

MEMO

To: Laura Graham
From: Dan Hayes; Joana Santos
cc:
Date: 12/05/2017
Revision: 2
Job Number: 35944
Subject: North Littlehampton, Lyminster Bypass – Design Statement

1. Introduction

This document has been prepared by Peter Brett Associates LLP (PBA) in support of the Reserved Matters Application for the North Littlehampton development.

The document provides:

- a description of changes made to the design of the proposed south section of the Lyminster Bypass subsequent to the submission of the outline planning application (Section 2);
- a response to issues raised by Arun District Council in their Decision Notice to application reference LU/47/11 and further email comments made by Tim Townsend (WSCC) sent in response to Adrian Barnley's (Mayer Brown) email dated 27/10/2016, included in Appendix A (Section 3);
- a summary of the review of the Stage 1 Road Safety Audit and Designer's response undertaken by PBA (Section 4).

2. Design changes and Conformity

2.1 Road alignment

As part of the detailed design process the southern section of the proposed Lyminster Bypass has been subject to minor horizontal and vertical realignment to tie into the amended roundabout layouts of the A259 Worthing Road proposed roundabout to the south and proposed roundabout at the intersection of the proposed site roads and the northern and southern sections of the Lyminster Bypass to the north.

The realignment of both ends of the bypass had a minor impact on the position of the bridges over Toddington Lane and the railway. Whilst realigning the approach to the A259 Worthing Road roundabout the alignment was optimised to ensure that the carriageway, foot / cycleway, verges and earthworks are contained within the redline boundary.

2.1.1 – Design Speed

The proposed road alignment and design conform to the DMRB standard, in particular to TD 9/93 Highway Link Design for a 70kph (40mph) design speed road.

2.1.2 – Horizontal Alignment:

The horizontal curves along the southern section of the bypass are 1020m and 1500m radii with a standard cambered crossfall and the most southerly curve a 550m radius with the carriageway crossfall superelevated to 3.5% conforming to Table 3 of TD 9/93.

2.1.3 – Vertical Alignment:

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The vertical curvature along the bypass conforms to Table 3 of TD 9/93 with minimum crest k values of 30 and sag values of 20 with the exception of the vertical curve on the approach to the A359 roundabout which is within the sight stopping of the roundabout and therefore does not need to meet the link road requirements. This curve is also between a relatively small change in vertical gradient.

The full desirable minimum vertical sight stopping distance of 120m (DMRB TD9/93, Table 3, 70kph Design Speed) has been shown to be provided along the full length of the bypass on drawing 35944/2001/001. The visibility envelope shown on the drawings is for a driver's eye height of 1.05m to an object height of 0.26m in accordance with Chapter 2 of TD 9/93. There will be no impact on greater driver or object heights of 2m as there will be no obstruction in that area of the visibility envelope.

2.1.4 Highway Corridor:

The proposed highway corridor for the link road provides a 7.3m carriageway (2 no. 3.65 lanes) with a 1m hard strip at each edge. The eastern edge of the road is a 125mm kerb upstand with a 3.5m shared footway / cycleway. A 1m verge is provided in areas where a standard earthwork embankment retains the highway to allow space for the noise fencing, however, where a structure forms the edge of the corridor at either the reinforced earth wall or bridge parapet no verge width is provided. Along the western edge of the road a 2m verge is provided behind the 125mm kerb.

A copy of the latest version of the proposed road alignment and contours, drawing 35944/2001/001, can be found in Appendix B.

2.2 Earthworks

Through design development the proposed earthworks solution for the approaches to the railway and Toddington Lane bridges has evolved from traditional 1 in 3 earthwork slopes to reinforced earth walls on three sides of the approaches with the southwestern approach remaining as an earthwork embankment.

The change to the earthworks on the south-eastern approach was necessitated by the requirement to achieve the agreed area quantity required for new allotments, to compensate for the allotment area being lost due to the construction of the proposed bypass, whilst not expanding the earthwork embankment into the recreation area to the west. The bridge approaches to the north of Toddington Lane and between the Toddington Lane and Railway Bridges were revised to reinforced earthwork embankments to minimise the land take of the bridge approaches and optimise the developable area adjacent to the bypass.

2.3 Pavement construction

The proposed bypass pavement construction will be a flexible Asphalt Concrete construction designed in accordance with the Design Manual for Roads and Bridges and the West Sussex County Council (WSCC) design guide to achieve suitable construction layer thicknesses, design life and skid resistance.

Where possible WSCC standard highway construction details will be used so the road corridor construction materials and techniques are the same as the surrounding road networks.

