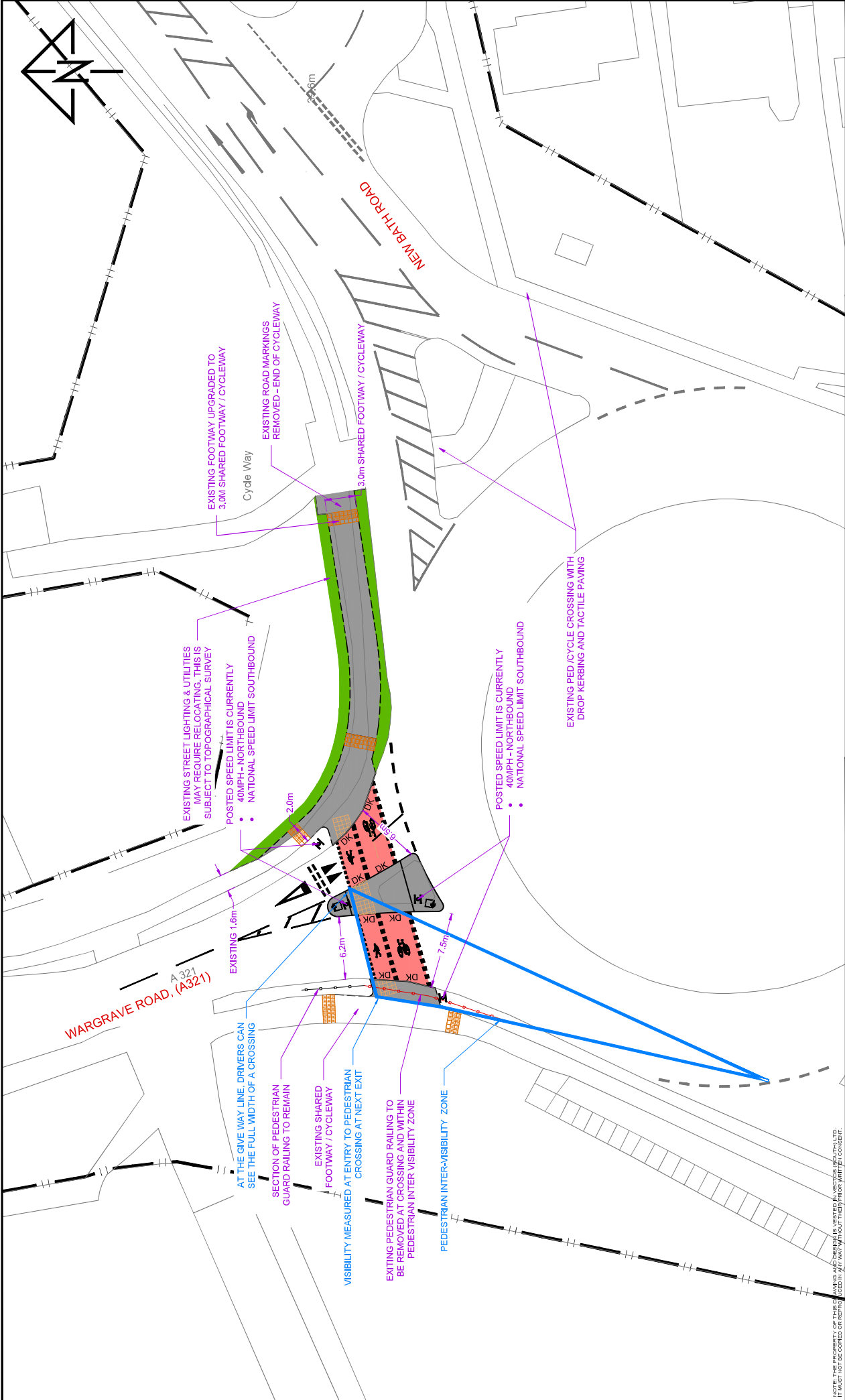
.....

