

TECHNICAL NOTE

Job Name: Plot SGR1
Job No: 41436
Note No: TN001 Rev A
Date: August 2018
Prepared By: Ben House / Anthony Bubb
Reviewed By: Andy Wells
Approved By: Nick Church

Subject: Review of B4100 Banbury Road Pedestrian Crossing Options

This Technical Note has been prepared by Peter Brett Associates LLP (PBA) on behalf of SGR (Bicester 1) LTD. It includes a preliminary assessment as to the feasibility of providing a new pedestrian crossing facility across B4100 Banbury Road in proximity to St Laurence Church as part of the Plot SGR1 development proposal [Application Number: 18/00484/OUT].

Following discussions PBA has held with the project team, and a meeting with Oxfordshire County Council and Cherwell District Council on 6 July 2018, it is understood that a pedestrian crossing facility is desirable to the local community at this location due to perceived safety issues of users of St Laurence Church, who currently park along the access road of Home Farm, having to cross B4100 Banbury Road between free flow traffic. It is anticipated these safety issues will intensify as new housing across the wider North West Bicester Eco Town scheme is delivered, including the 75 units to be delivered on the Plot SGR1 site, which would generate more demand for use of St Laurence Church. In addition to this, it is expected that the informal parking area proposed to be provided off the Home Farm access road as part of the Plot SGR1 development, for use by Parishioners of St Laurence Church and users of the allotments, would also intensify the perceived safety issues as it improves the existing parking arrangement at this location.


Through discussions the client [SGR (Bicester 1) LTD] has held with the local community, it is also understood that St Laurence Church is also interested in more non-worship and daytime activities, such as parent and toddler groups, therefore further increasing the need for a pedestrian crossing in this location.

PBA understands that new Heads of Terms have been issued to Quod by Cherwell District Council as the local planning authority, with the request that any financial contributions from the Plot SGR1 development proposal [Application Number: 18/00484/OUT] towards provision of a new community building are to be waived in place of the provision of a new pedestrian crossing between the site and St Lawrence Church. Any new pedestrian crossing facility would be provided in addition to provision for additional parking for St Laurence Church to be located adjacent to the access road to Home Farm as part of the outline planning application submission.

Oxfordshire County Council and Cherwell District Council have requested this Technical Note to provide information about the opportunities and constraints to different forms of pedestrian crossing in this location and to review if a pedestrian crossing facility could be delivered in the location proposed in accordance with design standards.



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| Item / Subject | Commentary |
|---|---|
| <p>1 Traffic Speeds and Visibility Requirements</p> | <p>This preliminary assessment as to the feasibility of providing a new pedestrian crossing has been informed by a desk-top review of B4100 Banbury Road traffic data and guidance documents, as well as a site visit of the local area undertaken by PBA.</p> <p>There is at present no formal pedestrian infrastructure along B4100 Banbury Road in proximity of St Laurence Church, as shown by the photograph below (PBA, January 2018) taken from the junction of the Home Farm access road onto B4100 Banbury Road.</p>  <p>As shown in the photograph above, the existing verge adjacent to the wall of the churchyard slopes up from the carriageway and also serves as an anchor point for cable stays for telegraph posts which run along the boundary of the churchyard.</p> <p>A shared footway / cycleway is provided on both sides of B4100 Banbury Road between the B4100 Banbury Road / A4095 roundabout junction and the Elmsbrook scheme; however, no footway is provided further north of this point and there is no intention to provide this infrastructure.</p> <p>From measurements taken of topographical survey, the approximate distance of the B4100 Banbury Road carriageway is 7.0m which equates to an 8.4 second crossing time.</p> <p>The visibility requirement for Non-Motorised Users (NMU) is stated in Design Manual for Roads & Bridges Volume 6 Section 3, Part 5 – TA 90/05: “<i>The Geometric Design of Pedestrian, Cycle and Equestrian Routes</i>”. For the posted speed limit of 40mph, the design speed of B4100 Banbury Road for visibility would be 70kph, which equates to 120m.</p> |

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2 Traffic Volumes and Implications for Type of Crossing

An ATC survey was undertaken along B4100 Banbury Road for a 7-day period between 22 February 2018 and 28 February 2018 by a 3rd-party traffic survey company just to the north of the junction with Charlotte Avenue approximately 330m from St Laurence Church. Annual Average Daily Traffic (two-way) flow along B4100 Banbury Road recorded by this ATC survey is 12,608 vehicles for a 24-hour period; however, these flows will increase in time with additional development in the local area. It is predicted that, between 2016 and 2026 along B4100 Banbury Road, there will be a 21% increase in traffic in the AM peak period and a 13% increase in the PM peak period, as set out in the Transport Assessment (PBA, August 2018) prepared to support the Plot SGR1 development proposals.

