York Central Partnership

York Central

Access Options Study

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1 Introduction

1.1 Overview of York Central

York Central represents a major opportunity to create a new business district and to deliver a major housing development in the heart of York. This will enable the City of York to grow and deliver economic benefits for the wider City Region.

The site encompasses all of the land between the East Coast Main Line ('ECML'), York Railway station and the Freight Avoiding Lines ('FAL'). Owing to the shape that the ECML and the FAL create when viewed from the air, the site is commonly referred to "the Teardrop" area, to the west of York Railway Station.

The draft City of York Local Plan Preferred Sites Document (2016) identifies York Central as a 'Strategic Allocation' and identifies the site as being 72ha in size (with a net developable area of 35ha) and proposes it for the allocation of 1,500 dwellings (1,250 within the plan period) and 80,000 sqm of office led commercial space (Use Class B1a).

1.2 Context for this Study

This study has been prepared by Ove Arup and Partners ('Arup') on behalf of the York Central Partnership (hereafter referred to as 'YCP'). YCP is a collaboration between Network Rail (NR), the National Railway Museum (NRM), the Homes and Communities Agency (HCA) and City of York Council (CYC). Together, the Partnership is currently working to secure planning consent for the future use of York Central and coordinate the delivery of key infrastructure to enable the successful development of the site.

To be able to develop this large site to its best potential, an additional vehicular access is required into the site. Five potential points of access have been suggested in previous studies on the site and this study initially considers the achievability of all these options before shortlisting the more achievable options for further consideration. The purpose of the study is therefore to review the possible access options and to consider the achievability of these options. Within this process, regard has been given to:

- An overview of all options to inform which should be shortlisted; and
- An assessment of the respective constructability and potential environmental impacts of each shortlisted option.

It is important to recognise that this is not the first study to identify an access option for the York Central site, as previous studies have been undertaken by City of York Council. Whilst these previous studies have informed the basis of this study, this study has been commissioned by YCP to provide more clarity on the wider impacts of each option.

This study was undertaken between April and June 2017 and is based on information available at that time.

1.3 Options Considered

This study considers the potential options for accessing the site, as set out in Table 1. Appendix A and B of this study provide further detail on the likely design of these options and connections to the existing highway network. These represent the extent of options available and there are no other access options which have been suggested by YCP as part of the scoping of this study.

Table 1 Summary of Access Options

Access Option	Broad Summary of Option
Option A	• Creation of a new bridge span across the ECML parallel to the existing Water End bridge; • Creation of a new signalised junction at the eastern end of the existing Water End road bridge over the ECML; • A section of new road linking the signalised junction with a bridge over the ECML; • Provision of a new bridge over the ECML and embankment to take the road down to grade within the York Central site; and • A new road through the York Central site to link the bridge over the ECML to the western entrance to York Station and on to Leeman Road. A further link is provided to connect with the western end of Leeman Road.
Option B	• Modification to the existing junction between Holgate Park Drive and the A59 Poppleton Road; • A new section of road from the Holgate Park Drive/A59 Poppleton Road junction to a new bridge over the FAL, through the existing area of green-space off Holgate Park Drive; • A new bridge over the FAL and York Yard South; • A new road through the York Central site to link with the western end of Leeman Road; and • A new road through the York Central site to link the bridge over the FAL to the western entrance to York Station and on to Leeman Road.
Option C	• Modifications to the existing junctions on Holgate Park Drive; • A new bridge over the FAL, originating from the existing roundabout on Holgate Park Drive; • A new road through the York Central site to link with the western end of Leeman Road; and • A new link road to connect with the western entrance to York Station and the eastern side of Leeman Road.
Option D	• Modifications to the existing junctions on Holgate Park Drive; • A new bridge over the FAL, originating from the eastern side of Holgate Park Drive, to the west of Network Rail's Holgate Depot; • A new road through the York Central site to link with the western end of Leeman Road; and • A new link road to connect with the western entrance to York Station and the eastern side of Leeman Road.

Access Option	Broad Summary of Option
Option E	• Modifications to the existing junction on Holgate Road; • A new bridge over the FAL, originating from Holgate Road, running broadly parallel to Chancery Rise; • A new road through the York Central site to link with the western end of Leeman Road; and • A new link road to connect with the western entrance to York Station and the eastern side of Leeman Road.

Figure 1 identifies the broad location of each access option considered in this study.

Figure 1 Broad location of access options considered

1.4 Purpose of Study

To progress a planning application for the future use of the York Central site, the selection of a new access route is required. This is needed before work can begin to prepare the information that is needed to accompany an application.

The purpose of this study is to review the five options and then discount options which are not achievable, before objectively reviewing the shortlisted options for access into the York Central site.

All of the options considered have been developed to a consistent design level (plan and cross section) prior to shortlisting. The plan details are included as Appendix A.

The further consideration of each shortlisted option has taken into account engineering and environmental matters.

Given the site's overall size, the quantum of likely development and the nature of the neighbouring land uses, the approach to the shortlisted option review to a degree, mirrors the assessment approach taken in an Environmental Impact Assessment ('EIA'). For clarity, this document does not constitute an EIA, nor EIA scoping exercise. It only considers the impact along an access route option in isolation and not as part of a fully proposed development, and does not therefore consider cumulative effects.

It does however, consider the likely environmental implications that each access option could give rise to, providing YCP with an understanding of all of the potential implications to inform option selection. To support this process, where appropriate, the methodology for the study of the shortlisted options has followed a common methodology to an Environmental Impact Assessment. This has included the following stages:

- Baseline review of existing information, including the design details prepared for each shortlisted access option.
- Indication of survey requirements or data collected to support the assessment.
- Review of each shortlisted access option and assessment of unmitigated impact.
- Identification of any potential mitigation and assessment of residual (post-mitigation) impact.

1.5 Structure of Study

The outline study structure is as follows:

- **Section 2**: Overview of all options and shortlisting to discount those options which are not achievable.
- **Section 3 and 4**: An overview and summary assessment of the shortlisted options.
- **Sections 5 to 26**: Comparative assessment of the shortlisted options.
- **Section 27**: Conclusion and Next Steps.

1.6 History of Access Options

Between 2003 and 2016, a number of studies were undertaken to consider how to access the York Central site. The conclusions and commitments from this previous work are provided in the Table 2. Whilst this is a fresh look at the access options, an understanding of the historic body of work provides context to this study.

Table 2 A summary of the history of York Central's Access Options

Study	Date	Study Owner/ Commissioner	Summary of Proposed Access Arrangements	Conclusions and Commitments	Consultation Details & Comments
York Central Transport report for Stage 2 Masterplan.	June 2003	York Central Steering Group	Considers: • Potential western access from Water End; • Potential access from Holgate Road with bridge across FAL; and • Potential access from Holgate Road (east)/Queen Street with bridge across ECML.	• Modelling shows that the Water End link and the new Queen Street bridge link (combined with a link between Holgate Road and Queen Street) are required to provide adequate vehicular access into the site. This allows Leeman Road to be severed, which achieves the aim of reducing traffic through the Salisbury estate and breaking the barrier between the National Railway Museum's buildings. • The Holgate Park link cannot be provided instead of the Water End link as the Boroughbridge Road (A59) /Water End junction is pushed over capacity. The Holgate Park link can be provided with the Water End link, however the model shows that traffic is drawn from the Acomb Road through a residential area, therefore some further exploration is required to determine the best way to manage this. • Saturn Modelling based upon 1430 dwellings and 42,900m^2 of office space.	N/A
York Central Planning Brief	March 2004	City of York Council	No single access arrangement proposed, though Planning Brief notes broad locations where access might be taken from.	Planning Brief notes: • All potential access options will need to cross operational railway lines to connect with the external highway; • The potential to downgrade the existing route through Salisbury Terrace; • The potential to sever Leeman Road in the around the Railway Station to integrate the two separate National Railway Museum sites. • The site could provide 2/3 new road links for vehicles approaching from different directions. The potential locations for these access points are; adjacent to the Railway Station at Queen Street Bridge, in the vicinity of Water End and Holgate Park site. • Possible link from Holgate Park should not lead to deterioration in air quality on Holgate Road.	Planning Committee resolved that: • Revised YC Planning brief be agreed as Supplementary Planning Guidance to the Local Plan once adopted; • SPG to consider boundary revision to site to include the whole Railway Institute leased site.
Development Control Local Plan	November 2005	City of York Council	• Local Plan notes that "*The Leeman Road Relief Road will open up derelict Railtrack land for redevelopment and provide relief from traffic for the Leeman Road residential area".* • Vehicular access routes into the site are not set out spatially in the plan.	• It is important to note that the Leeman Road Relief Road is not defined spatially in proposals map, policy or appendices. • Proposals for new roads would have to demonstrate substantial benefits in terms of job creation or other effects on the local economy to be justifiable.	Executive Committee resolved to adopt the deposit draft Local Plan for development control purposes 12th April 2005.
York Central Transport Masterplan Study	November 2005	City of York Council	Study recommends: • A new bridge access over the FAL at Holgate Park, feeding directly into the signalised junction on A59 Poppleton Road. • A new bridge access over the southern section of the ECML at Queen Street, forming a new junction with the Inner Ring Road.	• At Holgate Park any bridge will need to span several sidings adjacent to the FAL. • At Queen Street the bridge will cross the southern 'throat' of the railway station platform approaches and will likely be an 'iconic' bridge. • The optimal combination of highway accesses is to provide bridges into the site from Holgate Park and Queen Street, but not from Water End. Traffic restriction measures will be necessary on Station Road. • Cycling and walking access will be provided at the two new highways entrances at Holgate Park and Queen Street.	Executive Committee resolved that: • Approval be given to review the proposed access arrangements and public transport provision against the strategies included within LTP2; • Further work to review the modal split and parking allocation within the planning brief be approved; and • Local community's views on access arrangements would be embedded into design. Local Plan was called in by strategic policy panel 19th January 2006 and Executive advised to endorse and confirm their earlier resolutions (i.e. those set out above).

Study	Date	Study Owner/ Commissioner	Summary of Proposed Access Arrangements	Conclusions and Commitments	Consultation Details & Comments
			• A series of accompanying Transport restrictions.		
York Northwest Area Action Plan (Issues & Options)	November 2007	City of York Council	As the document is an Issues & Options document, the content is high level and as such all options are included (A-F). The report sets out a range of potential access options (delineated indistinctly against a non OS base map)	• Significant discussion about the potential to establish a transport corridor through to the British Sugar site to the north west; • Water End, Holgate Business Park, Queen Street, Holgate Road/Acomb Road, Garfield Terrace, access route would be 'restricted access' only; • Water End access noted to have potential for 'Visual Intrusion', and notes potential loss of grassland on the Millennium Green; • Holgate Business Park access noted as having potential to adversely impact on surrounding residential areas; potential to increase congestion and air pollution; • Queen Street access point noted as having potential to remove existing Queen Street Bridge on Inner Ring Road; Option highlighted as having potential to unacceptably impact on the listed railway station and city walls; and • Holgate Road/Acomb Road access noted as requiring demolition of part of Thrall works.	Approved for public consultation.
York Northwest Transport Topic Paper	October 2010	City of York Council	Topic Paper considers many issues including the assessment of the high level, headline implications of different development and access scenarios.	Topic Paper notes: • The York Central access strategy will reduce through flow of general traffic to the city centre. • Two new vehicular access points were seen to be required; Water End and Holgate Business Park were identified through both the option appraisal process and detailed trip distribution and network impact modelling as the possible points of vehicular access into the site. • Restricting vehicular traffic through Leeman Road and providing public transport access at Marble Arch and/or Queen Street were shown through modelling to effectively stop undesirable through flows of traffic to and from the city centre and Inner Ring Road. • The topic paper does not however revisit the 'reference case' assumptions around site access (location or number of accesses).	Resolved that the Topic Paper would inform the evidence base for the Core Strategy document.
York Northwest Transport Masterplan	December 2011	City of York Council	Considers Access from Water End, Access from A59 Poppleton Road, and Access from Queens Street/Holgate Road.	The Masterplan notes: • The three preferred access options are taken forward for further consideration and a final selection be made in due course on the basis of community consultation, and sustainability appraisal; • The Water End access option should form part of a phased approach to accessing the site and be pursued further through planning and funding discussions. • The Water End access option should be phased as far back in the development as is possible owing to cost and potential intrusion reasons.	Members endorsed the proposed approach to accessing the York central site, the next steps to arriving at a preferred option, and the ultimate use of a preferred access approach to inform ongoing plan preparation development enquiries and public funding bids.
York Northwest Masterplanning and Infrastructure Study	June 2011	City of York Council	Study considers: • Access from Chancery Rise; • Access from Holgate Park; • Access from Water End; • Access through Leeman Road; and • Access over Queen Street Bridge.	Study suggests: • Chancery Rise noted as being suitable to provide a convenient access corridor toward the bridge crossing the rail lines into the development site. Possessions would be required to deliver the Chancery Rise Bridge, but study concludes that this is not considered onerous owing to the low frequency of rail freight traffic. • Future Network rail plans to develop additional sidings on the land to the west of the Holgate Works could significantly jeopardise the viability of providing an access corridor from the existing highway network into the development site (Holgate Park). • The length of highway from Water End to the ECML is elevated on a viaduct which results in a high cost solution. • Construction work in the Millennium Green area may be disruptive to this environment during the construction period and may require significant remedial landscaping proposals and careful management and mitigation during construction. • The demolition of the Queen Street Bridge would improve the overall appearance and setting of the City Walls, but study notes that there will be a need to close Queen Street for approximately 4 weeks whilst one stage of the works is being undertaken.	Resolved that the proposed approach to accessing the York Central site, the next steps to arriving at a preferred option, and the ultimate use of a preferred access approach to inform ongoing plan preparation development enquiries and public funding bids would be endorsed.

Study	Date	Study Owner/ Commissioner	Summary of Proposed Access Arrangements	Conclusions and Commitments	Consultation Details & Comments
2011/ 2012 Halcrow York Northwest masterplan and Infrastructure Study, and CYC 2011 York Northwest Transport Masterplan)	January 2013	City of York Council	Study considers: • Access from Chancery Rise; • Access from Holgate Park; • Access from Water End; • Access through Leeman Road; and • Access over Queen Street Bridge.	Update study recommends that: • A phased strategy prioritises an A59 access, to be augmented by a Water End access provided at a stage when development quanta/ type and associated vehicular trip generation warrant this. • The Water End access option form part of a phased approach to accessing York Central to be pursued further in planning and funding discussions.'	N/A
York Northwest Masterplanning and Infrastructure Study – Access Analysis	June 2013	City of York Council	Study Considers: • Holgate Park Drive Access; and • Chancery Rise Access.	Study Concludes: • The Holgate Park Drive option leads to better overall network performance than the Chancery Rise option; • Greater benefits are provided to A59 P&R bus services with the Holgate Park Drive option as services divert off the congested A59 corridor earlier than with the Chancery Rise option; and • Economic analysis indicates that with a low level of development Chancery Rise represents the best value for money; with a high level of development at the site Holgate Park Drive represents the best value for money over a 10 year appraisal period.	N/A
Publication Draft Local Plan York Central Extract 2014	September 2014	City of York Council	• Figure 3.4 of Draft Local Plan shows indicative access arrangements. Potential Road Access routes highlighted as being from Water End, Holgate Business Park and Chancery Rise. • City Centre Proposals Map indicates 'potential new bridge' from the top of Wilton rise into the development site. Proposals Map North indicated 'potential new bridge' in broad location of Chancery Rise access E.	• Annex E Transport Infrastructure Investment Requirements sets out York Central's access & Link Road as a 'public transport (bus)' scheme and 'Local Plan Infrastructure (Strategic Measure)'. • The study does not accurately plot this infrastructure on a plan.	Subsequent motion approved on the 25th September 2014 at Full Council to halt planned consultation on current (2014) Local Plan draft.
Air Quality Impact Assessment	November 2015	City of York Council	• Modelling work based upon Chancery Rise and namely Holgate Park Drive schemes. • Both options assume a full closure of Leeman Road and a bus gate on the new spine road, south of its junction with Leeman Road by Marble Arch.	• Assessment undertook more detailed modelling and analysis of air quality impacts across access options, and serves as an update to a June 2013 study. • Assessment concludes that there are only very slight differences in the air quality impacts between the two York Central access scenarios. • On balance, it is considered that the Chancery Rise Access option is the most favourable option in terms of air quality.	N/A
West Yorkshire Transport Fund Gateway 1 Report 2016	March 2016	City of York Council	Gateway 1 submission based around a detailed submission for the new signalised junction on the A59 Holgate Road and bridge over FAL at Chancery Rise.		West Yorkshire & York Investment Committee resolved that the York Central Access and Station Masterplan should progress through Gateway 1 and for expenditure to progress the project from Gateway 1 to Gateway 2 be endorsed.

1.7 Summary

An additional access is required in order to deliver the York Central site to its best potential. There is a historic body of work from 2003 to 2016 which has examined the potential ways to access the site. This study provides a fresh look at the potential access options, considering these from an environmental, engineering and value for money perspective. The approach to this study is an initial review of five options and a more detailed review of shortlisted options to allow YCP to make an informed decision.

2 Description of All Options

2.1 Overview

This section provides a detailed description of all five access options YCP identified for review in this study. Plan and elevation drawings of the options are included as Appendix A.

Option A: Water End to York Central

Option A comprises the creation of a new access from Water End to the west of the site. The access would connect to Water End to the northeast of the existing East Coast Main Line (ECML), adjacent to the existing Water End road bridge over the ECML. To the east of the access point lies open Green space (part of which is leased to the Leeman Road Millennium Green Trust), to the north lies an RSPCA Rescue Centre, with residential properties to the north east accessed via Salisbury Road and Bismarck Street.

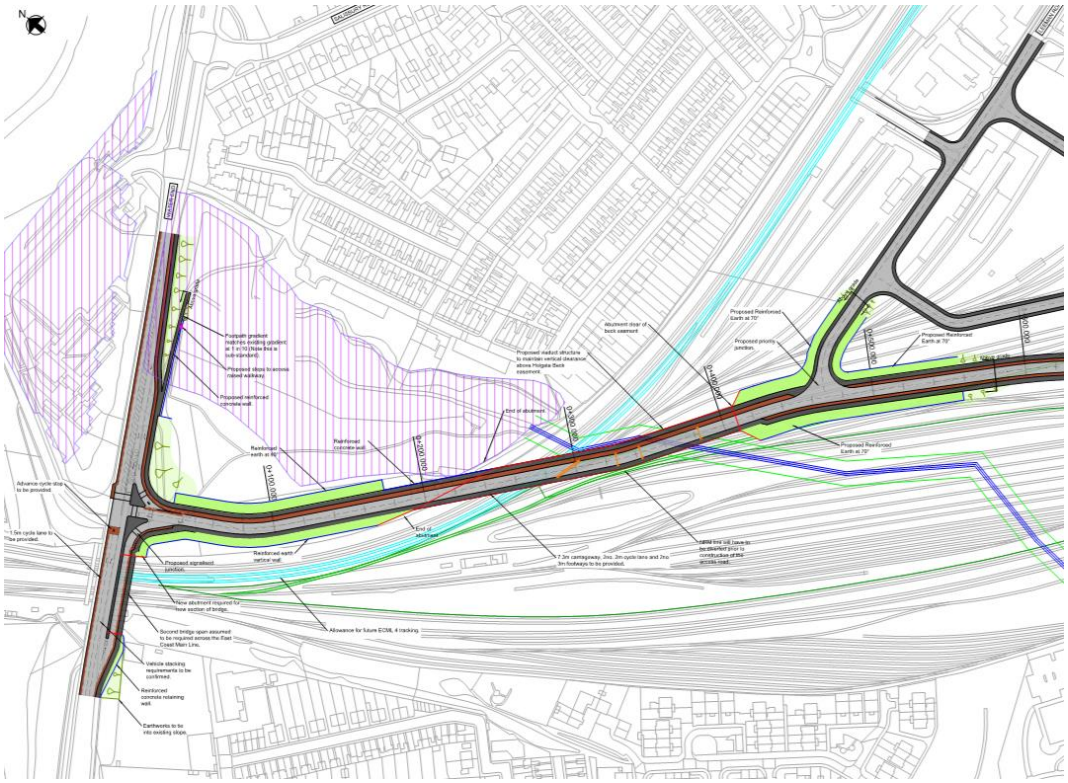
Option A would comprise:

- Creation of a new signalised junction at the eastern end of the existing Water End road bridge over the ECML, including a second bridge span over the ECML, parallel to the existing. This is required to provide additional carriageway space for dedicated right and left turn filter lanes at the junction. The junction arrangement is based on previous work undertaken by Halcrow.[1]
- A section of new road linking the signalised junction with a bridge over the ECML. This would be constructed on a reinforced earth embankment. To achieve this an existing Network Rail Global System for Mobile Communications – Railway (GSMR) signalling mast would require re-provision and removal and a highway access point for railway maintenance would need to be re-provided to Skelton Junction.
- Provision of a new multi-span bridge over the ECML and Holgate Beck, transitioning to embankment to take the road down to grade within the York Central site.
- A new road through the York Central site to link the bridge over the ECML to the western entrance to York Railway Station and on to Leeman Road. A further link is provided to connect with the western end of Leeman Road.

An overview of Option A is shown below. Illustrative plan and elevation drawings are presented in Appendix A.

[1] York Northwest Masterplanning & Infrastructure Study (Halcrow, June 2011)

Figure 2 Option A



Option B: Poppleton Road (West) to York Central

Option B connects into the York Central site over the Klondyke Sidings, FAL and York Yard South on the southern edge of the site and connects to the A59 Poppleton Road. The connection to the A59 is via an area of existing open green space (grassland) between residential properties on Damson Close/Hillary Garth and the existing Business Park accessed from Holgate Park Drive. A pedestrian connection runs across this open space to the adjacent residential development. On the frontage of the open space lies a commemorative arch, which also includes a section of metal railway track under the arch. This was constructed as part of a 'Planning for Real' exercise associated with the development of the adjacent Business Park.

On the south side of the A59 lies an existing residential area, with accesses onto Grantham Drive (north of Option B) and Tisbury Road (directly opposite Option B).

Option B would comprise the following:

- Modification to the existing A59 Poppleton Road / Holgate Park Drive junction including revision to the vertical and horizontal alignment of Holgate Park Drive. The indicative junction arrangement adopted, which has not been modelled at this stage, essentially replicates the current arrangement, with two exit lanes on to the A59.
- Creation of a new section of road across an existing landscaped area adjacent to the Gateway Business Park and the existing housing on Hillary Garth. To

provide sufficient clearance over the railway, this level increase would need to commence from the point where Holgate Park Drive meets the A59 Poppleton Road. Therefore, reinforced concrete retaining walls up to approximately 4m in height would be needed to prevent the embankment extending onto third party land.

- A new multi-span road bridge across the Klondyke Sidings, FAL and York Yard South.
- A roundabout, elevated above site levels by earth retaining structures, distributing traffic onto the site road network to the Leeman Yard area, and to the western entrance of York Railway Station and on to Leeman Road.

An overview of Option B is shown below. Illustrative plan and cross section drawings are presented in Appendix A.

Figure 3 Option B

Option C: Holgate Business Park (Central) to York Central

Option C would include a new access taken directly from the existing Business Park access road at Holgate Park Drive. This would be achieved by the creation of a new road connecting to the central roundabout on Holgate Park Drive, and crossing the Five Acre site. This is currently an area of scrub land which separates the Station Business Park from the Holgate Works site. It has been allocated by Network Rail to provide a new track fan to improve access to the Holgate Works, and to house the relocated Maintenance Delivery Unit (MDU).

It should also be noted that Gateway 2, to the north-west of the proposed access has a prior approval in place for the conversion of the office block to residential (CYC ref 15/00150/ORC).

Option C would comprise the following:

- Optimisation of existing signal timings at the current access junction to Holgate Park Drive.
- Construction of a new signalised junction on the A59 Poppleton Road to provide a second access point through to Holgate Park Drive, alleviating through traffic in the Business Park area. It has been assumed that this would comprise a single lane inbound (toward York Central) and two outbound lanes, as per design proposals for Option E which have been subject to traffic modelling. To avoid incursion in to the third party owned Station Business Park this would require the road junction to encroach on the Holgate Works traverser along with relocation of an existing electrical substation.
- Due to the need to increase road level to achieve sufficient clearance over the Holgate Works track fan, FAL and York Yard South, the level of Holgate Park Drive would be raised and the mini-roundabout removed and re-provided.
- Creation of a new section of road, raised above existing ground levels, across the Five Acre Site. A reinforced concrete retaining wall would be required to prevent encroachment onto third party land.
- A new multi-span bridge over the Holgate Works Track Fan, FAL and York Yard South sidings.
- A roundabout, elevated above site levels by earth retaining structures, distributing traffic onto the site road network to the Leeman Yard area, and to the western entrance of York Railway Station and on to Leeman Road.

An overview of Option C is shown below. Illustrative plan and cross section drawings are presented in Appendix A.

Figure 4 Option C

Option D: Holgate Business Park (East) to York Central

Option D includes the provision of an access on the eastern edge of Holgate Park Drive alongside the Holgate Works, and the provision of a new access (extending the existing spur at the end of Holgate Park Drive) onto the A59 Poppleton Road. This in effect creates a through route within Station Business Park, as well as creating a direct route into the York Central site. The new access would cross the Five Acre site. South of the new access, and on the opposite side of the A59, lies an existing residential area.

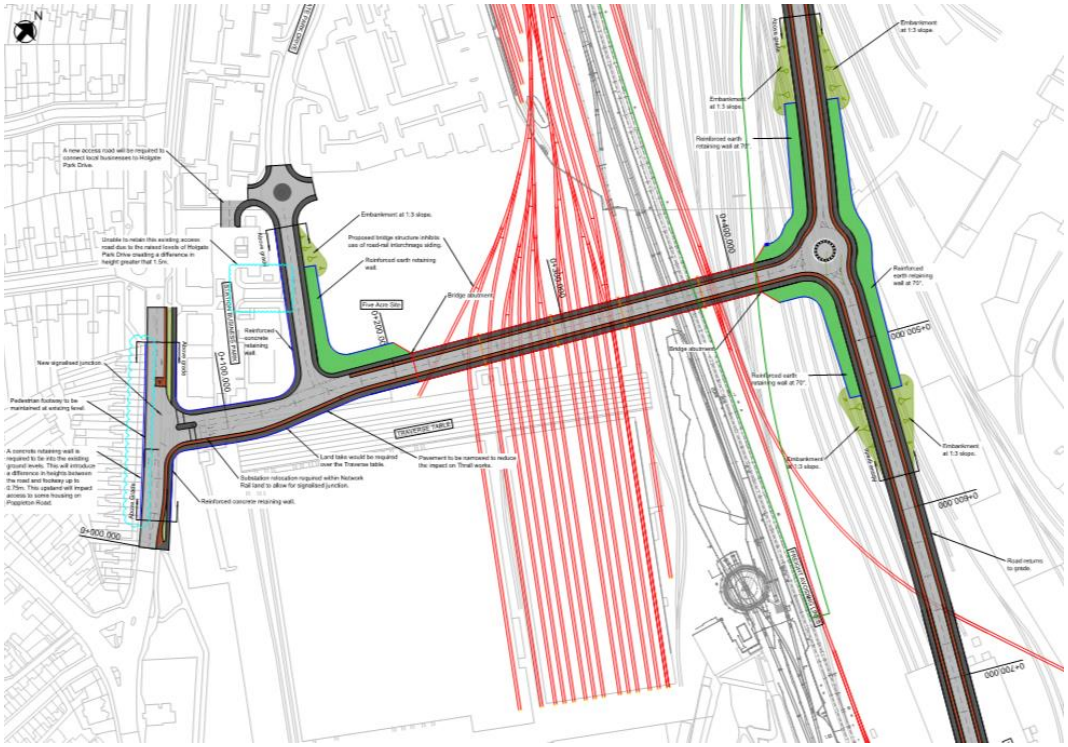
Option D would comprise the following:

- Construction of a new signalised junction on the A59 Poppleton Road to provide access through to Holgate Park Drive. The assumed geometry of this junction replicates that of Option C. This would involve raising levels on the A59 to allow the road link to reach sufficient vertical clearance over the proposed Holgate Works Track Fan. This would require construction of a retaining wall in front of existing residential properties. Relocation of an existing substation would also be required.

- Creation of a new section of road, raised above existing ground levels with earth retaining walls, across the Five Acre Site.
- Due to Network Rail's proposed plans for retention of sidings in York Yard South and proposed changes to the operation of the Holgate Works, a new multi-span bridge is required over the Five Acre Site, FAL and rail sidings.
- A roundabout, elevated above site levels by earth embankments, distributing traffic onto the site road network to the Leeman Yard area, and to the western entrance of York Railway Station and on to Leeman Road.

An overview of Option D is shown below. Illustrative plan and cross section drawings are presented in Appendix A.

Figure 5 Option D



Option E: Holgate Road to York Central

Option E creates a new access from the A59 Holgate Road, and runs to the east of the Holgate Works. This is in the vicinity of the Holgate Works/Chancery Rise Junction. To the east of the new access lies an existing residential area, and a playground which may be lost in the provision of the new access road (this could be re-provided as part of the York Central development). Residential areas also exist on the southern edge of Holgate Road, which also include the southern access of Chancery Rise (where a residential care home, language school and hotel take access from the A59).

Option E would comprise the following:

- Construction of a new signalised junction on the A59 Holgate Road. The signals at this junction would be linked with the signals at the A59 Holgate

Road – Acomb Road junction to optimise traffic flows. The geometry of this junction is based on previous transport modelling and design work.[2] The existing section of Chancery Rise to the northeast of the junction would be stopped up. It is assumed that a bus priority lane would be provided to the rear of the Fox Inn, with space being available to achieve this (as opposed to other options where it is not).

- A new section of at-grade road to the southeast of Holgate Works, subsequently rising above grade on an earth retaining wall and earth embankment on the approach to a proposed road bridge. A retaining wall is provided at the boundary of the Holgate Works to enable the road to be moved away from neighbouring residential properties.
- A new single span road bridge over the FAL and lines serving the turntable, transitioning to a road elevated on earth retaining walls before returning to grade within the York Central site.
- A new link road to connect with the western entrance of York Railway Station and on to Leeman Road, and a second link to connect to Leeman Road via the Leeman Yard area.

