Norwich Western Link

Design and Access Statement Appendix 1: Departures from Standards Report

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1 Introduction

1.1.1 The Proposed Scheme has been designed using current standards contained in the Design Manual for Roads and Bridges (DMRB). The DMRB sets a standard of good practice that has been developed principally for Trunk Roads and motorways. It is for the local highway authority to decide on the extent to which the documents in the manual are appropriate when used for local road schemes.

1.1.2 Departures from Standard are not uncommon and are part of the design hierarchy used in circumstances where desirable minimum standards cannot be achieved. There may be situations where features on site, innovation of design, construction methods or materials may make it advantageous to depart from standards. Where a Departure from standard is proposed, it should ensure safety, value for money and maintainability despite not following the requirements from the design manual.

1.1.3 Where it has not been possible to comply with the DMRB on the Proposed Scheme, the departures have been considered through the road safety audit process. This is to ensure that consideration has been given to the safety implication of the departures on all road users and the resulting design is safe.

1.1.4 This report provides information on the highway geometric, highways pavement, structures and geotechnical departures.

2 Summary of Departures

2.0.1 The sections below provide a summary of the departures identified on the design considered in this report.

2.1 Highways

2.1.1 Table 1 provides a summary of the highway geometric departures identified.

Table 1 Summary of Highways Geometric Departures

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H1	Mainline – whole scheme	Reduced lane widths	CD127 Cl.2.2	Traffic lane widths for horizontal curvature greater than 400 metres radii shall be in accordance with Figures 2.1.1N1a to 2.1.1N1h.	Offside lane proposed to be 3.5m instead 3.65m wide on both NWL and Fakenham Road dual carriageway	A reduced offside lane width has been utilised to minimise the cross section/footprint of the road and minimise environmental impact	NCCT41793-00-A-01 Table 3.1 & NCCT41793-03-C-18-0100-0035 TO 0038 & NCCT41793-03-C-02-13	NCCT41793-RAM-HGN-FSC-DF-CH-0001	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H2	Mainline outside viaduct extents	Reduced hard strip widths	CD127 Cl. 2.4/2.5	Nearside hard strips shall be provided as shown in Figures 2.1.1N1a to 2.1.1N1h. The minimum width of offside hard strips (dimension F) shall be as shown in Figures 2.1.1N1a to 2.1.1N1h.	Nearside hard strip widths are proposed to be 0.7m (except along the Wensum Viaduct BR1 and the link between the viaduct and the A1067 roundabout where hard strips are provided to standard) Offside hard strip widths are proposed to be 0.3m (except through Foxburrow Green Bridge where they will be 0.7m and from A1067 roundabout to chainage 1900 including along the viaduct where they will be to standard)	Reduced hard strip widths have been utilised to minimise the cross section/footprint of the road and minimise environmental impact	NCCT41793-03-C-18-0100-0035 TO 0038 & NCCT41793-03-C-02-13	NCCT41793-RAM-HGN-FSC-DF-CH-0002	Yes	Accepted
NWL DEP H3	Viaduct South abutment	Insufficient Superelevation	CD109 Table 2.1/Cl4.2	For curves with radii less than those shown in Table 2.10 (Minimum R with superelevation of 2.5%), (i.e. $V^2/r > 7$) superelevation shall be provided in accordance with Equation 4.2 subject to maximum values for rural and urban roads.	Superelevation change applied less than 1/3 within curve and remainder within transition	Alignment constraints restrict transition being placed as required by the standard. Departure avoids complex viaduct design and construction Agenda note from DRM 09/12/22	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0009	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H4	Police Observation Platforms	Reduction in forward visibility	CD169 Cl.11.3	The visibility from vehicles parked in an observation platform shall be unobstructed for a minimum distance of 0.8 km both upstream and downstream of the platform	800m visibility achieved in upstream direction from both platforms N/B downstream visibility = 295m S/B downstream visibility = 470m	The 0.8km visibility requirement is based on provision of a type 1a layby on motorways. A type 1a layout isn't the normal layout provision for dual carriageways. On dual carriageways the minimum visibility requirement is 295m, which is met by the current design.	