As B4100 Banbury Road is a single carriageway with Annual Average Daily Traffic flow of more than 12,000 vehicles, based on Design Manual for Roads & Bridges Volume 5 Section 2, Part 4 – TA 91/05: “*Provision for Non-Motorised Vehicle Users*”, an informal at-grade crossing would be ‘*not normally appropriate*’ in this location.

| Road type | AADT flow (two-way) | | |
|--------------------|----------------------|--|--------------------------|
| | Normally Appropriate | Potentially Appropriate (see paragraph 6.8) | Not Normally Appropriate |
| Single carriageway | Below 8,000 | 8,000 to 12,000 | Above 12,000 |
| Dual carriageway | Below 16,000 | 16,000 to 25,000 | Above 25,000 |
| Wide single c'way | - | Below 10,000 | Above 10,000 |

A signalised crossing would require L-shaped tactile paving to be provided on both sides of the carriageway and formalisation of the pedestrian access to St Laurence Church. A crossing width minimum of 2.4m and appropriate signage would also be required.

Notwithstanding the above, it could be argued that there would be limited periods of high pedestrian demand (such as for Sunday services) when traffic flows were typically lower and outside of these times the pedestrian crossing would be in infrequent use; therefore, it may be argued that an informal crossing could be a more suitable pedestrian crossing type than a formalised signalised crossing in this location.

This view was supported by Oxfordshire County Council and Cherwell District Council during the meeting on 6 July 2018, who indicated that a signalised pedestrian crossing at the location proposed could result in excessive ‘*urbanising*’ of what is a rural corridor and that a full formal public consultation, which would be required for a signalised pedestrian crossing in this location, may not be supported by the police and / or local councillors / the local community.

Any type of crossing in this location along B4100 Banbury Road would be subject to consultation with Oxfordshire County Council highways and require further design review / potential highway design treatments to be delivered alongside the crossing facility. A Stage 1 Road Safety Audit of the pedestrian crossing design would also be required.

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| | <p>If an informal crossing is preferred:</p> <ul style="list-style-type: none"> • An at-grade crossing with tactile paving would be required; • Dropped kerbs would be required on both sides of the carriageway; • A refuge island would not be required to accord with standards, given that the crossing distance is 7.0m, but consideration of a crossing incorporating a refuge was requested by Oxfordshire County Council and Cherwell District Council at the meeting on 6 July 2018 given the recorded two-way traffic flow along B4100 Banbury Road; and • If a refuge island is provided, then the consideration of the width of the refuge to accommodate parents with pushchairs will be needed, along with consideration of the number of pedestrians likely to use the refuge island at peak times. |
| <p>3 Evaluation of Pedestrian Crossing Types</p> | <p>In the context of the above and following the meeting with Oxfordshire County Council and Cherwell District Council on 6 July 2018, PBA have prepared designs for 3 types of pedestrian crossing at the location proposed, as stated below. The 3 option drawings are included in Appendix A of this Technical Note.</p> <ul style="list-style-type: none"> ▪ Option 1: Drawing 41436/5505/001 <i>An uncontrolled pedestrian crossing with dropped kerbs and tactile paving</i> ▪ Option 2: Drawing 41436/5505/002 <i>An uncontrolled pedestrian crossing with central refuge island with dropped kerbs and tactile paving</i> ▪ Option 3: Drawing 41436/5505/003 <i>A signalised pedestrian crossing with dropped kerbs and tactile paving</i> <p>Evaluation of Option 1</p> <p>Option 1 is for the provision of an uncontrolled pedestrian crossing facility with no central refuge island but with dropped kerbs and tactile paving on each side of the carriageway. It would include improved pedestrian access within the northern highway verge into the grounds of St Laurence Church and a 2.0m wide footway alongside the northbound (southern side) carriageway of B4100 Banbury Road. This section of footway would continue into the Plot SGR1 site to enable pedestrian access south into the development scheme.</p> <p>For the section of footway within the northern highway verge, the required pedestrian visibility splays of 2.0m x 120m in accordance with Design Manual for Roads & Bridges Volume 6 Section 3, Part 5 – TA 90/05: “<i>The Geometric Design of Pedestrian, Cycle and Equestrian Routes</i>” can be accommodated within public highway; however, for the footway proposed alongside the northbound (southern side) carriageway of B4100 Banbury Road, land outside of the public highway would be required to accommodate the pedestrian visibility splay.</p> <p>As part of any Option 1 build out, it is proposed to provide appropriate signage in the form of Signs 562 & 563 as stated in ‘The Traffic Signs Regulations and General Directions 2016’ manual to be located in either direction along B4100 Banbury Road.</p> |