An overview of Option E is shown below. Illustrative plan and cross section drawings are presented in Appendix A.

Figure 6 Option E

[2] York Central – Stage 1 Transport Appraisal (Draft) (Arup, 2016)

3 Stage 1: Initial Shortlisting

3.1 Introduction

As any access into the York Central site requires crossing railway land, it was agreed with YCP that an initial review would be undertaken of all five options to determine whether there were any significant constraints on their delivery. This has been a qualitative consideration, based upon the following factors:

- Conflict with operational rail uses (existing or planned operations) has been considered to be a 'showstopper' for particular access options.
- Consideration of neighbouring uses, including how this may impact on the ability to deliver and operate the particular access option.
- The compatibility of the access options with the emerging masterplan. The masterplan will evolve through the preparation of the York Central development proposals and will be used to prepare outline parameter plans for a future planning application.

All design options have been drawn up in plan and cross-section form to the same level of detail to inform both the initial shortlisting and subsequent engineering and environmental review set out in Stage 2 of this study.

Option A: Water End to York Central

Option A entails provision of a new access to the site from Water End, across the ECML. The broad location of Option A is shown on the image below.

Figure 7 Image showing broad location of Option A

Key considerations for Option A are as follows:

Conflicts with Operational Rail Uses

- The presence of the existing Network Rail GSMR mast within the proposed road alignment poses a cost and programme risk. Used for railway signalling,

the location of this has been chosen to allow the signalling to operate on a line of sight basis over a large geographical area. It would need to be removed and relocated to accommodate the proposed bridge alignment, with the cost and timescales associated with this currently unknown. As a key part of existing railway infrastructure, this would need to be undertaken prior to the construction of the new access (and removal of the existing mast).

Consideration of Neighbouring Uses

- There are no potential conflicts with residential or business uses at the edge of the site where the access meets the existing highway.
- The proposed access road is adjacent to Millennium Green, which currently provides amenity open space for local residents. This would be adversely impacted by the construction of the road, which would require construction access and temporary land take within the amenity space (it is assumed this can be agreed with the Millennium Green Trust through negotiation), along with noise, dust, etc. during the works.
- Option A would cross over land within Flood Zone 2. Whilst development in Flood Zone 2 is sequentially preferable to Flood Zone 3, options for development within Flood Zone 2 will still need to be sequentially tested. This is a common feature for options A, B, C, D and E and therefore it is not considered further at this stage.

Compatibility with Emerging Masterplan

- The construction of a new bridge over the ECML with a clearance of 5.7m over the railway line to carry the proposed site access road. With a span of approximately 70m it is assumed that this tied arch bridge would need to be installed during a 56 hour Christmas possession of the ECML. The typical lead-in time for such a possession is understood to be 2 years.
- To allow the access road to transition down to grade, land would be required to accommodate earth retaining structures.
- The assumed vertical clearance above the ECML is based on currently published Network Rail technical standards. Discussion with Network Rail Asset Protection has highlighted a risk that this requirement may increase to 7.8m to accommodate electrification upgrades to provide 140mph running on the ECML. This would involve a resultant increase in height of the bridge approach embankments and structures, entailing higher cost and greater visual impact. Whilst this risk could also apply to bridges over the FAL, it is considered to be more elevated in this case, where bridging over the main line is proposed. However, for the purpose of this study, we have assumed a 5.7m clearance on all options as the current requirement.
- To allow provision of a new right turn lane on the existing bridge structure, it would be necessary to install a second span parallel to the existing bridge structure.
- Given the proximity of the Millennium Green area to the River Ouse and the Holgate Beck, the capacity of the existing ground could be limited due to the existing water table and presence of softer ground which may include alluvial

deposits. The capacity of the existing ground to accommodate earthworks of the scale proposed is not known and there is a risk that ground improvement could be required or a piled foundation would be needed below the embankments.

Shortlisting Outcome

Option A is generally compatible with operational rail uses. It would have an impact on neighbouring uses in terms of the amenity use of Millennium Green, and agreement would need to be reached with Millennium Green Trustees over various aspects including temporary and permanent land take. The impact on the emerging masterplan and developable area is limited, and the option preserves the emerging masterplan principles of a linear park and sustainable movement framework.

It is proposed that Option A be taken forward to the options shortlist for further consideration.

Option B: Poppleton Road (West) to York Central

Option B provides a new access located on open space between the Station Business Park and residential properties. The broad location of Option B is shown on the image below.

Figure 8 Image showing broad location of Option B

Key considerations for Option B are as follows:

Conflicts with Operational Rail Uses

- It is assumed that a multi-span bridge of approximately 170m would be provided. This would limit visual impact of the scheme (as opposed to a tied arch bridge, for example). However, the overall span across operational railway limits constructability. In particular, the need to install piers within such an environment would result in elevated risk and cost, and is likely to entail limitations on the operational use of existing sidings, in order to provide construction access and working room. Installation of the deck components would be challenging, with cranage options constrained by the operational railway. Space for fabrication and segmental launching of the bridge deck (as an alternative to craning in to place) is also constrained, particularly in the Business Park area, and this would also add to programme duration as permanent earthworks and highway construction could not be commenced until the deck was in place. This option would also result in a greater maintenance requirement for the bridge owner (assumed to be the Highway Authority).

Consideration of Neighbouring Uses

- This option would require alterations to the main access into the Station Business Park, which with no alternative access point would generate disturbance to existing business operations. In particular, the vertical realignment of Holgate Park Drive, which would need to be raised by approximately 3m to accommodate surface level changes on the approach to the proposed bridge, would entail significant complexity. It is considered infeasible to undertake this work with the road still open to traffic, necessitating the provision of an alternative access point (e.g. from the A59 Poppleton Road alongside the Holgate Works). This in itself would entail

additional cost and complexity, including the need to relocate the existing electrical substation and construct a new junction arrangement (as per Options C and D), which would be subsequently rendered redundant. The boundary of the Holgate Works facility would constrain the space available for construction of this junction, resulting in reduced capacity, greater delay and increased impact on the existing users of Station Business Park during the course of the construction works.

- This option would result in the loss of existing green space. New green space will be required as part of the York Central development. There would be minor severance of pedestrian routes between the residential area and the Business Park, but this would be minor in nature and could be diverted onto the A59 Poppleton Road frontage. Conversely, it would improve pedestrian access between the Business Park and York Railway Station.
- Whilst the proposed horizontal alignment of the access road seeks to avoid third party land take, the practicalities associated with constructing retaining walls adjacent to third party land should be taken in to account, with this being difficult to achieve without means of access. Similarly, the need to divert and maintain utility supply connections to existing premises over the course of the works would entail further complexity, leading to elevated risk, extended programme duration and increased cost.
- Construction of retaining walls will be in close proximity to existing premises. Whilst some screening is provided by existing vegetation at the rear of the properties on Hillary Garth, this is likely to be impacted by the proposed construction works and subsequent shading by the embankment structure. Views and daylighting to the west facing elevations of the Business Park would be adversely impacted, particularly at ground floor level.
- On the basis that York Yard South will not be available for development in the near term, this would increase the span of the bridge and impact on neighbouring resident's outlook.
- The open space provision currently hosts public art which was constructed to commemorate previous uses associated with the business park site. The art would need to be relocated or removed to facilitate the access construction which may generate some resistance from neighbouring residents.

  The access would be shared with the Business Park. From review of aerial images, there appears to be parking on the Business Park on street and within existing stubs off the central roundabout on Holgate Park Drive. There is the potential for spill over parking from the business park to either utilise the access road for parking or seek to park within the York Central site, which may cause conflict with York Central users or occupiers. There is a prior approval for residential consent associated with one of the office buildings fronting Poppleton Road, which may increase pressure on parking associated with the future residential use.

Compatibility with Emerging Masterplan

- The new road into the York Central site would land within the Green spine proposed through the site (as a consequence of having to clear York Yard

South). The need to provide extensive earthworks and/or retaining structures in this proposed parkland area would result in both physical and visual severance on this east-west axis, disrupting the pedestrian and cycle connections proposed through the heart of the scheme, limiting the ability to integrate development in the Leeman Yard area with the remainder of the site.

- The road corridor would result in the reduced potential developable area.

Shortlisting Outcome

The length of the proposed bridge span over operational railway presents a significant constraint in terms of both construction and maintenance of the highway access. This is compounded by the need for extensive works to both horizontally and vertically realign Holgate Park Drive. Option B would create significant disruption to existing business uses, adversely impact on amenity for adjacent existing and planned residential uses, and would result in the loss of existing green space and public art. It could have an impact on the emerging masterplan principles and ability to deliver an integrated scheme that incorporates a sustainable movement framework. It is not regarded as a potential option for consideration at Stage 2.

Option C: Holgate Business Park (Central) to York Central

Option C takes the access point from the central roundabout on Holgate Park Drive, via the Station Business Park. It also creates a second access point onto Holgate Park Road from Poppleton Road. The broad location of Option C is shown on the image below.

Figure 9 Image showing broad location of Option C

Key considerations for Option C are as follows:

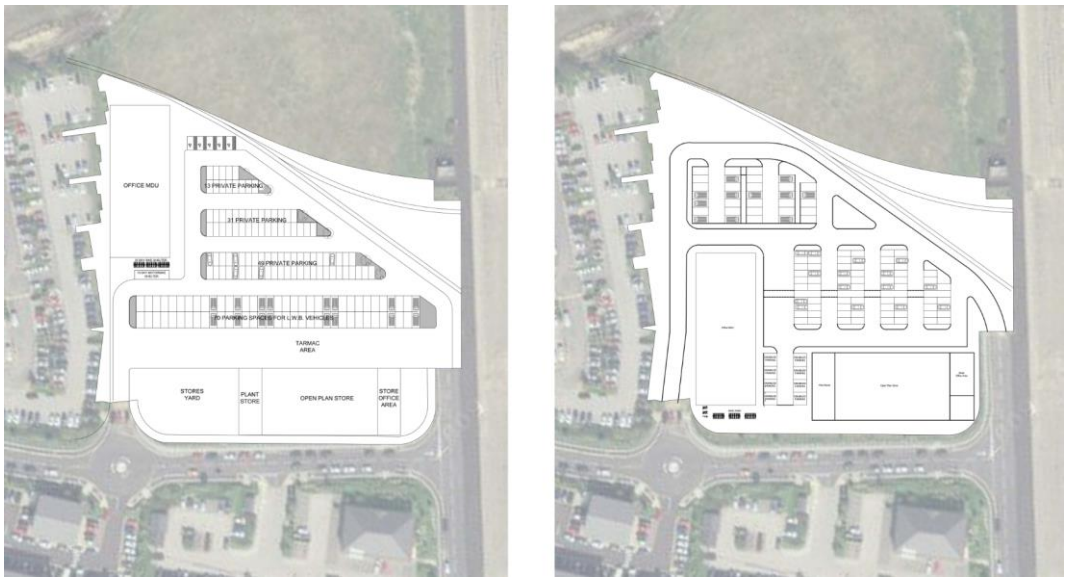
Conflicts with Operational Rail Uses

- It is assumed that a multi-span bridge of approximately 140m would be provided. This would limit visual impact of the scheme (as opposed to a tied arch bridge, for example). However, the overall span across operational railway limits constructability. In particular, the need to install piers within such an environment would result in elevated risk and cost, and is likely to entail limitations on the operational use of existing sidings, in order to provide construction access and working room. This issue would be further exacerbated in the event that Network Rail completes the proposed Holgate Works Track Fan in advance of construction of the new highway access. Installation of the bridge deck components would be challenging, with cranage options constrained by the operational railway. Space for fabrication and segmental launching of the bridge deck (as an alternative to craning in to place) is also constrained, particularly owing to the proposed relocation of Network Rail's MDU to the Five Acre site.
- It is noted that MDU relocation is necessary to provide vacant possession of developable land of the emerging masterplan and permit early commercial development at York Central. Network Rail's proposed MDU relocation (refer Figure 10) would also be adversely impacted by the provision of an access road in this location, which would result in the access road either crossing the proposed location of Network Rail's office space, or the presence of retaining walls directly adjacent to it. Whilst Network Rail could revise their proposals, the net impact would be a reduction in developable area. In the event that the

MDU is relocated prior to construction of the access road, its presence will constrain construction operations.

- To construct the proposed junction with the A59 whilst avoiding third party land take in the Station Business Park area, part of the Holgate Works traverser would need to be taken out of operation and the land given over to highway use. This would result in loss of operational capability for Holgate Works to be able to maintain rail vehicles.

Figure 10 Illustrative Proposals for Network Rail MDU (Network Rail Building Design Group, provided March 2017)



Consideration of Neighbouring Uses

- The principle of a second access to the Business Park has not been tested or subject to discussions with CYC Highways Department. Whilst modelling of the existing Holgate Park Drive / A59 junction has not been undertaken as part of this study, previous analysis[3] indicated that the junction was likely to exceed capacity. Omission of the second access would avoid conflict with Network Rail operations, however this would result in increased disruption and traffic delay to the general public as well as users of Station Business Park (as per option B) and the York Central site.
- This option would require vertical realignment of the existing roundabout on Holgate Park Drive, which would need to be raised by approximately 2m to accommodate surface level changes on the approach to the proposed bridge. Access to the majority of Station Business Park could be provided from either end of Holgate Park Drive, following construction of the new junction on the A59. However, access to the existing premises off the southwestern arm of the roundabout would prove difficult to maintain and permanent reconfiguration of the existing car park access may be required. This would require negotiation and agreement with the third party landowner and tenant.

[3] York Northwest Masterplanning & Infrastructure Study (Halcrow, June 2011)

- The vertical realignment of Holgate Park Drive would require the construction of retaining walls at the highway boundary. The practicalities associated with this should be taken in to account, with this being difficult to achieve without means of access. Similarly, the need to divert and maintain utility supply connections to existing premises over the course of the works would entail further complexity, leading to elevated risk, extended programme duration and increased cost.
- The access would be shared with the Station Business Park, which does not offer a clear entrance to the new YCP development from the existing Highway network. From review of aerial images, there appears to be parking on the Business Park on street and within existing stubs off the central roundabout on Holgate Park Drive. The entrance point to the York Central site does not have any presence on the A59, and there is no apparent gateway into the site. This may cause disruption with Business Park users and traffic. There is the potential for spill over parking from the Business Park to either utilise the access road for parking or seek to park within the York Central site, which may cause conflict with York Central users or occupiers. There is a prior approval for residential consent associated with one of the office buildings fronting Poppleton Road, which may increase pressure on parking associated with the future residential use.

Compatibility with Emerging Masterplan

- The new road into the York Central site would land within the Green spine proposed through the site (as a consequence of having to clear York Yard South). The need to provide extensive earthworks and/or retaining structures in this proposed parkland area would result in both physical and visual severance on this east-west axis, disrupting the pedestrian and cycle connections proposed through the heart of the scheme, limiting the ability to integrate development in the Leeman Yard area with the remainder of the site.
- The road crosses potential developable land.

Shortlisting Outcome

Construction and maintenance of Option C entails a significant degree of complexity in relation to existing and proposed operational rail uses, and is constrained by Network Rail's proposed MDU facility (it would also constrain Network's Rail future construction of the MDU facility). It would have adverse impacts on the Station Business Park both during and after construction, and the feasibility of the option is dependent upon reaching agreement with third parties outside the control of YCP.

With limited scope to provide increased junction capacity, the traffic impacts of the scheme cannot be readily mitigated at a local level. It could have an impact on the emerging masterplan and ability to deliver an integrated scheme that incorporates a sustainable movement framework. It is not regarded as a potential option for shortlisting.

Option D: Holgate Business Park (East) to York Central

Option D creates a new access direct from Poppleton Road to the west of the existing Holgate Works. The broad location of Option D where it would connect with Poppleton Road is shown in the image below.

Figure 11 Broad location of where Option D would connect with Poppleton Road

Key considerations for Option D are as follows:

Conflicts with Operational Rail Uses

- To construct the proposed junction with the A59 whilst avoiding third party land take in the Station Business Park area, part of the Holgate Works traverser would need to be taken out of operation and the land given over to highway use. This would result in loss of operational capability for Holgate Works to be able to maintain rail vehicles.
- As part of the proposed reconfiguration of the Holgate Works, Network Rail propose to install a new fan of sidings ("track fan") across the Five Acre site. This will include a road-rail interchange point to allow movement of rolling stock by road. The proposed road alignment conflicts with this arrangement, and with Network Rail's intended future relocation of operations from the York Central site.
- It is assumed that a multi-span bridge of approximately 200m would be provided. However, the overall span across operational railway limits constructability. In particular, the need to install piers within such an environment would result in elevated risk and cost, and is likely to entail limitations on the operational use of existing sidings, in order to provide construction access and working room. This issue would be further exacerbated in the event that Network Rail completes the proposed Holgate Works Track Fan in advance of construction of the new highway access. Installation of the bridge deck components would be challenging, with cranage options constrained by the operational railway. Space for fabrication and segmental launching of the bridge deck (as an alternative to craning in to

place) is also constrained, particularly owing to the proposed relocation of Network Rail's MDU to the Five Acre site.

- It is noted that MDU relocation is necessary to provide vacant possession of the land and permit early commercial development at York Central. Network Rail's proposed MDU relocation (refer Figure 10) would also be adversely impacted by the provision of an access road in this location. Whilst Network Rail could revise their proposals, the net impact would be a reduction in developable area. In the event that the MDU is relocated prior to construction of the access road, its presence will constrain construction operations.

Consideration of Neighbouring Uses

- To achieve sufficient vertical clearance above Network Rail's proposed Holgate Works track fan whilst maintaining an acceptable maximum gradient on the approach embankment (assumed to be 6%), the A59 Poppleton Road itself would need to be vertically raised by approximately 1m. This would include the need to provide a retaining wall where the kerbline is presently located on the western side of the road. The road would then be elevated, with the footway retained at existing level. A parapet would be required atop the retaining wall. This would constrain access to existing residential properties, cause widespread disruption during the course of the works, entail significant additional cost and likely diversion of major utilities, present an adverse visual impact and detract from the public realm and streetscape. For similar reasons relating to the inability to accommodate the change in vertical geometry, this option was considered infeasible during previous option appraisal work.[4]

- This option would require vertical realignment of the priority junction and accesses to car parks on Holgate Park Drive, to accommodate surface level changes on the approach to the proposed bridge. Access to the existing premises off the southwestern arm of the roundabout would prove difficult to maintain and permanent reconfiguration of the existing car park access may be required. This would require negotiation and agreement with the third party landowner and tenant.

- The vertical realignment of Holgate Park Drive would require the construction of retaining walls at the highway boundary. The practicalities associated with this should be taken in to account, with this being difficult to achieve without means of access. Similarly, the need to divert and maintain utility supply connections to existing premises over the course of the works would entail further complexity, leading to elevated risk, extended programme duration and increased cost. Given the height of the proposed retaining walls, issues are likely to be encountered in terms of visual impact and daylighting to existing premises.

Compatibility with Emerging Masterplan

- The new road into the York Central site would land within the Green spine proposed through the site (as a consequence of having to clear York Yard South). The need to provide extensive earthworks and/or retaining structures

[4] York Northwest Masterplanning & Infrastructure Study Update (Halcrow, 2013)

in this proposed parkland area would result in both physical and visual severance on this east-west axis, disrupting the pedestrian and cycle connections proposed through the heart of the scheme, limiting the ability to integrate development in the Leeman Yard area with the remainder of the site.

- The road corridor crosses potential developable land.

Shortlisting Outcome

The impact of achieving the necessary vertical clearance above the Holgate Works Track Fan on the A59 Poppleton Road, in terms of the vertical realignment required, would be significant and on this basis this option is considered infeasible.

Whilst Option D may be challenging in terms of delivery, it does provide the benefit of a direct access from Poppleton Road and visibility of the York Central site. However, views from the access into the site would principally be of the adjacent Holgate Works, which may affect the gateway experience and arrival into the site.

Furthermore, construction and maintenance of Option D entails a significant degree of complexity in relation to existing and proposed operational rail uses, and both constrains, and is constrained by, Network Rail's proposed MDU facility and Holgate Works Track Fan. It is also considered unacceptable to Network Rail in terms of the impact it would have on the operation of the Holgate Works and the land take required to provide the new junction.

There could be an impact on the emerging masterplan principles and ability to deliver an integrated scheme that incorporates a sustainable movement framework.

It is not regarded as a potential option for shortlisting.

Option E: Holgate Road to York Central

Option E provides a new access route via land to the east of the Holgate Works Rise. The broad location of Option E is shown in the image below.

Figure 12 Broad location of where Option E would connect with Holgate Road

Key considerations for Option E are as follows:

Conflicts with Operational Rail Uses

- There are no known conflicts with operational rail uses.
- Provision has been made in the design of this option for a vehicle access from the proposed new access road to the Holgate Works site, for occasional use by Network Rail. The land transfer boundary, which the proposed design respects, has been informed by Network Rail's requirement to turn articulated lorries in the space between the Holgate Works building and the road.
- A single span bridge of circa 45m can be provided across the FAL and access lines to the turntable. This avoids the need to construct bridge piers within the operational railway. It is considered feasible to either crane the bridge deck in to place or launch it from within the site.

Consideration of Neighbouring Uses

- The access would necessitate the removal of an existing playground on the edge of the York Central site. This could be re-provided within the York Central site as part of the public open space provision, or it may be possible to identify other relocation options nearby.
- The proposed access road would pass close to existing residential properties accessed from Cleveland Street and Upper St Paul's Terrace. This presents adverse impacts in terms of noise, air quality and visual impact, with a need for an earth retaining structure (reinforced concrete wall) to support the proposed access road across the north-western end of Cleveland Street. Based on the indicative proposals, this would be approximately 1.0m in height. There would also be a loss of existing vegetation to the rear of some properties at the north-western end of Cleveland Street. Visual and environmental mitigation

for the development would be considered as part of the environmental assessment accompanying a future planning application should this option be taken forward as part of York Central.

- The proposed access road also passes to the rear of existing residential properties on Wilton Rise, which may again present adverse noise and air quality impacts. Noise and air quality considerations will be considered further as part of Stage 2 on shortlisted options.
- The proposed junction arrangement on the A59 Holgate Road does not currently provide for access and egress from York Bridge Club on the eastern corner of the junction, and this requires further consideration as part of the overall design. This would be considered as part of detailed design development if option E is taken forward as part of York Central.

Compatibility with Emerging Masterplan

- The road corridor would result in a potential reduced developable area.

Shortlisting Outcome

Option E does not have any adverse impact on operational rail uses. It can be delivered within land controlled by YCP and is not subject to any long term leases that are likely to present a challenge or require negotiation with third parties. It would see the loss of an existing community facility and be located close to residential properties, presenting potential issues in relation to noise, air quality and visual impact in particular. There would be a reduction of developable area.

It is proposed that Option E be taken forward to the options shortlist for further consideration.

3.2 Stage 1: Conclusions and Further Assessment

Table 3 provides an overview of the options to be discounted and the options to be brought forward for further assessment in Stage 2.

Table 3 Summary of Stage 1 Assessment

Access Option	Stage 1 Assessment
Option A: Water End to York Central	Requires further assessment: shortlisted
Option B: Poppleton Road (West) to York Central	Discounted due to conflicts with multiple adjacent existing planned and proposed uses, and loss of community facilities; as well as significant construction issues associated with York Yard South future uses and impact on Green link through York Central. It would have significant amenity issues for adjacent residential development.
Option C: Holgate Business Park (Central) to York Central	Discounted due to conflicts with multiple adjacent existing planned and proposed uses, lack of gateway entrance; as well as significant construction issues associated with York Yard South future uses. The inclusion of a second junction onto Poppleton Road would conflict with Network Rail planned operations and has not been subject to detailed discussions with CYC Highways. Concerns exist about the potential capacity to support this additional junction.
Option D: Holgate Business Park (East) to York Central	Discounted due to potential conflict with Business Park operations, impact on A59 and Network Rail operations. Partly affected by future York Yard South discussions but not to the same degree as Option B and C.
Option E: Holgate Road to York Central	Requires further assessment: shortlisted

4 Stage 2: Review of Shortlisted Options: Methodology

4.1 Methodology

Stage 2 of this study provides further detail on and review of the shortlisted options in terms of engineering, environmental and value for money considerations.

This has included a technical review of the engineering or 'constructability' of each shortlisted option and an environmental review, which includes consideration of potential transport, air quality, heritage, townscape, noise, ecology, community and placemaking and flood risk resulting from each shortlisted option. Each subject has been considered by an appropriately qualified professional and appraised akin to the process used when drafting and Environmental Impact Assessment. This information is presented in sections 6 to 26 of this study and supporting appendices provide the methodological approach and technical data for each subject, where appropriate.

This study also considers whether impacts could be partly reduced by the addition of mitigation. It should be noted that this study is based on the theoretical delivery of the access option only (i.e. without the wider York Central development proposals) and therefore it represents a comparison of the shortlisted access options only. There may be additional mitigation which could be incorporated into the development to reduce the overall impacts associated with the choice of access. This will be informed by technical assessment to support future planning applications.

4.2 Approach to Environmental Overview

Each shortlisted option has been assessed in terms of constructability to provide the baseline information for review by the environmental professionals. A consistent quantum and rate of development have been assumed to inform the review for the purpose of this study only. The environmental overview has been undertaken using a similar methodology to the assessment work undertaken by the professional team in preparing an Environmental Impact Assessment and the following steps have been followed for each environmental subject:

- Overview of existing baseline conditions.
- Identification and completion of any necessary survey information to support the assessment.
- Review of the shortlisted options and consideration of impacts which may arise from the shortlisted access option being implemented. This is independent of the assessment of the full York Central development, which will be subject to assessment as part of a future planning application.

- Where adverse impacts have been identified, consideration of whether there is any mitigation which could be implemented in relation to the shortlisted access option to reduce the impact.

This assessment is reported in technical chapters, by subject. No one environmental topic has been weighted over others as this study provides a factual overview of all issues to inform YCP in their decision making process on the choice of access option.

The results of this are summarised in Section 5 of this study by shortlisted access option. In order to provide an interpretation of the assessment and assist YCP in the future decision making process, the summary tables in Section 5 utilise a red/amber/green rating to visually represent the extent of the impacts. These can be interpreted as follows:

- Red = Major adverse impact.
- Amber = Minor or moderate adverse impact.
- Green = Neutral/Negligible impact and any positive impacts.

The summary tables represent the assessment without mitigation. The residual impact with mitigation has also been recorded in the summary table. This approach of recording the impact 'without and with mitigation' follows a similar approach to the methodology carried out in the preparation of an Environmental Impact Assessment.

4.3 Comparative Assessment

Section 6 of this study provides a comparative assessment to identify the key differences between the two shortlisted access options. This section has been developed to assist YCP in considering the next steps and potential access option to take forward in any subsequent planning application. This differs from the methodology which would normally be undertaken in an Environmental Impact Assessment, but is provided for ease of reference and as a guide to the subsequent technical chapters.

5 Shortlisted Options: Summary Information and Comparison

5.1 Introduction

The engineering and environmental information is drawn together in summary tables for each shortlisted option and a Red, Amber or Green criteria has been assigned to indicate the impact of the option against a given subject. The criteria and rating is set out in the example table below.

Table 4 Example Red/Amber/Green Rating and Level of Impact

Rating	**Level of Impact**
Red	Major Adverse Impact
Amber	Moderate or Minor Adverse Impact
Green	Negligible Impact, Neutral or Positive Impact

For clarity, no one subject has been valued over another and the information is presented transparently to show YCP how each of the shortlisted options performs in a given category.

A final summary table compares the shortlisted options together and states which performs most optimally/ has the least impact against each subject.

The summary tables are presented first, but should be read in conjunction with the information provided in sections 2 to 25. Section 5 therefore represents a summary of the detailed assessment in subsequent sections.

It should be noted that this study only focuses on the comparative nature of the two access options which have been shortlisted. It is not an overall assessment of the York Central scheme. This will be fully considered within the Environmental Impact Assessment accompanying any future planning application.