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0003	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H5	Foxburrow Green Bridge	Design speed of Foxburrow Green Bridge track	CD109 Cl 2.1	For new rural roads, design speed shall be derived from Figure 2.1 using alignment constraint (Ac) and layout constraint (Lc).	Design developed based on a 30kph design speed. Table 2.10 of CD109 – Highway Link Design prescribes a minimum design speed of 50kph.	A 30kph design speed has been adopted due to the unmade nature of the farm track. Development of design using 50kph design speed would result in significant additional impact on adjacent woodland and the resulting farm access would be overdesigned for its intended use	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0004	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H6	Foxburrow Green Bridge	Vertical alignment of Foxburrow Green Bridge track	CD109 Cl. 211 / Table 2.10	Values for stopping sight distance, horizontal curvature and vertical curvature shall not be less than those given in Table 2.10 for 50kph design speed regardless of permitted relaxations	Crest K value of 3 has been used rather than a desirable minimum of 6.5 (following 50kph design rules).	Development of design using 50kph design speed would result in significant additional impact on adjacent woodland and the resulting farm access would be overdesigned for its intended use	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0005	Yes	Accepted
NWL DEP H7	Foxburrow Green Bridge	Vertical alignment of Foxburrow Green Bridge track	CD109 CL2.11 / Table 2.10	Values for stopping sight distance, horizontal curvature and vertical curvature shall not be less than those given in Table 2.10 for 50kph design speed regardless of permitted relaxations	Sag curve K value of 6.5 has been used compared to a desirable minimum of 9 (following 50kph design rules)	Development of design using 50kph design speed would result in significant additional impact on adjacent woodland and the resulting farm access would be overdesigned for its intended use	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0006	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H8	Foxburrow Green Bridge	Horizontal alignment of Foxburrow Green Bridge track	CD109 Table 4.5	Except for the restrictions to relaxations noted in Section 2 (Relaxations) of this document and in the clauses below, relaxations to the desirable minimum horizontal alignment requirements shall be permitted as identified in Table 4.5.	Horizontal curvature more than 4 steps below standard for a 50kph design speed as prescribed in Table 4.5 of CD109. Actual value of 20m against a prescribed minimum of 44m. The horizontal curve is in line with Manual for Streets 2 guidance which permits a 16m radius for a design speed of 30kph.	Development of design using 50kph design speed would result in significant additional impact on adjacent woodland and the resulting farm access would be overdesigned for its intended use	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0007	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H12	A1067 Fakenham Road Single Carriageway	Omission of Hard strip	CD127 Cl. 2.4	Nearside hard strips shall be provided as shown in Figures 2.1.1N1a to 2.1.1N1h.	Nearside hard strip is not provided on the A1067 Fakenham Road Single Carriageway. CD127 Figure 2.1.1N1e requires a hard strip to be provided on rural all-purpose road mainline, therefore a departure from standard is required.	Hard strip has been omitted to meet the employer's requirement for the cross section of the single carriageway, and to minimise the cross section/footprint of the road and minimise environmental impact (i.e. Intrusion into an ancient and veteran tree root protection area).	not applicable	TBC	No	To be Drafted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H13	Police Observation Platforms	Observation Platform Type	CD169 Cl.12.1/12.5/12.6	12.1 The requirements in this section of the document shall be used for the layout and location of observation platforms on all-purpose trunk road dual carriageways. 12.5 Observation platforms on all-purpose trunk road dual carriageways shall be colocated at the upstream end of the Type A parking lay-bys parking area. 12.6 The observation platform design shall facilitate authorised vehicles entering the platform in a reverse gear from within the Type A parking lay-by.	Motorway Type 1 drive-through platform as per CD169 section 11 has been proposed, rather than all-purpose trunk road observation platform as per CD169 section 12, therefore a departure from standard is required.	The Type 1 drive through platform was provided in line with The Applicant's preference.	not applicable	TBC	No	To be Drafted

