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1 Introduction

1.1 BACKGROUND

1.1.1 This report has been produced by Northamptonshire County Council's Highway Service Provider, MGWSP, on behalf of the County Council to support the West Northamptonshire Joint Planning Unit (WNJPU) in the preparation of their Joint Core Strategy. Its purpose is to provide evidence on the feasibility and cost of construction of the Northampton North-West Bypass, connecting the A428 Harlestone Road and A5199 Welford Road on the north-west edge of Northampton.

1.1.2 This work is for the purpose of an initial feasibility study to establish if further investigation is justified and if so what this should be.

1.2 HISTORY OF THE SCHEME

1.2.1 As far back as 1969, plans were developed for a high standard ring road around the town.

1.2.2 During the 1970s and 1980s a number of sections of the planned ring road system were developed and constructed to facilitate the rapid expansion of the town.

1.2.3 In 1988, options for a North-West Bypass, which includes the section of road in this study, were subject to a public consultation exercise; however development of the scheme was not pursued at that time.

1.2.4 Some sections of the planned North-West Bypass, namely the Sandy Lane Relief Road (in part) and Sandy Lane Improvement North, have been constructed in recent years to initially serve planned new development to the west of the town, and to serve a wider need in accommodating the town's future traffic requirements as other sections of road are constructed. Construction of the remaining section of the Sandy Lane Relief Road is planned to be funded and delivered as development in this area continues.

1.2.5 The Northampton Multi-Modal Study, undertaken by Arup and dated March 2004, confirmed that a North-West Bypass, linking the A428 and A5199, would be necessary to accommodate further development then being envisaged as part of the Milton Keynes and South Midlands Growth Area; in particular development at Dallington Grange, adjacent to the proposed scheme.

1.3 CURRENT PLANNING POLICY

1.3.1 The West Northamptonshire Joint Core Strategy, currently being developed by WNJPU, contains proposals for three Sustainable Urban Extensions (SUEs) in the vicinity of the proposed scheme, as follows:-
- Northampton Kings Heath (also known as Dallington Grange) with in the region of 3000 house units, 10ha of employment use and a 4ha local centre including retail and community facilities.

- Northampton North of Whitehills (also known as Buckton Fields) with up to 1050 house units, a local centre and 1.6ha of employment land.

- Northampton West with up to 1500 house units and a local centre including retail and community facilities.

The location of these areas is shown on Drg.No.S1096/004 revision C at Appendix 4.

The Daventry Local Plan includes saved policies that form part of the adopted Development Plan relevant to the bypass proposal.

1.3.2 Other evidence produced by and on behalf of Northamptonshire County Council to support the West Northamptonshire Joint Core Strategy has demonstrated that these sustainable urban extensions would, in combination, generate significant traffic flows and that construction of the Northampton North-West Bypass is necessary to accommodate this additional traffic on what is already a congested area of the existing highway network. It is accepted that the above does not imply that the bypass be in place prior to Buckton Fields progressing.

1.3.3 This study has therefore been commissioned to review previous plans for the North-West Bypass and confirm the feasibility of its construction, together with an appropriate estimate of costs.

1.3.4 The extent of the proposed highway study is from the A428 Harlestone Road, at the location of the Sandy Lane Improvement North Roundabout, to the A5199 Welford Road, in the vicinity of the junction with Brampton Lane. See Figure 1.

1.4 STUDY OBJECTIVES

1.4.1 As part of the planned development at Northampton Kings Heath (Dallington Grange) the developers propose to construct a section of the North-West Bypass to provide a link from the A428 Harlestone Road into their development. Design of this section of road has been progressed as part of their overall development proposals, to terminate at a roundabout close to Grange Farm, with the intention that at a future date the County Council could construct the North-West Bypass northwards from this roundabout to provide a link to the A5199.

1.4.2 Apart from the above, no work has been carried out on the scheme since the mid-1990s, and the County Council commissioned this study to undertake some initial work to determine whether construction of the road along the alignment determined in the 1990s was still feasible. In particular, as the road is required to cross both the Northampton Loop of the West Coast Main Line railway and the Brampton Arm of the River Nene, it was appropriate to determine the current requirements of Network Rail and the Environment Agency respectively.
1.4.3 The objectives of this study are therefore to:-

- Ascertain whether an appropriate highway link can be constructed between the proposed roundabout at Grange Farm and the A5199 Welford Road/Brampton Lane junction.

- Examine the constraints associated with crossing the railway and river/flood plain and propose, as appropriate, means for overcoming or mitigating these.