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| | <p>Evaluation of Option 2</p> <p>Option 2 is for the provision of an uncontrolled pedestrian crossing facility with a 2.0m x 2.0m central refuge island with dropped kerbs and tactile paving on both the central refuge island and each side of the carriageway. It would include improved pedestrian access within the northern highway verge into the grounds of St Laurence Church.</p> <p>Due to the existing width of B4100 Banbury Road, this crossing option would require the northbound (southern side) carriageway to be re-aligned within public highway land to accommodate the central refuge island. As a result, Plot SGR1 land and hedgerow removal would be required to accommodate a 2.0m wide footway alongside the northbound (southern side) carriageway of B4100 Banbury Road.</p> <p>For the section of footway within the northern highway verge, the required pedestrian visibility splays of 2.0m x 120m in accordance with Design Manual for Roads & Bridges Volume 6 Section 3, Part 5 – TA 90/05: “<i>The Geometric Design of Pedestrian, Cycle and Equestrian Routes</i>” can be accommodated within public highway; however, for the footway proposed alongside the northbound (southern side) carriageway of B4100 Banbury Road, land outside of the public highway would be required to accommodate the pedestrian visibility splay.</p> <p>As part of any Option 2 build out, it is proposed to provide appropriate signage in the form of Signs 562 & 563 as stated in ‘The Traffic Signs Regulations and General Directions 2016’ manual to be located in either direction along B4100 Banbury Road.</p> <p>Evaluation of Option 3</p> <p>Option 3 is for the provision of a 2.4m wide formal signalised pedestrian crossing facility with dropped kerbs and L-shaped tactile paving to be provided on both sides of the carriageway. It would include improved pedestrian access within the northern highway verge into the grounds of St Laurence Church and footway alongside the northbound (southern side) carriageway of B4100 Banbury Road. This section of footway would continue into the Plot SGR1 site to enable pedestrian access south into the development scheme.</p> <p>In accordance with Design Manual for Roads & Bridges Volume 6 Section 3, Part 5 – TA 90/05: “<i>The Geometric Design of Pedestrian, Cycle and Equestrian Routes</i>”, a 120m visibility splay to the nearside signal head is achievable within public highway land on the southbound approach towards the crossing facility; however, land outside of the public highway would be required to accommodate the required visibility splay on the northbound approach to the nearside signal head. A 120m visibility splay to the offside signal head is achievable on the northbound approach.</p> <p>As part of any Option 3 build out, it is proposed to provide appropriate signage in the form of Signs 543 & 572 (to display ‘120 yds’) as stated in ‘The Traffic Signs Regulations and General Directions 2016’ manual to be located in either direction along B4100 Banbury Road.</p> |
| <p style="text-align: center;">4</p> <p>Conclusions and Recommendation</p> | <p>Further to the preliminary assessment presented in this Technical Note, PBA’s conclusions and recommendations as to the feasibility of providing a new pedestrian crossing facility across B4100 Banbury Road between the Plot SGR1 site and St Laurence Church are presented in this section.</p> |