5.1.1 Access A: Water End to York Central, Summary Table

Table 5 Summary Table of Access A Overview

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
Constructability	**Existing Water End bridge** • To provide a new road junction a right turn lane is required on Water End to permit movement of through traffic. • The width of the existing bridge constrains the ability to achieve this without either widening the bridge or moving the junction further to the northeast, impacting on Millennium Green.	Moderate adverse impact	Install an additional span on the bridge, parallel to the existing, to carry a single carriageway, cycle lane and footway. This permits provision of a third traffic lane (right turn lane) across the existing bridge. The capacity of the existing Water End bridge structure to carry additional traffic loading will be subject to structural analysis.	Minor beneficial impact
	Poppleton Road Primary School To construct the second bridge span across the ECML and tie the new vehicle lane back in to the existing carriageway, widening of the existing Water End embankment would be required adjacent to the existing school playing fields.	Moderate adverse impact	A reinforced concrete retaining wall is proposed to retain the widened carriageway within the limits of existing adopted public highway.	Negligible
	Network Rail GSMR mast An existing Network Rail GSMR telecommunications mast is located within Network Rail owned land to the north of the ECML, within the proposed road corridor. Used for railway signalling, it operates on a line of sight basis over a large geographical area.	Major adverse impact	A suitable alternative site for provision of the GSMR mast would need to be identified and a new facility installed and commissioned prior to removal of the existing.	Negligible

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Access for railway maintenance The current highway access point from Water End provides Network Rail with access to the ECML for maintenance purposes. This will be lost as a result of the proposed access arrangement	Moderate adverse impact	The proposed access road would remove this access point. An alternative means of access would need to be agreed with Network Rail, either through the York Central development site or at an alternative location. This may be located with the York Central site, however it is not possible to appraise the impact of this until the location of this access point has been determined.	Moderate adverse impact
	ECML 140mph running To accommodate future upgrade of ECML OHLE, the vertical clearance of any structures above the rail network could be increased from current standards up to 7.8m. This would involve a resultant increase in height of the bridge approach embankments and structures which may be detrimental to the existing streetscene.	Moderate adverse impact	The published Network Rail standards have been adopted, allowing for a vertical clearance of at least 5.7m. This would require localised lowering of OHLE beneath the proposed bridge structure.	Minor adverse impact
	ECML 4 tracking Capacity on the northern approach to York Railway Station is constrained by existing section of two track line, and by local services interacting with long distance mainline services. To avoid Harrogate Line services crossing the ECML a third line is under consideration, and passive provision for a fourth has been suggested by Network Rail to cater for future High Speed 2 and Northern Powerhouse Rail services.	Minor beneficial impact	Increase the span of the proposed new site access bridge over the ECML to allow for future four tracking of the Main Line.	Minor beneficial impact
	NRM main line rail access The existing NRM main line rail access crosses the proposed road alignment at a skewed angle that is considered incompatible	Major adverse impact	It has been assumed that the NRM main line access would be re-provided from the FAL, removing this constraint.	Moderate beneficial impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	with a level crossing and which conflicts with the proposed earthworks for the road.			
	York Yard South York Yard South is currently used for rail operations and it is understood that this is likely to continue to be the case. Department for Transport has identified the site as its preferred location for stabling and rolling stock as part of the TransPennine Route Upgrade.	Moderate adverse impact	The proposed road corridor has been designed to avoid York Yard South.	Minor beneficial impact
	Holgate Beck The Holgate Beck is a culverted watercourse contained by a 6 foot diameter brick culvert at approximately 4m depth to soffit. Proposals may increase load on the culvert and obstruct maintenance.	Major adverse impact	It has been assumed that mass fill structures cannot be placed above the beck or within the easement to avoid increasing load on the culvert and to limit obstruction of maintenance access. Therefore it has been assumed that it would need to be bridged over, with 6m headroom required above the culvert.	Minor beneficial impact
Transport and Highways	**Network wide - delay / travel time / distance** By 2031, the increase in delay in the Do-Something scenario compared to Do-Minimum scenario are 9% and 6% in the AM and PM peak hours respectively. The predicted increase in network wide travel time in 2031 for option A is 7% and 3% in the AM and PM peak hour respectively. The Do-Something traffic flows are consistently higher as a result of development. The most significant increase in flow occurs on the outer ring road and radial routes to the west connecting the city centre.	Moderate adverse impact	The proposed scheme adds traffic to the wider highway network. Effective travel planning will potentially reduce car trips on the highway network and reduce the impact. At this stage it is not possible to quantify / assess the potential impact of this.	Moderate adverse impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Network flow differences Overall the York Central scheme shows an increase in congestion over the wider area, although the increases are proportionally low.	Moderate adverse impact	The proposed scheme adds traffic to the wider highway network. Effective travel planning will potentially reduce car trips on the highway network and reduce the impact. At this stage it is not possible to quantify / assess the potential impact of this.	Moderate adverse impact
	Flow differences – local The additional trips generated from the development generally leads to increased traffic flows on the local road network. The increase varies along different routes. The greatest increase in trips is along the A59 corridor with more modest increases along A19 and Water End. There are some slight reductions in trips to the east of the rail station on A1036 and Queen Street.	Moderate adverse impact	The proposed scheme adds traffic to the local highway network. Effective travel planning will potentially reduce car trips on the highway network and reduce the impact. At this stage it is not possible to quantify / assess the potential impact of this.	Moderate adverse impact
	Junction performance – mitigation Nine junctions are identified where there are potential congestion issues and mitigation measures may be required.	Major adverse impact	Junction improvements will likely be required. Further assessment is required to identify appropriate mitigation.	Moderate adverse impact
	Bus journey times Overall, slight increases in bus journey times across the network are predicted. This is as a result of development traffic as well as rerouting services via the new Leeman Road link. Slight journey time improvements are forecast on 59 and P&R services.	Minor adverse impact	Further discussions with CYC and bus operators to consider bus routes and potential mitigation / priority. At this stage it is not possible to quantify / assess the potential impact of this.	Minor adverse impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Bus Service accessibility The York Central scheme will provide improved bus stopping facilities and access to the west of the station, improving bus congestion to the east of the station.	Minor beneficial impact	Scheme design developed in liaison with CYC and operators.	Minor beneficial impact
	Pedestrian / Cycle Accessibility General improvement in pedestrian and cycle accessibility through site and connecting with the wider area. Option A, however does not improve connections to the south of the rail line and substandard crossing to Wilton Rise remains to limit accessibility for all users.	Minor / Moderate beneficial impact	Improve access over railway to Wilton Rise.	Moderate beneficial impact
Air Quality	Option A is predicted to improve air quality at three modelled receptors, have a negligible impact at 46 assessed receptors, and have a slight adverse impact at one receptor. For the assessment of PM10, Option A is predicted to have a negligible impact at all assessed receptors.	Minor adverse impact	Encouraging sustainable transport.	Moderate beneficial impact
Heritage	**Impact upon Designated and Undesignated Assets** Indirect impact upon a number of designated and undesignated heritage assets.	Minor adverse impact	The nature and extent of mitigation measures for the designated and undesignated assets will be determined and assessed through subsequent detailed work and cannot be assessed at this time.	
Townscape	**Visual Screening** Visual impact when viewed from Water End, currently relatively well tree lined and elevated. As such the road and the associated vegetation often screens mid to long distance	Minor adverse impact	Consideration should be given to the integration of the access road with the adjoining Millennium Green, utilising terracing/ planting/ landforms etc, without compromising the functionality of the floodplain, to reimagine the space and aim to improve it, providing a gateway to the York Central site and an amenity for the existing surrounding communities.	Minor beneficial impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	views from the north-west towards York, and the lower lying York Central site.			
	Impact of Bridge Upon Views of York Minster	Moderate adverse impact	Consideration should be given to the design of the bridge which should be of a high architectural quality design with key consideration given to the form of the bridge and its appearance on the skyline of York. The colour of the bridge should also be carefully considered to avoid 'drawing the eye' in views from sensitive locations including York Minster.	Minor adverse impact
	Visual impact of walls and embankments.	Minor adverse impact	Consideration should be given to the form of walls and embankments to be fully integrated into the surrounding townscape and emerging masterplan in areas which integrate more closely with housing and development. Alternative measures to steep earth embankments which would allow the retaining structures to be landscaped and planted should be considered.	Minor beneficial impact
	Potential loss of trees and vegetation at Millennium Green.	Moderate adverse impact	Consideration should be given to the retention of trees and vegetation within the Millennium Green, particularly those that line the eastern boundary of the Green wherever possible. Additional trees planting proposed in this location would help to screen views from within the Green and mid-distance views from residences within Leeman Road.	Minor beneficial impact
	Impact on views towards access from residences and Poppleton School to the west.	Moderate adverse impact	Consideration should be given to supplementing the western edge of the railway with more tree planting to increase the screening function of existing trees in this location. This will help to mitigate views towards the access road from residences and Poppleton School to the west. However, planting in this area must take into account any specific requirements for planting near active railway lines.	Minor beneficial impact
Noise	Potential road noise impact on residential properties.	Moderate adverse impact	Noise assessment indicates the proposed new access road has a negligible noise impact upon existing nearby noise sensitive receivers. The proposed road surface employed will need to be reviewed to ensure consistency with respect to noise modelling assumptions.	Negligible Impact
Ecology	Indirect impact on statutory designated site (Clifton Ings and Rawcliffe Meadows SSSI).	Minor adverse impact	Adherence to pollution prevention guidelines to minimise any impacts on air quality, increased light and noise pollution.	Minor beneficial impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Direct impact on non-statutory designated site (Millennium Green SINC).	Major adverse impact	Replacement of any habitat removed and production of a suitable management plan for the non-statutory designated site to ensure the features for which the site is designated are protected.	Minor beneficial impact
	Invasive plant species.	Minor adverse impact	The provision of an appropriate method statement/scheme of treatment for each invasive species.	Minor beneficial impact
	Destruction/disturbance of potential bat roosts.	Major adverse impact	If bat roosts are found to be present and will be impacted by works, a licence will be required from Natural England to permit disturbance of these roosts. Appropriate mitigation will be required to support the licence, for example provision of bat boxes and slates on any new buildings in close proximity to identified roosts.	Minor beneficial impact
	Destruction/disturbance of suitable water vole habitat and burrows (if found to be present during further survey)	Minor adverse impact	The erection of a buffer zone around the watercourse to ensure burrows are not affected. Retaining the watercourse as part of the development.	Minor beneficial impact
	Destruction/disturbance of badger sett (if found to be present/ active during further survey).	Minor adverse impact	The erection of a buffer zone surrounding the sett entrance. If a sett closure is required, a licence to close the sett will be required from Natural England. Depending on the sett type, an artificial sett may need to be created as part of the licence mitigation.	Minor beneficial impact
	Destruction/disturbance of suitable song posts, foraging and nesting habitat for black redstart and common breeding bird. Removal of any trees/scrub within the breeding bird season (March to August inclusive).	Minor adverse impact	Provision of suitable terrain landscaping to mitigate for the loss of foraging habitat for black redstart. Any tree or scrub removal should be undertaken outside the bird breeding season. If this is not possible then a nesting bird survey of suitable habitat must be undertaken prior to any vegetation removal. Any trees and scrub removed should be replaced to mitigate for the loss of suitable habitat for common nesting birds.	Minor beneficial impact
	Removal of suitable habitat for invertebrates.	Minor adverse impact	Suitable landscaping to include bare ground, patchy swards and flower-rich bunds or banks.	Minor beneficial impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
Flood Risk	Risk arising from location within Flood Zone 2.	Moderate adverse impact	Application of sequential test and exceptions test.	Negligible
Place Making & Delivery	**Gateway Entrance** Option A presents an opportunity to create a gateway entrance to the site.	Major beneficial impact	Option A could include maximising the opportunities afforded by site levels to create views across the York Central site and towards the historic core of the City	Major beneficial impact
	Maximising Development Potential Impact upon the number of plots available for development.	Minor adverse impact	Option A would have a limited impact, resulting in a loss of developable floorspace.	Minor adverse impact
	Legibility Potential to improve legibility.	Major beneficial impact	Option A considered to present a more obvious and legible point of entrance. It is the continuation of a Green, linear route through the site from which both residential and commercial zones are accessed. There will be clearer views into and across the site, improving legibility of the scheme.	Major beneficial impact

5.1.2 Access E: Holgate Road to York Central, Summary Table

Table 6 Summary Table of Access E Overview

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
Constructability	**Impact upon Residential Care Home** A residential care home, language school and hotel currently take access from the A59 via Chancery Rise.	Moderate Adverse Impact	The existing access point onto Chancery Rise has been retained and incorporated within the proposed junction design.	Negligible
	Impact upon storm overflow at Holgate Beck A metal grille is located above Holgate Beck to the north of Holgate Road which may provide a storm overflow function from the Holgate Beck and serve to reduce upstream and downstream flood risk.	Moderate Adverse Impact	The grille is positioned within the proposed carriageway of the site access road. It would need to be removed or relocated as part of the scheme through agreement with the Environment Agency / LLFA and Highway Authority.	Negligible
	Parking provision for York Bridge Club The existing undocumented use of private land for parking by users of York Bridge Club would be removed as part of the proposed scheme.	Major Adverse Impact	Arrangements for continued provision of parking for York Bridge Club would be ascertained as part of further design development and stakeholder engagement activity.	Negligible
	Impact upon Network Rail Holgate Works Operations • Impact upon HGV access • Impact upon HGV movements	Moderate Adverse Impact	Provision has been made in the design of this option for a vehicle access from the proposed new access road to the Holgate Works site, for occasional use by Network Rail. The proposed road alignment has been informed by Network Rail's requirement to turn articulated lorries in the space between the Holgate Works building and the road.	Negligible
	Land availability alongside Holgate Works The road corridor is to be constructed within land owned by CYC.	Negligible	Land ownership extents have been respected, with earthworks and retaining walls proposed to achieve this.	Negligible

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Impact upon Cleveland Street Properties Existing properties in Cleveland Street are assumed to remain and must be avoided.	Major Adverse Impact	The road alignment, in conjunction with earth retaining structures, would ensure that existing properties are avoided.	Negligible
	Operational Impact upon Network Rail's Turntable lines	Moderate Adverse Impact	The bridge has been designed to span across these lines.	Negligible
	Impact on existing electrical substation	Major Adverse Imapact	The substation would need to be relocated to suit the proposed road alignment.	Negligible
Transport and Highways	**Network wide delay / travel time / distance** By 2031, the increase in delay in the Do-Something scenario compared to Do-Minimum scenario are 7% and 3% in the AM and PM peak hours respectively.	Moderate adverse impact	The proposed scheme adds traffic to the wider highway network. Effective travel planning will potentially reduce car trips on the highway network and reduce the impact. At this stage it is not possible to quantify / assess the potential impact of this.	Moderate adverse impact
	Flow differences – local The additional trips generates from the development generally leads to increase traffic flows on the local road network. The increase varies along different routes. The greatest increase in trips is along the A59 corridor with more modest increases along A19 and Water End. There are some slight reductions in trips to the east of the rail station on A1036 and Queen Street.	Moderate adverse impact	The proposed scheme adds traffic to the local highway network. Effective travel planning will potentially reduce car trips on the highway network and reduce the impact. At this stage it is not possible to quantify / assess the potential impact of this.	Moderate adverse impact
	Junction performance – mitigation Nine junctions are identified where there are potential congestion issues and mitigation measures may be required.	Major adverse impact	Junction improvements will likely be required. Further assessment is required to identify appropriate mitigation.	Moderate adverse impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Bus journey times Overall, slight increases in bus journey times across the network are predicted. This is as a result of development traffic as well as rerouting services via the new Leeman Road link. Slight journey time improvements are forecast on 59 and P&R services.	Minor adverse impact	Further discussions with CYC and bus operators to consider bus routes and potential mitigation / priority. At this stage it is not possible to quantify / assess the potential impact of this.	Minor adverse impact
	Bus Service accessibility The York Central scheme will provide improved bus stopping facilities and access to the west of the station, improving bus congestion to the east of the station.	Minor beneficial impact	Scheme design developed in liaison with CYC and operators.	Minor beneficial impact
Air Quality	For the assessment of NO2, Option E is predicted to improve air quality at 1 modelled receptor, have a negligible impact at 48 assessed receptors, and have a slight adverse impact at 1 receptor. For the assessment of PM10, Option E is predicted to have a negligible impact at all assessed receptors.	Minor adverse impact	Encouraging sustainable transport.	Minor beneficial impact
Heritage	**Impact upon Designated and Undesignated Assets** Indirect impact upon a number of designated and undesignated heritage assets.	Minor adverse impact	The nature and extent of mitigation measures for the designated and undesignated assets will be determined and assessed through subsequent detailed work and cannot be assessed at this time.	Minor adverse impact
Townscape	Impacts upon existing connectivity.	Negligible	Consideration should be given to incorporating direct connectivity between Cleveland Street and Upper St Pauls Terrace and the proposed access road.	Minor beneficial impact

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
	Impact upon walking and cycling opportunities.	Minor beneficial impact	Consideration should be given to retaining and improving the existing pedestrian bridge from Wilton Rise.	Minor beneficial impact
	Visual impact upon properties along Wilton Rise.	Moderate Adverse	Consideration should be given to utilising the area between the proposed access road and Wilton Rise to improve access to the road from Wilton Rise and to provide screening through the introduction of tree planting.	Minor beneficial impact
	Impact upon open space adjoining Fox Inn.	Negligible	Consideration should be given to opportunities to improve the open space adjoining the Fox Inn.	Minor beneficial impact
Noise	Assessment has shown that the proposed access road has a negligible noise impact at Holgate Road but a moderate impact on the eastern edge of the access.	Moderate Adverse Impact	Erection of a 1.8m high noise barrier is proposed along the length of the new access road in order to reduce noise levels at nearby receptors.	Minor adverse impact
Ecology	Destruction/disturbance of potential bat roosts.	Major adverse impact	If bat roosts are found to be present and will be impacted by works, a licence will be required from Natural England to permit disturbance of these roosts. Appropriate mitigation will be required to support the licence, for example provisions of bat boxes.	Minor beneficial impact
	Destruction/disturbance of suitable song posts, foraging and nesting habitat for black redstart and common breeding bird. Removal of any trees/scrub within the breeding bird season (March to August inclusive).	Minor adverse impact	Provision of suitable terrain landscaping to mitigate for the loss of foraging habitat for black redstart. Any trees or scrub removal should be undertaken outside the bird breeding season. If this is not possible then a nesting bird survey of suitable habitat must be undertaken prior to any vegetation removal. Any trees and scrub removed should be replaced to mitigate for the loss of suitable habitat for common nesting birds.	Minor beneficial impact
	Removal of suitable habitat for invertebrates.	Minor adverse impact	Suitable landscaping to include bare ground, patchy swards and flower-rich bunds or banks.	Minor beneficial impact
Flood Risk	Risk arising from location within Flood risk Zone 2.	Moderate adverse impact	Application of sequential test and exceptions test.	Negligible

Topic Area	Appraisal	RAG Rating without Mitigation	Potential Mitigation	RAG Rating with Mitigation
Place Making & Delivery	**<u>Gateway Entrance</u>** In an industrial location with limited opportunity to create a legible gateway entrance. Landing into site would be contrived.	Minor adverse impact		

5.2 Comparison of the Shortlisted Options

This section provides a summary of the comparison between the shortlisted options by subject. It describes the differences between the two shortlisted options, in order to provide the necessary information to YCP to inform any future decisions regarding the choice of access. It should be read in conjunction with the full study which provides the technical information to support the summary tables and this comparison.

5.3 Variant Option A2

Following initial appraisal of access Option A at shortlisting stage, a variant option has been identified. This is referred to as Option A2 (with the option initially referred to as "Option A" hereafter referred to as "Option A1").

Option A2 would result in a shorter bridge span over the ECML and would also avoid the need to install a second bridge span parallel to the existing Water End bridge over the ECML. This could offer reduced cost, less construction complexity, and a shorter construction programme than Option A1. Therefore, it is considered that there is merit in exploring this option. This variant design is considered further in subsequent sections of this study.

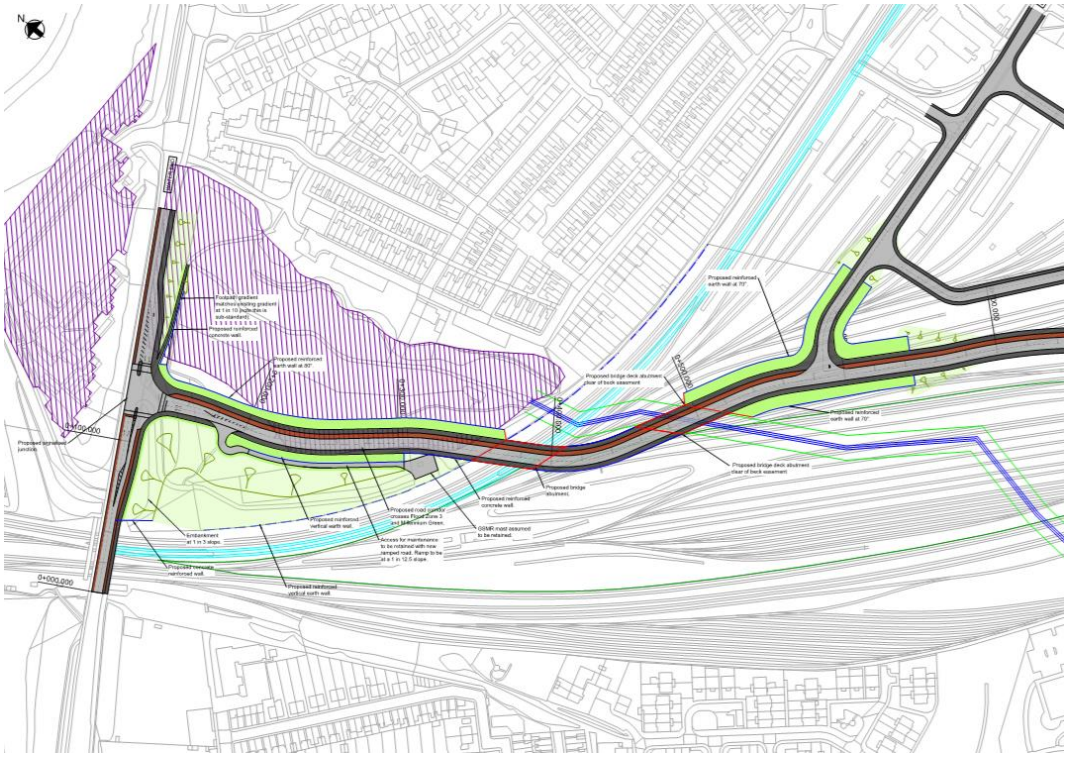
Option A2 would comprise:

- Creation of a new signalised junction at the location of the existing vehicular access route down toward Millennium Green from Water End. The junction arrangement is based on previous work undertaken by Halcrow and allows for provision of dedicated right and left filter lanes at the junction.[5]
- A section of new road linking the signalised junction with a bridge over the ECML. This would be constructed on a reinforced earth embankment which would cross part of Millennium Green and Flood Zone 3.
- An access route for maintenance of the existing Network Rail Global System for Mobile Communications – Railway (GSM-R) signalling mast, alongside the earth embankment. This would also provide continued access for railway maintenance to Skelton Junction.
- Provision of two new single span bridges, one over the ECML and one over the Holgate Beck, transitioning to embankment to take the road down to grade within the York Central site.
- A new road through the York Central site to link the bridge over the ECML to the western entrance to York Railway Station and on to Leeman Road. A further link is provided to connect with the western end of Leeman Road.

An overview of Option A2 is shown below. Illustrative plan and elevation drawings are presented in Appendix A.

[5] York Northwest Masterplanning & Infrastructure Study (Halcrow, June 2011)

Figure 13 Option A2



5.4 Constructability

5.4.1 Option A1

5.4.1.1 Land Availability

The land required for delivery of Option A1 is owned by YCP. Access to Millennium Green may also be required for construction purposes and for surface water drainage of the road.

5.4.1.2 Technical Complexity

In technical terms, Option A1 is the most complex of the options.

Relocation of the Network Rail GSMR mast presents a risk that cannot be accurately quantified at this stage, both in terms of cost and programme impact.

The capacity of the Water End bridge to accept additional traffic flow has not been established and this presents a risk (it could potentially lead to rebuilding of the existing bridge). Construction access for widening of the existing Water End bridge over the ECML is constrained, both to the south alongside the existing primary school, and to install a central pier for the bridge between operational railway lines.

Due to the proposed construction of an embankment across Flood Zone 2, options for flood risk mitigation are limited and this poses a risk in terms of reaching

agreement with the Environment Agency / LLFA and securing approvals for the scheme.

Ground conditions are expected to be poor and this would introduce complexity and risk in terms of potential settlement of retained earth embankments and the placement of piled foundations for bridge structures. The span and skew of the proposed tied arch bridge complicates both design and construction, requiring extensive temporary works within a constrained site area and introducing additional phases in to the construction process to allow the bridge to be slid in to place from the northern embankment. Given the skew of the proposed bridge, potential sighting issues to signals on the ECML curve would need to be understood before the abutment position and bridge span can be confirmed.

The line, level and condition of the Holgate Beck is not accurately known, and this potentially limits the accuracy of the current design and may introduce further complexity.

Potential changes to Network Rail OHLE standards to provide 7.8m vertical clearance above the ECML present the highest risk to Option A1, and this would result in increased cost and programme duration for construction to accommodate the increased bridge height. There is also a risk that this could trigger rebuilding Water End bridge as part of the scheme; were this to transpire it would require remodelling of Water End, which would prove complex and disruptive.

5.4.1.3 Impact on Operational Railways & Highway Network

Disruption to the railway network would be greatest under Option A1, which requires work above and adjacent to the ECML, installation of a bridge pier between existing lines over numerous possessions, construction of the NRM chord to facilitate it, and extended line possessions with long lead-ins. This would increase risk in terms of statutory approvals, construction risk and cost, and programme duration.

The extent of work proposed at the Water End junction, and the length of the construction programme, means that of the shortlisted options considered Option A1 would cause most disruption to the highway network.

5.4.1.4 Cost & Programme

The combined capital and maintenance cost of Option A1, at £[redacted], is the highest of the shortlisted options. At 615 days the construction programme is also the longest in duration.

5.4.2 Variant Option A2

5.4.2.1 Land Availability

Land availability for construction of Variant Option A2 is a constraining factor, with the northern bridge approach road being situated within the leased Millennium Green area. To deliver this option would require negotiation with the

Leeman Road Millennium Green Trustees to complete the land assembly required. The road would pass across the southern edge of the Holgate Millennium Green SINC. The route also affects the location of two Network sidings and the siding to the NRM South Yard that would have to be relocated.

Given the scale of changes proposed to this area and the intrusive nature of the works proposed, both in the temporary and permanent case, land availability is considered to present a significant consideration for Variant Option A2.

5.4.2.2 Technical Complexity

This option is technically less complex than Option A1 given the reduced bridge span over the ECML and the avoidance of works to the existing Water End bridge.

Whilst this option physically avoids the Network Rail GSMR mast, the benefit of this has yet to be confirmed dependent upon the coverage of the mast and whether the presence of the bridge approach road would adversely impact on this.

With the proposed road alignment passing closer to the Holgate Beck, ground conditions are expected to be worse than for Option A1 and potential embankment settlement issues more prevalent.

The road alignment passes across Flood Zone 3, and should this be demonstrated as being acceptable through the sequential and exception tests (against Options A1 and E), then some form of mitigation measures or compensatory flood storage would be required. In the worst case, this could result in the need to construct a viaduct across the flood plain, leading to increased cost and programme duration.

5.4.2.3 Impact on Operational Railways & Highway Network

Whilst line possessions for the bridge lift would be limited in number and of short duration, disruption to the railway network would result from the need to reconfigure existing Network sidings and rail access to the NRM South York.

In the temporary case, disruption to the highway network would be less than Option A1 due to the avoidance of works to the existing Water End bridge. However, avoiding these works may constrain the capacity of the junction in the permanent case.

5.4.2.4 Cost & Programme

The combined capital and maintenance cost of Option A2, at £[redacted], is in the mid-range of the shortlisted options. At 445 days, the construction programme is also in the mid-range.

5.4.3 Option E

5.4.3.1 Land Availability

All land required for delivery of Option E is in the control of YCP and the lease agreements that are in place are between the partners, with limited notice periods.

5.4.3.2 Technical Complexity

Technically, Option E is the least complex of the options, with a single span girder bridge that can be lifted in to place by crane, reduced risk of experiencing poor ground conditions, and flood risk issues that can be most readily mitigated. Limited third party risks are present but manageable, including relocation of the electricity substation through a standard process with Northern Powergrid.

Potential changes to Network Rail OHLE standards do present a risk to this option, and if a higher clearance above the electrified FAL were insisted upon than currently assumed then this would result in increased height of earthworks on the approaches to the bridge. However, of the shortlisted options considered, a case could be more readily presented for retaining the lower OHLE clearance in this location given the operational uses of the line (i.e. less heavily used and at lower line speed than the ECML).

5.4.3.3 Impact on Operational Railways & Highway Network

Disruption to the railway network would be lowest under Option E, which does not require work above or in the vicinity of the ECML, changes to existing rail sidings, installation of piers between existing lines, construction of the NRM chord to facilitate it, or extended line possessions.

Given the scale of the proposed works and the nature of the modifications to the Holgate Road / Chancery Rise junction, disruption to the highway network is likely to be less than for Option A1 or Variant Option A2.

5.4.3.4 Cost & Programme

The combined capital and maintenance cost of Option E, at £[redacted] over a 60 year period, is the lowest of the shortlisted options. At 335 days the construction programme is also the shortest in duration.

Conclusion

Of the shortlisted options, Option E is most straightforward in terms of constructability.

5.5 Transport and Highways Considerations

5.5.1 Network wide – Delay/Travel Time/Distance

For Option A the network wide delay is predicted to increase by 6% and 5% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 9% and 6% respectively in the AM and PM peak hours respectively.

The network wide travel time is predicted to increase from the Do-Something to Do-Minimum scenarios by 3% and 2% by 2021 in the AM and PM peak hours respectively. By 2031 the percentage increase is 7% and 3% in the AM and PM peak hours respectively.

For Option A, total network travel distances are predicted to increase by 1% in both the AM and PM peak hours in 2021 and by 3% in both the AM and PM peak hours in 2031.

For Option E, the network wide delay is predicted to increase by 1% and 2% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 6% and 3% respectively in the AM and PM peak hours respectively.

The network wide travel time is predicted to increase from the Do-Something to Do-Minimum scenarios by 2% and 2% by 2021 in the AM and PM peak hours respectively. By 2031 the percentage increase is 5% and 2% in the AM and PM peak hours respectively.

For Option E, total network travel distances are predicted to increase by 1% in both the AM and PM peak hours in 2021 and by 2% and 3% in the AM and PM peak hours respectively in 2031.

5.5.2 Pedestrian / Cycle Accessibility

Access Option A will provide a further route adjacent to the new highway to the north west connecting with Water End. The existing bridge over the railway at Wilton Rise will provide the only access between the York Central site and residential / commercial areas to the south of the rail lines. This existing bridge is stepped and therefore provides restricted pedestrian and cycle connectivity.

Overall, pedestrian and cycle connectivity will be improved for new occupiers of the site as well as for pedestrian / cyclists in existing surrounding uses, improving access to the rail station and city centre. However, without improvements at the Wilton Rise bridge the connectivity to the south of the rail line is limited. A minor/moderate beneficial impact is predicted.

Access Option E will provide a new route adjacent to the new highway to the south of the rail lines linking with Chancery Rise and A59 Holgate Road. This will provide an improved pedestrian / cycle access from the existing stepped bridge to Wilton Rise and improve connectivity to all users.

Overall, pedestrian and cycle connectivity will be improved for new occupiers of the site as well as connecting the surrounding existing areas. In particular, Option E improves connectivity to the south of the rail line. A moderate/major beneficial impact is therefore predicted.

Conclusion

Option E has a lower impact on do-something network wide delays, but also has the potential to improve pedestrian and cycle connectivity to the south of the rail lines. Option A provides the opportunity to improve east-west connectivity across the site.