The proposed pavement construction will be developed in collaboration with Mayer Brown to ensure consistency of pavement depths and materials across the scheme as well as agreeing the extent of any high PSV surfacing which may be required on the approaches to the roundabouts at the northern and southern extents of the scheme.

2.4 Road Restraint Systems

The proposed Lyminster Bypass (Southern Section) will have a combination of Class N1 and N2 galvanised steel vehicular restraint systems with infill galvanised mesh on the approaches to the bridges and over the Toddington Lane bridge. Over the railway bridge a very high containment H4a vehicle

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restraint system will be used. For further information on the vehicle restraint systems over the proposed bridges refer to section 2.7 below and drawing 35944/3501/004 contained in Appendix B.

2.5 Street lighting

It is proposed that only the roundabouts and their approaches at the northern and southern end of the Lyminster Bypass (Southern Section) will be illuminated via street lighting with the central section to be unlit. The extent of the proposed lighting will be developed in collaboration with Mayer Brown and SSE to ensure the highway lighting requirements for the roundabouts and approaches are met with a single power supply and cabling network for each of the roundabouts,

2.6 Highway drainage

The design of the surface and foul water drainage shall be carried out by White Young Green (WYG).

2.7 Structures

2.7.1 Toddington Lane Bridge

The proposed road bridge will carry the southern section of the Lyminster Bypass over Toddington Lane road.

The proposed structure has been positioned to provide a minimum clearance of approx. 2800mm at the east corner of the north abutment to the rising main being installed. The width of northern footway under the proposed structure will therefore vary between approx. 3200mm, at the northeast end, and approx. 4500mm, at the northwest end. The width of the southern verge under the proposed structure will vary between approx. 2900mm at the southwest end and approx. 4000mm at the southeast end.

The structure is proposed to be a semi-integral bridge with a single clear square span of 17.0m. The bridge superstructure will comprise of precast prestressed concrete U-beams with an in-situ reinforced concrete deck slab. The substructure will comprise of reinforced concrete abutments.

A 1.4m high N2 (normal containment) galvanised steel parapets with mesh infill panels will be provided on the east side of the structure, over the bridge deck and wing walls. A 1.25m high N2 (normal containment) galvanised steel parapet with mesh infill panels will be provided on the west side of the proposed structure, over the bridge deck and wing walls.

An elevation of the proposed structure has been included on drawing no. 35944/3501/004, included in Appendix B.

2.7.2 Road over rail bridge

The proposed rail overbridge will carry the southern section of the Lyminster Bypass over the Brighton to Littlehampton Line (ELR: BLI1).

The structure is proposed to be a semi-integral bridge with a single clear span of 29.8m. The bridge superstructure will comprise of precast prestressed concrete U-beams with an in-situ reinforced concrete deck slab. The substructure will comprise of reinforced concrete abutments.

A minimum 2m wide corridor will be provided between the abutments and the Network Rail boundary fence, allowing a scaffolding tower to be erected at the ends of the structure for inspection and maintenance.

1.8m high H4a (Very high containment) galvanised steel parapets with solid infill panels and steeple copings will be provided on both sides of the structure, over the bridge deck and wing walls.

An elevation of the proposed structure has been included on drawing no. 35944/3501/004, included in Appendix B.

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2.7.3 Allotment culvert

The proposed structure will carry the southern section of the Lyminster Bypass and will provide pedestrian access to the new allotments at the east of the bypass.

The structure will comprise an 18m long buried precast reinforced concrete box culvert with precast reinforced concrete headwalls and tapered wing walls at the west end. The proposed structure will have a clear width of 2.3m and a clear height of 2.3m to allow pedestrian access only.

Lockable access gates will be provided at both ends of the structure.

Lighting will be provided along the length of the culvert. Timed push button switches shall be provided at both ends preventing light pollution.

A 1.4m high N2 (normal containment) galvanised steel parapets with mesh infill panels will be provided along the east side of the structure. The western verge will have a VRS with a 1.15m high steel post and rail fence to provide a pedestrian edge restraint. A 1.15m high galvanised steel post and rail fence will also be mounted along the top of the headwalls and wing walls, on the west side of the structure.

An elevation of the proposed structure has been included on drawing no. 35944/3501/004, included in Appendix B.

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2.7.4 Toddington Lane Footbridge

We understand that the Toddington Lane Footbridge will be submitted via a separate planning application. Therefore, no details have been provided in this document.