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| | <p>Conclusions</p> <p>Although Option 1 (an uncontrolled pedestrian crossing with dropped kerbs and tactile paving) is the most easily deliverable, given the recorded two-way traffic flow along B4100 Banbury Road, it is not an appropriate design in this location. PBA's evaluation of this crossing type indicates that a deviation from standards would be necessary to ensure the required visibility splay can be accommodated within public highway; however, as the Annual Average Daily Traffic flow was recorded as being more than 12,000 vehicles, it is not a design supported by Design Manual for Roads & Bridges.</p> <p>Option 2 (an uncontrolled pedestrian crossing with central refuge island with dropped kerbs and tactile paving) would require Plot SGR1 land and hedgerow removal to be undertaken to provide a 2.0m wide footway alongside the northbound (southern side) carriageway of B4100 Banbury Road. Even with Plot SGR1 land, the required visibility splay would also fall outside of the public highway. Although this is the favourable crossing design of both Oxfordshire County Council and Cherwell District Council, it requires land outside of the public highway to be deliverable.</p> <p>Although Option 3 (a signalised pedestrian crossing with dropped kerbs and tactile paving) would require a full formal public consultation to be undertaken and may not be supported by the police and / or local councillors / the local community, the required visibility splay can be accommodated within public highway and is the favourable design given its potential use by vulnerable users. It is known however that both Oxfordshire County Council and Cherwell District Council have reservations about this type of pedestrian crossing in this location.</p> <p>Recommendation</p> <p>In the context of the above, while either Option 1 or Option 2 is the design favourable with Oxfordshire County Council and Cherwell District Council, given the volume of traffic along B4100 Banbury Road and the limits on required visibility splay, together with the vulnerability of users of the crossing facility, the correct technical solution is Option 3. The required visibility splay can be accommodated within public highway either to the nearside or offside signal head while the additional protection control in a location with potentially higher vehicle speeds is more suitable to the vulnerable users of St Laurence Church.</p> |
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Design Guidance References

TA 90/05 – *The Geometric Design of Pedestrian, Cycle and Equestrian Routes:*
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol6/section3/ta9005.pdf>

TA 61/05 – *Provision for Non-Motorised Users*
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol5/section2/ta9105.pdf>

TA 50/04 – *The Geometric Layout of Signal Controlled Junctions and Signalised Roundabouts*
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol6/section2/td5004.pdf>

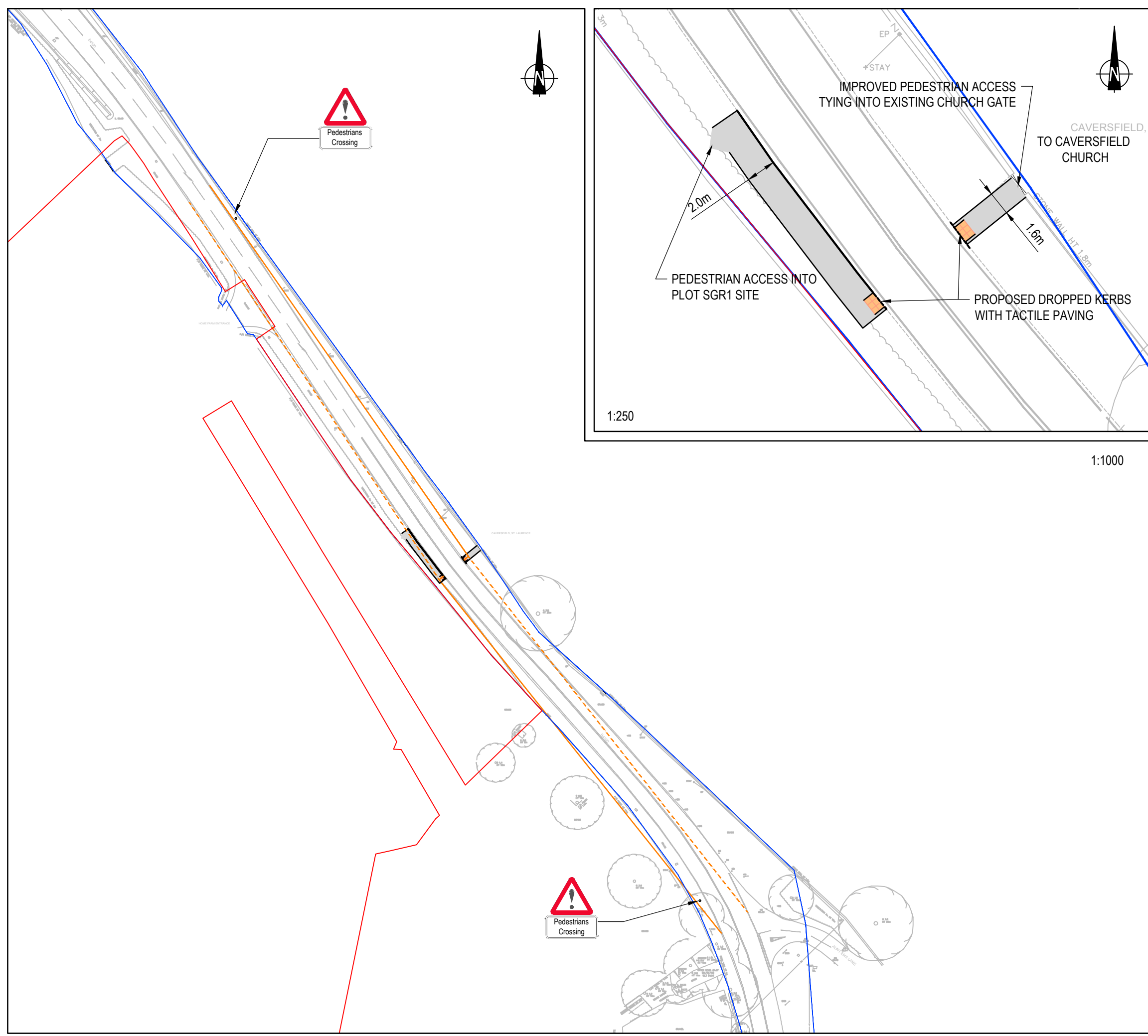
TA 42/95 – *Geometric design of Major/Minor Priority Junctions*
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol6/section2/td4295.pdf>