- Determine, as necessary to meet the first two objectives, indicative amendments which would be necessary to the historic scheme alignment, as the basis for future work.

- Provide an estimated cost of construction for the developed scheme to an appropriate future year, to enable the West Northamptonshire Joint Planning Unit to assess viability and funding.
2 Stakeholder Interests

2.1 INTRODUCTION

2.1.1 An overview within the narrow corridor of interest defined in section 1.4.3 identified the key constraints as follows:-

- Crossing of the Northampton Loop of the West Coast Main Line railway
- Development within the Nene Valley flood plain and crossing the water course.
- Implications on the existing highway infrastructure and promotion of a scheme that complies with technical standards and advice notes, based on use and volume of traffic.
- Effects on plant and equipment operated by public utility companies.
- Land owners and residential properties in close proximity.

2.1.2 With regard to the constraints identified, key stakeholders were consulted and the outcome of meetings, comments and information is provided in this section. The local planning authorities, Daventry District Council and Northampton Borough Council, have also been consulted as part of this process.

2.2 NETWORK RAIL

2.2.1 The Northampton Loop of the West Coast main line railway runs south-east to north-west in the study area and any proposed road will be required to cross the railway. See Figures 2 and 3.

Figure 2 – Railway Line
2.2.2 A meeting was held on Thursday 7th July 2011 at the offices of Network Rail in Birmingham. A full set of the meeting notes are included at Appendix 7.

2.2.3 Having regard to the Development Road layout proposals serving the Northampton Kings Heath (Dallington Grange) SUE and the need to tie-in with the existing road network near Brampton Lane, the scope of locations to cross the railway line was limited to a section of track that is close to ground level.

2.2.4 Options were presented for discussion to pass under the railway (Option 1) and over the railway (Option 2). Drawings showing these indicative alignments are included in Appendices 1 and 2 respectively.

2.2.5 A third option (at-grade crossing) was discussed, however this was discounted for a range of reasons, as outlined in the meeting notes.

2.2.6 The option to pass under the railway was not favoured by Network Rail and the following significant reasons were identified:-

- An under-bridge option would only be considered if there were compelling reasons not to pass over, such as topography or sensitive areas.

- It is Government Policy for Network Rail to minimise temporary closures of lines and an under-bridge would require more closures for longer durations.

- To minimise disruption an under-bridge would need to be constructed off line and jacked into place. Cost would be significantly more than an over-bridge.

- An under-bridge would need to be maintained by Network Rail and costs recovered from the County Council; meaning open-ended financial commitments.

- Authorisations for design are more onerous and lengthy for under-bridges.
• The number and duration of possessions required to undertake works on Network Rail land for construction would be greater, resulting in substantially higher fees. Network Rail has advised their costs would almost double for an under-bridge based on recent projects.

• Compensation to operators would be a further cost and again, based on recent projects, the differential would be double for an under-bridge.

2.2.7 The over-bridge option would therefore be favoured by Network Rail and disruption to the Railway would be minimised by most construction taking place outside Network Rail limits, with possessions only required for key operations (lifting beams, sealing bridge deck, construction of parapets etc.).

2.2.8 Network Rail stressed the strategic importance of this line, particularly as a freight corridor and main line diversionary route. Night time closures would result in significant disruption of services and consequential costs.

2.2.9 Technical information of bridge requirements and clearances would be provided by Network Rail in development of design, and it was stated that any bridge must allow for future up-grading to 4 tracks. This would need to be accommodated within any proposed structure.

2.3 ENVIRONMENT AGENCY

2.3.1 The River Nene runs in a north to south direction and any proposed road will be required to cross the water course and the associated flood plain area.

2.3.2 A meeting was held on Friday 8th July 2011 at the offices of the Environment Agency in Kettering. A full set of meeting notes are included at Appendix 7.

2.3.3 Having regard to the proximity of the main water course to the A5199 and its junction with Brampton Lane, the most suitable location to cross the water course is restricted to a short section.

2.3.4 Alternative crossing locations, to those identified in Appendices 1 and 2 would all be significantly less acceptable as explained above.

2.3.5 The Environment Agency identified the following key requirements:

• Only essential infrastructure would be considered for crossing a flood plain (1 in 25 year flood data to be assumed for the extent of the flood plain).

• To minimise flood impact, an open structure should be considered. (Reference was made to Cross Valley Link Road as a suitable example), a photo of which is shown in Figure 4.
• Alternatives to an open structure would be considered if supported by an appropriate case.