For Option E, the network wide delay is predicted to increase by 1% and 2% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 6% and 3% respectively in the AM and PM peak hours respectively.

For Option A the network wide delay is predicted to increase by 6% and 5% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 9% and 6% respectively in the AM and PM peak hours respectively.

5.6 Air Quality Considerations

The study has looked at the difference between the two access options (A and E) and predicted indicative pollutant concentrations.

The NO_2 indicative results show that access Option E resulted in higher concentrations at 35 of the discrete receptors in comparison to the concentrations predicted in Option A. At 15 receptors higher concentrations were predicted with access Option A, in comparison to Option E. Therefore Option E predicts higher concentrations at a greater number of assessed receptors.

With regards to the impact descriptors, only receptor number 38 (at the junction of Boroughbridge Road and Water End) was predicted to have a slight adverse impact with Option A and only receptor number 14 (Vine Street) was predicted to have a slight adverse impact with Option E. All other receptors were predicted to have a negligible or slight beneficial impact for both options.

Conclusion

Overall, the comparative study found that Option A is considered the better option with regards to air quality. The results of both NO_2 and PM10 indicative predicted concentrations found that with Option A, at the majority of the assessed receptors, lower total pollutant concentrations were predicted.

5.7 Heritage Considerations

In comparing the relative heritage impact of access Options A and E it is important to recognise that there are gaps in the available baseline data relating to

the background archaeological potential of both sites. The most recent desk base assessment (DBA) for the York Central site as a whole was written in 2005 and does not therefore assess all the available archaeological reports.

There is a lack of evidence relating to the possibility that the land flanking the Holgate Brook at the Water End (Option A) site could preserve sealed environmental deposits preserved in anoxic (with low or no oxygen) waterlogged conditions. These have been observed in other areas of York and have been identified as a priority area for preservation, sampling and research. This could be addressed by a targeted borehole survey and the insertion of piezometers in key locations equipped with suitable monitoring equipment.

Within the site, where the new bridge for Option E crosses the existing rail lines, and anywhere along the line of the new roads within the site there is an unknown potential for Roman era burials to be preserved. There are three known Roman cemeteries which have been identified across the eastern side of the site. Preservation of burials and cremations is likely to have been impacted by previous episodes of ground clearance ahead of the construction of rail infrastructure in the nineteenth and early twentieth centuries. This could be assessed in more detail by a careful examination of the archive material relating to the construction of the railways and associated industrial activity. Burials do survive within the site, an intact inhumation was found underneath platform 1 of the current railway station at a depth of approximately 0.5m. There is therefore an unknown but moderately high possibility that ground disturbing work associated with the construction of a new access road in this area could uncover Roman burials or cremations.

These are considered to be of high value in heritage terms, as is any information relating to where the limits of the burial grounds might be and any roadside or other tombs or votive shrines.

Conclusion

The nature and extent of mitigation measures for the designated and undesignated assets will be determined and assessed through subsequent detailed work and cannot be assessed at this time. Option E is located in close proximity to a larger number of designated and non-designated heritage assets, in comparison to Option A.

5.8 Townscape Considerations

Option A has the potential to create a gateway to the York Central site that would benefit both existing and future communities. The bridge has the potential to provide beneficial townscape impacts though its design and form should be considered further.

Option E would have higher adverse townscape impacts than Option A; however if mitigation options are incorporated adverse impacts could be lessened upon existing communities and townscape.

Option A would result in:

- localised impacts upon the Millennium Green, particularly if tree loss occurs. Impacts could be partly mitigated by further tree planting, improvements to the public space and habitat creation;
- the arch of the proposed bridge changing the character of the skyline locally, though it is not anticipated to be a prominent feature within the wider townscape; and
- localised impacts upon levels of tranquillity due to movement of traffic along the new road, particularly at the Millennium Green. However, the Millennium Green and the surrounding area already experience existing moderate levels of disturbance due to the railway and surrounding roads.

Overall the impact upon the townscape is considered to be low and adverse in nature.

Option E would result in:

- high localised impacts upon the smaller scale streets of Cleveland Street and Upper St Pauls Terrace due to the introduction of new road infrastructure in close proximity to residences, resulting in reductions in level of tranquillity due to movement of traffic;
- the loss of the Holgate Garden play area. The loss of this space could be mitigated to some extent by improving access to new public spaces within the York Central development;
- the loss of buildings that have historical interest and are intrinsic to the character of the townscape; and
- the potential loss of pedestrian and cycle access from Wilton Rise to the railway station, though connectivity from these residential streets could be improved by providing improved pedestrian and cycle links to the railways station and city centre.

Overall the impact upon the townscape is considered to be medium and adverse in nature.

Visual Considerations

Key View 10

Option A would have a greater impact on Key Viewpoint 10 than Option E, though it is not anticipated that the arch of the bridge would screen views of the York Minster from this location. However, it is recommended that this is confirmed with a verifiable visualisation and discussion are held with York City Council if this option is to be taken forward.

Option E would have a minimal impact on viewpoint 10 and this is considered to be negligible.

Conclusion

Option A

Option A would affect views from the following receptors:

- medium to high impacts on mid-range views from educational receptors at Poppleton Primary School;
- medium impacts on mid-range views from residences in Garnet Terrace (Leeman Road) Seldon Road/ Poplar Street (close to Poppleton Primary School) and Hillary Garden/ Bonnington Court;
- medium impacts on mid to close range views from recreational users of the Millennium Green (ensuring retention of trees);
- medium to low impacts on mid-range views from recreational users of Holgate Park;
- low impacts on mid to long range views from Clifton Ings; and
- low to negligible impacts from the York Minster and the City Walls.

Option A would be visible from a wider area and by a great number of receptors than Option E, resulting in changes to mid-range views from residences that bound the railway and close to mid-range views from the adjacent Millennium Green. Medium to high impacts upon the Poppleton Primary School are also likely. There are opportunities to mitigate these impacts through integrated design mitigation and tree planting.

Option A2 would result in the loss of trees in Millennium Green and as a result would increase adverse visual effect upon residencies in Leeman Road and users of Millennium Green. Further adverse effect would be likely to be experienced by residences adjoining the site, such as Seldon Road/ Poplar Street and Poppleton Primary School as described within the Visual Consideration section for Option A. In consideration of the above, option A is considered to be less visually adverse and more likely to offer beneficial visual effects than Option A2.

Option E

Option E would result in adverse impacts to views from the following receptors:

- high impact upon close range views from residences in Cleveland Street and Upper St Pauls Terrace;
- medium impact upon close to mid-range views from residences within Wilton Rise and mid-range views from small number of properties on the A59 Holgate/ Poppleton Road; and
- low impact upon mid-range views from recreational users of the Holgate Park.

Option E would result in high localised impacts which are limited to those receptors that immediately adjoin the proposed access road such as the adjoining residential streets of Cleveland Street and Upper St Pauls Terrace. These impacts could be mitigated by design changes such as the lowering and setting back of retaining walls and embankments and integration into the existing townscape.

Overall in terms of impact on visual amenity, Option E would result in higher adverse visual impacts, though these are localised and would affect a fewer number of receptors. Option A would affect a higher number of receptors though visual effects would be generally lower.

5.9 Noise Considerations

The relative performance of the two options has been considered quantitatively. Both locations exhibit a similar density of housing albeit at differing distances from the proposed new access road.

Both Option A and E experience similar current ambient noise levels at the most sensitive of the nearest noise sensitive receptors. Current ambient noise levels at residential properties on the south side of Holgate Road are however marginally higher due to its position relative to Holgate Road, representing a less onerous assessment case.

Option E results in the greatest noise impact at nearby receptors because of the proximity of the access road to the residential properties and partially because of the elevation of it above ground. A 1.8m high noise barrier has been proposed as mitigation to reduce road traffic noise levels. The assessment of the 'mitigated' access road shows a negligible noise impact at Holgate Road but a moderate impact at on the eastern side of the Option E access route. The use of a low noise road surface has the potential to provide a further 2.5dB attenuation compared to the base assumption.

Importantly, the presence of a barrier/landscaping around the Option E access road would also provide some protection to the receptors from industrial noise from the units located to the west.

Conclusion

Option E results in the greatest noise impact at nearby receptors because of the proximity of the access road to the residential properties and partially because of the elevation of it above ground.

5.10 Ecology

Designations: Option A is likely to have a direct effect on the non-statutory site Millennium Green SINC which lies adjacent to the proposed access route. There is also the potential that the access route will require land take within the designated site for storing construction equipment during the construction phase. Option A also has the potential to indirectly affect Clifton Ings and Rawcliffe Meadows SSSI and the River Ouse SINC through increased visual, noise and light disturbance during the construction phase. The nearest non statutory designated site for Option E is York Central 150m north. It is not anticipated that the proposed access route, Option E would have any direct or indirect effects on this designated site.

Habitats: Both options may affect similar habitat compositions; hardstanding, ephemeral vegetation, broadleaf woodland plus areas of semi-improved grassland within Option A.

Invasive plant species: Three species of invasive plant species were identified within the proximity of Option A. One species of invasive plant species was identified within the proximity of Option E.

Bats: Five buildings and one bridge were identified to have bat roost suitability within Option A. Seven buildings were identified to have bat roost suitability within Option E.

Badger: Information regarding badgers is treated as confidential. Further information can be made available on request by bona fide individuals.

Water vole: Holgate Beck runs within Millennium Green which may be effected by Option A. There are no water courses with water vole potential that will be affected by Option E.

Black redstart and breeding birds: Both Option A and Option E will require removal of suitable foraging, song post and nesting habitat for black redstart. Additionally, suitable habitat for common nesting birds is likely to be removed.

Invertebrates: Both Option A and Option E will require removal of suitable habitat for invertebrates.

Conclusion

Option A is likely to have an increased ecological impact related to the potential for works on the Millennium Green Site of Importance for Nature Conservation (SINC) and proximity of works to Holgate Beck.

5.11 Community Facilities

Option A would impact on the use of the Millennium Green Land. Variant A1 would have impacts on the land at the edge of the Millennium Green, but also result in the potential loss of disabled parking associated with the Green. In addition, variant A2 would have a substantial impact on the Millennium Green area, removing a significant proportion of the existing Green space. The construction of the Option A access (either Variant) as proposed may provide some benefits in terms of permeability and access for those communities located in Acomb and the north of Holgate. There is the opportunity for some new green space to form part of the York Central development.

The construction of Option E would result in the loss of a basketball court and the loss of a children's equipped play area adjacent to St Paul's Terrace. It is likely that the construction of the new route will provide positive benefits for the Holgate community in terms of walking and cycling, providing a new linkage to the station.

Conclusion

Both options would result in the partial loss of existing community facilities. There is the potential for new facilities to be incorporated into the York Central development to appropriately mitigate the loss of these facilities.

5.12 Place Making

With regards Option A, the height and length of the proposed bridge could create an opportunity to define an iconic gateway into the site. In parallel to this, the level difference would deliver exciting views across the York Central site and towards the historic core of the city.

With regards Option E, there would be a need to consider where the road lands in the site, changes in levels and relationship of the road to new buildings.

Conclusion

Both options can be satisfactorily accommodated in the overall design of the emerging masterplan. There are no 'show stoppers' associated with either Option A or E. Option A represents the potential to deliver an iconic gateway into the site.

5.13 Flood Risk & Water Resources

Of the shortlisted options, Option E has least impact on flood risk.

Were the sequential test to be applied then this option would be sequentially preferable to either Option A1 or Variant Option A2, notwithstanding wider sustainability objectives which may be taken into account, including those identified as part of this appraisal.

Part of the Holgate Road / Chancery Rise junction is located within Flood Zone 2. Proposed surface level changes resulting from modification of the existing junction arrangement are likely to be minimal and as such have negligible impact on flood risk. The remainder of the road corridor for Option E is located in Flood Zone 1. Therefore it is anticipated that the exception test could justifiably be applied.

In the case of Option A1, in flood risk terms there is a sequentially preferable alternative in the form of Option E. Option A1 entails provision of an embankment across Flood Zone 2, in effect reducing the volume available for flood water and potentially increasing flood risk elsewhere.

Were the exception test applied on the basis that Option A1 is preferable to Option E due to wider sustainability benefits, then it would be challenging to

demonstrate this can be achieved "*without increasing flood risk elsewhere and where possible reduce flood risk overall*[6]" because:

a. Given the alignment of the road adjacent to the ECML, conveyance of storm water through the embankment is not considered a viable means of mitigation;

b. Option A1 assumes that works within Millennium Green are to be avoided – earthworks operations to create additional storage volume in this space would be contrary to this aim; and

c. Construction of a viaduct to lift the road above the flood water would add substantial cost.

In the case of Variant Option A2, in flood risk terms there are sequentially preferable alternatives in the form of both Option A1 and Option E. Variant Option A2 entails provision of an embankment across Flood Zone 3 which would result in a reduction in the volume available for flood water.

Were the exception test applied on the basis that Variant Option A2 is sequentially preferable to Option A1 and Option E due to wider sustainability benefits, then to successfully apply the exception test it is considered likely that:

a. Either a viaduct structure would need to be provided to lift the road alignment above the floodplain; or

b. Surface levels across Millennium Green would need to be remodelled and a means of conveyance provided for surface water through the embankment, combined with provision of additional flood storage between the embankment and ECML (i.e. within Network Rail owned land).

Conclusion

Of the shortlisted options, Option E has least impact on flood risk.

Were the sequential test to be applied then this option would be sequentially preferable to either Option A1 or Variant Option A2, notwithstanding wider sustainability objectives which may be taken into account, including those identified as part of this appraisal.

[6] Guidance - Flood Risk and Coastal Change (DCLG, March 2014)

5.13.1 Summary Table Showing Optimal Access Per Engineering and Environmental Review

Table 7 Overview of Comparative Assessment

Topic Area	Comparison between Options	Optimal Scheme
Constructability	Of the shortlisted options, Option E is most straightforward in terms of constructability. Option A requires further complexity in construction to avoid impacts on the operational railway or mitigate impacts on the adjacent Flood Risk Zone 3.	Option E
Transport and Highways	Both schemes deliver similar benefits with regards to Transport and Highways.	Neutral
Air Quality	Option A is considered to be the better option with regards to air quality, as indicative predicted concentrations were lower overall with this option.	Option A
Heritage	Both options result in an adverse impact upon designated and undesignated heritage assets. At this stage it has not been possible to suggest a suitable mitigation strategy. Option E is considered to have an impact on a wider range of designated and un-designated heritage assets; however the overall heritage impacts will need to be balanced as part of the overall York Central development.	Neutral
Townscape	Option E is marginally better in terms of Townscape, primarily as it minimises the impact upon the views of the Minster.	Option E
Noise	Option A is preferred in terms of noise, primarily owing to the greater distance between residential properties and the proposed road infrastructure.	Option A
Ecology	Whilst both options record moderate or minor beneficial impacts for ecology once mitigation measures are applied, it should be noted that there are a greater number of receptors that would be potentially impacted by Option A. Therefore upon balance Option E would represent the optimal scheme.	Option E
Community	Option A has implications for the use of the adjacent Millennium Green Land and associated parking. Option E has implications for the use of public open space including a basketball court and children's playground. Mitigation for both facilities can be appropriately integrated into the open space associated with the new development. The access will also establish new pedestrian and cycle routes across the site towards the rail station.	Neutral
Place Making & Delivery	Option A is considered to provide the optimal access route into the site, affording views over the wider York Central development and across the Green Link proposed across the site. Both options have limited impacts on developability.	Option A
Flood Risk	Option A would potentially require agreement with the Environment Agency regarding the provision of compensatory Flood Storage.	Option E

Stage 2: Technical Review of Option A

6 Stage 2: Technical Review - Option A

6.1 Introduction and Overview

This section of the study provides a more detailed review of Option A. It examines the constructability and environmental factors of this option. It is noted that there are two variants associated with option A:

- A1 which is on land within the control of YCP.
- A2 which runs to the north of variant A1, on land which is partly within the control of the Millennium Green Trust.

This assessment is principally undertaken on Option A1, as the basis of the study. However, where there are potentially significant differences in impacts between the two options, this is highlighted in the text associated with the technical assessment. This allows the comparative benefits of Option A1 and A2 to be considered as part of this study, and provide information to YCP to consider whether Option A2 should be subject to further investigation.

In addition to the constructability and environmental overview, placemaking and viability discussions were held as part of this study.

7 Option A: Constructability

7.1 Introduction

This section considers the technical feasibility and potential programme constraints associated with Option A. This includes the following criteria as part of the overall review:

- Land availability;
- Overview of construction costs;
- Technical constraints;
- Impact on existing road network during construction;
- Impact on operational rail uses; and
- Draft programme for construction.

This section provides an overall methodology for the construction of the access option. It is neutral of construction considerations associated with the York Central development, and has been developed based on an assessment of the current operations on the site.

7.2 Assessment

7.2.1 Land Availability

All land required to construct this access is owned by the York Central Partnership. Some is subject to lease restrictions and statutory designations as described below:

- Network Rail own a section of land adjacent to the railway boundary which can be used to achieve access. There are not understood to be any restrictions in relation to acquiring this, subject to relocation of the existing GSMR (Global System for Mobile Communications - Railway) signalling mast and re-provision of the maintenance access point to the ECML.
- CYC own a section of land adjacent to Water End, including a section of road that provides highway access to Millennium Green and the Network Rail land.
- Millennium Green was leased from CYC to the Leeman Road Millennium Green Trust in 2000 on a 999 year lease. It is understood that a small section of this area can be re-possessed by CYC. This is conditional upon the Council using best endeavours to replace any land possessed with “another plot of comparable size and amenity” and to continue providing a means of vehicle and pedestrian access. Pedestrian access could be maintained by reconfiguring the existing access from Water End (requiring works within Millennium Green), whilst vehicle access could potentially be maintained by installing additional parking bays on Garnett Terrace.

- It is noted that agreement may need to be reached with the Millennium Green Trust over means of providing surface water attenuation for the road atop the embankment structure, and assumed conveyance of surface water discharge across Millennium Green to the Holgate Beck.

7.2.2 Technical Constraints

There are a number of constraints to be considered in providing an access to the site from Water End. In developing the preliminary design presented in this study these constraints have been considered and responded to, as summarised in Table 8.

Table 8 Option A Technical Constraints

Constraint	Description	Approach Adopted
Existing Water End bridge	To provide a new road junction a right turn lane is required on Water End to permit movement of through traffic. The width of the existing bridge constrains the ability to achieve this without either widening the bridge or moving the junction further to the northeast, impacting on Millennium Green.	Install an additional span on the bridge, parallel to the existing, to carry a single carriageway, cycle lane and footway. This permits provision of a third traffic lane (right turn lane) across the existing bridge. The capacity of the existing Water End bridge structure to carry additional traffic loading will be subject to structural analysis.
Poppleton Road Primary School	The existing Poppleton Road Primary School playing fields are located adjacent to Water End to the south of the ECML. To construct the second bridge span across the ECML and tie the new vehicle lane back in to the existing carriageway, widening of the existing Water End embankment would be required adjacent to the existing school playing fields.	A reinforced concrete retaining wall is proposed to retain the widened carriageway within the limits of existing adopted public highway.
Ground Conditions	Borehole data indicates that ground conditions are likely to be poor in this area, comprising 0.5m of Made Ground overlying approximately 5m of soft to firm sandy clay and silt over sand to 19m depth. Intact sandstone bedrock was not encountered in this area. These ground conditions, coupled with the proposed scale of the approach embankments to the bridge, are likely to lead to ground settlement – if not addressed at construction stage this could result in long term issues and render the road unusable in the future.	Ground strengthening is assumed to be required prior to installation of the embankments. The form this takes will be dependent on further investigative works and design development, with options including the use of geotextile reinforcement at the base of the embankment, vibro-concrete columns or controlled modulus columns to strengthen the ground, or installation of piles beneath the embankment.
Flood Zones 2 & 3	A significant proportion of Millennium Green is categorised as Flood Zone 3, and the remainder as Flood Zone 2.	The road can be designed to fall outside of the Flood Zone 3 area. The road is within Flood Zone 2 and it would need to be

Constraint	Description	Approach Adopted
		sequentially tested against alternative options. If pursued the exception test would need to be applied as set out in National Planning Practice Guidance.
Network Rail GSMR mast	An existing Network Rail GSMR telecommunications mast is located within Network Rail owned land to the north of the ECML, within the proposed road corridor. Used for railway signalling, it operates on a line of sight basis over a large geographical area.	A suitable alternative site for provision of the GSMR mast would need to be identified and a new facility installed and commissioned prior to removal of the existing.
Access for railway maintenance	The current highway access point from Water End provides Network Rail with access to the ECML for maintenance purposes.	The proposed access road would remove this access point. An alternative means of access would need to be agreed with Network Rail, either through the York Central development site or at an alternative location.
ECML 140mph running	Discussion with Network Rail Asset Protection has highlighted that, to accommodate future upgrade of ECML OHLE, the vertical clearance of any structures above the rail network could be increased from current standards up to 7.8m. This would involve a resultant increase in height of the bridge approach embankments and structures.	The published Network Rail standards have been adopted, allowing for a vertical clearance of at least 5.7m. This would require localised lowering of OHLE beneath the proposed bridge structure.
ECML 4 tracking	Capacity on the northern approach to York Railway Station is constrained by existing section of two track line, and by local services interacting with long distance mainline services. To avoid Harrogate Line services crossing the ECML a third line is under consideration, and passive provision for a fourth has been suggested by Network Rail to cater for future High Speed 2 and Northern Powerhouse Rail services.	Increase the span of the proposed new site access bridge over the ECML to allow for future four tracking of the Main Line.
NRM main line rail access	The existing NRM main line rail access crosses the proposed road alignment at a skewed angle that is considered incompatible with a level crossing and which conflicts with the proposed earthworks for the road.	It has been assumed that the NRM main line access would be re-provided from the FAL, removing this constraint.
York Yard South	York Yard South is currently used for rail operations and it is understood that this is likely to continue to be the case. DfT have identified the site as its preferred location for stabling for rolling stock as part of the TransPennine Route Upgrade.	The proposed road corridor has been designed to avoid York Yard South.
Holgate Beck	The Holgate Beck is a culverted watercourse that flows southeast to northwest across the western area of the	It has been assumed that mass fill structures cannot be placed above the beck or within the

Constraint	Description	Approach Adopted
	York Central site, entering in to culvert at Holgate Road near the junction with Chancery Rise, and returning to open watercourse in Millennium Green. Classified as a Main River by the Environment Agency, the beck is contained by a 6 foot diameter brick culvert at approximately 4m depth to soffit.[7] It is standard practice to provide an easement for access and maintenance to watercourses, typically 8m from each the edge of the culvert. Experience from previous projects suggests a vertical clearance above the culvert, in the order of 6m, is typically required.	easement to avoid increasing load on the culvert and to limit obstruction of maintenance access. Therefore it has been assumed that it would need to be bridged over, with 6m headroom required above the culvert. The accuracy of the culvert alignment, depth and diameter requires confirmation through survey.

7.2.3 Design Parameters

The design parameters presented in Table 9 have been applied.

Table 9 Option A1 Design Parameters

Parameter	Value
Corridor width	16.3m, comprising: 2 vehicle lanes, 3.65m wide 2 footways, 3.0m wide 1 cycleway, off road, two way, 3.0m wide
Verge width	1.5m
Underside of bridge deck clearance to rail (vertical)	5.7m
Bridge abutment / pier clearance to rail (horizontal)	4.5m
Bridge abutment / pier clearance to boundary fence (horizontal)	2.0m
Vehicle Incursion Protection	1.8m high H4A concrete parapet on bridge and viaduct sections H4A/N2 transitions to: N2 barrier alongside all elevated sections of road.

[7] Interpolation from drawing 41 Y 126 (British Railways, June 1941)

7.2.4 Design Proposals

The preliminary design for Option A1 is described as follows:

1. A new junction would be formed at Water End, at the existing Water End bridge. This has been based on the previous access options work by Halcrow.[8]
2. On the south western arm of the junction, to accommodate a right turn lane on the existing bridge, the cycleway and footway would need to be converted to carriageway. A new bridge over the ECML, parallel to the existing, is therefore required to carry the cycleway and footway. An additional traffic lane is also shown on this new section of bridge to provide additional highway capacity. To tie this traffic lane back in to the existing road alignment, works adjacent to the playing fields of Poppleton Road Primary School would be required, with a retaining wall anticipated required to accommodate the level change.
3. On the north eastern arm of the junction, widening of the existing embankment adjacent to Millennium Green is proposed to accommodate a left turn lane. This would require realignment of the existing cycleway and footway, and reconfiguration of the existing pedestrian access ramp down to Millennium Green. The existing vehicle access to Millennium Green / ECML would be stopped up.
4. The access road to the northwest of the ECML would be constructed on a reinforced earth embankment to tie the road in with the Water End embankment, and to provide sufficient height to clear the ECML tracks. It is proposed that this reinforced earth would inclined at an 80 degree slope with precast concrete block facing. Facing the ECML, a vertical precast concrete block solution is proposed (refer Figure 14) to minimise land take and maintenance requirements. A safety barrier would be required atop this embankment, and grass verges are proposed to accommodate this.
5. A tied arch bridge (refer Figure 15) would be supported by a reinforced concrete abutment on the north side of the ECML, and a reinforced concrete leaf pier on the south side. The approximate span of this bridge would be 80m, at a skew over the railway lines.
6. To bridge over the culverted Holgate Beck, a series of 5 elevated viaduct spans are proposed. It is assumed that piers for these spans can sit within the easement to the beck.
7. Beyond the Holgate Beck a reinforced concrete abutment would be provided and the road would return to ground level on a 70 degree reinforced earth embankment (refer Figure 16), with a planted facing to both elevations. A safety barrier would be required atop this embankment, and grass verges are proposed to accommodate this.

[8] York Northwest Masterplanning & Infrastructure Study (Halcrow, June 2011)

Figure 14 Example of Reinforced Earth Retaining Wall with Vertical Block Face

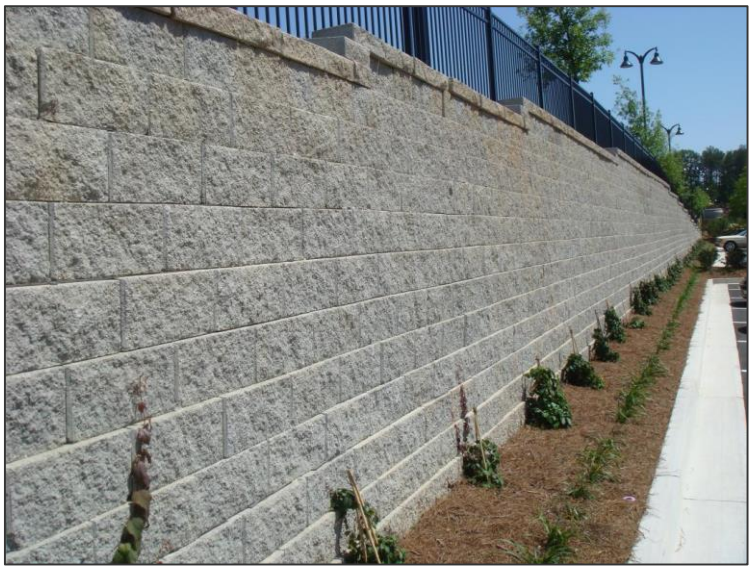


Figure 15: Example of Tied Arch Bridge

Figure 16 Example of Reinforced Earth Retaining Wall with Vegetated Face

7.2.5 Construction Methodology and Impacts

7.2.5.1 Proposed Construction Methodology

The following construction methodology is proposed:

1. Identification of options for relocation of the Network Rail GSMR mast, and subsequent implementation of this activity, is an early task to allow this to be relocated as soon as possible.
2. Relocation of the current Network Rail maintenance access point would be required early in the project.
3. Relocation of the NRM main line rail connection. This would be required at the outset to permit construction of the southern bridge approach embankment.
4. Construction of new abutments for second bridge span over the ECML at Water End. For the eastern abutment, modifications to the existing Network Rail / Millennium Green access point at Water End would be required to allow access for heavy construction plant including a mobile crane. A construction access point would need to be installed off Seldon Road to provide access to the western abutment. At this location, temporary works would be required to provide sufficient width for heavy goods vehicles to access alongside the Poppleton Road Primary School playing fields by temporarily realigning the existing school boundary fence. A turning head would also be required along with welfare facilities and lay down areas at both abutment positions.
5. Installation of central pier for second bridge span over ECML at Water End. It is assumed that piled pier foundations would be installed using rail mounted plant during possessions. A reinforced concrete leaf pier, designed to withstand derailment impact, would then need to be constructed over a series of night time possessions.
6. Following construction of the abutments and piers, it is assumed that new bridge spans would be lifted in to place using a large mobile crane positioned on the southwestern side of the ECML. This is assumed to comprise a composite girder or ladder deck structural form, installed over a series of night time possessions.
7. Construction of the upgraded Water End junction could commence at the outset of the project, taking place in a number of phases to allow continued traffic flow under traffic management. Elements of work adjacent to the Poppleton Road Primary School playing fields, namely construction of a reinforced concrete retaining wall to permit bridge widening, may need to be undertaken during school holidays to minimise the impact on the school and its sports facilities.
8. In tandem with the construction of bridge abutments at Water End, the same exercise would be undertaken either side of the ECML to support the proposed tied arch bridge. Construction access to the northern abutment would be

obtained from Water End, whilst access to the southern abutment would be via Leeman Road.

9. Earthworks to form the approach embankments to the northern and southern bridge abutments would commence following completion of the abutments.

10. Construction of the proposed viaduct structure to bridge across the Holgate Beck and its easement is assumed to follow on from construction of the abutments. This would entail piling operations, followed by construction of reinforced concrete viaduct piers and then installation of the viaduct deck. This is assumed to comprise a composite girder or ladder deck structural form, which would be lifted in to place using a mobile crane.

11. The tied arch bridge would be delivered to site in sections and assembled on the reinforced earth embankment to the north of the ECML. Temporary works would be required to provide a level platform of sufficient width for bridge construction.