TA 9/93 – *Highway Link Design*
<http://www.standardsforhighways.co.uk/ha/standards/dmr/vol6/section1/td993.pdf>

LTN 2/95 – *The Design of Pedestrian Crossings*
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/330214/ltn-2-95_pedestrian-crossings.pdf



Appendix A



1:1000

KEY:

- PEDESTRIAN VISIBILITY SPLAY TO THE LEFT (2m x 120m IN ACCORDANCE WITH DMRB)
- PEDESTRIAN VISIBILITY SPLAY TO THE RIGHT (2m x 120m IN ACCORDANCE WITH DMRB)
- PLOT SGR1 SITE BOUNDARY
- HIGHWAY BOUNDARY (OXFORDSHIRE COUNTY COUNCIL, MARCH 2018)



- 900mm HEIGHT (TSRGD, 2016 - SIGN 562)
- 62.5mm HEIGHT (TSRGD, 2016 - SIGN 563)

| Mark | Revision | Date | Drawn | Chkd | Appd |
|------|---|----------|-------|------|------|
| A | REVISION TO RED LINE SITE BOUNDARY PLAN | 08.10.18 | JM | AW | NC |

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
 UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.

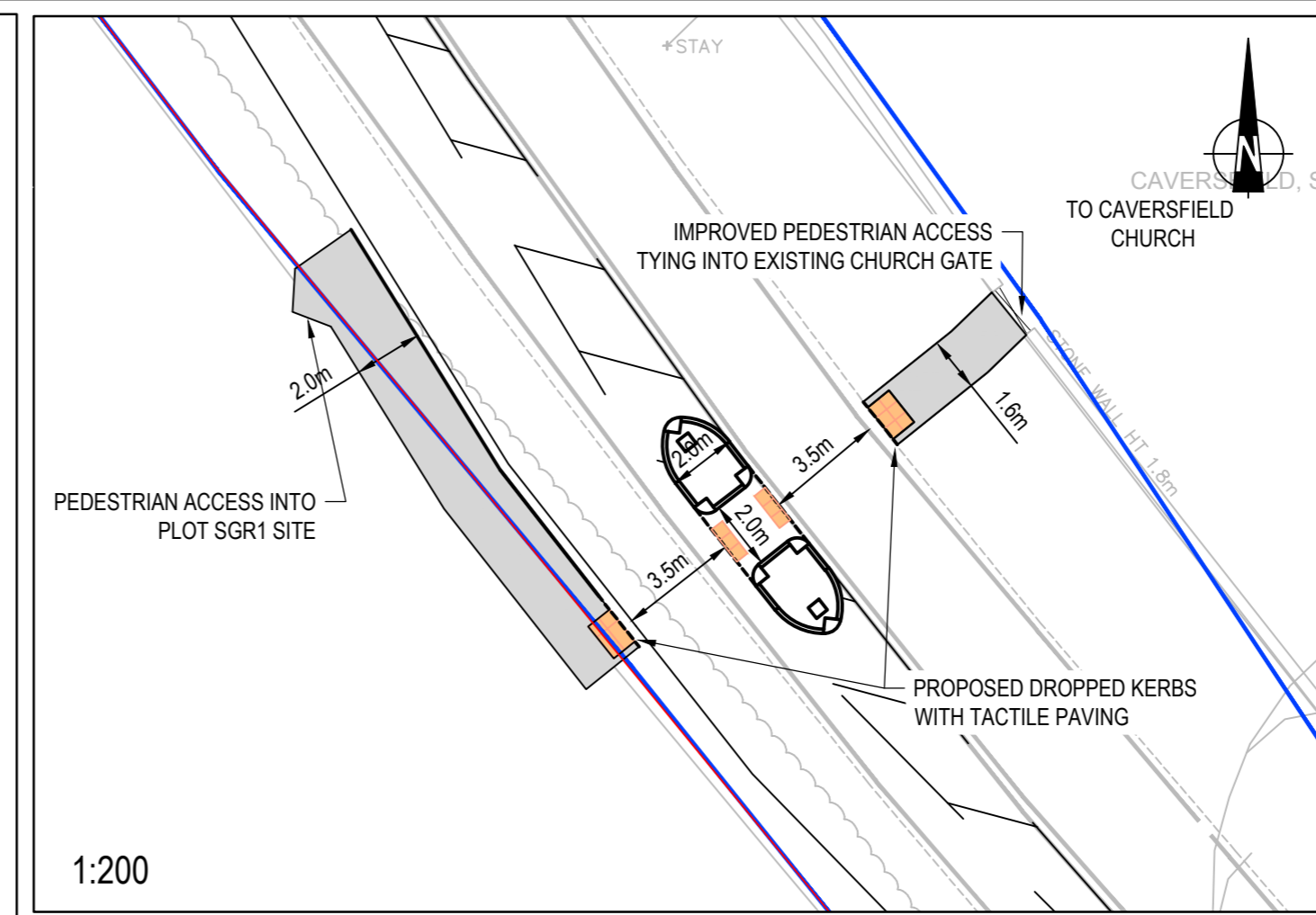
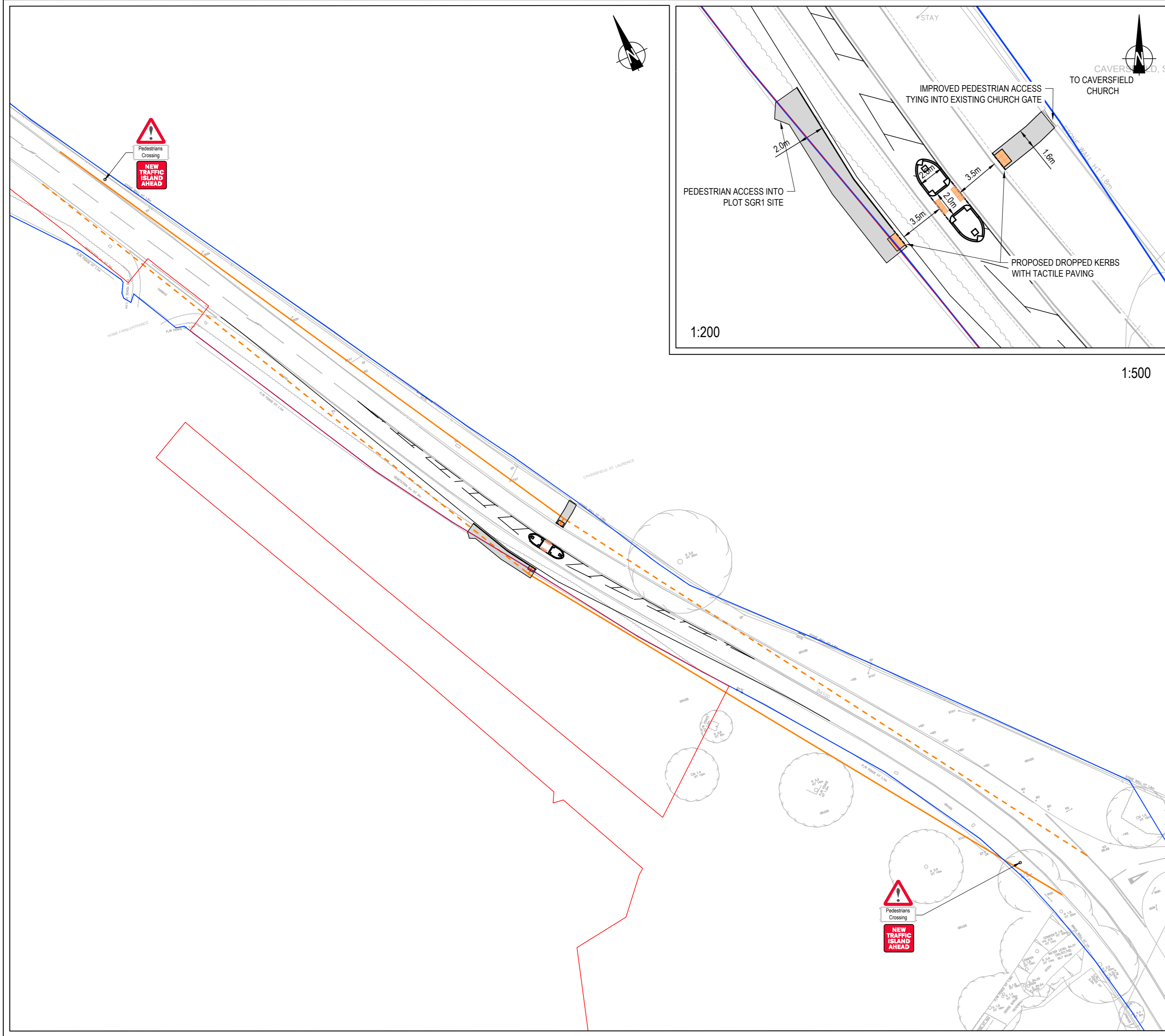
Drawing Issue Status **FOR INFORMATION**