• Flood plain encroachment would need to be compensated upstream or adjacent, to demonstrate no adverse effect.

2.3.6 During technical development of any proposals, the following should be taken into account:-

• As essential infrastructure, the road would need to be above the 1 in 1000 year level of 65.5m AOD or to the latest flood level at time of planning submission.

• Culvert span should be designed for 1 in 200 year event (plus an allowance for climate change) with access for Environment Agency vehicles.

• Balancing Ponds should be for 1 in 200 year event with safety factors (plus an allowance for climate change) and located outside the flood plain.

• Discharge to balancing ponds should be at normal run off rates for green field sites (3.5 litres/sec/ha) or to the current requirements at time of planning submission.

2.3.7 Currently the proposals for development of the scheme should follow the guides below:-

• National Planning Policy Framework (March 2012)

• Technical Guidance to the National Planning Policy Framework (March 2012)

• Contaminated Land Report II
2.3.8 The Environment Agency, having considered the two options of under-bridge or over-bridge of the railway, advised their preference would be an over-bridge. An under-bridge option would result in the proposed road, which is deemed essential infrastructure, being lower than the defined 1 in 1000 year flood level (65.5m AOD).

2.3.9 A letter from the Environment Agency dated 15\textsuperscript{th} July 2011, sets out in detail the requirements and preferences in regard to mitigating the impact of the road proposals. This letter is included at Appendix 7.

2.4 STATUTORY UNDERTAKERS

2.4.1 Under requirements of the New Roads and Street Works Act 1991, preliminary enquiries have been made to service providers (known as C2 enquiries).

2.4.2 The following service providers have identified that they have plant and equipment within the study area that will be affected.

- Anglian Water (Water)
- Anglian Water (Sewage)
- BT Openreach
- Western Power Distribution
- Virgin Media
- National Grid Gas

2.4.3 A Statutory Undertakers Drg.No.S1096/006 revision B is included at Appendix 6 showing the plant and equipment identified.

2.4.4 The main area of disruption to statutory undertakers’ equipment will be at the proposed roundabout junction on the A5199 in the proximity of Brampton Lane.

2.4.5 Draft scheme and budget estimates will need to be requested from affected operators by requesting a C3 process under the New Roads and Street Works Act.

2.4.6 The potential for costly diversion works exceeding those on a typical highway scheme exists with BT Openreach apparatus. They have an exchange facility at Brampton Lane and the proposed roundabout may impact significantly on their equipment. An enquiry has been raised with BT to ascertain their initial response and costs associated with the construction of a roundabout at this location.
2.5 LANDOWNERS

2.5.1 Preliminary enquiries, and information in the public domain, have identified the proposed area of the road corridor would directly affect the following 5 landowners:-

- Althorp Estates
- Brian Rice Farms
- Tollers Solicitors (acting for third parties)
- Raybell & Sons (Surfacing) Ltd
- Northamptonshire County Council

2.5.2 Details of land ownership are contained on Drg.No.S1096/005 revision B at Appendix 5.

2.5.3 No contact has been made with landowners to confirm or refute details in the preparation of this feasibility study.

2.5.4 The land in the ownership of Brian Rice Farms includes the area of Brampton Heath Golf Course. This course was founded in 1995, and having regard to the public consultation on the proposals for a North West Bypass the boundary of the course was established to protect the future corridor of the road. The indicative alignments for Options 1 and 2 continue to cross the Brian Rice Farms land within this corridor.

2.5.5 The ownership of land identified as c/oTollers Solicitors, is thought to be held on behalf of a group known as the ‘NN2 Residents’. This group, following concerns raised by previous intended use of the land, raised funds to secure the land and utilise the facility for accessible green space. Reference to information in the public domain suggests the group is now known as ‘Kingsthorpe North Meadows Charitable Trust’.

2.5.6 A small parcel of land adjacent to the A5199 is thought to be owned by Raybell and Sons Ltd. Raybell is a local independent business associated with surfacing, recycling, skip hire and earth moving.

2.5.7 The land owned by Althorp Estates and Northamptonshire County Council forms part of the wider housing development proposals.

2.5.8 It should be noted that any party that has an interest in land affected by highway proposals promoted by Orders under the Highways Act 1980 or the Acquisition of Land Act 1981 are considered as ‘Statutory Objectors’. Objections by a statutory objector may force a public inquiry process.