2.1.2 Table 2 provides a summary of the highway pavement departures identified.

Table 2 - Summary of Highways Pavement Departures

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H9	Mainline – whole scheme	Use of foundation for construction traffic	CD225 Cl 3.10	Design layer thicknesses in this section assume the foundation carries up to 1000 standard axles during construction.	It is a contract requirement that the use of the stabilised foundation should not be used as a haul road	Already submitted (by others) and agreed prior to detailed design	NCCT41793-00-A-06	NCCT41793-RAM-HPV-FSC-DF-CH-0002	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H10	Mainline – whole scheme	Pavement Design Life (20 years)	CD226 Cl.2.17	Where designing a pavement for a new carriageway, the design life shall be 40 years.	It is proposed that the NWL pavement is designed with a design life of 20 years	Already submitted (by others) and agreed prior to detailed design - This is in line with the NDR design, the data collected for the pavement on the NDR from deflectorgraph is showing that in the areas of stabilisation that this has been greatly exceeded.	NCCT41793-00-A-06	NCCT41793-RAM-HPV-FSC-DF-CH-0003	Yes	Accepted

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP H11	Mainline – whole scheme	Pavement Foundation Design	CD 226 Cl.4.9 Note 2 and TRL Report 615 clause 7.1	The steps that shall be followed when undertaking an analytical pavement design are as follows: NOTE 2 Principles for alternative flexible pavement designs are set out in TRL 615 [Ref 2.I].	It is proposed model the foundation layers individually rather than as a single layer of infinite thickness	The proposed design uses the individual foundation layers within the analytical model to make full use of the combined strengths which resulting in a higher foundation support when modelled with the overlying asphalt layer.	NCCT41793-00-A-06	NCCT41793-RAM-HPV-FSC-DF-CH-0001	Yes	Accepted

2.2 Structures

2.2.1 Table 3 provides a summary of structures departures identified.

Table 3 - Summary of Structural Departures

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included in ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP S1	Wensum Viaduct	PC deck slabs looped connections	CD 350 Cl 3.3 & 3.4	Where Eurocodes are used, information listed in Appendix A relating to the individual project, options and choice of method adopted shall be recorded for Categories 2 and 3 structures. Where supplementary guidance or advice that is non contradictory and complementary to Eurocodes from recognised sources and publications from professional institutions is used, this shall be referenced in the AIP.	The current BS EN 1992-1.1 does not provide detailed design guidance on verifications to be carried out when using looped connections	The current BS EN 1992-1.1 does not provide detailed design guidance on verifications to be carried out when using looped connections	not applicable	NCCT41793-RAM-SBR-BR1-DF-CB-0001	Yes	Accepted

2.3 Geotechnical

2.3.1 Table 4 provides a summary of geotechnical departures identified.

Table 4 - Summary of Geotechnical Departures

Reference (internal)	Location	Description	DMRB Standard / Cl	Required Standard	Proposed Standard	Notes	Included In ERs (reference)	Contractor's reference	Submitted	Status
NWL DEP G1	Scheme wide	Use of Site-Won Soils For Fill to Structures (Class 6N/6P) and Reinforced Soil Walls (Class 6J)	BS8006-1 Table 4.5	Class 6N/6P for backfill to structures and Class 6J for reinforced soil structures.	To use Class 6Q/1B instead of Class 6N/6P material for use as a structural fill. And to modify the lower limit of uniformity for Class 6J from 5 to 2.	The reason for the departure is based on sustainability considerations to allow the use of site won materials in some selected granular fill applications.	not applicable	NCCT41793-RAM-HGN-FSC-DF-CH-0008	Yes	Accepted

3 Location of Departures

3.0.1 Figure 1 shows the locations of departures on the design considered in this report. Note that departures extending along the whole scheme are not shown below i.e. NWL DEP H1, H2, H9, H10, H11 & G1.

Figure 1 - Departure Locations