Name: [NAME (press F9)]

Organisation: Borough of Wokingham

Position: [TITLE (press F9)]

Date: [DATE]



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DETAILS		KEY		PROJECT		DRAWING TITLE		CLIENT	
REV.	PROJECT TITLE UPDATED	SCJ	TB	DATE	SCJ	TB	DATE	SCJ	TB
A	PEDESTRIAN INTER VISIBILITY SHOWN	SCJ	TB	25.08.22	SCJ	TB	24.08.22	SCJ	TB
B		SCJ	TB	12.10.22	SCJ	TB	24.08.22	SCJ	TB
STATUS		INFORMATION ONLY		HIGHWAY BOUNDARY (WOKINGHAM BOROUGH COUNCIL RECORDS)		Land north of the A4, New Bath Road, Twyford		David Wilson Homes	
						PROPOSED PEDESTRIAN / CYCLE IMPROVEMENTS TO WARGRAVE ROAD, NEW BATH ROAD ROUNDABOUT GENERAL ARRANGEMENT		PART OF vectos. SLR	
								3rd Floor, Brew House, Jacob Street, Bristol, BS2 0EQ t: 0117 203 5240 e: enquiries@vectos.co.uk	
								DRAWING NUMBER 184398-PD04	
								REVISION B	
								SCALES 1:250 @ A2	

LAND NORTH OF NEW BATH ROAD, TWYFORD

Proposed Development Related Highway Works

Stage 1 Road Safety Audit
Prepared on behalf of David Wilson Homes

October 2022



Road Safety Engineering

Project: Land North of New Bath Road, Twyford
Proposed Development Related Highway Works

Document: Stage 1 Road Safety Audit

Design Organisation: Vectos

Overseeing Organisation: Borough of Wokingham

Client: David Wilson Homes

Gateway RSE ref: SG/JS/2208-07 RSA1 v3.0

Issue date: 21/10/2022

Status: Issued as Version 3.0

Authorised by: SG

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3	Audit Team Statement	4

Appendices

Appendix A:	Items Considered by this RSA
Appendix B:	Location Plan(s)

1 INTRODUCTION

- 1.1 This report describes a Stage 1 Road Safety Audit (RSA) of proposed development related highway works at New Bath Road, Twyford, within the Borough of Wokingham. The audit brief, dated 21st October 2022, describes the scheme as a fourth arm on the north side of a proposed roundabout on the A4 Bath Road, serving approximately 250 dwellings and potentially a rugby club.
- 1.2 The New Bath Road/Access Road roundabout has been the subject of a separate Stage 1 RSA, by Beth Newiss & Associates, in May 2021. It is therefore beyond the scope of this Audit, although the potential road safety aspects of the additional northern arm have been considered here.
- 1.3 New Bath Road (A4) is a 2-lane single carriageway road with a central ghost island, running broadly west to east. It is lit, with a shared foot/cycleway on its northern side and is subject to the 60mph national speed limit, changing to 40mph east of Charvill. It is proposed to extend the 40mph speed limit eastwards, beyond the proposed roundabout.
- 1.4 This Road Safety Audit was carried out by Steve Giles and Julian Smith and consisted of a desktop study and a site visit, which was carried out between 12:30 and 13:15 on Wednesday 17th August 2022, when the weather was fine and the road surface dry. No traffic congestion was observed, whilst some pedestrian and cyclist movements occurred. No cars were observed parked on-street during the site visit.
- 1.5 The terms of reference for this RSA are as described in the Design Manual for Roads and Bridges (DMRB) document GG119. The Audit Team is independent of the project design team and has not been involved in the design process in any other capacity. The audit considers only the potential road safety implications of the scheme and has not verified compliance of the design with any other criteria.
- 1.6 The Audit Team has not been made aware of any Departures from Standard. Whilst reference may be made to design standards, this report is not intended to provide a design check.

- 1.7 Recommendations are aimed at addressing the identified potential road safety problems. However, there may be other acceptable ways to overcome a problem, considering wider constraints and opportunities; the Auditors would be pleased to discuss such alternative solutions as appropriate. The recommendations contained herein do not absolve the Designer of his/her responsibilities.

Collision Data

- 1.8 Personal Injury Collision (PIC) information was obtained from the Crashmap database (www.crashmap.co.uk). This indicates that two PICs occurred at or close to the proposed works during the latest five-year period.
- 1.9 One collision occurred at the junction between New Bath Road and Bridge Farm Road, in August 2020, although both are described as travelling ahead. It involved a private car/taxi and a pedal cycle, resulting in slight injuries to the cyclist. Conditions were recorded as rain/wet surface/dark.
- 1.10 A further collision occurred in June 2019, to the east of Bridge Farm Road. A car appears to have lost control in fine/dry/dark conditions, causing slight injuries to the driver and a passenger.