2.5.9 For the purposes of this study, an allowance has been made for land acquisition and compensation. However for the principal landowners, Althorp and
Northamptonshire County Council, (See Appendix 5) no allowance has been included for land acquisition costs and compensation as it is assumed that the necessary land will be secured as part of a future planning obligation for the appropriate Sustainable Urban Extension.

2.6 RESIDENTIAL PROPERTIES

2.6.1 There are approximately 40 properties that would fall within a 600m envelope of the proposed road. These are located parallel to the A5199 Welford Road and back onto the Brampton Valley Way (dismantled railway line)

2.6.2 Residents who are subject to additional noise above a specified level may be entitled to noise mitigation measures.

2.6.3 Furthermore, residents in private residential dwellings may seek compensation if their property has diminished in value as a result of the physical factors caused by public works. Physical factors include:-

- Noise
- Fumes
- Vibration
- Smoke
- Smell
- Artificial Light
- Discharge onto the land of any solid or liquid substance

2.6.4 A detailed environmental survey will be required to support a future planning application and other statutory processes and this will include noise and air quality.
3 Route Options and Constraints

3.1 INTRODUCTION

3.1.1 In addition to the constraints identified by the stakeholders listed in Section 2 of this report, this section contains additional constraints that have been identified and will impact on the proposals in the course of any scheme development.

3.2 TRAFFIC FLOW AND HIGHWAY DESIGN STANDARDS

3.2.1 The one way peak hour flows are highest on the proposed Grange Farm Roundabout to A5199 section in the Design Year 2026.

3.2.2 The predicted flows fall well within the capacity of an Urban All-Purpose (UAP1) standard of road with a 7.3m carriageway width, as identified in ‘TA79/99 Traffic Capacity of Urban Roads’.

3.2.3 The standard of a UAP1 taken from table 1 of TA79/99 is as follows:-

- Speed Limit - Generally 40mph for single carriageway
- Side Roads - 0 to 2 per km
- Access - Limited
- Parking - Restricted
- Pedestrian Crossings - Mostly grade separated
- Bus Stops - In lay-bys

3.2.4 It should be noted that more detailed studies on traffic flows would be necessary to ensure appropriate design of the proposed roundabout geometry and assessment of capacity on other links on the existing network.

3.3 NORTHAMPTON KINGS HEATH (DALLINGTON GRANGE) SUE

3.3.1 The promoters of the Northampton Kings Heath (Dallington Grange) SUE, provided their proposed horizontal alignment for the road eastwards from the A428 Harlestone Road. This included two three armed roundabouts to accommodate principal estate roads onto the link road.

3.3.2 With the tie-in to the existing A428 Harlestone Road Roundabout and the estate road layout referred to above, the proposed road alignment south of the railway is assumed to be fixed.
3.4 RAILWAY LINE

3.4.1 The main issues regarding the crossing of the railway by the proposed road are identified in Section 2.2 of this report.

3.4.2 The option to pass under the railway would result in infrastructure for pumping surface water drainage from the road. This option would also impose additional unquantifiable costs on the Highway Authority for maintenance, and repair costs to Network Rail for the structure. For these reasons, the preference would be for an over-bridge.

3.4.3 In addition, it should be noted that during construction no crossing of the railway would be permitted by Network Rail. Consequently this will impact significantly on construction, particularly in regard to earthworks and access, effectively turning the site into two separate halves with consequential routing/logistical issues for construction traffic.

3.5 DRAINAGE OUTFALLS

3.5.1 In order to outfall surface water from the proposed road to the watercourse, it will be necessary in the area of Grange Farm Roundabout, to secure appropriate land away from the proposed road for construction of a balancing pond and outfall connection pipe (See Appendices 1 & 2).

3.5.2 Restrictions on development to accommodate the required drainage locations will need to be put into place.

3.6 PUBLIC RIGHTS OF WAY

3.6.1 The proposed road will affect the following public rights of way (these are shown on Appendices 1 and 2):-

- Bridleway KL12
- Bridleway KL14
- Footpath KL16
- Brampton Valley Way (Disused Railway)

3.6.2 As a consequence of the development plans for the area and the nature of a 40mph single carriageway road, no grade separated provisions or diversions have been considered.

3.6.3 Network Rail has identified a desire to divert KL16, which presently has an at-grade crossing on the railway line. The diverted route would make use of the road structure crossing the railway.