12. Once the abutments are completed and the bridge fabricated, it can be moved in to position during a 56 hour Christmas possession of the ECML. It is proposed that the bridge would be slid in to place using self-propelled modular trailers (SPMTs) in conjunction with hydraulic rams (refer 15). The OHLE would need to be temporarily removed and subsequently reinstated to allow the SPMTs to cross the ECML.

13. Following the bridge slide the temporary works would be removed and the permanent road profile created on the northern bridge approach.

14. The final stages of construction would see completion of pavement construction, surfacing, landscaping, safety barriers, lighting installation, etc.

Figure 17 Tied Arch Bridge Slide. Hydraulic jacks to left, SPMTs to right of image.

7.2.5.2 Impact on Operational Rail Uses during Construction

The construction phase activities would need to be planned and implemented so as to minimise impact on the operational rail network, and the proposals would need to be formally agreed with Network Rail prior to the commencement of works. Anticipated impacts on operational rail uses include:

- The need to relocate the Network Rail GSMR signalling mast and existing maintenance access point.
- The need to re-provide the NRM main line rail connection, necessitating a new connection to be made to the FAL.
- The need for a series of possessions to permit works on or above the existing railway, including the need for an extended possession to permit installation of the tied arch bridge.

7.2.5.3 Impact on Existing Road Network During Construction

Impacts on the existing road network during construction would emanate from both construction traffic and the need to undertake works on the existing public highway at Water End. Impacts are likely to include:

- Construction site access points would be required at Leeman Road, Water End and Seldon Road, with the latter taking access from the A59 Boroughbridge Road. This would lead to increased goods vehicle movements in the vicinity of these accesses and potential increases in noise and dust, subject to the introduction of mitigation measures.
- It is assumed that widening of Water End to create the new access road junction would necessitate the introduction of traffic lights and one way working to allow sufficient working room for construction operations. To provide sufficient working room it is assumed that the southern footway of Water End would be closed to pedestrians and cyclists who would be diverted on to the northern footway. Increased delay and congestion to all road users in the vicinity of Water End would result.

7.2.6 Indicative Costs

7.2.6.1 Capital Cost

The indicative capital cost of this option is estimated at £[redacted] in Q2 2017 prices.

This cost allows for the following:

- Construction of the new road junction, bridge and approaches, and highway infrastructure through the site to connect to Leeman Road via Leeman Yard, and also to Leeman Road via Cinder Lane and York Railway Station. This approach has been adopted to allow comparison of the extent of primary access road infrastructure required for each access option to deliver on the core objectives of the scheme (unlocking the York Central site and improving access to York Railway Station).
- A design development risk allowance of 10% has been included along with a construction risk allowance of 5%.
- Design and professional fees have been included at 12%.

- Cost estimates do not include for Value Added Tax, inflation, finance charges, Local Authority fees (including S.106 & S.278 charges), legal fees, agents fees, third party costs or client internal costs.

A cost breakdown is presented in Appendix C.

7.2.6.2 Maintenance Cost

The indicative maintenance cost is estimated at £[redacted] Q2 2017 prices and includes for the following:

- Allowance for resurfacing all highway areas twice during assessment period (60 years).
- Allowance to replace all street lighting once during assessment period.

A cost breakdown is presented in Appendix C.

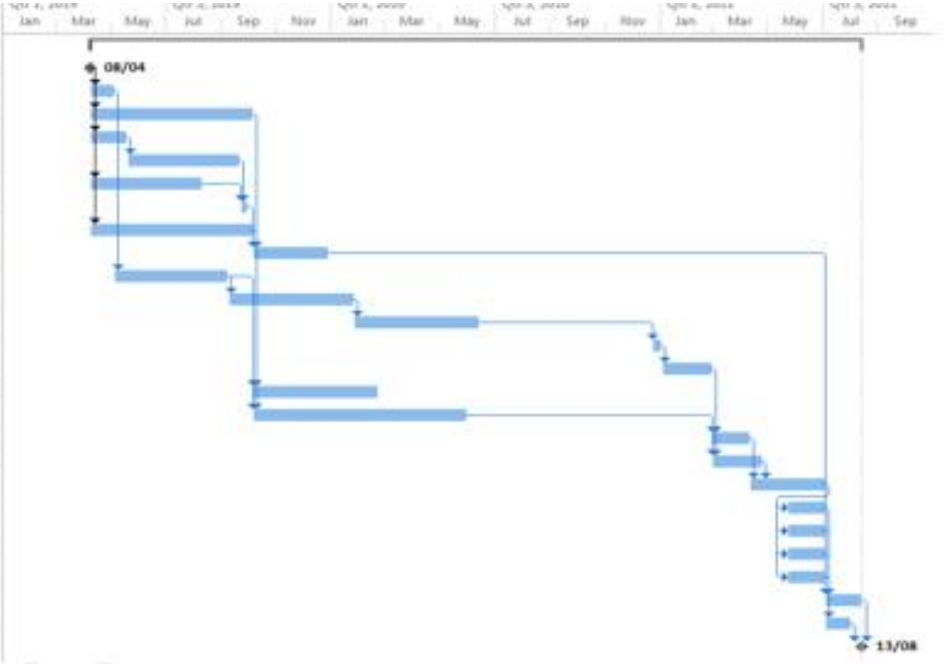
7.2.7 Outline Programme

An outline programme for construction of Access Option A1 is presented in Figure 18. This shows a total estimated construction programme duration of 615 working days. It has been assumed that statutory approvals and detailed design work would be undertaken in advance of this.

The possession for the tied arch bridge lift is a key programme driver. It is assumed to be requested in January 2018 once sufficient design and planning information is available and a 2 year lead-in time has been assumed based on information provided by Network Rail Asset Protection in February 2017.

Figure 18 Option A1 Outline Programme

Task Name	Duration	Start	Finish
Access Option A1 Outline Construction Programme	**615 days**	**Mon 08/04/19**	**Fri 13/08/21**
Construction Start	0 days	Mon 08/04/19	Mon 08/04/19
Relocation of Network Rail GSMR Mast	20 days	Mon 08/04/19	Fri 03/05/19
Relocation of NRM main line rail connection	130 days	Mon 08/04/19	Fri 04/10/19
Establish Site Access Points	30 days	Mon 08/04/19	Fri 17/05/19
Water End Bridge - Abutments	90 days	Mon 20/05/19	Fri 20/09/19
Water End Bridge - Central Leaf Pier	90 days	Mon 08/04/19	Fri 09/08/19
Water End Bridge - Lift	5 days	Mon 23/09/19	Fri 27/09/19
Water End Junction - Phase 1	130 days	Mon 08/04/19	Fri 04/10/19
Water End Junction - Phase 2	60 days	Mon 07/10/19	Fri 27/12/19
Tied Arch Bridge - Abutments	90 days	Mon 06/05/19	Fri 06/09/19
Earthworks - Northern Approach - Phase 1	100 days	Mon 09/09/19	Fri 24/01/20
Tied Arch Bridge - Fabrication	100 days	Mon 27/01/20	Fri 12/06/20
Tied Arch Bridge - Slide (Christmas Possession)	6 days	Fri 25/12/20	Fri 01/01/21
Earthworks - Northern Approach - Phase 2	40 days	Mon 04/01/21	Fri 26/02/21
Earthworks - Southern Approach	100 days	Mon 07/10/19	Fri 21/02/20
Viaduct	170 days	Mon 07/10/19	Fri 29/05/20
Drainage	30 days	Mon 01/03/21	Fri 09/04/21
Utilities	40 days	Mon 01/03/21	Fri 23/04/21
Pavements	60 days	Mon 12/04/21	Fri 02/07/21
Fencing	30 days	Mon 24/05/21	Fri 02/07/21
Safety Barriers	30 days	Mon 24/05/21	Fri 02/07/21
Lighting	30 days	Mon 24/05/21	Fri 02/07/21
Signage & Line Marking	30 days	Mon 24/05/21	Fri 02/07/21
Landscaping	30 days	Mon 05/07/21	Fri 13/08/21
Commission Traffic Signals	20 days	Mon 05/07/21	Fri 30/07/21
Completion	0 days	Fri 13/08/21	Fri 13/08/21



7.2.8 Variant Option A2

7.2.8.1 Description

A summary of key variations between Options A1 and A2 is as follows:

- The Water End junction has been slid northeast away from the existing Water End bridge. This is intended to avoid the need to widen the existing road bridge over the ECML. This option may offer less junction capacity than Option A1 due to the restricted length of right turn lane that can be accommodated between the existing bridge and proposed access road.
- The road alignment does not respect the Millennium Green leasehold extent or Flood Zone 3, passing across both these areas. This results from the relocation of the Water End junction position and the proposed bridge alignment. It is assumed that the road would be supported on a reinforced earth embankment across Millennium Green. This would be subject to review dependent upon any requirement for compensatory flood storage that may be imposed by the Environment Agency / LLFA. This could result in the need to provide either a viaduct structure, or remodel surface levels across Millennium Green and provide a means of conveyance through the embankment to provide additional flood storage between the embankment and ECML (i.e. within Network Rail owned land).
- The road alignment also passes across the Holgate Millennium Green Site of Importance for Nature Conservation (SINC).
- It is assumed that the Network Rail GSMR mast remains in its current position. The feasibility of this would be subject to further review, as the embankment could potentially impinge on wireless communications in this area. An access road would be constructed alongside the reinforced earth embankment; this could also provide continued railway maintenance access for Network Rail.
- A shorter (circa 40m) single span bridge would cross the ECML at a reduced skew angle. This would be of composite multi-girder or ladder deck construction and could be pre-assembled and lifted in to place with a mobile crane.
- The relocation or remodelling of two network sidings and the NRM South Yard rail access would be required.
- The southern approach embankment could be constructed from reinforced concrete retaining walls as the alignment in this area would allow the Holgate Beck easement to be partly avoided (negating the need for a viaduct structure). A second bridge span is assumed required across the culverted Holgate Beck.

7.2.8.2 Indicative Cost

The indicative capital cost of this option is estimated at £[redacted] in Q2 2017 prices.

This cost allows for the following:

- Construction of the new road junction, bridge and approaches, and highway infrastructure through the site to connect to Leeman Road via Leeman Yard, and also to Leeman Road via Cinder Lane and York Railway Station. This approach has been adopted to allow comparison of the extent of primary access road infrastructure required for each access option to deliver on the core objectives of the scheme (unlocking the York Central site and improving access to York Railway Station).
- A design development risk allowance of 10% has been included along with a construction risk allowance of 5%.
- Design and professional fees have been included at 12%.
- Cost estimates do not include for Value Added Tax, inflation, finance charges, Local Authority fees (including S.106 & S.278 charges), legal fees, agents fees, third party costs or client internal costs.

The indicative maintenance cost is estimated at £[redacted] in Q2 2017 prices and includes for the following:

- Allowance for resurfacing all highway areas twice during assessment period (60 years).
- Allowance to replace all street lighting once during assessment period.

A cost breakdown is presented in Appendix C.

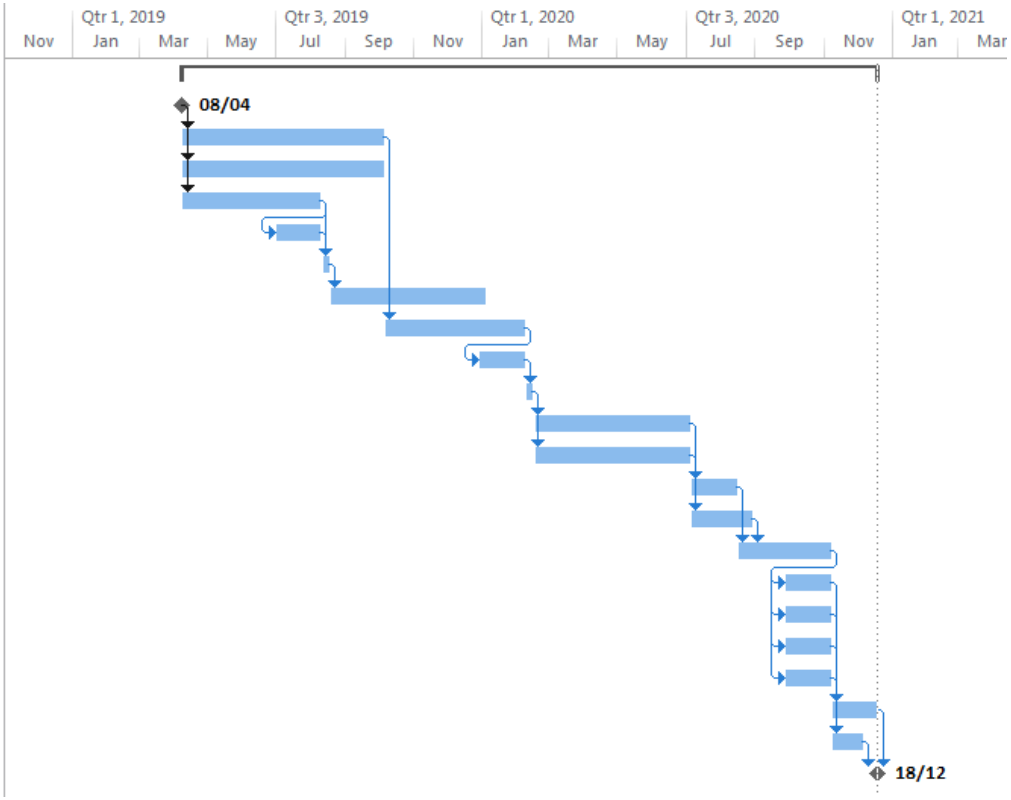
7.2.8.3 Outline Programme

An outline programme for construction of Variant Option A2 is presented in Figure 19. This shows a total estimated construction programme duration of 445 working days. It has been assumed that statutory approvals and detailed design work would be undertaken in advance of this.

Relocation of the NRM main line rail connection is a key programme driver, with this being required to permit subsequent construction of the abutments for the Holgate Beck bridge, the southern approach embankment to the bridge, and the interconnecting section of road between the Holgate Beck and ECML bridges.

Figure 19 Variant Option A2 Outline Programme

Task Name	Duration	Start	Finish
Access Option A2 Outline Construction Programme	**445 days**	**Mon 08/04/19**	**Fri 18/12/20**
Construction Start	0 days	Mon 08/04/19	Mon 08/04/19
Relocation of NRM main line rail connection	130 days	Mon 08/04/19	Fri 04/10/19
Water End Junction	130 days	Mon 08/04/19	Fri 04/10/19
Bridge Abutments - ECML	90 days	Mon 08/04/19	Fri 09/08/19
Bridge Deck Assembly - ECML	30 days	Mon 01/07/19	Fri 09/08/19
Bridge Lift - ECML	5 days	Mon 12/08/19	Fri 16/08/19
Earthworks - Northern Approach	100 days	Mon 19/08/19	Fri 03/01/20
Bridge Abutments - Holgate Beck	90 days	Mon 07/10/19	Fri 07/02/20
Bridge Deck Assembly - Holgate Beck	30 days	Mon 30/12/19	Fri 07/02/20
Bridge Lift 2 - Holgate Beck	5 days	Mon 10/02/20	Fri 14/02/20
Earthworks - Southern Approach	100 days	Mon 17/02/20	Fri 03/07/20
Earthworks - Central Section	100 days	Mon 17/02/20	Fri 03/07/20
Drainage	30 days	Mon 06/07/20	Fri 14/08/20
Utilities	40 days	Mon 06/07/20	Fri 28/08/20
Pavements	60 days	Mon 17/08/20	Fri 06/11/20
Fencing	30 days	Mon 28/09/20	Fri 06/11/20
Safety Barriers	30 days	Mon 28/09/20	Fri 06/11/20
Lighting	30 days	Mon 28/09/20	Fri 06/11/20
Signage & Line Marking	30 days	Mon 28/09/20	Fri 06/11/20
Landscaping	30 days	Mon 09/11/20	Fri 18/12/20
Commission Traffic Signals	20 days	Mon 09/11/20	Fri 04/12/20
Completion	0 days	Fri 18/12/20	Fri 18/12/20



8 Option A: Transport and Highways Considerations

8.1 Introduction

An assessment of the York Central transport impacts for each access option has been undertaken for various travel modes:

- The highway impact of the access options has been assessed using the CYC Strategic Saturn model. Data outputs consider network wide traffic flows, journey times and delay as well as local traffic flow differences and junction performance;
- Bus re-routing and journey time impacts have been assessed using the Strategic Saturn model; and
- A graphical analysis of cycle and pedestrian connectivity and accessibility has been undertaken.

Detail of the traffic modelling is provided in the Modelling Note, provided at Appendix B.

8.2 Assessment

8.2.1 Site Context

The York Central site is located immediately west of York Rail Station, on the western fringes of York City Centre. The site is bounded by existing rail freight lines to the south and west, Water End to the north west, the East Coast Main Line, commercial properties adjacent to Leeman Road and the River Ouse to the north and York Rail Station to the east.

The site location, adjacent to the rail station and on the fringes of the city centre, is well connected for a range of services and amenities as well as to bus and rail services to a range of local, regional and national destinations. The site is also located close to local residential areas including Acomb and Clifton.

8.2.1.1 Highway Network

The York Central site is broadly surrounded by the A59 Holgate Road to the south and west, Water End to the north west, A19 Clifton Road to the north and east and Queen Street / Station Road to the east. Salisbury Road / Leeman Road connect Water End and Station Road with Leeman Road passing through the site in an approximate north west to south east direction.

The A59 Holgate Road and A19 Clifton Road provide key radial routes between the Outer Ring Road and the city centre, as well as wider destinations to the north and west including Thirsk, Harrogate and Skipton. They are busy wide single carriageway routes characterised by local junctions, access to local

businesses/retail and residential dwellings, areas of on street parking, frequent bus services and cycle route provision.

Water End, provides a connection between these two radial routes. It is a wide single carriageway with a number of junctions providing local access to businesses and residential areas. Cycle lanes are provided along the full length of Water End.

The A19 Holgate Road and A59 Clifton Road are key corridors accessing the city centre while Water End and Leeman Road provide local cut through routes. The local highway network is busy and congested in peak periods.

8.2.1.2 Bus Services

Due to the site location in the vicinity of York Railway Station, the area is served by an extensive bus network. There are a number of bus services which stop at the railway station, typically providing buses at an interval of 15 minutes or less during the day from Monday to Friday and at weekends. These services are complimented by a number of lower frequency services.

A59 Holgate Road is an important public transport route with a high number of bus services including Routes 1, 5/5A, 22, 23, 24, 44, 59 and 412 using it to access York Railway Station and the city centre. Bus services also run along Leeman Road and Water End (2, 10/10A, 19, 30, 30X, 31, 31X) in close proximity of the site. Bus frequencies along Leeman Road and A59 Holgate Road are approximately 15 to 20 minutes. Further east, the A19 Clifton, is also a bus route, served by a number of regular routes including 2, 19, 29, 30, 30X, 31, 31X and 822.

8.2.1.3 Rail Services

York Railway Station offers access to a wide range of local, regional and national destinations. York is located on the East Coast Main Line and provides three services per hour to London King's Cross. York also provides high frequency services to regional centres such as Leeds, Manchester and Newcastle.

8.2.1.4 Cycling Infrastructure

Across the majority of the site there is limited cycling infrastructure in place. In the immediately vicinity of the site a cycle lane is provided along the section of Leeman Road before the T-junction with Cinder Lane and under Marble Arch. A segregated cycle lane is provided along the frontage of the Bishopfields housing estate. Cycle lanes are provided either side the section of Queens Street/Station Road and on Water End.

Off road cycle tracks are provided to the north of the rail station over Scarborough Bridge and either side of the River Ouse. To the south of the rail station an off road cycle route is provided through the car park to Lowther Terrace and Holgate Road. In addition a further off road cycle routes is provide adjacent to Cinder Lane and over the railway bridge to Wilton Rise. A wheel ramp up/down the steps is provided.

In the wider area there a number of off-road, on-road and advisory cycle routes identified across the city, including the A59 and A19.

8.2.1.5 Pedestrian Infrastructure

Within the site there is limited pedestrian infrastructure as the majority of the site relates to rail activity. There are pedestrian connections to the wider network connecting local residential areas, the rail station and city centre.

Two underpasses on Leeman Road provide pedestrian connections to the site, with a dedicated pedestrian (and cycle route) available through Marble Arch to the east, and a footway along Leeman Road to the west. The existing western entrance to York Railway Station provides pedestrian access between the site and the city centre via the station. However, this stepped access is poorly signed and difficult to use for pedestrians, particularly those with mobility impairments.

Pedestrian access exists from the north east of the site from Leeman Road via Scarborough Bridge to Marygate. Stepped pedestrian access also exists from the south of the site over the railway to Wilton Rise. These routes provide access to local residential areas, however are generally narrow and present difficulties for those with mobility impairments.

Footways and crossings are generally provided adjacent to the local highway network surrounding the site, at the main station entrance, within the city centre and in local residential areas.

8.2.2 Model Development

City of York Council's Strategic Saturn model has been used to assess the impact of the York Central scheme shortlisted access options. The modelled time periods are AM peak hour (08:00-09:00hrs) and PM Peak hour (17:00-18:00hrs). The following models have been used for assessment:

- 2015 Base Year;
- 2021 and 2031 Do-Minimum; and
- 2021 and 2031 Do-Something.

The Do-Minimum models incorporates background growth and committed developments and the Do-Something models includes background growth, committed developments and the proposed York Central development, including highway access options A and E.

The Base, Do-Minimum and Do-Something models have been provided by CYC. Updates to the Do-Something models have been undertaken to reflect the latest scheme trip generation.

8.2.2.1 Development Proposals / Quantum / Trip Generation

The proposed development comprise residential, employment and other retail and community uses. For the purposes of this assessment, the phasing and

development quantum of the proposed York Central development site is provided in Table 10. This has been calculated based on estimated build out rates provided by Savills in April 2017. Based on the quantum and proposed phasing, the new access would be required by 2021 to enable development to continue unconstrained by the highway access capacity.

Table 10 Indicative Phasing of York Central Development (calculated from build out rates provided by Savills in April 2017)

Land Use	Forecast Year	
	2021	2031
Residential (no. of dwellings)	425	1,685
Commercial – employment (sq.m)	18,580	61,060

Site specific trip rates were derived for residential developments based on traffic count data collected for the Aldborough Way and Bishopfields residential areas which includes a mixture of terraced houses and multi-storey apartments.

Vehicle trip rates for employment land uses are based on TRICS assessment (Town Centre sites, Sites excluding London, Ireland, Wales and Scotland and sites surveyed no earlier than 2010).

The vehicle trip rates applied to the proposed York Central development are presented in Table 11.

Table 11 Vehicle Trip Rates

Vehicle Trip Rates				
Land Use	Time Period			
	AM peak		PM peak	
	Arrivals	Departures	Arrivals	Departures
Residential (no. of dwellings)	0.070	0.152	0.176	0.118
Employment (per 100 sq.m)	0.575	0.042	0.026	0.561

Vehicular trips generated by the proposed development site have been estimated for each forecast year and time period by applying the above trip rates to each land use and the quantum of proposed development. In order to account for predicted trips for other retail and community uses at the site a 10% uplift factor has been applied to the total residential and employment trips. The total predicted trip generation is presented in Table 12.

Table 12 York Central Trip Generation

Land Use	2021				2031			
	AM peak		PM peak		AM peak		PM peak	
	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures	Arrivals	Departures
Residential	30	65	75	50	118	256	296	198
Employment	107	8	5	104	351	26	16	342

Total	137	72	80	154	469	282	312	541
Total+10%	150	80	88	170	516	310	343	595

The number of trips generated in 2021 represents the partial build out of the site and in 2031 represents the full build out of the York Central development. It is estimated that Phase 1 of York Central development (2021) would result in 230 and 258 additional vehicle trips in AM and PM peak hours. The modelled development vehicle trips by 2031 is 826 and 938 in AM and PM peak hours respectively.

These predicted development trips have been included in the Do-Something trip matrices.

8.2.2.2 Highway network – including Leeman Road

The proposed highway network for the York Central development Option A is based on the CYC Do-Something model.

In both Do-Something options Leeman Road is closed as a through route and diverted into the site. Immediately south of the western railway bridge Leeman Road is incorporated in to the York Central site, providing access to new residential areas. The eastern section of Leeman Road at the eastern underpass is retained. The Leeman Road alignment is retained to the north of the Bishopfields residential development, however, is blocked as a vehicle route in front of NRM. A new route through the site is provided to the west of the rail station and a two way bus gate provided between the station and Leeman Road eastern underpass.

For Option A, a new highway link is provided connecting Water End, immediately north of the railway bridge, with the western end of Leeman Road. A new traffic signal controlled junction is proposed at Water End.

8.2.2.3 Bus services – diversions

A review of modelled bus services and routes surrounding the site, principally A59 Holgate Road, A19 Clifton and Water End has been undertaken.

Currently all bus services are routed to serve the main rail station frontage at Queen Street / Station Road and Leeman Road. Routes along A59 Holgate Road joining A1036 Blossom Street and Queen Street can be congested causing delay for buses.

In order to provide an assessment of the highway impacts associated with the choice of access, assumptions have been made that a number of bus services will be re-routed to run through the York Central site. These assumptions are based on an analysis of existing routes, but there has been no engagement with bus operators as part of this study. There is no current commitments from YCP regarding such re-routing. The potential for bus servicing will be considered as part of the Transport Assessment which will accompany a future planning application.

The potential for existing bus services to be re-routed into the York Central site has been considered, capturing passengers travelling to/from north-western segments defined by the primary radial routes between the inner and outer ring roads of the city (Acomb Road, A59 Boroughbridge Road, A19 Shipton Road).

The re-routing of bus services has included the P&R and higher frequency services (defined as at least 3 buses per hour) through York Central to capture increase in demand that can be expected from new employment uses and enhancement of connections to the rail station.

The bus services re-routed for Option A are summarised in Table 13. The services will divert on to Water End and through the site via the new northern access road. Bus service routing has been assumed to be same for Do-Minimum and Do-Something scenarios except for the routes identified.

Table 13 Re-routing of bus services – Option A

Segment	Bus Route	Service Frequency (per hour, peak)	Option A
Acomb Road Segment	1	6	No Change
	412	1	No Change
A59 Segment	5	2	No Change
	5A	1	No Change
	22	1	No Change
	24	1	No Change
	59 P&R	6	New Road
A19 Segment	2	6	New Road
	10	2	New Road
	19	1	New Road
	30	1	Salisbury Rd – Leeman Rd – York Central – Leeman Rd
	30X	1	Salisbury Rd – Leeman Rd – York Central – Leeman Rd
	31	1	Salisbury Rd – Leeman Rd – York Central – Leeman Rd
	31X	1	Salisbury Rd – Leeman Rd – York Central – Leeman Rd

8.2.2.4 Car Parking Assumptions

The location of the car parks to the west of the station have been rationalised within an assumed Multi-storey Car Park (MSCP) (Saturn zone number- 523) located to the west of the station and accessed via the new site link road. Due to proposed changes to the location of access and egress from the site car parks as

well as the ROC and Unipart, all trips from these zones were redistributed to the assumed MSCP.

The quantum of rail station car parking to the east of the station is not altered at this stage. For the purposes of this assessment, it is assumed that this remains as per the current situation.

8.2.3 Model Outputs (Option A)

A range of modelling output data has been obtained to provide assessment of the operation of the highway network as a result of the proposed York Central development and provide comparison of the two access options.

The modelling note provided at Appendix B provides detail of the modelling outputs and results. A summary of the Option A outputs are presented below.

8.2.3.1 Network wide - delay / travel time / distance

An assessment of the York Central development impact on the network wide highway operation has been undertaken. This is reported as Total Network Delay (PCU hrs), Total Network Travel Time (PCU hrs) and Total Travel Distance (PCU km). The detailed results of each metric are presented in the modelling note at Appendix B.

The network wide delay is predicted to increase by 6% and 5% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 9% and 6% respectively in the AM and PM peak hours respectively.

The network wide travel time is predicted to increase from the Do-Something to Do-Minimum scenarios by 3% and 2% by 2021 in the AM and PM peak hours respectively. By 2031 the percentage increase is 7% and 3% in the AM and PM peak hours respectively.

For Option A, total network travel distances are predicted to increase by 1% in both the AM and PM peak hours in 2021 and by 3% in both the AM and PM peak hours in 2031.

Comparison of the network performance between the Do –Minimum and Do-Something shows an increase in congestion as demonstrated by each metric owing to the additional trips generated from York central. Total travel time and delay is predicted to increase in the Do-Something scenario showing a general deterioration in highway conditions across the wider network, however the overall increase compared to Do-Minimum is proportionately low and a moderate adverse impact is predicted.

8.2.3.2 Flow differences – network wide and local

Flow difference plots have been extracted from the 2031 AM and PM models and are presented in the modelling note at Appendix B. These identify the difference in flows between the Do-Minimum and Do-Something scenarios for each option.

In general on the wider network, traffic flows in the Do-Something scenario are consistently higher than the Do-Minimum scenario along the majority of modelled routes in the study area. The most significant increase in flow occurs on the outer ring road and the western radial routes connecting to the city centre as these are the major corridors that take traffic to/from the development.

In the AM peak hour, increase in traffic flows are predicted along the A59, A19 and B1224 corridors providing access to the site as well as A64 to the south of the outer ring road, and the A1036 and B1363 Wigginton Road which provides alternative access routes to the city centre. In the PM peak hour greater increases in traffic flows are predicted on the A64 outer ring road to the south and east of the city. The A19, A59 and Water End in the immediate vicinity of the site are predicted to experience increased traffic as well as the B1224 and Askham Lane. There are a few instances of some decrease in traffic flows as a result of drivers rerouting to less congested routes. Principally the flow reduction occurs on Leeman Road, as a result of its closure as a through route for general traffic.

The analysis has shown that the additional development trips do not have an overly significant impact compared to the Do-Minimum scenario. Increases in traffic flows are mainly observed along the outer ring road and the radial routes during peak hours. On these routes the increases in traffic flows are generally modest. Flow changes remain relatively insignificant in other parts of the network and this implies that the proposed developments will not lead to re-routing of trips beyond the immediate vicinity of the development site. A moderate adverse impact is predicted.