Previous Road Safety Audit

- 1.11 This Audit Team carried out a Stage 1 RSA on a wider scope of works, including a fourth arm onto the roundabout junction, in August 2022.

2 PROBLEMS IDENTIFIED BY THIS ROAD SAFETY AUDIT

General Matters

- 2.1 The Audit Team raises no concerns in respect of general matters.

Local Alignment

- 2.2 The Audit Team raises no concerns in respect of local alignment.

Junctions

2.3 Problem

Vehicle side-impact collisions due to parallel circulating

Location: Circulatory carriageway of proposed roundabout

The proposed 4th arm onto the roundabout incorporates two entry lanes at the give way line, but the geometry of the nearside lane appears suitable for left turns only. Vehicle swept path analysis has not been provided and it is therefore not clear whether two vehicles will be able to circulate simultaneously. Insufficient circulating carriageway width could lead to side impact collisions.

Recommendation

Carry out vehicle swept path analysis for side-by-side turning movements for vehicles entering the roundabout on the proposed north arm and, if appropriate, provide arrow markings within each lane on the approach including a left turn arrow within the nearside lane.

Walking, Cycling and Horse Riding

- 2.4 The Audit Team raises no concerns in respect of walking, cycling and horse riding.

Road Signs, Carriageway Markings and Lighting

- 2.5 The Audit Team raises no concerns in respect of road signs, carriageway markings and lighting.

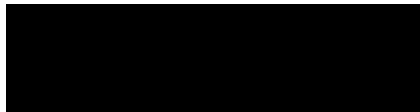
3 AUDIT TEAM STATEMENT

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

Audit Team Leader

Steve Giles
BEng (Hons), IEng, FIHE, MCIHT, MICE, CMILT, MSoRSA, HE Cert Comp
Senior Road Safety Engineer

Signed:



Date: 21st October 2022

Audit Team Member(s)

Julia Smith
BEng, MCIHT, MSoRSA
Senior Road Safety Engineer

Signed:



Date: 21st October 2022

APPENDIX A

Items Considered by this RSA

Items Considered by this Road Safety Audit

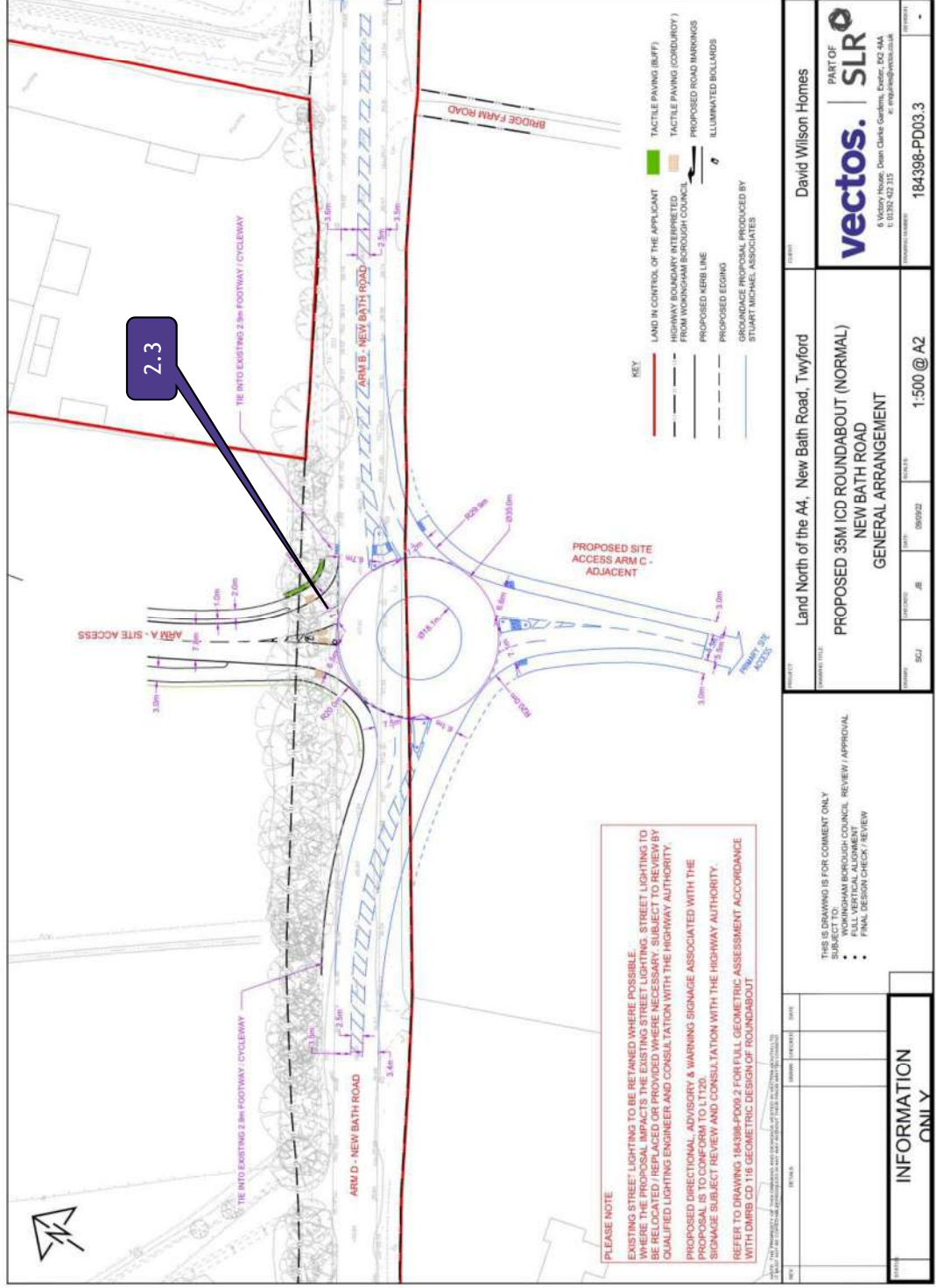
Document ref.	Rev.	Originator	Title
184398-PD03.3	E	Vectos	Proposed 35m ICD Roundabout (Normal). New Bath Road, General Arrangement