3.6.4 The diversion could be readily accommodated, however the appropriate orders would need to be made and the necessary procedures followed.
3.6.5 The Brampton Valley Way would be crossed by the proposed road in the vicinity of Brampton Lane, and in the development of the detailed design, an appropriate road crossing for users of the Brampton Valley Way, which is also a pedestrian/cycle means of access to the Northampton & Lamport Railway, will need to be developed. There is presently a signalised pedestrian crossing of the A5199, and this, along with other changes to the junction layout, would need to be considered as part of the overall provision for pedestrian users and cyclists. This would need to form the basis of further consultations as detailed designs develop.

3.7 JUNCTION WITH A5199

3.7.1 At the termination of the proposed scheme with the A5199 Welford Road, the most suitable junction type for predicted traffic flows is a roundabout.

3.7.2 The proposed roundabout has been located to ensure:-

- Appropriate geometry to meet technical standards and obtain desirable minimum visibility.

- Minimising development within the flood plain.

- Avoidance of existing utilities and plant operated by Anglian Water (Sewage) and BT Openreach.

3.7.3 A recently constructed housing development, Northampton Brampton View Care Home, is located to the north of Brampton Lane. This development would force any future development of an outer ring road to the west of this development and would have significant adverse impact on the Nene Valley and the flood plain. If the North West Bypass were to be developed further, a more detailed evaluation of precise route options would need to be considered in the vicinity of the Welford Road tie-in and connection to Brampton Lane, particularly in the context of not compromising the developable area of the Northampton North of Whitehills (Buckton Fields) SUE.

3.8 OTHER ENVIRONMENTAL ISSUES

3.8.1 A full Environmental Impact Assessment will need to be undertaken as part of further scheme development. An initial desktop review of other environmental constraints has identified two sites of interest. Similarly, an ecological assessment would need to be carried out.

3.8.2 A recognised site of archaeological interest is identified on Drg.No.S1096/005 rev.B at Appendix 5. The proposed road as shown in Appendices 1 and 2 is located at a distance to not directly impact on the identified area.

3.8.3 Visual impact will need to be carefully considered. Immediately north of the railway, an area of mature trees and shrubs has been identified by Northants County Council as being an important feature. Regard has been taken of this feature, and although both options pass in close proximity, there would be no loss of this feature.
4 Cost Estimate and Programme

4.1 INTRODUCTION

4.1.1 Discussions with both Network Rail and the Environment Agency identified that they preferred a bridge crossing over the railway line to one passing underneath. For the purpose of this study, and having regard to the outcome of discussions with Network Rail and the Environment Agency, an estimate of cost has been therefore prepared for ‘Option 2’ only. This is with the bridge carrying the proposed road over the railway line as identified on Drg.No.S1096/002 revision C in Appendix 2.

4.1.2 MGWSP have undertaken a detailed cost estimate in July 2011 and this is attached at Appendix 8.

4.2 LOCAL SOURCING OF FILL TO MINIMISE COSTS

4.2.1 As a consequence of the topography, the need to pass over the railway, the extent of the flood plain and sufficient clearances across the River Nene, much of the proposed road will be on embankment.

4.2.2 This would result in a considerable requirement to import fill, with a predicted volume estimated to be 161,000 Cubic metres; 36,000 Cu.m south of the railway and 125,000 Cu.m north of the railway.

4.2.3 At a typical rate of £15/m³ this would equate to a cost in excess of £2.4 million. The estimate has therefore presumed local sourcing as follows:-

- South of the Railway, 36,000 Cu.m will be sourced from the adjacent land owned by Althorp Estates.

- North of the Railway, 125,000 Cu.m will be sourced from the Northampton North of Whitehills (Buckton Fields) SUE development land owned by Northamptonshire County Council.

4.2.4 An allowance has been made in the estimate for the above and includes an assumed nominal payment of £5.50/m³ to the landowner and £3.85/m³ for transporting, deposition and compaction.

4.2.5 The necessary agreements of landowners, developers and the appropriate planning permissions will need to be secured to ensure this can be undertaken. The cost estimate presented, is submitted on the nominal figure of £5.50/m³ rather than a typical rate of £15/m³ for importing fill.
4.2.6 Early negotiations with landowners and developers at the two SUEs should be pursued to ascertain their agreement to this proposal. Regard should be taken of appropriate volumes either side of the railway to avoid transportation costs and environmental impact.

4.2.7 If agreement to locally sourced fill material is not obtained, additional costs of £1.53m should be added which equates to £2.2m at 2021 prices. This cost is additional to the estimate provided in 4.6.4 and is summarised in 4.6.5.