Local network flow differences between the Do-Minimum and Option A are presented within the modelling note at Appendix B.

The additional trips generated from the proposed developments generally lead to traffic growth on the local road network.

In Option A in the AM peak hour there is a moderate increase in traffic flows on A19 (18%) and Water End (12%) with a more significant increase of traffic flows on the A59 corridor (22%, 23% and 28%). There is a forecast reduction in traffic flows on routes to the east of the station including A1036 (-17%) and Queen Street (-3%). The results are similar but more significant for the PM peak hour with an increase of 23% at Water End, 53% on A19 and approximately 50% on A59 links. There is a modest increase in traffic flows on the A1036 (7%) and slight reduction on Queen Street (-2%).

In general there are traffic flow increases on routes surrounding the site with the impact on the A59 considered to be major adverse and on A19 and Water End where a moderate adverse impact is predicted. There is a reduction or minor increase in traffic flows on routes to the east of the station, A1036 and Queen Street where there is considered to be a minor beneficial impact.

8.2.3.3 Junction performance – mitigation

Junction performance is based on predicted delay at junctions (node delay). Within the modelled network, junctions have been identified where the delay is

greater than 50 seconds in the Do-Minimum scenario and where the Option A Do-Something scenario further increases the delay by 10 seconds or more.

This process has been applied to identify where junctions experience delay and where the York Central development is likely to have an impact. On this basis, it is assumed that junction mitigation measures may be required. Further more detailed assessment will be required to confirm impacts and potential highway mitigation as part of a future planning application

There are nine junctions identified for Option A in both AM and PM peak hour or either of them by applying the above filtering criteria. The location of these junctions is shown in the modelling note at Appendix B. The key junctions on the network that are affected by junction delay in 2031 are detailed below:

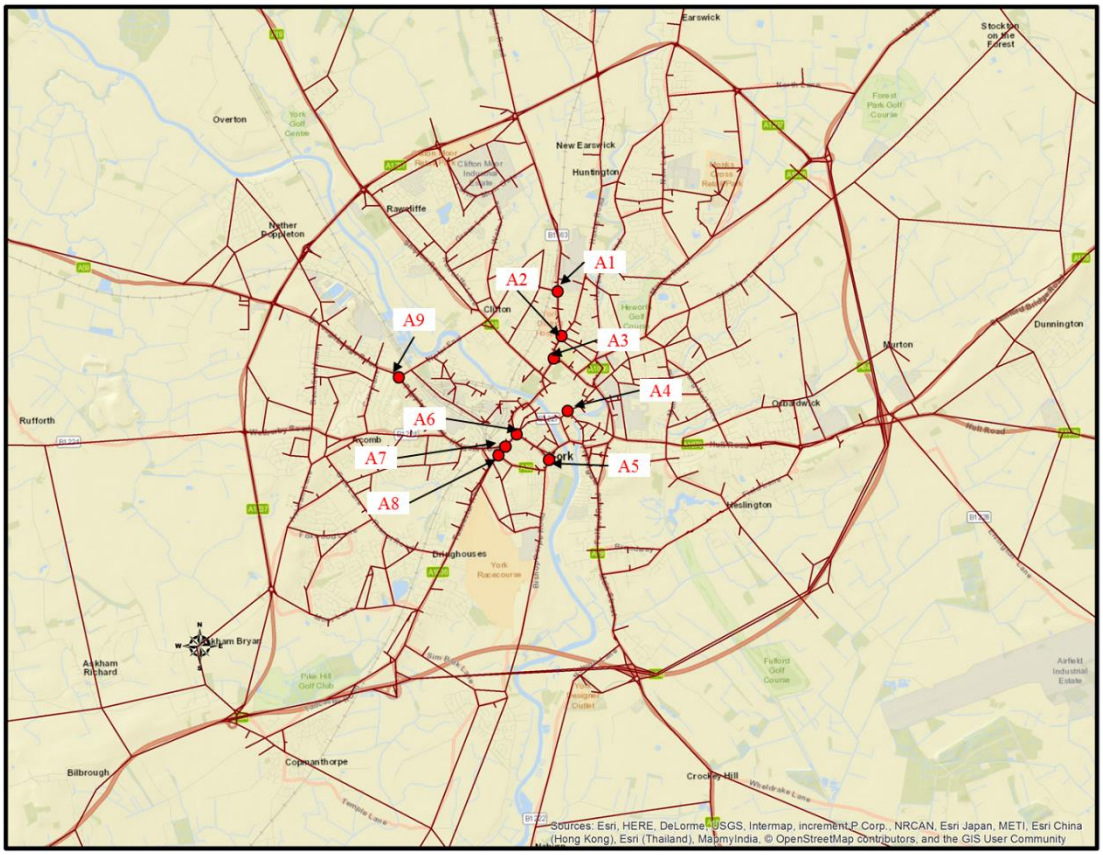
- A1-B1363 Wigginton Road/Crichton Avenue
- A2-B1363 /Haxby Road
- A3-B1363/A1036
- A4-Piccadilly/Pavement/Coppergate
- A5-A1036 Bishopthorpe Road/Nunnery Lane
- A6-A1036 Blossom Street/Nunnery Lane
- A7-A1036 Blossom Street/A59 Holgate Road
- A8-A1036 The Mount/Scarcroft Road
- A9-A59 Boroughbridge Road/Water End

Most of the junctions are located along the B1363 and A1036 corridors. The delays could be attributed to traffic coming into the city centre and predicted to experience more congestion in 2031. In particular B1363 Wigginton Road/Crichton Avenue junction is predicted to experience congestion in both peak hours and part of it is related to the proposed York Central development.

Junction performance issues at other locations are due to the combined effect of increase in background traffic growth and the proposed developments.

The extent of delay and impact of the York Central development varies for each junction. Overall there is considered to be a major or moderate adverse impact as a result of the development. A mitigation assessment has not been undertaken as part of this study. Further analysis needs to be carried out at these junctions with detailed junction modelling to understand the issues and potential mitigation measures required to alleviate congestion. Following more detailed modelling and identification of mitigation measures it is anticipated that the impact would be of moderate or minor adverse significance.

Figure 20 Junction Performance Assessment- Comparing Option A with Do-Minimum



8.2.3.4 Bus Journey Times

An initial assessment of the changes in bus journey time on the wider network is made by comparing the bus summary statistics for each route. This involves tracing each bus route and summing total travel times and distance, based on the number of buses using each route. The routes identified and the bus journey times are provided within the modelling note at Appendix B.

Initial results indicate that Option A will result in a cumulative increase of 16 and 11 minutes for the routes under consideration in AM and PM peak hour in 2031, Closure of Leeman Road will result in buses travelling slightly longer distance via Salisbury Road-Leeman Road-York Central-Leeman Road in the Do-Something scenario which partially contributes to the increase in journey time. It is noted that there are some slight improvements in journey time on the 59 P&R route. A minor adverse impact on bus journey time is predicted.

8.2.4 Pedestrian / Cycle Accessibility

An assessment of pedestrian and cycle accessibility for the schemes has been undertaken. The York Central scheme could provide a network of high quality and safe pedestrian and cycle routes through the site. These will provide a network of routes internally connecting the residential, employment and community uses on the site. Routes will also connect to the existing external network, including via the railway station and Leeman Road underpass to the east

for access to the city centre, via Scarborough Bridge to the north of the River Ouse, via a new link to the west of the NRM for access to residential areas and leisure routes to the south of the River Ouse and via Leeman Road to the north west of the site.

Access Option A can also provide a further route adjacent to the new highway to the north west connecting with Water End. The existing bridge over the railway at Wilton Rise will provide the only access between the York Central site and residential / commercial areas to the south of the rail lines. This existing bridge is stepped and therefore provides restricted pedestrian and cycle connectivity.

Overall, pedestrian and cycle connectivity will be improved for new occupiers of the site as well as for pedestrian / cyclists in existing surrounding uses, improving access to the rail station and city centre. However, without improvements at the Wilton Rise bridge the connectivity to the south of the rail line is limited. A minor/moderate beneficial impact is predicted.

Further analysis has been undertaken identifying walking and cycling catchments:

- 800m walking catchment (approx. 10 mins) to the rail station western entrance. This is based on guidance that indicates people are likely to walk 800m to access a rail station. This will capture residents from the York Central scheme as well as existing residential areas that will have good access to the rail station;
- 2km walking catchment (approx. 25 mins) to the rail station western access / commercial development. This is based on guidance that indicates this distance is realistically achievable and people could be encourage to walk to work. This will capture residents from the York Central scheme as well as existing residential areas that will have good access to employment opportunities on the site. In reality, some residents may walk this distance to York rail station to avoid congestion / parking issues from access by bus or car. It is also considered an appropriate distance for residents to cycle to the rail station.

Within a catchment of 800m (walking distance) based on the existing walking network, the identified population would be approximately 6,725 people. Within a catchment of 2km (walking distance) based on the existing walking network, the identified population is approximately 37,800 people. The population data has been taken from the Office of National Statistics 2015 mid-year estimates using a Lower Super Output Area (LSOA) datasets. Factors have been applied to populations within LSOAs that are only partially within the walking distance isochrones (based on the estimated percentage of residential area that appears to be inside/outside the isochrones).

The population within these catchments accounts for the poor accessibility to the south of the railway line and the sub-standard crossing to Wilton Rise remains, limiting accessibility for all users.

It is acknowledged that cyclists will generally cycle greater distances (guidance indicates up to 8km to work). However, beyond 2km there is negligible difference

in the catchments for the two access options, therefore further assessment as part of this access options study has not been undertaken.

9 Option A: Air Quality Considerations

9.1 Introduction

The development has the potential to impact existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. The main pollutants of concern from vehicle exhaust emissions are NO_2 and PM_{10}.

This chapter summaries the air quality assessment carried out for Option A. The full assessment can be found in the Access Options Air Quality Assessment Report (Appendix E).

The chapter includes:

- A review of relevant policy, legislation and guidance;
- Assessment methodology;
- A baseline assessment of existing air quality conditions in the vicinity of the site; and
- Operational assessment of road traffic emissions including indicative pollutant concentration results and an assessment of significance.

It should be noted that this assessment has been carried out on variant A1. Variant A2 would move the new access route further north and significantly closer to existing residential properties, such that it may change some of the results of the detailed modelling on the northern side of the bridge. This would be confirmed through detailed modelling to accompany the Environmental Impact Assessment for any scheme to support any future planning application.

9.2 Assessment

A detailed modelling assessment has been undertaken to determine the potential local air quality effects associated with the potential trip generation as a result of the proposed development. Indicative pollutant concentrations have been forecast at selected properties (receptors) where the effects of the proposed road options on air quality are potentially the greatest. Pollutant concentrations at specified receptors near to the Option A have been assessed for the two key pollutants related to traffic emissions: NO_2 and PM_{10}.

Traffic data was provided by Arup transport consultants for a 2031 Do-Minimum (DM) and 2031 Do-Something (DS) scenario. These scenarios have been selected for assessment as the proposed opening year of the development, when vehicle movements will be at their peak. Emissions have been kept at 2016 levels, as a worst case assessment.

Following the EPUK/IAQM guidance, a screening assessment has been carried out which looked at the increase in vehicle numbers from the DM scenario to the DS scenario, for roads in the vicinity of the site. Where there was a change in

Heavy Duty Vehicle (HDV) or Light Duty Vehicle (LDV) numbers which would be greater than the EPUK/IAQM screening numbers of 25 HDVs and 100 LDVs, these were included in the assessment.

The results have been categorised using the traffic light approach: red suggests a moderate adverse impact is likely to occur; amber suggests a minor adverse impact; and Green suggests a small or negligible impact on local air quality. All results are without mitigation in place.

For the assessment of NO_2, Option A is predicted to improve air quality at 3 modelled receptors, have a negligible impact at 46 assessed receptors, and have a slight adverse impact at 1 receptor. There are no moderate adverse impacts predicted.

The PM_{10} results show a similar trend to the NO_2 results, however a negligible impact for PM_{10} was predicted at all receptors.

Therefore, without mitigation in place, Option A is considered to have a slight adverse impact at worst, and has been classified as amber. The predicted results have not been verified and therefore have been used for comparative purposes. The overall air quality assessment for the full development of York Central will be provided within the Environmental Impact Assessment accompanying the planning application.

9.2.1 Operational Mitigation

The proposed development will be designed to encourage walking and use of public transport rather than personal car ownership. Measures to reduce car or vehicle use on the site should be encouraged as well as installing electric car charging points. These measures will help to reduce local air quality concentrations by reducing vehicle trips in the local area.

Sensitive receptors (residential dwellings, schools, hospitals etc) should not be located close to the proposed road option. Setting dwellings back from the roadside will reduce the concentrations of pollution at the façade of the properties.

10 Option A: Heritage Considerations

10.1 Introduction

This section considers, at a high level, the possible impacts in terms of both designated and undesignated heritage assets. It should be read alongside and in connection with the townscape appraisal at section 10 to understand the overall approach to townscape and visual impacts associated with the access options. It should be noted that in terms of impacts on heritage assets, limited differences occur between variant A1 and A2.

The baseline data used for the appraisal has been drawn from a review of the available Historic Environment Record entries, retrieved in March 2017. This, together with the Audit of Heritage Assets[9] (which identifies both listed buildings, locally listed buildings and the sites of now demolished railway buildings that have been subject to excavation) and data retrieved from the National Heritage List England[10].

The baseline for the assessment has also been the subject of discussions with the City of York Council Archaeologist to inform the baseline for the appraisal of the shortlisted access options and their impact on heritage assets. This assessment considers impacts on those assets either directly in the route of the access options or in the immediate vicinity.

It should be noted that the heritage overview of the access options has been prepared without consideration of the associated impact of the York Central development on the setting and value associated with those assets. Without the wider consideration of the full development, the mitigation which could be used to reduce any adverse impacts is difficult to quantify. Therefore the assessment focuses on the unmitigated impacts which could arise on designated and un-designated heritage assets.

10.2 Assessment

The assessment has been informed by an assessment of the magnitude of change to the assets identified against the value of the asset. The approach used to assess magnitude of impacts on heritage assets considers the change upon the receptor. This takes into account the severity of impact of the Proposed Development, together with the vulnerability of the receptor to change. The approach used is based on professional judgment and experience. It also reflects guidance on 'substantial harm' and 'less than substantial harm' in the NPPF and established methodologies in the Highways Agency Design Manual for Roads and Bridges Volume 11(DMRB).

[9] York Central: Audit of Heritage Assets (Fawcett et al 2013)
[10] https://historicengland.org.uk/listing/the-list/

10.2.1 Archaeological context

Access Option A runs from the north-west of the site through an area associated with prehistoric activity as it lies on a causeway linking the Western Pennine foothills with the Eastern Chalk Uplands of the Yorkshire Wolds (a historic trade route). It is noted that the majority of archaeological finds come from the area on the south-west bank of the River Ouse, particularly the Holgate Beck which is a tributary that runs adjacent to Option A. The low lying nature of this area and the presence of the Holgate Beck indicates that there is at least a moderate potential for sealed waterlogged deposits to be preserved in anoxic (oxygen free) conditions. These can preserve organic materials (such as wood and leather) and also potentially preserve deposits of peat which can be analysed to retrieve important pollen sequences which reveal climatic changes over long periods of time.

It should be noted that Roman material has previously been recorded as dispersed across the proposed development site due to ground levelling during construction of the railway infrastructure in the 19th century. The site has also been documented as having been in use as arable land in the medieval period. The road runs through a mostly late post-medieval setting, surrounded by the Railway and associated infrastructure.

10.2.2 Designated and non-designated Heritage Assets

The designated and un-designated heritage assets which would be affected by Option A are set out in the tables below.

There are no Conservation Areas or Scheduled Monuments affected by the route of Access option A, directly or indirectly, except for views from and to York Minster. Poppleton Road Primary school, a Grade II Listed Building (NHLE Number 1256903), lies in an elevated position approximately 250m to the west.

The view of York Minster (a Grade 1 Listed Building and Scheduled Monument, NHLE Number 1257222) from the Water End Bridge has been assessed as being one of the City wide key views (view 10) of this iconic monument. Therefore there is likely to be a visual impact on the setting from this location.

The tables below describes at a high level the possible magnitude of impact and significance of effect on the heritage assets associated with Option A.

Table 14 Option A: Direct impacts on non-designated heritage assets

HER Number	Description	Heritage value (DMRB)	Magnitude of Impact	Significance of effect
MYO3497	Ridge and furrow seen as earthworks and cropmarks on 1936 air photographs	Low.	None- The option would pass to the south west of this asset.	Neutral

Table 15 Option A: Indirect impacts on designated heritage assets

NHLE Number	Description	Heritage Value	Magnitude of Impact	Significance of effect
1256903	Poppleton Road Primary School Grade II Listed building	Medium.	Negligible- the access option would be visible within the setting of to the east of the school, but this view does not contribute to the significance of the asset.	Neutral
1257222	CATHEDRAL CHURCH OF ST PETER, YORK MINSTER Grade I Listed building and Scheduled monument	Very High - this iconic asset is considered to be of international significance.	Negligible	Slight adverse –the asset itself would not experience an effect as a result of the option, however the city wide key view (view 10) of the asset would be impacted by the presence of this option.

11 Option A: Townscape Considerations

11.1 Introduction

This section looks at the townscape and visual baseline associated with the Option A access to the York Central site and provides a high level appraisal of the likely impacts. It only considers the impacts on the local townscape and visual amenity that would arise as a result of this potential access and not the proposed York Central development. It is not intended to replace a full townscape and visual impact assessment for the scheme.

11.2 Assessment

The proposed junction from Water End lies approximately 1.4km to the north west of York Railway Station, within the suburban Holgate area of the city. The River Ouse lies to the north, flowing into the city centre from north-west to south-east. The townscape is characterised by its valley floor setting, wide stretches of open space follow the meandering route of the Ouse, such as the Clifton Ings and Rawcliffe Meadows (Registered Common Land and Site of Special Scientific Interest (SSSI)), bound by residential areas and industrial/ commercial land use. The railway is a defining feature within the townscape, following the course of the river into the city, connecting to York Railway Station.

The immediate land uses surrounding Water End include Leeman Road Millennium Green, through which the Holgate Beck flows, and bound to the east by 19th and 20th century terraced housing of Garnet Terrace within the Leeman Road area. The railway line defines the western edge of Millennium Green, beyond which the Poppleton Road Primary School (Grade II Listed) and residential streets of Holgate occupy more elevated land between the A59 Poppleton Road and the railway.

The A59 Poppleton Road and Water End are both well used commuter roads and in combination with the railway the area experiences moderate levels of disturbance from the movement of trains and traffic. The Leeman Road Millennium Green, Clifton Ings and River Ouse walk experience localised feelings of tranquillity and wildness, particularly when views towards nearby buildings and transport infrastructure are screened by trees and waterside vegetation.

11.2.1 Townscape Considerations

11.2.1.1 Option A1

The proposed new access bridge in Option A would result in the introduction of a large new feature that would not be uncharacteristic of the adjoining Water End road bridge. The arch of the proposed bridge would change the character of the

skyline locally though it is not anticipated to be a prominent feature within the wider townscape.

The access road may result in a localised impact upon levels of tranquillity due to movement of traffic along this new road, particularly at the Millennium Green. However, the Millennium Green and the surrounding area already experience existing moderate levels of disturbance due to the railway and traffic on the A59 Poppleton Road and Water End.

In consideration of the above, the impact of the proposed access road on the local townscape is considered to be low and adverse in nature. Impacts may be higher in some localised locations though these will be limited. Adverse impacts are unlikely to be experienced upon the wider townscape as the arch of the bridge will begin to integrate into the skyline of York.

11.2.1.2 Option A2

Option A2 would result in the character of the Millennium Green being altered, involving the loss of areas of trees to the west of the Millennium Green that are intrinsic to the character of the Green. The road would use the south section of the Millennium Green. Existing Network Rail Land to the south of the road alignment could be used for replacement habitat creation.

In consideration of the above, the impact of the proposed access road in Option A2 on the local townscape is considered to be medium and adverse in nature. Adverse impacts are unlikely to be experienced beyond the immediate townscape due to the girder bridge within this option not intervening in the skyline.

11.2.2 Visual Considerations

The townscape is relatively flat and low-lying, due to proximity to the valley floor of the River Ouse, as such views are often foreshortened by intervening trees within the Millennium Green, waterside trees lining the Holgate Beck, the River Ouse and trees that line the railway.

Water End road is relatively well tree lined and elevated, as such the road and the associated vegetation often screens mid to long distance views from the north-west towards York, and the lower lying York Central site.

Few longer distance views are afforded, though panoramic views across the York Central site are possible from elevated locations, such as from bridges at Water End and the pedestrian bridge from Wilton Rise and from Holgate Park.

The York Central Historic Core Conservation Appraisal[11] identifies a series of key views of York Minster that have been selected because they define the city and its image. Each view suggests ways in which it should be safeguarded or enhanced and this is a material consideration in the acceptance of planning applications. Only Key View 10 would be impacted by Option A and Option A2, this is assessed within Viewpoint 1.The line of sight between Key View 8 and the

[11]York Central Historic Core Conservation Area Appraisal Part One.

Minster passes above Water End bridge, however the arch of the bridge is not likely to be visible above intervening roofs.

A series of viewpoints have been identified to represent views towards the proposed access route. These views are outlined below.

Viewpoint 1: Water End Bridge

This viewpoint has been taken to represent views from road users on Water End road. It is also representative of Key View 10 in the York Central Historic Core Conservation Area Appraisal as a key view of York Minster. The appraisal states:

'This is an elevated panorama focused on the Minster, from a road bridge over the railway to the north west of the cathedral. A combination of the low bridge parapet and the lightweight fences either side, together with the extensive clearing and levelling the foreground for the railway, means that this is one of the most expansive panoramas of the historic core from within the city. It demonstrates the unrivalled pre-eminence of the Minster in the city centre townscape. However, the extent of railway tracks and sidings limits the quality of the foreground.' [12]

The photograph from Key View 10 in the Conservation Area Appraisal was taken from the centre of Water End bridge; however the height of the parapet is above most peoples eye level. As such the photograph has been taken from the south-western end of the bridge where the view extends through security fencing.

Beyond the security fencing and bridge parapet in the foreground of the view, the railway lines and York Central site are located below Water End road. Railway and road infrastructure dominate the view, extending into the background of the view to the south east. Trees within the Millennium Green form the horizon of the view to the west, and screen views towards Leeman Road.

[12]York Central Historic Core Conservation Area Appraisal Part One,

The main tower of York Minster is visible to the east in the background of the view, extending above the distant skyline of York between the trees in the midground of the view.

The proposed new junction on Water End road will be visible in the foreground of the view, including a signalised junction and new cycle lanes. The access route would run perpendicular to Water End, comprising a viaduct that would be at grade to the road and would cross in front of Millennium Green. A tied arch bridge with a span of approximately 80 metres would cross the ECML and then continue on viaduct, decreasing in height till its meets the existing site level.

The proposed access route would be seen as a large new feature within the view, screening views of the Millennium Green, though the tops of the canopies of trees would remain visible above the viaduct. In consideration of the above, the magnitude of visual change upon road users is anticipated to be medium to low and the effect would be adverse.

The magnitude of change upon Key View 10 is considered to be low, due to the anticipated retention of views of the Minster (this should be confirmed within a verifiable photomontage if this option is taken forward**)** and the existing degraded nature of the foreground and mid- ground of the view. Whilst this study is neutral of the townscape impacts associated with the wider York Central development, it should be appreciated that with the construction of the York Central development, there may be appreciable wider change to this viewpoint.

Viewpoint 2: Millennium Green

This viewpoint represents recreational users of the Millennium Green of a higher sensitivity as their activity involves appreciation of their surroundings. The Millennium Green has a sheltered nature due to boundary planting along the

western boundary and waterside trees that line the Holgate Brook that flows from north to south.

The Millennium Green is at a similar elevation to the railway lines that bound the western edge of the park, as such views of the railway are predominantly screened by intervening vegetation. The photograph represents a rare glimpsed view of the railway, in proximity to the Water End bridge.

It is anticipated that views of the proposed access route would be mostly screened from within the Millennium Green, due to large areas of trees on the western boundary of the space and those lining the Holgate Beck. The arch of the bridge would be visible from some locations through and above intervening vegetation, particularly from the elevated locations on the eastern edge of the Millennium Green.

The construction of the proposed embankments and retaining walls may require the removal of trees on the western boundary of the site, resulting in views from within the Green extending further and increasing the extent of visual change. As such trees should be retained wherever possible, and if any loss is incurred replacement planting should be implemented.

In consideration of the above, the magnitude of visual change upon recreational users of the park is anticipated to be medium and the impact would be adverse. The magnitude of visual change would be higher if trees on the western boundary of the Millennium Green are felled.

Viewpoint 3: Views to the west from Garnet Terrace/ Bismark Street

The viewpoint represents views from residents of Garnet Terrace. The photograph was taken in front of properties to the north of Garnet Terrace who are located at a slightly elevated location within the Leeman Road area.

The foreground and mid-ground of the view comprises the Millennium Green, sloping down to the Holgate Beck. Waterside trees and a large group of trees to the south of Water End tend to foreshorten views, screening the railway and the elevated built form on the south western edge of the railway. This viewpoint represents a rare glimpsed view of the Poppleton Road Primary School building. It is assumed that views from first floor windows would extend further.

The trees and scrub within the Millennium Green, will mostly screen views of the proposed access viaduct and bridge, though the arch of the bridge will be partially visible above the canopy line. Views from upper floor windows, particularly from the more elevated residences to the north of Garnet Terrace, will extend further and will experience a greater degree of visual change. In consideration of the above, it is anticipated there would be a medium magnitude of visual change to the view which would be adverse in nature.

Viewpoint 4: Holgate Park

This viewpoint represents views of users of the Holgate Park and also of nearby residences to the north with views towards Water End road. The foreground of the view is partially screened by trees, scrub and ornamental planting within the park and that line the edge of the railway. Due to the elevated location on the eastern edge of the park, views extend across the York Central site. Longer distance views extend to properties within the Leeman Road area and Water End bridge though railway infrastructure dominates the views.

The proposed new access route would be visible from this elevated location, from the new junction at Water End road in the background of the view to the section of the road that comes to grade with the site. The proposed bridge and viaduct would be likely to screen longer distance views to the north- west to the

Millennium Green and houses within Leeman Road. The arch of the bridge would form a prominent new feature on the horizon of the view.

The view from nearby residences to the west of the park are anticipated to be predominantly screened by the vegetation that lines the railway and within private gardens in the foreground, and also other residences intervening within the view. However, the arch of the bridge may be visible from some upper storey windows of properties that line the railway and would form a perceptible change on the skyline of the view.

In consideration of the above, the magnitude of visual change upon recreational users of the park and residents is anticipated to be medium and the impact would be adverse.

Viewpoint 5: Seldon Road/ Poplar Street

This viewpoint represents views from residences within the Seldon Road/Poplar Street residential area, located to the east of the A59 Poppleton Road and the west of the railway lines. The houses in this area are predominantly terraced and the streets are orientated in a north west to south east orientation, as such views to the York Central site and to Water End road are mostly screened by built form. However, the more recently developed Poplar Court, located immediately adjacent to the railways lines, is three stories in height and the back of this development faces to the east, as such views to Water End road are anticipated from the upper storeys of these residences.

The foreground of the view to the east of these properties, particularly from ground floor windows, would be partially filtered by trees that line the western edge of the railway. Views will extend through and above this area of vegetation, particularly from upper floors and in winter months due to the deciduous nature of the vegetation. The mid-ground of the view from the upper storeys of residences

is likely to comprise the railway lines and the Millennium Green and the background will be formed by the residential area of Leeman Road to the east and the elevated Water End road and bridge to the north.

The proposed new access road would be visible in the mid-ground of the view from the upper storey of residences; however vegetation would screen views from lower levels. The viaduct and bridge would screen mid-ground views of the Millennium Green and properties within the Leeman Road area. The tops of the canopies of trees and roofs may be visible above the bridge parapet. Views from the school would be of a similar orientation though the proposed new access would be visible across the view to the east, due to more open views, particularly from the play area to the west of the school. However, existing views from the school contain the railway and the Water End road and junction to the A59 Poppleton Road.

The proposed new arch of the bridge would form a noticeable change to the skyline and the movement of traffic along the road would be perceptible.

In consideration of the above, the magnitude of visual change experienced by these residents is anticipated to be medium and the impact would be adverse, the magnitude of change experienced from the school would be medium to high and the impact would be adverse.

Viewpoint 6: Bishopsfield Drive

This viewpoint represents views from residences within the Bishopfields Drive housing development within the centre of the York Central site. The development is generally inward facing and residences front on to internal roads. Views to the surrounding industrial buildings and railway infrastructure are screened by boundary fencing and trees.

The photograph has been taken from the Green to the south of the development, views are completely screened by boundary planting. As such these receptors are anticipated to experience a negligible magnitude of change and a neutral overall impact.

Viewpoint 7: Railway station

This viewpoint represents views experienced by people at York Railway Station. The photograph has been taken from an elevated location at the top of the stairs which provides access from the back of the station to the National Railway Museum and Leeman Road.

The foreground of the view currently comprises car parking to the rear of the train station and a large warehouse beyond that screens views to the west and north-west. The canopies of trees and the roofs of houses within Leeman Road and Holgate that bound the York Central site are barely visible above the roof of the warehouse.

As such views towards the proposed access road are screened and users of the Railway Station are anticipated to have a negligible magnitude of change and a neutral overall impact.

Viewpoint 8: City Walls

This viewpoint represents views from people walking along the historic city walls, near York Railway Station. The main station building screens views to the north-west from the walls; however to the south of the station views extend above the slightly lower roofs of the platforms.

Longer distance views extend to the Freightliner Wagon Repair Depot and beyond to residences within Holgate, Poppleton Primary School and residences within Leeman Road that form the horizon of the view along with a band of trees assumed to be those that line the River Ouse.

The proposed new access road would be barely perceptible within the background of the view, partially screened by trees. The arch of the bridge would be visible and may partially extend above the horizon of the view, but would not be incongruous within this longer distance view that is predominantly focused on the railway station within the foreground and mid-ground. In consideration of the above, the magnitude of visual change upon these walkers on the city walls is anticipated to be low to negligible and the impact would be adverse to neutral.