3. PBA's input to response to Decision Notice to application reference LU/47/11 and further email comments made by Tim Townsend (WSCC) sent in response to Adrian Barnley's (Mayer Brown) email dated 27/10/2016

The following provide a response to conditions 5, 7.iv, 9 and 26 raised by Arun District Council in their Decision Notice to application reference LU/47/11 and further email comments made by Tim Townsend (WSCC) in response to Adrian Barnley's (Mayer Brown) email dated 27/10/2016, included in Appendix A.

Arun District Council Decision Notice to application reference LU/47/11 and further comments made by Tim Townsend in response to Adrian Barnley's email dated 27/10/2016	Response
5 <i>The details referred to in condition 1 for each phase or sub phase shall include details of the materials and external finishes of the buildings, surfaces for roads / footpaths, earth remodelling, means of enclosure and the parking of vehicles, and the provision of samples of such materials and finishes as required. Development shall be carried out in accordance with the approved details unless otherwise agreed with the Local Planning Authority.</i>	For details of proposed road / footway finishes refer to section 2.3. For details of proposed road restraint system refer to sections 2.4, 2.7 and to drawing no. 35944/3501/004.
7.iv <i>The detailed design of the southern section of the Lyminster bypass, including associated levels, profiles, culverts, lighting and street furniture, including a scheme for inclusion of public art. The lighting and street furniture should be of a design and specification which reflects the 'gateway' appearance and function of the new road and could constitute public art;</i>	For details of proposed horizontal and vertical road alignment refer to drawing no. 35944/2001/001. For details of proposed structures (Toddington Lane bridge, road over rail bridge and allotment culvert) refer to section 2.7 and drawing no. 35944/3501/004. No street furniture or street lighting (other than a continuation of the roundabout lighting on their approaches) have been proposed along the southern section of the Lyminster Bypass.
9 <i>The development permitted by this planning permission shall only be carried out in accordance with the approved Flood Risk Assessment (FRA) dated February 2011 and the following mitigation measures detailed within the FRA:</i> - <i>Compensatory flood storage shall be provided on/or in the vicinity of the site to the design flood levels specified within the approved FRA;</i> - <i>Finished floor levels shall be set no lower than 500mm above the design flood level within the approved FRA.</i>	The design of the surface and foul water drainage shall be carried out by WYG.

Arun District Council Decision Notice to application reference LU/47/11 and further comments made by Tim Townsend in response to Adrian Barnley's email dated 27/10/2016	Response
26 <i>Before each phase or sub phase of the development hereby permitted is commenced, details of the layout and specification of and construction programme for the roads, footpaths, cycleways and parking areas, including tracking details for heavy goods vehicles and refuse vehicles, for that phase shall be submitted to and approved in writing by the Local Planning Authority. No dwelling or commercial building shall be occupied until it is provided with access constructed in accordance with such approved details to the highway network.</i>	The layout and specification of the proposed highway will be detailed as part of the Technical Approval process. Details of the construction programme is to be provided by Persimmon.

Table 1. Response to Arun District Council Decision Notice to application reference LU/47/11 and comments made by Tim Townsend (WSCC) sent in response to Adrian Barnley's (Mayer Brown) email dated 27/10/2016

4. Review of Stage 1 Road Safety Audit and Designer's response

The following provides a summary review of the Stage 1 Road Safety Audit and Designer's response undertaken by Mayer Brown Limited.

The Stage 1 Road Safety Audit was undertaken by Mayer Brown to cover the full extent of the proposed scheme which incorporates the new carriageway sections of Lyminster Bypass (Southern Section) and Fitzalan Link to the south as well as associated upgrade works and new junctions on the surrounding road network. The majority of comments raised in the Safety Audit relate to the areas outside of the Lyminster Bypass and as such will be incorporated into the detailed design of these sections of the scheme.

The items raised in the Safety Audit which require incorporation into the Lyminster Bypass (Southern Section) did not require amendments to the proposed layout and are addressed above Section 2 – Design Changes or will be addressed as part of the detailed design. Items to be addressed at detailed design relate to the inclusion of pedestrian and vehicle restraint systems over the proposed bridges and on top of the sections of reinforced earth embankments, which are included in sections 2.4 and 2.7 above. The need for a full signage scheme will also be developed as part of the detailed design process, and in collaboration with Mayer Brown to ensure consistency of signage across the scheme and avoid duplication of information.

The Stage 1 Safety Audit notes that the Auditors were advised of 28 departures from standard throughout the whole scheme. Details of the departures and any impacts they would have on the layout of the scheme are not available at this time however there are no departures within the Lyminster Bypass (Southern Section) design being taken forward by PBA.

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Appendix A – Arun District Council, Decision Notice to application reference LU/47/11 and Tim Townsend response to Adrian Barnley's email dated 27/10/2016

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Appendix B – Drawings