4.3 NETWORK RAIL BRIDGE

4.3.1 Following the meeting with Network Rail and further advice provided by them, the structure crossing the railway has an assumed span of 23.6m.

4.3.2 No allowance for Network Rail costs and compensation of track users has been included in the cost estimate at Appendix 8.

4.3.3 Network Rail have identified that costs for possession and compensation payments for track users would be substantial. As a consequence of unknowns associated with train operators and timings, Network Rail is reluctant to provide a formal cost estimate.

4.3.4 Informally, Network Rail have cited costs associated with construction of an over bridge in 2008 at Rugby that resulted in total payment to Network Rail to cover possessions and compensation in the sum of £430,000. Network Rail have, however, emphasised that the line affected by these proposals serves Daventry International Rail Freight Terminal (DIRFT). DIRFT is currently undergoing major development that is due for completion in 2015. Consequently the aforementioned costs could be in the region of 30% more. Allowing for inflation to 2021, the cost could be in the region of £800,000. This cost is additional to the estimate provided in 4.6.4 and is summarised in 4.6.5.

4.4 RIVER NENE CULVERT AND FLOOD PLAIN

4.4.1 Following the meeting with the Environment Agency and their letter of 15th July 2011, the case needs to be made to them for not promoting an open structure. Such a provision would increase costs significantly and has not been included in the cost estimate.

4.4.2 The estimate includes for a 4m x 3m wide box culvert and 6 No. open structures within the embankment to reduce flood plain imprint.

4.4.3 Early negotiations should be undertaken to determine the structure type and principles for scheme development.

4.4.4 If an open structure (see section 2.3) is required by the Environment Agency, the costs will increase by approximately £500,000 at current prices. Adjusting for inflation to 2021, the cost could be in the region of £725,000. This cost is additional to the estimate provided in 4.6.4 and is summarised in 4.6.5.
4.5 LANDSCAPING

4.5.1 An allowance has been included within the estimate, based on a rate per kilometre for installation adjacent to the carriageway only and for maintenance over a 5 year period.

4.5.2 It is envisaged, having regard to the nature of the site and the panoramic views from dwellings, that offsite landscaping would also be required to mitigate the visual impact of the proposed road. Such provisions have not been included in the cost estimate and would be developed as part of the environmental appraisal process. This cost is additional to the estimate provided in 4.6.4 and is summarised in 4.6.5.

4.6 ESTIMATED SCHEME COSTS

4.6.1 Based on the restricted information available at the present time, having regard to the presumptions above, and accepting additional provisions will become apparent as part of the detailed development of the scheme, the cost estimate for the scheme is shown in 4.6.4.

4.6.2 The costs identified in 4.6.4 below have been divided as follows:-

- The whole scheme, from the A428 Harlestone Road Roundabout to the A5199 Welford Road, including the tie-in in the vicinity of Brampton Lane.

- South of the railway line, which extends from the A428 Harlestone Road Roundabout up to and including the proposed roundabout adjacent to Grange Farm.

- North of the railway line, which extends from the proposed roundabout adjacent to Grange Farm to the A5199 Welford Road, including the tie-in in the vicinity of Brampton Lane, and crossings of both the railway and River Nene flood plain.

4.6.3 The scheme costs in 4.6.4 have been split solely for the purpose of apportioning funding contributions. It does not indicate the scheme could be constructed in part or implemented as phased construction.
### 4.6.4 Cost Estimate Table for Basic Scheme

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<td>£500,000</td>
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<td>£500,000</td>
</tr>
<tr>
<td>(Inc.BT exchange)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contingencies (10%)</td>
<td>£1,297,650</td>
<td>£530,652</td>
<td>£766,999</td>
</tr>
<tr>
<td>(Construction/land/SUs)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Overall Construction Cost</strong></td>
<td>£14,274,157</td>
<td>£5,837,170</td>
<td>£8,436,988</td>
</tr>
<tr>
<td>Supervision (4%)</td>
<td>£570,966</td>
<td>£233,487</td>
<td>£337,479</td>
</tr>
<tr>
<td>Detail Design (3%)</td>
<td>£428,224</td>
<td>£175,115</td>
<td>£253,109</td>
</tr>
<tr>
<td>(Excludes Consultations/Public Inquiries/Environmental Surveys etc)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Scheme Cost</strong></td>
<td>£15,273,347</td>
<td>£6,245,772</td>
<td>£9,027,575</td>
</tr>
<tr>
<td>(Estimated for overall construction, detail design and site supervision)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Add for Optimism Bias (25%)</td>
<td>£3,818,337</td>
<td>£1,561,443</td>
<td>£2,256,894</td>
</tr>
<tr>
<td><strong>Estimated cost (2011) including Optimism Bias</strong></td>
<td>£19,091,684</td>
<td>£7,807,215</td>
<td>£11,284,469</td>
</tr>
<tr>
<td>For projected costs at construction start date of 2021 assuming 3.8% inflation (current construction rate) Uplift would be 45%</td>
<td>£8,591,258</td>
<td>£3,513,247</td>
<td>£5,078,011</td>
</tr>
<tr>
<td><strong>Estimated cost (2021) including Optimism Bias (25%)</strong></td>
<td>£27,682,942</td>
<td>£11,320,462</td>
<td>£16,362,480</td>
</tr>
</tbody>
</table>
4.6.5 Cost Estimate Table for Possible Additional Provisions