**PLOT SGR1, B4100 BANBURY ROAD
 PEDESTRIAN CROSSING - OPTION 1**

Client
SGR (Bicester 1) Ltd

| | | |
|-----------------------|----------|----------|
| Date of 1st Issue | Designed | Drawn |
| 30/08/18 | AB | JM |
| A3 Scale | Checked | Approved |
| AS SHOWN | AW | NC |
| Drawing Number | Revision | |
| 41436/5505/001 | - | |

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1:500

- KEY:**
- PEDESTRIAN VISIBILITY SPLAY TO THE LEFT (2m x 120m IN ACCORDANCE WITH DMRB)
 - PEDESTRIAN VISIBILITY SPLAY TO THE RIGHT (2m x 120m IN ACCORDANCE WITH DMRB)
 - PLOT SGR1 SITE BOUNDARY
 - HIGHWAY BOUNDARY (OXFORDSHIRE COUNTY COUNCIL, MARCH 2018)
 - 900mm HEIGHT (TSRGD, 2016 - SIGN 562)
 - 62.5mm HEIGHT (TSRGD, 2016 - SIGN 563)

| Mark | Revision | Date | Drawn | Chkd | Appd |
|------|---|----------|-------|------|------|
| A | REVISION TO RED LINE SITE BOUNDARY PLAN | 08.10.18 | JM | AW | NC |

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
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Drawing Issue Status **FOR INFORMATION**