Viewpoint 9: Views to the south-west from The Minster

This viewpoint is taken from the central tower of York Minster and represents views from tourists whose attention is focussed on the landscape.

The view to the south- west from the tower is an expansive panorama across the city and the Vale of York. The York Central site is prominent due to large scale warehouses and sheds that contrast with the predominantly historic and wooded character of York.

The proposed new access road would be barely perceptible within this long distance and elevated view. It would be mostly screened by trees within the Museum Gardens in the mid-ground and intervening buildings such as built form within the Leeman Road area. The arch of the bridge would be perceptible but would form a small feature within a wide and open panoramic view.

In consideration of the above, the magnitude of visual change upon these tourists visiting the Minster is anticipated to be low to negligible and the impact would be adverse to neutral.

Viewpoint 10: Clifton Ings

This viewpoint represents views from walkers and recreational users of Clifton Ings. The photograph is taken from a footpath located on the elevated bank of the River Ouse, the trees that line the River Ouse screen the majority of views to the opposite river side, towards the city. Intermittent views of the roofs of properties on Leeman Road, lighting columns and occasional views of traffic on Water End road are glimpsed through riverside vegetation as the walker moves along the footpath. Views in winter months would extend further through winter vegetation.

The proposed access road would be predominantly screened by trees and vegetation that line the River Ouse, there may be glimpsed views of the deck and parapet and the movement of traffic through winter trees from the elevated bank of the river, though this would be viewed in combination with the frequent passing of traffic along Water End. The arch of the bridge would be mostly screened by intervening trees; however it would be intermittently visible glimpsed through and above this vegetation as the receptor walks along the path. Recreational users within the Ings that are not walking along the bank of the river are unlikely to experience a change to the view due to the low elevation of the flood plain.

In consideration of the above, the magnitude of visual change upon walkers and recreational users is anticipated to be low and the impact would be adverse.

11.2.2.1 Visual Considerations of Option A2

Option A2 would reduce the extent of visibility of the proposed access road, as the option does not involve the use of a tied arch bridge, this will reduce impacts upon the skyline of York.

Option A2 would not worsen visual effects in comparison to Option A1 within longer distance viewpoints 8, 9 and 10. The option will however result in the worsening of visual effects from viewpoints 2 and 3 due to partial loss of Millennium Green and a slight worsening of effects from viewpoints 4 and 5 due to the disjointed and undulating nature of the design of the access road.

11.2.3 Mitigation Measures

Consideration should be given to:

- The integration of the access road with the adjoining Millennium Green, utilising terracing/ planting/ landforms etc, without compromising the functionality of the floodplain, to reimagine the space and aim to improve it, providing a gateway to the York Central site and an amenity for the existing surrounding communities;
- The design of the bridge which should be of a high architectural quality design with key consideration given to the form of the bridge and its appearance on the skyline of York. The colour of the bridge should also be carefully considered to avoid 'drawing the eye' in views from sensitive locations including York Minster;
- The final appearance and function of earth retaining walls. Green walls would help to integrate the retaining walls into views. If green walls are not possible, consideration should be given to the integration of other ecological features;
- The form of walls and embankments to be fully integrated into the surrounding townscape and emerging masterplan in areas which integrate more closely with housing and development. Alternative measures to steep earth embankments which would allow the retaining structures to be landscaped and planted should be considered;
- The retention of trees and vegetation within the Millennium Green, particularly those that line the eastern boundary of the Green wherever possible. Additional tree planting proposed in this location would help to screen views from within the Green and mid-distance views from residences within Leeman Road; and
- Supplementing the western edge of the railway with more tree planting to increase the screening function of existing trees in this location. This will help to mitigate views towards the access road from residences and Poppleton School to the west. However, planting in this area must take into account any specific requirements for planting near active railway lines.

12 Option A: Noise Considerations

12.1 Introduction

This section considers potential noise impacts associated with the shortlisted access options. The potential impact of Option A has been assessed in this section. Road traffic noise from the access option has been predicted and existing baseline noise has been measured. As a consequence of the modelling, the assessment also considers any mitigation which may be necessary as part of the design of any access to be taken forward.

As with the other assessments, the noise study is independent of the full York Central development, which may also require mitigation to be incorporated into the scheme in relation to existing noise sources. This will be assessed as part of the Environmental Impact Assessment for any future planning application.

12.2 Assessment

12.2.1 Noise Modelling Predictions

An assessment of the impact of the new access option resulting from the Proposed Development has been conducted by comparing predicted road traffic noise against measured baseline ambient noise levels. Road traffic noise levels for the new access roads have been calculated using CRTN[13].

Road traffic noise levels at the closest receptors were calculated in accordance with the methodology outlined in ISO9613 *"Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"* to replicate the CRTN results. This allows for better consideration of barrier attenuation as well as future compatibility with the prediction of other noise sources (rail, industrial, construction etc).

Noise changes arising from the proposed link roads are therefore assessed in both absolute and relative terms. Outline mitigation has been developed.

12.2.2 Significance Criteria

The potential noise impacts associated with each access road option have been considered in relation to the:

- Alignment relative to surrounding noise sensitive receivers (NSRs);
- Proximity of the NSRs;
- Number of NSRs potentially affected;
- Likely existing noise levels in relation to the introduced noise (i.e. impact);
- Likely proportionate traffic change on existing, connecting roads.

[13] Calculation of Road Traffic Noise CRTN, Department of Transport, Welsh Office, 1998

Table 16 presents the noise change criteria against which potential noise impacts have been appraised, in conjunction with the number of NSRs affected. The noise change magnitude categories (e.g. negligible, minor, moderate) are based upon the traffic noise assessment guidance in DMRB HD 213/11[14] - Table 3.1 '*Classification of magnitude of noise impacts in the short term*'.

Table 16 Appraisal Criteria – Noise change (overall impact also considers number of NSRs affected)

Noise Impacts	Criteria
Negligible or Minor	Negligible = <1dB change Minor = 1 to 2.9dB change
Moderate	3 to 4.9dB change
Major	5+ dB change

DMRB, HD213/11 provides a basis for evaluating the magnitude of impact and the significance of an effect in order to arrive at an overall level of significance. Considering the magnitude of noise impacts in the long term (typically 15 years) for the Do-Minimum and Do-Something cases, a potentially significant effect for road traffic noise is identified where the Proposed Development would cause a 3dB or greater increase in road traffic noise level where the Do-Minimum noise level is below Significant Observed Adverse Effect Level (SOAEL). Where the Do-Minimum traffic noise level is above SOAEL, any increase in level greater than 1dB is assessed as a potentially significant effect. Lowest Observed Adverse Effect Level (LOAEL) and SOAEL for road traffic noise for this assessment are given in Table 17.

Table 17 Adverse effect levels for road traffic noise

Noise	Period	Noise level
LOAEL	Day	50dBLAeq,16hr
SOAEL	Day	63dBLAeq,16hr

Baseline Noise Survey

A baseline noise survey was conducted on Wednesday 12 April 2017. The measured noise levels have been used to quantify the existing noise climate around the proposed development site. Noise measurements were undertaken at the locations shown in Figure 21 Option A measurement locations. Full details and results of the baseline noise survey are presented in Appendix D.

[14] THE HIGHWAYS AGENCY, TRANSPORT SCOTLAND, WELSH ASSEMBLY, DRD (2011), Design Manual for Roads and Bridges Volume 11, Section 3, Part 7,HD 213/11 – Revision 1, TSO

Figure 21 Option A measurement locations

A summary of the noise survey results is presented in Table 18 in terms of $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$ and $L_{Amax,F}$. The table shows the logarithmic average for the $L_{Aeq,T}$ and the arithmetic average for the other indicators. $L_{Amax,F}$ is shown as a range.

Table 18 Summary of attended daytime noise levels

Measurement location (See Figure 22)	**Measured noise level dB (re 20µPa)**			
	$L_{A90,T}$	**$L_{Aeq,T}$**	**$L_{A10,T}$**	**$L_{Amax,F}$**
Location 4 (Water End)	52	57	60	63-75
Location 5 (Garnet Terrace)	53	58	60	69-73
Location 6 (Garfield Terrace)	50	61	57	75-87

The daytime noise level at Location 4 (Water End) has been calculated from three individual noise measurements, based upon the principles of the 'shortened measurement procedure' described at Section 43 of Calculation of Road Traffic Noise (CRTN) because road traffic dominates the noise climate.

This method has been used to calculate a noise level in terms of $L_{A10,(18\text{-hour})}$. A further correction has been applied in accordance with Section 9 of Annex 1 of the now superseded PPG24 to convert the noise levels to $L_{Aeq,16\ hour}$. This process is summarised below.

$$L_{A10}\ (18\text{-hour}) = L_{A10}\ (3\text{-hour}) - 1\text{dB(A)} \qquad \text{(CRTN)}$$

$$L_{Aeq,16\ hour} \approx L_{A10}\ (18\text{-hour}) - 2\text{dB(A)} \qquad \text{(PPG24)}$$

$$L_{Aeq,16\ hour} \approx L_{A10}\ (3\text{-hour}) - 3\text{dB(A)}$$

For locations 5 and 6, the measured $L_{Aeq,T}$ has been used for the assessment. The resultant daytime noise levels are therefore taken as follows:

- Location 4: 57dB$L_{Aeq,16h}$
- Location 5: 58dB$L_{Aeq,T}$
- Location 6: 61dB$L_{Aeq,T}$

Noise Assessment

The outline noise assessment results are presented in Figure 22 and Table 19 . The noise levels are quoted at a height of 4.5m above the terrain, representing the height of a 1st floor window. Modelling assumptions are provided in Appendix E.

Figure 22 Daytime noise map and receptors results (free-field at 4.5m above terrain) for the un-mitigated access design

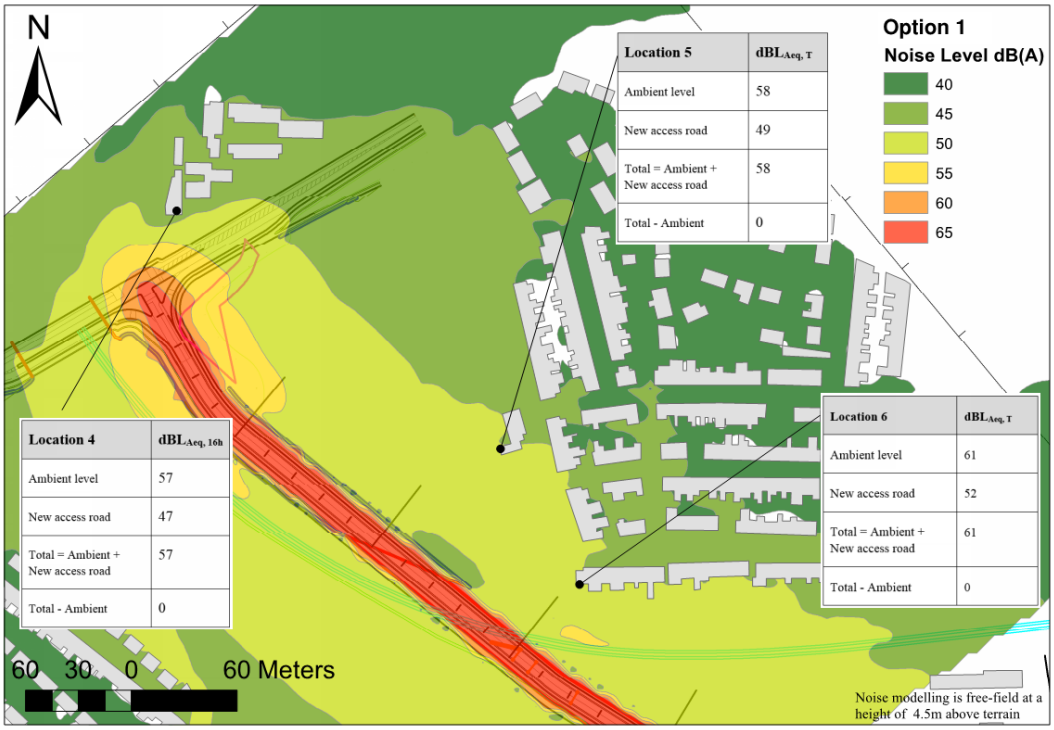


Table 19 Daytime noise results dBLAeq, 16h (free-field at 4.5m above terrain)

	Location 4 (Water End)	**Location 5 (Garnet Terrace)**	**Location 6 (Garfield Terrace)**
Ambient level	57	58	61
New access road	47	49	52
Total = Ambient + New access road	57	58	61
Change due to proposal (Total – Ambient)	0	0	0
Impact	Negligible	Negligible	Negligible

The assessment indicates the proposed new access option has a negligible noise impact upon existing nearby noise sensitive receivers. The proposed road surface employed will need to be reviewed to ensure consistency with respect to noise modelling assumptions. It should be noted that this assessment has been carried out on variant A1 due to timing constraints associated with the access study. Variant A2 would move the new access route further north and closer to existing residential properties, such that acoustic treatment may be required on the northern side of the bridge. This would be confirmed through detailed modelling to accompany the Environmental Impact Assessment for any future scheme.

13 Option A: Ecology

13.1 Introduction

A Preliminary Ecological Appraisal (PEA) of the emerging York Central masterplan site was undertaken in June 2016 as part of the Stage 1 Assessment.[15] In May 2017 a PEA of the Millennium Green area, which had not previously been accessed, was undertaken in support of this Access Options Study.

The findings of both PEAs have been used to inform the assessment of access options A and E contained in this study. The findings of this study are based on the current condition of the site. However, the condition may change with time and therefore surveys may require updating if there is a delay in the proposed works.

Further protected species surveys are being undertaken at the time of writing.

13.2 Assessment

13.2.1.1 Desk Study

The following statutory designations exist within 2km radius surrounding the proposed Option A access road:

- Clifton Ings and Rawcliffe Meadows Site of Special Scientific Interest (SSSI) located approximately 180m north.
- Hob Moor Local Nature Reserve (LNR) located approximately 1.3km south.
- Clifton Backies LNR located approximately 2km north east.

The following non-statutory designations exist within a 2km radius surrounding the proposed access road:

- Millennium Green Site of Importance for Nature Conservation (SINC) located adjacent/on site.
- River Ouse SINC located approximately 100m north.
- Clifton Ings SINC located approximately 180m north.
- Holgate Park Drive Site of Local Interest located approximately 250m south.
- York Central Site of Local Interest located approximately 300m south east.
- Severus Hill Reservoir Basin SINC located approximately 600m south west.
- Rawcliffe Meadows SINC located approximately 750m north.
- Clifton Bridge SINC located approximately 800m north east.
- British Sugar Sidings SINC located approximately 900m north west.
- Danebury Court SINC located approximately 1.1km south west.

[15] Arup (2017) Preliminary Ecological Appraisal. Issued to York Central Partnership.

- Fishpond Wood SINC located approximately 1.1km south west.
- Extn. to Hob Moor Community School SINC located approximately 1.5km south west.
- Poppleton Ings South – Ditch SINC located approximately 1.5km north
- Bachelor Hill SINC located approximately 2km south west.
- Poppleton Glassworks SINC located approximately 2km north west.
- Clifton Backies SINC located approximately 2km north east.
- Rawcliffe Ings Dyke SINC located approximately 2km north west.
- Rawcliffe Lake and Grasslands SINC located approximately 2km north.

Local records were obtained from North East Yorkshire Ecological Data Centre (NEYEDC) for the York Central site.

13.2.1.2 Field Study

The key findings of the PEA survey relating to Option A include:

The millennium Green area was considered to have potential in respect of the following ecology issues:

- Millennium Green was identified as having suitable foraging habitat for bats. The existing bridge on Water Lane was identified to have low bat roost suitability. Additionally, five buildings at the eastern end of the access route were identified to have bat roost suitability (three moderate, two low).
- Holgate Beck (30m from the proposed access) was identified as having suitable habitat for water vole.
- Badgers: Information regarding badgers is treated as confidential. Further information however can be made available on request to bona fide individuals.
- Black redstart *Phoenicurus ochruros* and breeding birds: Anecdotal evidence provided by a local ornithology group indicates that black redstart may be present on the site. The Network Rail portakabins which are situated in proximity to Option A, were identified as potential song posts for black redstart. The habitat within Millennium Green and the disused allotments were identified to be suitable for common nesting birds. Additionally, areas of scrub within the sidings will also provide suitable habitat to breeding birds.
- Invertebrates: The early successional mosaic habitat present within the sidings provides highly valuable habitat to invertebrates. The mosaic provides a range of opportunities for nesting and breeding invertebrates in close proximity to foraging locations.

These key ecological constraints may require the project to obtain European Protected Species licence/s from Natural England dependent on the impact on protected species. These issues will require additional surveys as part of the overall preparation of the Environmental Impact Assessment, including as

appropriate the requirement for further surveys to fully assess the ecological impacts associated with the scheme. If licences are required from Natural England, these are subject to a separate consenting regime, and require planning approval.

13.2.2 Potential Effects

The potential effects identified below are based on survey and desk study findings available at the time of writing. Detailed species-specific surveys have been commissioned for bats, water vole, black redstart and invertebrates, which will determine whether those species are likely to be impacted by the proposed option. Until these results are available a precautionary approach has been taken assuming that these species may be present.

- Potential direct effects on Millennium Green SINC due to construction and operational phases of the development include loss of habitat, increased light and noise disturbance, and risk of pollution incidents.
- Potential indirect effects on Clifton Ings and Rawcliffe Meadows SSSI and the River Ouse SINC arising from the construction and operational phases of development. This includes increased noise and visual disturbance, reduction in air quality as a result of vehicle emissions, and light disturbance from road lighting.
- Potential disturbance or loss of bat roosts (subject to further survey) during the demolition phase of the development. A European Protected Species Licence may be required from Natural England if bat roosts are identified within the site.
- Potential indirect effects on water vole (subject to further survey) during construction and operational phases of development through noise and visual disturbance and risk of pollution incidents. A licence may be required from Natural England if water vole are identified on site and proposed works will impact on this species.
- Potential direct effect on badger (subject to further survey) during the construction phase of development through loss of setts and suitable foraging habitat. A licence may be required from Natural England if badger are identified on site and proposed work will impact on this species.
- Potential direct effect on black redstart (subject to further survey) and breeding birds during the demolition of buildings and construction phase of development.
- Potential direct effect on invertebrates (subject to further survey) during the construction phase of development.

13.2.3 Potential Mitigation

Designations: Consultation should be undertaken with Natural England regarding potential impacts the proposed access option may have on Clifton Ings and Rawcliffe Meadows Site of Special Scientific Interest (SSSI) which lies approximately 0.2km north. Additionally, due to the close proximity within which

Millennium Green SINC lies and the potential land take required for the proposed access option, consultation with the CYC Ecologist is recommended to discuss potential impacts and mitigation required. Dependent on the land take required at Millennium Green SINC, the habitat removed should be replaced and managed in an appropriate manner to benefit biodiversity. Additional management measures could be implemented to improve the value of the site for wildlife. For example, Holgate Beck is subject to disturbance by dogs which could be managed through the use of a fence to prevent dogs from entering the beck, therefore allowing wildlife to be undisturbed.

Due to the close proximity to several statutory and non-statutory designated sites, to prevent terrestrial, air and aquatic pollution and to adhere to good practice, works should be undertaken in accordance with the pollution prevention guidelines produced by the Environment Agency (EA).[16] Though these guidelines have been withdrawn by the EA in 2015, they still provide suitable guidelines for good practice.

Clearance of trees or scrub should be undertaken outside of the breeding bird season (which runs from March to September inclusive). If clearance works must be undertaken during this period, a nesting bird check should be completed by a suitably qualified ecologist up to 24 hours in advance of works commencing.

Any trees that are to be removed should be replaced on a 2:1 ratio using native species, in keeping with the local area. Native tree species include oak *Quercus robur*, silver birch *Betula pendula* and sycamore *Acer pseudoplatanus*. Additionally, creation of hedgerows will improve species movement and permeability throughout the site. Species for use in a hedgerow may include hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and dog rose *Rosa canina*.

Appropriate mitigation will be developed if a Natural England licence is required for water vole. Mitigation may include providing a buffer zone around the watercourse to ensure burrows are not affected during construction and retaining the watercourse as part of the development.

In the event that badgers colonise the site between development phases, appropriate mitigation will be required including the potential submission of a Natural England badger licence.

Appropriate mitigation for loss of suitable habitat for invertebrates includes provision of open areas, ideally with a southerly aspect. These open areas should include a mosaic of open ground, patchy open swards and bare ground. In addition the creation of a flower-rich bund or bank which provides essential habitat for butterflies and pollinating invertebrates.

[16] Environment Agency (2012) Working at construction and demolition sites: preventing pollution guidance PPG 6.

14 Option A: Community & Place Making

14.1 Introduction

This section of the study provides an overview of the community impacts associated with access option A. This overview considers the following issues:

- Loss of community facilities as a consequence of the construction of the access.
- Whether any wider community benefits would arise as a consequence of the access construction, such as new pedestrian or cycle routes.
- Any severance which may result from the new access construction.

Variant A1 of Option A is located along the southern edge of land leased to the Millennium Green Trust. This area of land is considered to have community benefit as Green space, and it is likely that the construction of a new bridge structure on the southern edge may result in a degree of disturbance for the general public utilising the Green space. This degree of disturbance could be minimised by careful landscaping of the structure, as discussed the townscape chapter associated with Option A. Whilst there may be a degree of disturbance associated with the new development, the access overall would have limited impact on the function and form of the Green space, which would minimise the requirement for replacement of the Green space within the new development.

Variant A2 would use Millennium Green Trust land, which potentially would have community impacts. Given the nature of the loss would be potentially more significant based on Variant A2, this is a key consideration in relation to community impacts.

14.2 Assessment

14.2.1 Existing Conditions

Option A1 comprises a new link into the York Central site from Water End at the north-west. As proposed the access arrangement uses land that can be released from the area designated as Leeman Road Millennium Green. In summary the Green comprises a natural meadow and is leased from the Council by The Leeman Road Millennium Green Trust on a 999 year lease, granted in 1999. Reference to the 2005 CYC Draft Development Control Local Plan incorporating 4th set of changes, shows that the majority of the site benefits from an allocation as Open Space under Policy GP7.

Figure 23 Extract for CYC Development Control Local Plan 2005, with the Green area denoting protected Open Space, and red hatching denoting proposed cycling/pedestrian network.

As it currently stands the Millennium Green takes its vehicular access from Water End via a short stretch of sealed road, leading to Network Rail operational land. It is understood that this area in front of the Network Rail land is one of two areas that Millennium Green Trust encourages members of the public with disabilities to utilise for car parking, the other being on-street at Garnett Terrace/Garfield Terrace. It is important to note however that given the fact that this area is also used to access Network Rail facilities the Trust stresses that parking opportunities at this location are limited.

The wider communities of Holgate and Acomb lie to the west and north west of the York Central site. Access between these areas and York Railway Station, particularly for those communities towards Acomb the western extent of Holgate is notably poor, segregated by road and rail infrastructure. Whilst a footbridge exists between Wilton Rise and Cinder Lane at the south, providing pedestrian access, this route is not optimally located for those communities located in Acomb and to the north of Holgate. An alternative route by which this journey could be made is via Water End, through the Millennium Green and into Garfield Terrace and Leeman Road, however this route is complicated, lengthy and currently non-intuitive.

14.2.2 Potential Effects

The construction of the access road along the Green's southern and western boundary, together with its associated earth works, would also represent an adverse impact upon the Green, marginally reducing its overall area.

The potential community effects of Variant A1 largely relate to the loss of land that is currently in use as a Millennium Green but which can be surrendered from the lease. It is important to note however that this loss only relates to the areas at the west/north west, and from a planning policy perspective it is unlikely that there will be land take from the area that is protected Open Space. Whilst the land take of the new access road will be minimal, and largely contained within the Network Rail operational land, the retaining structures to support the road's construction will marginally encroach on the Millennium Green. The biggest loss will be noted along Water End, with the construction of the new left-hand turning lane. This will also remove one of the two areas that are currently used for parking by disabled users. In addition, variant A2 would have an impact on the Millennium Green area, removing a proportion of the existing Green space on the south boundary of the Trust land.

The construction of the access (either Variant) as proposed may provide some benefits in terms of permeability and access for those communities located in Acomb and the north of Holgate. Option A would therefore provide a new route and significant improvements for these communities, providing community benefits. This would also reduce severance and align with the policy aspiration of the 2005 Draft Local Plan policy T2.

14.2.3 Potential Mitigation

Primarily the main issue that would need to be mitigated if this option were to be pursued would be the loss of land currently designated as a Millennium Green. Dependent on the variant option proposed, this would significantly affect the extent of Green space to be re-provided as well as catering for some loss of informal opportunities for car parking by disabled users. There may be the potential for land on the southern side of the access bridge to be redesignated as Green space and provided for the Millennium Green Trust to manage in lieu of the loss of the existing Millennium Green space.

With regard to the loss of car parking, there are two potential options that could mitigate this loss. Firstly, it is noted that there is an area of grass-crete to the west of Garnet Terrace. This area could be improved and formalised as a car park, thereby offsetting the loss of the informal car parking at Water End. If this was delivered in conjunction with new signage and an improved gateway experience into the site, this would offset any harm caused by the loss of the area on Water End, and improve the user-experience for disabled users accessing Millienium Green from the east which is currently poor.

The second option would be to retain some of the existing access road at Water End for the sole purpose of accommodating car parking for the Millennium Green. This would however need to be considered in the context of the proposed left turn lane to determine whether this would be a safe and practicable solution. Accommodating this would also increase the land take required.

14.3 Place Making and Scheme Delivery

Placemaking considerations have been informed by discussions with suitably qualified urban design and property market agents.

In considering option A, it was noticed that the height and length of the proposed bridge could create an opportunity to define an iconic gateway into the site. In parallel to this, the level difference would deliver exciting views across the York central site and towards the historic core of the city. Option A would have a limited impact on the developable area.

From a market viewpoint, Option A presents a legible point of entrance with limited traffic constraint (base on high level assumptions).

In addition to this, the additional bridge would provide the opportunity to extend the linear route across the site.

15 Option A: Flood Risk & Water Resources

15.1 Introduction

This section of the study considers the existing Flood Risk Zones applicable to the access option, and in particular the extent of development within Flood Risk Zone 2 and 3, to understand the approach to the sequential and exception test in any future planning application. This assessment solely focuses on the access options and does not assess the full build out of the York Central site.

15.2 Assessment

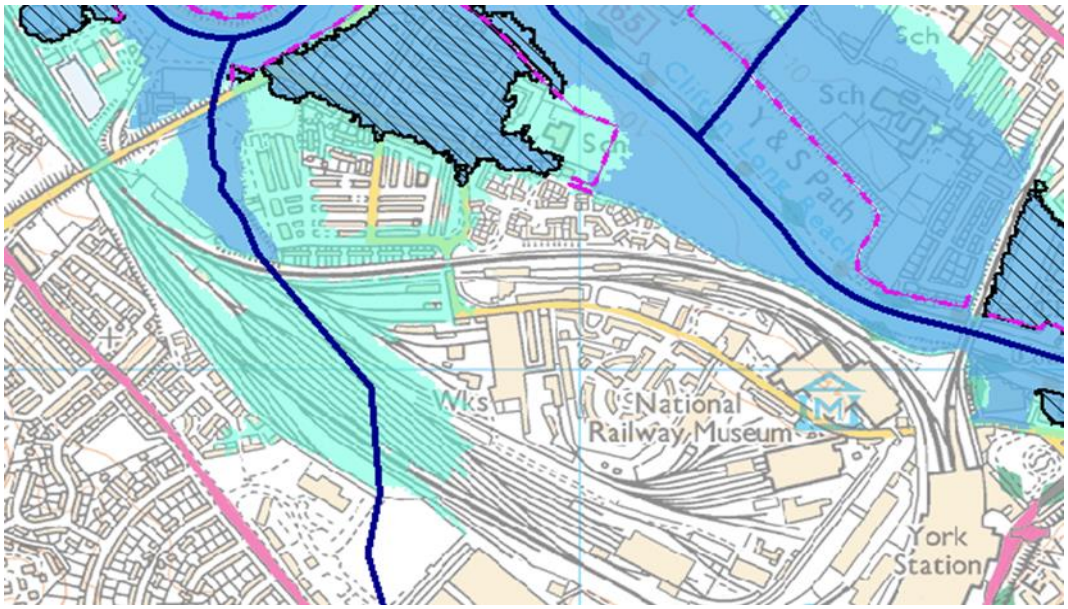
15.2.1 Option A1

Reference to Environment Agency mapping (refer Figure 24) highlights that the proposed access road would be located within Flood Zone 2, which is designated as 'medium' flood risk and defined as having an annual probability of flooding from rivers of between 1 in 100 and 1 in 1,000 years (i.e. between 1% and 0.1% probability in any given year).

The source of flood risk in this location is understood to be the Holgate Beck, which discharges to the River Ouse via a pumping station. In the event that this pumping station fails then water levels in the beck will rise, flooding Millennium Green and the western portion of the York Central site.

To permit construction of the access road across Flood Zone 2 it would need to be sequentially tested against alternative options (including Option E). Should it be determined that Option A1 is preferable, taking account of wider sustainability objectives, then the exception test would need to be applied to justify construction of the access road in this location.

Figure 24 Extract from Environment Agency Flood Map



15.2.2 Variant Option A2

This option would result in the access road being located in both Flood Zones 2 & 3. Flood Zone 3 is designated as 'high' flood risk and defined as having an annual probability of flooding from rivers of 1 in 100 years or greater (i.e. at least 1% probability in any given year).

In this case, the sequential test would be applied and it would need to be demonstrated that there are no alternative options available that would result in construction of the road in an area of lower flood risk classification (i.e. Flood Zones 1 or 2). Were this demonstrated, taking account of wider sustainability objectives, then the exception test would need to be applied to justify construction of the access road in this location.

Stage 2: Technical Review of Option E

17 Stage 2: Technical Review - Option E

17.1 Introduction and Overview

This chapter of the study provides a further detailed constructability and environmental overview of Option E. This builds on the assessment work undertaken in stage 1 of this access study. It is neutral of the wider York Central development and seeks to assess only the access options associated with the development rather than the overall development of York Central.