<table>
<thead>
<tr>
<th></th>
<th>Whole Scheme</th>
<th>A428 Harlestone Road roundabout up to and including the proposed Grange Farm roundabout</th>
<th>Proposed Grange Farm roundabout to A5199 Welford Road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Cost at 2021</td>
<td>£2,200,000</td>
<td>£500,000</td>
<td>£1,700,000</td>
</tr>
<tr>
<td>If fill is not sourced locally <em>(See 4.2)</em></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Additional Costs associated with compensation payable to Network Rail &amp; Customers <em>(See 4.3)</em></td>
<td>£800,000</td>
<td>-</td>
<td>£800,000</td>
</tr>
<tr>
<td>Additional Costs for provision of open structure crossing of the River Nene <em>(See 4.4)</em></td>
<td>£725,000</td>
<td>-</td>
<td>£725,000</td>
</tr>
<tr>
<td>Additional Costs for additional off site landscaping to reduce visual impact <em>(See 4.5)</em></td>
<td>£100,000</td>
<td>-</td>
<td>£100,000</td>
</tr>
<tr>
<td><strong>Total Sum of Additional Costs</strong></td>
<td><strong>£3,825,000</strong></td>
<td><strong>£500,000</strong></td>
<td><strong>£3,325,000</strong></td>
</tr>
</tbody>
</table>
4.7 PROGRAMME

4.7.1 A simple bar chart programme has been included at Appendix 9 to depict typical timescales for a highway scheme of this scale.

4.7.2 The proposed highway would be subject to appropriate Planning Consents. The section of proposed road between A428 Harlestone Road and the proposed Grange Farm Roundabout may form part of the planning for the Northampton Kings Heath (Dallington Grange) SUE development, and appropriate agreement would need to be established.

4.7.3 It should be recognised that the programme assumes typical public consultation periods, compulsory purchase of land, development of Highways Orders and the presumption that a Public Inquiry process will be necessary.

4.7.4 Appropriate durations for required surveys, detailed design and construction are included within the programme at Appendix 9.
5 Conclusions

5.1 FEASIBILITY OF SCHEME

5.1.1 Based on the concerns and statements raised formally by both Network Rail and the Environment Agency, Option 1 (Appendix 1), passing under the railway, would be subject to objection by both of these statutory consultees.

5.1.2 With regard to engineering and construction, Option 2 poses less problems and constraints and consequently costs for Option 2 would be significantly lower than Option 1 in both construction and on-going maintenance.

5.1.3 Although Network Rail and the Environment Agency have specific requirements which would need to be included in the design of Option 2, this study demonstrates that it is possible to meet those requirements.

5.1.4 The Option 2 alignment ties in satisfactorily with the proposed roundabout at Grange Farm and a new roundabout junction at the A5199 Welford Road/Brampton Lane.

5.1.5 This study therefore concludes that the construction of the Northampton North-West Bypass, connecting the proposed roundabout at Grange Farm and the A5199 Welford Road, continues to be feasible.

5.2 SCHEME FUNDING

5.2.1 It is assumed that the cost of construction of the section of road between the A428 Harlestone Road and Grange Farm will be met by the developers of Northampton Kings Heath (Dallington Grange) as part of a planning condition or obligation.

5.2.2 The cost for construction of the section of road between Grange Farm and the A5199 Welford Road does have greater variables and unknowns and table 4.6.5 shows additional costs that may be required. Whether these additional costs will be realised, depends on negotiations with third parties.