**PLOT SGR1, B4100 BANBURY ROAD
 PEDESTRIAN CROSSING - OPTION 2**

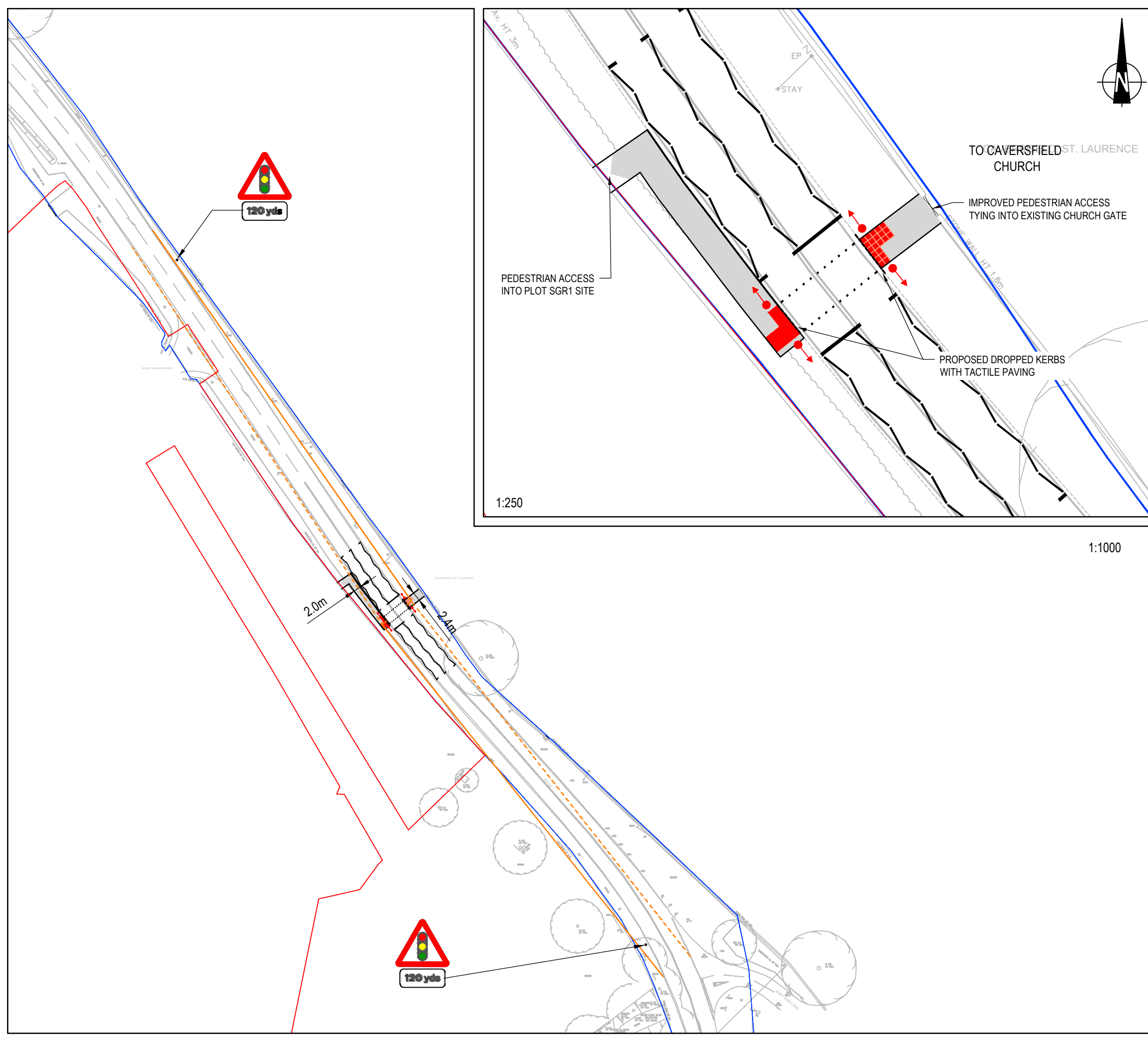
Client
SGR (Bicester 1) Ltd



| | | |
|-------------------|----------|----------|
| Date of 1st Issue | Designed | Drawn |
| 30/08/18 | AB | JM |
| A2 Scale | Checked | Approved |
| AS SHOWN | AW | NC |

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| Drawing Number | Revision |
| 41436/5505/002 | - |



KEY:

- PEDESTRIAN VISIBILITY SPLAY TO THE LEFT (2m x 120m IN ACCORDANCE WITH DMRB)
- PEDESTRIAN VISIBILITY SPLAY TO THE RIGHT (2m x 120m IN ACCORDANCE WITH DMRB)
- PLOT SGR1 SITE BOUNDARY
- HIGHWAY BOUNDARY (OXFORDSHIRE COUNTY COUNCIL, MARCH 2018)
- 900mm HEIGHT - TSRGD, 2016 - SIGN 543
- 62.5mm HEIGHT - TSRGD, 2016 - SIGN 572

| Mark | Revision | Date | Drawn | Chkd | Appd |
|------|-------------------------------|----------|-------|------|------|
| A | REVISION TO RED LINE BOUNDARY | 08.10.18 | JM | AW | NC |

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Drawing Issue Status **FOR INFORMATION**

PLOT SGR1, B4100 BANBURY ROAD
 PEDESTRIAN CROSSING
 OPTION 3 - PUFFIN CROSSING

Client
SGR (Bicester 1) Ltd

| | | |
|-----------------------|----------|----------|
| Date of 1st Issue | Designed | Drawn |
| 30/08/18 | AB | JM |
| A3 Scale | Checked | Approved |
| AS SHOWN | AW | NC |
| Drawing Number | Revision | |
| 41436/5505/003 | - | |