Additional/background information provided to the Audit Team

- Audit Brief Ref. dated 21st October 2022 (Vectos)

APPENDIX B

Location Plan(s)



ROAD SAFETY AUDIT RESPONSE REPORT

Project Details

Project: Land North of New Bath Road, Twyford
 Proposed Development Related Highway Works
 GRSE Ref: SG/JS/2208-07 RSA1 v3.0
 Status: Issued as Version 3.0
 Issue date: 21/10/2022
 Design Organisation: Vectos
 Overseeing Organisation: Borough of Wokingham
 Client: David Wilson Homes

Authorisation

Prepared by:
 Name: Simon Jones
 Position: Principal Technician
 Organisation: Vectos

Approved by:
 Name: James Bancroft
 Position: Director
 Organisation: Vectos
 Signed:

The Scheme

The highway works considered by the Road Safety Audit comprise:

- fourth arm on the north side of a proposed roundabout on the A4 Bath Road, serving approximately 250 dwellings and potentially a rugby club

Key Personnel

Overseeing Organisation:	[NAME (press F9)], [TITLE (press F9)] Borough of Wokingham
RSA Team:	Steve Giles, Senior Road Safety Engineer, Gateway RSE
	Julia Smith, Senior Road Safety Engineer, Gateway RSE
Design Organisation:	Simon Jones, Principal Technician, Vectos
	James Bancroft, Director, Vectos

RSA Decision Log				
Item No.	RSA Recommendation	Design Organisation Response	Overseeing Organisation Response	Agreed RSA Action
2.3	Carry out vehicle swept path analysis for side-by-side turning movements for vehicles entering the roundabout on the proposed north arm and, if appropriate, provide arrow markings within each lane on the approach including a left turn arrow within the nearside lane.	See drawing 184398-PD09-AT02 side-by-side turning movements max legal length hgv & car, accessing & egressing the roundabout on the proposed north arm. Road marking to be reviewed at detail design stage.		

Design Organisation Statement:

On behalf of the design organisation, I certify that:

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: Error! Reference source not found.

Organisation: Vectos

Position: Director

Date: [DATE]

Overseeing Organisation Statement:

On behalf of the overseeing organisation, I certify that:

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.

The agreed RSA actions will be progressed.

.....

Name: [NAME (press F9)]

Organisation: Borough of Wokingham

Position: [TITLE (press F9)]

Date: [DATE]