5.2.3 The whole basic scheme cost at 2021 prices and including Optimism Bias is estimated at £27,682,942. (See 4.6.4)

5.2.4 An additional amount to the whole scheme cost at 2021 prices, if all additions were implemented, is estimated at £3,825,000. (See 4.6.5)

5.3 FURTHER INVESTIGATIONS

5.3.1 The main disadvantage of Option 2 would be the visual impact of the proposed road passing over the railway line from properties. This impact would be apparent to existing
dwellings in Kingsthorpe overlooking what is presently a mainly rural landscape with limited development, for example.

5.3.2 However, landscape mitigation could significantly reduce impact both directly (on and adjacent to the proposed highway) and indirectly (off site landscaping to adjacent housing and alongside Brampton Valley Way).

5.3.3 To both reduce costs of construction and mitigate impact to the environment during construction, sourcing of material for embankment fill has been assumed to be sourced from appropriate locations of development sites north and south of the railway. Early negotiations to secure agreement in principle, and necessary planning procedures, would require to be undertaken.

5.3.4 The principle of minimising development in the flood plain and construction of ‘open structures’ may be challenged by the Environment Agency and necessitate additional costs. In further developing the scheme early discussions with the Environment Agency on structure types should therefore be undertaken.

5.4 ALTERNATIVE OPTIONS

5.4.1 This study has been undertaken as an initial assessment to determine whether any alterations to the historic alignment of the North-West Bypass would be required within the context of a limited number of key constraints. As such, only a single horizontal option has been determined to demonstrate that these constraints can be accommodated.

5.4.2 For the purposes of promoting and consulting on highway proposals, it is generally accepted that alternative schemes are considered. Should scheme development continue, it is recommended alternative alignments are considered, in particular, any promoter should be cautious of prosecuting a scheme through a public inquiry process with no alternative options.

5.5 CONSULTATIONS

5.5.1 Statutory Consultees, along with owners, lessees, occupiers or tenants of land within a Compulsory Purchase Order, may object to the proposals, forcing a Public Inquiry.

5.5.2 Whilst early consultations have taken place with the Environment Agency and Network Rail, other statutory consultees will need to be consulted at an early stage.

5.5.3 Not all land required to construct Option 2 is owned by the Developers of the Northampton Kings Heath (Dallington Grange) and Northampton North of Whitehills (Buckton Fields) SUE sites and therefore, as potential statutory objectors, there should be consultations at the earliest opportunity with all relevant landowners.

5.5.4 A statutory objection would result in a Public Inquiry process being essential into the necessary Compulsory Purchase of land and necessary Side Roads Orders under the
Highways Act 1980. This is additional to the requirement to obtain planning approval for the scheme.

5.5.5 As part of the planning process, and any Public Inquiry, non-statutory objectors are generally afforded opportunity to be heard at the Public Inquiry process, if necessary.

5.5.6 The development of the scheme will require extensive public consultation and detailed surveys and studies will require commissioning. In particular, an Environmental Impact Assessment, Traffic Study and Engineering Evidence will require development in support of the scheme proposals, having regard to appropriate legislation.

5.6 IMPACT ON COSTS – DETAILED STUDIES

5.6.1 The main uncertainties with regard to costs that require early and detailed assessment are:

- The Environment Agency requirement for an ‘open structure’.
- Costs associated with possession of and compensation for the Railway.
- Securing local fill from land owners.
- Utility diversions/protection of BT Openreach apparatus in the Brampton Lane area.

5.6.2 Confirmation on the above should provide scope for reviewing the current high level of Optimism Bias included in the current estimate and discounting the additional costs referred to in 4.6.5.

5.6.3 With regard to the inflation estimate as a consequence of the extended period between this report and the anticipated start of construction in 2021, the compound figure is substantial at 45%.
Appendices
APPENDIX 1

Drg.No.S1096/001 rev.C

Option1 (Under railway)
APPENDIX 2


Option 2 (Over railway)
APPENDIX 3

Drg.No.S1096/003 rev.B

Photo Locations
APPENDIX 4

Drg.No.S1096/004 rev.C

Location of Sustainable Urban Extensions
APPENDIX 5

Drg.No.S1096/005 rev.B

Land Ownership
APPENDIX 6


Statutory Undertakers
APPENDIX 7

Meeting Notes

- Meeting with Network Rail on 7th July 2011
- Meeting with Environment Agency on 8th July 2011
- Letter from Environment Agency 15th July 2011
APPENDIX 8

Cost Estimate
APPENDIX 9

Indicative Project Programme