18 Option E: Constructability

18.1 Introduction

This section considers the technical feasibility and potential programme constraints associated with Option E. This includes the following criteria as part of the overall review:

- Land availability;
- Overview of construction costs;
- Technical constraints;
- Impact on existing road network during construction;
- Impact on operational rail uses; and
- Draft programme for construction.

This section provides an overall methodology for the construction of the access option. It is neutral of construction considerations associated with the York Central development, and has been developed based on an assessment of the site's current operations.

18.2 Assessment

18.2.1 Land Availability

All land required to construct this access is owned by the York Central Partnership or within the control of the Partners. Some is subject to lease restrictions as described below:

Following a transfer of land from Network Rail to CYC in 2015, Network Rail lease some land from CYC within the proposed line of the access road, for use in connection with Holgate Works operations. It is understood that this lease can be readily surrendered by Network Rail at 6 months' notice.

The proposed road alignment crosses the Wagon Repair Depot site, located to the north of the FAL. This is currently leased to Freightliner and termination of this lease is expected in September 2017.

18.2.2 Technical Constraints

There are a number of constraints to be considered in providing an access to the site from Holgate Road. In developing the preliminary design presented in this study these constraints have been considered and responded to as summarised in Table 20.

Table 20 Technical Constraints Option E

Constraint	Description	Approach Adopted
Chancery Rise Access (South of Holgate Road)	A residential care home, language school and hotel currently take access from the A59 via Chancery Rise. Access to these properties must be maintained.	The existing access point onto Chancery Rise has been retained and incorporated within the proposed junction design.
Flood Zone 2	An area at the junction of Holgate Road and Chancery Rise is shown to be in Flood Zone 2. It is assumed that this results from the presence of the Holgate Beck, which enters in to culvert south of Holgate Road and has a metal grille covering to the north of Holgate Road, through which flood water could be conveyed during storm events.	The proposed access road would need to be sequentially tested against alternative options. If pursued the exception test would need to be applied as stipulated by the National Planning Practice Guidance.
Holgate Beck	A metal grille is located above Holgate Beck to the north of Holgate Road. As noted above, this may provide a storm overflow function from the Holgate Beck and serve to reduce upstream and downstream flood risk.	The grille is positioned within the proposed carriageway of the site access road. It would need to be removed or relocated as part of the scheme through agreement with the Environment Agency / LLFA and Highway Authority. The accuracy of the culvert alignment, depth and diameter requires confirmation through survey.
Parking provision for York Bridge Club	Parking provision for York Bridge Club currently exists in front of the premises on Holgate Road.	The existing undocumented use of private land for parking would be removed. Arrangements for continued provision of parking for York Bridge Club would be ascertained as part of further design development and stakeholder engagement activity.
Ground Conditions	There is no recent ground investigation data in the area of Option E. BGS logs from the site to the north record up to 2m of made ground over loose silty sand and soft to firm clay. BGS boreholes to the south of the site on St Pauls Square recorded peat between 1m and 5m depth. Based on the available information, it is feasible that the proposed embankment will be stable, but consideration of the settlement of the embankment is required.	Further investigative and interpretative works will be required to determine whether ground strengthening measures are required in advance of embankment construction. For the vertical reinforced concrete walls, for low heights (up to 2m) a simple gravity solution may be feasible. For higher retained heights a piled wall may be needed.
Network Rail Holgate Works Operations	Network Rail require continued provision for occasional access by HGVs to the east side of Holgate Works.	Provision has been made in the design of this option for a vehicle access from the proposed new access road to the Holgate Works site, for occasional use by Network Rail.

Constraint	Description	Approach Adopted
	Network Rail require sufficient space to turn HGVs on the east side of Holgate Works.	The proposed road alignment has been informed by Network Rail's requirement to turn articulated lorries in the space between the Holgate Works building and the road.
Land availability alongside Holgate Works	The road corridor is to be constructed within land owned by CYC.	Land ownership extents have been respected, with earthworks and retaining walls proposed to achieve this.
Cleveland Street Play Area	There is an existing play area at the north-western end of Cleveland Street / St. Paul's Terrace.	The proposed road alignment crosses this play area and it would need to be closed. Options for mitigation include provision of play space within the parkland proposed as part of the York Central scheme, or identification of a nearby alternative space for relocation of the existing facility.
Cleveland Street Properties	Existing properties in Cleveland Street are assumed to remain and must be avoided.	The road alignment, in conjunction with earth retaining structures, would ensure that existing properties are avoided.
Turntable lines	Existing lines serving the Network Rail turntable facility must be maintained.	The bridge has been designed to span across these lines.
Proposed rail siding	An additional siding is proposed parallel to the FAL.	The bridge has been designed to span across this proposed siding.
Electricity Substation	An existing electricity substation is situated off Chancery Rise, east of the Holgate Works.	The substation would need to be relocated to suit the proposed road alignment.

18.2.3 Design Parameters

The design parameters presented in Table 21 have been applied.

Table 21 Design Parameters Option E

Parameter	Value
Corridor width	16.3m, comprising: 2 vehicle lanes, 3.65m wide 2 footways, 3.0m wide 2 cycleways, off road, 2.0m wide
Verge width	1.5m
Underside of bridge deck clearance to rail (vertical)	5.7m
Bridge abutment / pier clearance to rail (horizontal)	4.5m

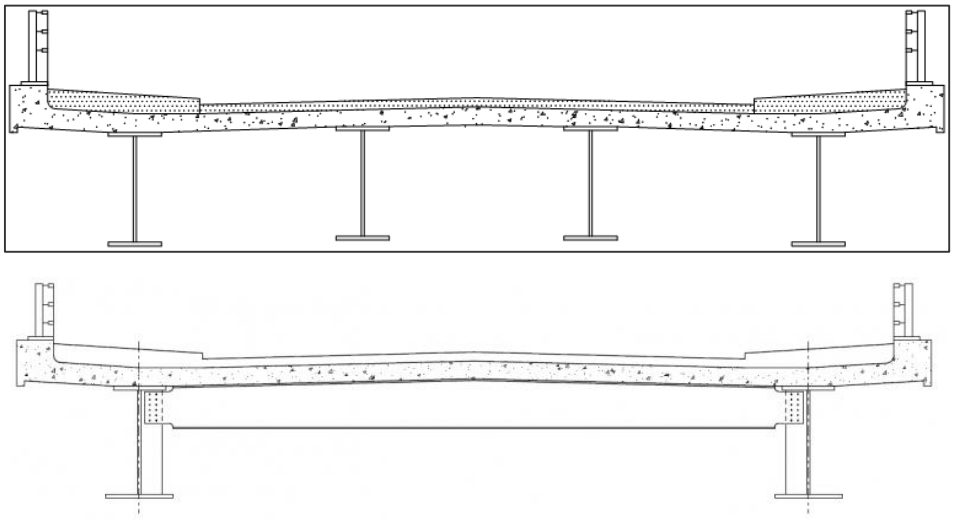
Bridge abutment / pier clearance to boundary fence (horizontal)	2.0m
Vehicle Incursion Protection	1.8m high H4A concrete parapet on bridge and viaduct sections H4A/N2 transitions to: N2 barrier alongside all elevated sections of road.

Design Proposals

The preliminary design for Option E is described as follows:

1. A new junction would be formed at Holgate Road, adjacent to the current junction with Chancery Rise (which would be stopped up). There is an option to also provide a bus priority lane, which would operate in an inbound direction to improve public transport access to the site and York Railway Station. This would be routed from Holgate Road past the rear of the Fox Inn, before joining the site access road.
2. The southern section of the site access road (referred to here as 'Chancery Rise') would be constructed at grade and would be landscaped up to the land ownership boundary on either side of the road.
3. Adjacent to the Holgate Works, a boundary fence or wall would be required to demarcate Network Rail's ownership and prevent trespass. An access junction is also proposed for occasional use by Network Rail. Closer to the railway, a retaining wall would be needed against this boundary to allow the road level to increase on the approach to the bridge, and again a boundary fence would be required along with a vehicle containment parapet on the top of the wall, and safety barrier on the approach to it.
4. On the eastern side of the road, an earthwork embankment is proposed to increase road levels on the approach to the bridge. This continues across the end of Cleveland Street. A safety barrier would be required on this side of the road.
5. Reinforced concrete bridge abutments would support a single 45m span bridge of composite multi-girder or ladder deck construction (refer Figure 25), complete with solid infill concrete parapets.

Figure 25: Typical Sections through Composite Multi-Girder (Top) and Ladder Deck (Bottom) Bridge Typologies



6. To the north, the road would be supported on reinforced concrete retaining walls before returning to grade within the development site. These vertical walls are intended to allow development up to the back of footway line. A

vehicle restraint parapet would be required atop these walls until such time as buildings are constructed.

18.2.4 Construction Methodology & Impacts

18.2.4.1 Proposed Construction Methodology

The following construction methodology is proposed:

1. Initial works would comprise demolition of existing buildings within the proposed alignment of the access road along with relocation of the electricity substation.
2. Modification of the existing Holgate Road / Chancery Rise junction would be undertaken. The existing section of Chancery Rise would be retained to provide an interim site access point until the new arm of the junction has been constructed.
3. In tandem with the junction modification work, the abutments for the proposed bridge over the FAL would be constructed. Construction access to the southern abutment would be obtained from Holgate Road, whilst access to the northern abutment would be via Leeman Road.
4. It is assumed that the bridge would comprise either a composite girder or ladder deck structural form. Bridge components would be delivered to the site via Holgate Road and pre-assembled in a laydown area to the south of the FAL.
5. The bridge would be lifted in to place during a series of night time possessions of the FAL. It is assumed that a large mobile crane would be used for this purpose, situated on land to the south of the FAL (refer Figure 26).

Figure 26 Bridge Lift over ECML, Doncaster

6. With the bridge structure in place, reinforced concrete retaining walls would be constructed on the northern and southern approaches to the bridge.

7. Earthworks to form the approach embankments to the northern and southern bridge abutments would commence following completion of the abutments and retaining walls.
8. The final stages of construction would see completion of pavement construction, surfacing, landscaping, safety barriers, lighting installation, etc.

18.2.4.2 Impact on Operational Rail Uses during Construction

The construction phase activities would need to be planned and implemented so as to minimise impact on the operational rail network, and the proposals would need to be formally agreed with Network Rail prior to the commencement of works. Anticipated impacts on operational rail uses include the need for a series of possessions to permit works on or above the existing railway.

18.2.4.3 Impact on Existing Road Network During Construction

Impacts on the existing road network during construction would emanate from both construction traffic and the need to undertake works on the existing public highway at Holgate Road. Impacts are likely to include:

- Construction site access points would be required from Holgate Road and Leeman Road. This would lead to increased goods vehicle movements in the vicinity of these accesses and potential increases in noise and dust, subject to the introduction of mitigation measures.
- It is assumed that modification of the Holgate Road / Chancery Rise junction would necessitate the introduction of traffic lights and one way working to allow sufficient working room for construction operations. Increased delay and congestion to road users in the vicinity of Holgate Road would result.

18.2.5 Indicative Costs

18.2.5.1 Capital Cost

The indicative capital cost of this option is estimated at £[redacted] in Q2 2017 prices.

This cost allows for the following:

- Construction of the new road junction, bridge and approaches, and highway infrastructure through the site to connect to Leeman Road via Leeman Yard, and also to Leeman Road via Cinder Lane and York Railway Station. This approach has been adopted to allow comparison of the extent of primary access road infrastructure required for each access option to deliver on the core objectives of the scheme (unlocking the York Central site and improving access to York Railway Station).
- A design development risk allowance of 10% has been included along with a construction risk allowance of 5%.
- Design and professional fees have been included at 12%.

- Cost estimates do not include for Value Added Tax, inflation, finance charges, Local Authority fees (including S.106 & S.278 charges), legal fees, agents fees, third party costs or client internal costs.

A cost breakdown is presented in Appendix C.

18.2.5.2 Maintenance Cost

The indicative maintenance cost is estimated at £[redacted] in Q2 2017 prices and includes for the following:

- Allowance for resurfacing all highway areas twice during assessment period (60 years).
- Allowance to replace all street lighting once during assessment period.

A cost breakdown is presented in Appendix C.

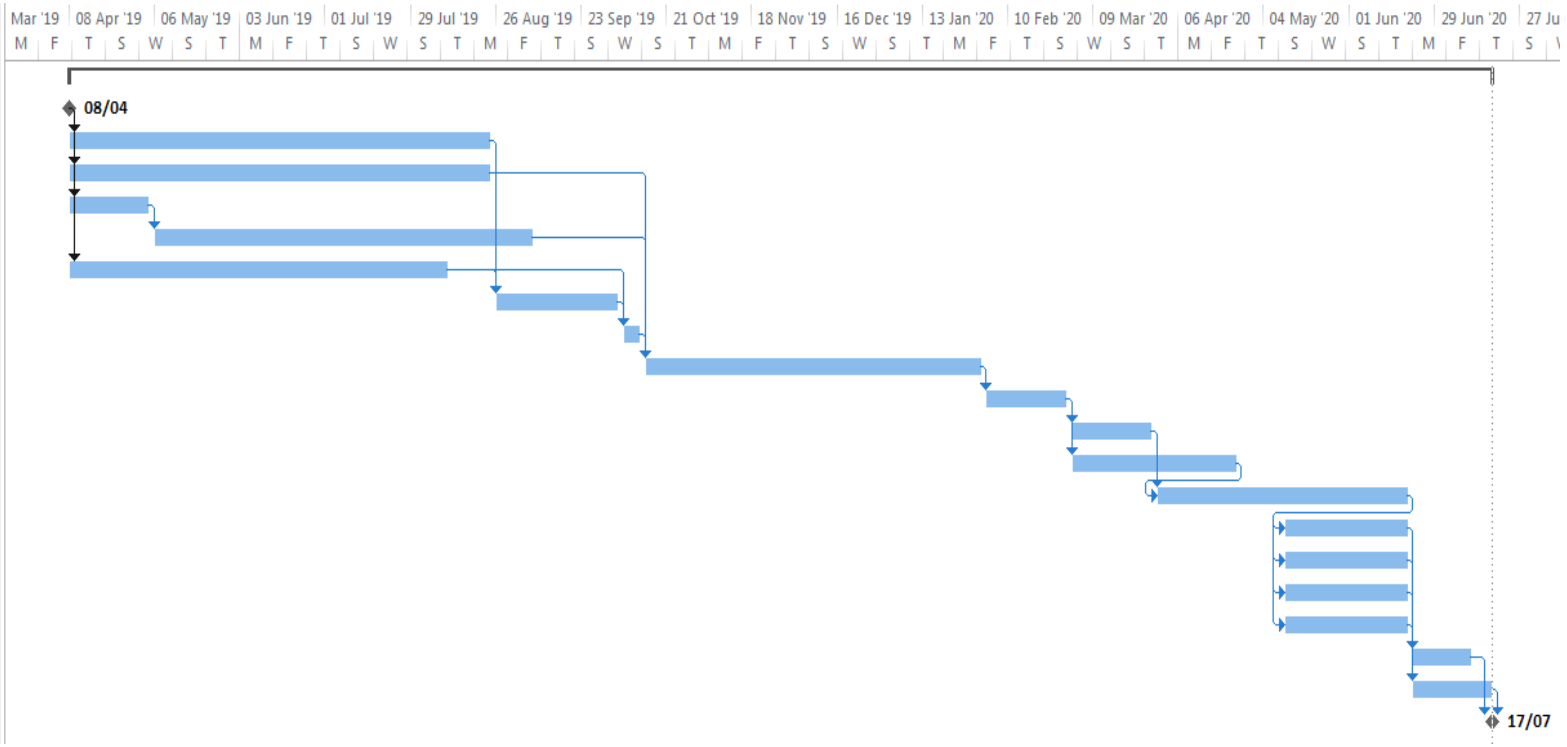
18.2.5.3 Outline Programme

An outline programme for construction of Access Option E is presented in Figure 27. This shows a total estimated construction programme duration of 335 days.

It has been assumed that statutory approvals and design work would be undertaken in advance of this.

Figure 27 Option E Outline Programme

Task Name	Duration
Access Option E Outline Construction Programme	**335 days**
Construction Start	0 days
Demolition of Buildings	100 days
Relocation of Substation	100 days
Site Clearance	20 days
Junction Modification	90 days
Bridge Abutments	90 days
Bridge Deck Assembly	30 days
Bridge Lift	5 days
Retaining Walls	80 days
Earthworks	20 days
Drainage	20 days
Utilities	40 days
Pavements	60 days
Fencing	30 days
Safety Barriers	30 days
Lighting	30 days
Signage & Line Marking	30 days
Landscaping	15 days
Commission Traffic Signals	20 days
Completion	0 days



19 Option E: Transport and Highways

19.1 Introduction

An assessment of the York Central transport impacts for each access option has been undertaken for various travel modes:

- The highway impact of the access options has been assessed using the CYC Strategic Saturn model. Data outputs consider network wide traffic flows, journey times and delay as well as local traffic flow differences and junction performance;
- Bus re-routing and journey time impacts have been assessed using the Strategic Saturn model;
- A graphical analysis of cycle and pedestrian connectivity and accessibility has been undertaken.

Detail of the traffic modelling is provided in the Modelling Note, provided at Appendix B.

19.2 Assessment

19.2.1 Model Outputs (Option E)

A range of modelling output data has been obtained to provide assessment of the operation of the highway network as a result of the proposed York Central development and provide comparison of the two access options.

The modelling note provided at Appendix B provides detail of the modelling outputs and results. A summary of the Option E outputs are presented below.

19.2.1.1 Network wide - delay / travel time / distance

An assessment of the York Central development impact on the network wide highway operation has been undertaken. This is reported as Total Network Delay (PCU hrs), Total Network Travel Time (PCU hrs) and Total Travel Distance (PCU km). The detailed results of each metric are presented in the modelling note at Appendix B. A summary of the results and their significance for Option E are presented below.

The network wide delay is predicted to increase by 1% and 2% in the 2021 AM and PM peak hours respectively as a result of the additional traffic generated by the York Central development. The percentage increase in delay in 2031 will be 6% and 3% respectively in the AM and PM peak hours respectively.

The network wide travel time is predicted to increase from the Do-Something to Do-Minimum scenarios by 2% by 2021 in both the AM and PM peak hours

respectively. By 2031 the percentage increase is 5% and 2% in the AM and PM peak hours respectively.

For Option E, total network travel distances are predicted to increase by 1% in both the AM and PM peak hours in 2021 and by 2% and 3% in the AM and PM peak hours respectively in 2031.

Comparison of the network performance between the Do –Minimum and Do-Something shows an increase in congestion as demonstrated by each metric owing to the additional trips generated from York central. Total travel time and delay is predicted to increase in the Do-Something scenario showing a general deterioration in highway conditions across the wider network, however the overall increase compared to Do-Minimum is proportionately low and a moderate adverse impact is predicted.

19.2.1.2 Flow differences – network wide and local

Flow difference plots have been extracted from the 2031 AM and PM models and are presented in the modelling note at Appendix B. These identify the difference in flows between the Do-Minimum and Do-Something scenarios for each option.

In general in the wider network, traffic flows in the Do-Something scenario are consistently higher than the Do-Minimum scenario along the majority of modelled routes in the study area. The most significant increase in flow occurs on the outer ring road and the western radial routes connecting the city centre as these are the major corridors that take traffic to/from the development.

In the AM peak hour, increase in traffic flows are predicted along the A19 and B1224, A1036 corridors providing access to the site as well as A64 to the south of the outer ring road. Slight reductions in traffic flows are predicted on some routes, in particular the A59 to the north west of Access Option E as traffic reroutes onto alternative routes away from the York Central site. In the PM peak hour greater increases in traffic flows are predicted on the A64 outer ring road to the south and east of the city. The A19, A1036 and B1224 corridors are predicted to experience increased traffic. Water End in the immediate vicinity of the site is predicted to experience increased traffic while there are some decrease in traffic flows in the immediate vicinity of the scheme as a result of rerouting to less congested routes. Principally the flow reduction occurs on Leeman Road, as a result of its closure as a through route for general traffic.

The analysis has shown that the additional development trips do not have an overly significant impact compared to the Do-Minimum scenario. Increases in traffic flows is mainly observed along the outer ring road and the radial routes during peak hours. On these routes the increases in traffic flows are generally modest. Flow changes remain relatively insignificant in other parts of the network and this implies that the proposed developments will not lead to re-routing of trips beyond the immediate vicinity of the development site. A moderate adverse impact is predicted.

Local network flow differences between the Do-Minimum and Option E are presented within the modelling note at Appendix B.

The additional trips generated from the proposed developments generally lead to traffic growth on the local road network.

In Option E the traffic flow changes show more variation. In the AM peak hour there are predicted to be moderate increases on the A19 (13%) and Water End (26%). On the A59 to the north west of the new access road there are forecast to be some reduction in traffic flows (-10% and -8%) with significant increases in flows from Acomb Road and to the south east (67% and 28%). There is a reduction in flows on A1036 (-18%) and Queen Street (-15%). A similar pattern results in the PM peak hour with increases in traffic flows on Water End (25%) and A19 (50%), some reduction on A59 to the north west (-2% and -9%) and increases on A59 to the south west (65% and 38%). There is a modest increase in traffic flows in A1036 (10%) and slight reduction on Queen Street (-6%). Option E traffic appears to route trips away from the A59 to the northwest of the new access road but a significant number of trips are attracted to the new route from Acomb Road and the south east. The A59 is known to have significant delays in the Do-Minimum scenario near its junction with Water End. As such an increase in traffic flow could be limited due to constraints associated with the capacity.

In general there are traffic flow increases on routes surrounding the site with the impact on the A19 and Water End considered to be moderate adverse. On the A59 Holgate Road immediately adjacent to the new site access a major adverse impact is predicted. There is a reduction or minor increase in traffic flows on the A59 to the north west of the new access road and routes to the east of the station, A1036 and Queen Street where there is considered to be a minor beneficial impact.

19.2.1.3 Junction performance – mitigation

Junction performance is based on predicted delay at junctions (node delay). Within the modelled network, junctions have been identified where the delay is greater than 50 seconds in the Do-Minimum scenario and where the Option E Do-Something scenario increases the delay by 10 seconds or more.

This process has been applied to identify where junctions experience delay and where the York Central development is likely to have an impact. On this basis, it is assumed that junction mitigation measures may be required. This has been undertaken for the Access Options study, further more detailed assessment will be required to confirm impacts and potential highway mitigation.

There are six junctions identified for Option E in both AM and PM peak hour or either of them by applying the above filtering criteria. The location of these junctions is shown in the modelling note at Appendix B. The key junctions in the network that are affected by junction delay in 2031 are detailed below:

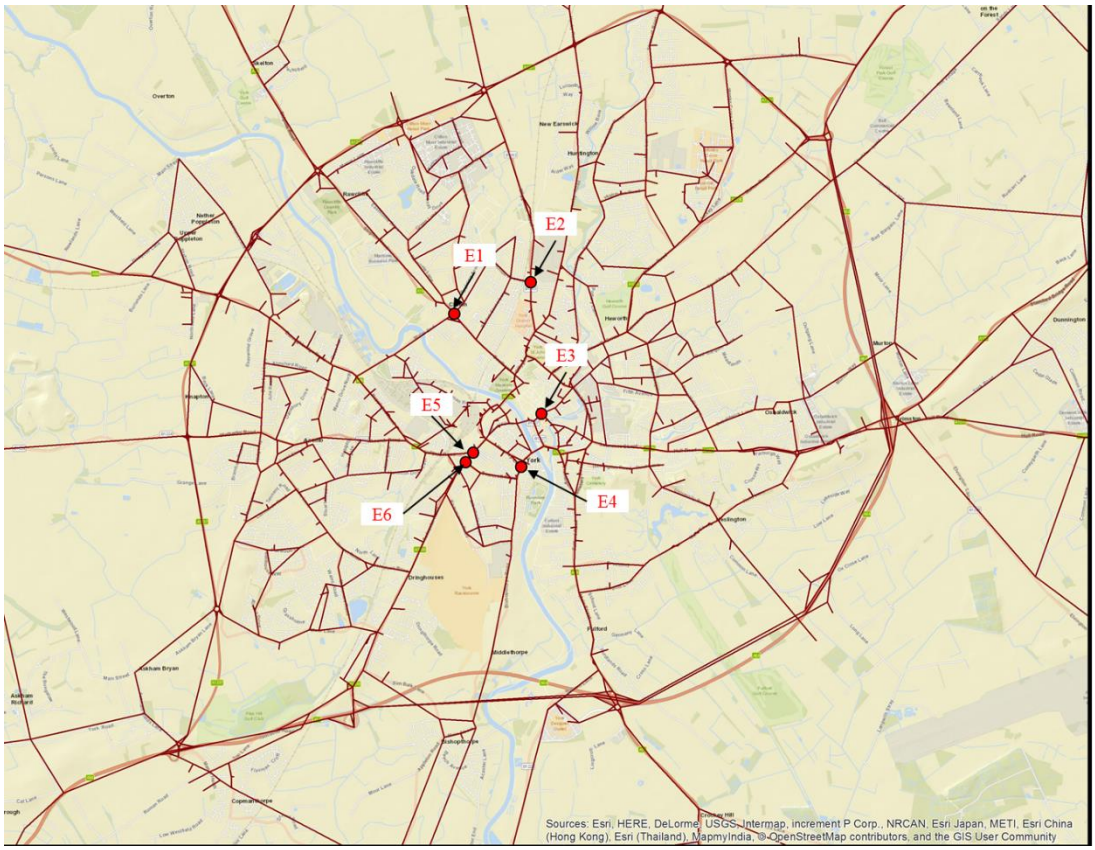
- E1-Water End/Clifton Green
- E2-B1363 Wigginton Road/Crichton Avenue
- E3-Piccadilly/Pavement/Coppergate
- E4-A1036 Bishopthorpe Road/Nunnery Lane
- E5-A1036 Blossom Street/A59 Holgate Road

- E6-A1036 The Mount/Scarcroft Road

The majority of the junctions are located along the B1363 and A1036 corridors and could be attributed to traffic coming into the city centre and predicted to experience more congestion in 2031. In particular B1363 Wigginton Road/Crichton Avenue junction is predicted to experience congestion in both peak hours.

The extent of delay and impact of the York Central development varies for each junction. Overall there is considered to be a major or moderate adverse impact as a result of the development. A mitigation assessment has not been undertaken as part of this study. Further analysis needs to be carried out at these junctions with detailed junction modelling to understand the issues and potential mitigation measures required to alleviate congestion. Following more detailed modelling and identification of mitigation measures it is anticipated that the impact would be of moderate or minor adverse significance.

Figure 28 Junction Performance Assessment- Comparing Option E with Do-Minimum



19.2.1.4 Bus Journey Times

An initial assessment of the changes in bus journey time on the wider network is made by comparing the bus summary statistics for each route. This involves tracing each bus route and summing total travel times and distance, based on the

number of buses using each route. The routes identified and the bus journey times are provided within the modelling note at Appendix B.

The cumulative change in city wide journey time for option E is negligible for the routes under consideration. Routes 1, 5 and 59 Park & Ride have significant savings in journey time in Option E as the model assumes they are re-routed through the new access road (re-routing has not been confirmed as part of the scheme development by YCP at this stage). On this basis, a minor beneficial impact on bus journey time is predicted.

It is noted that the York Central scheme will provide improved bus stopping facilities to the west of the station entrance and relieve bus congestion at the eastern station access. It is anticipated there will be some overall improvements in the experience for passengers.

19.2.2 Pedestrian / Cycle Accessibility

An assessment of pedestrian and cycle accessibility for the schemes has been undertaken. The York Central scheme could provide a network of high quality and safe pedestrian and cycle routes through the site. These will provide a network of routes internally connecting the residential, employment and community uses on the site. Routes will also connect to the existing external network, including via the rail station and Leeman Road underpass to the east for access to the city centre, via Scarborough Bridge to the north of the River Ouse, via a new link to the west of the NRM for access to residential areas and leisure routes to the south of the River Ouse and via Leeman Road to the north west of the site.

Access Option E will provide a new route adjacent to the new highway to the south of the rail lines linking with Chancery Rise and A59 Holgate. This will provide an improved pedestrian / cycle access from the existing stepped bridge to Wilton Rise and improve connectivity to all users.

Overall, pedestrian and cycle connectivity could be improved for new occupiers of the site as well as connecting the surrounding existing areas. In particular, option E improves connectivity to the south of the rail line. A moderate/major beneficial impact is therefore predicted.

Further analysis has been undertaken identifying walking and cycling catchments:

- 800m walking catchment (approx. 10 mins) to the rail station western entrance. This is based on guidance that indicates people are likely to walk 800m to access a rail station. This will capture residents from the York Central scheme as well as existing residential areas that will have good access to the rail station;
- 2km walking catchment (approx. 25 mins) to the rail station western access / commercial development. This is based on guidance that indicates this distance is realistically achievable and people could be encourage to walk to work. This will capture residents from the York Central scheme as well as existing residential areas that will have good access to employment opportunities on the site. In reality, some residents may walk this distance to

York rail station to avoid congestion / parking issues from access by bus or car. It is also considered an appropriate distance for residents to cycle to the rail station.

Within a catchment of 800m (walking distance) based on the existing walking network, the identified population would be approximately 7,830 people. Within a catchment of 2km (walking distance) based on the existing walking network, the identified population is approximately 48,300 people. The population data has been taken from the Office of National Statistic 2015 mid-year estimates at a Lower Super Output Area (LSOA) datasets. Factors have been applied to populations within LSOAs that are only partially within the walking distance isochrones (based on the estimated percentage of residential area that appears to be inside/outside the isochrones).

This option improves the existing substandard connections to the south of the rail line to improve accessibility for all users.

It is acknowledged that cyclists will generally cycle greater distances (guidance indicates up to 8km to work). However, beyond 2km there is negligible difference in the catchments for the two access options, therefore further assessment as part of this access options study has not been undertaken.

20 Option E: Air Quality

20.1 Introduction

The development has the potential to impact existing air quality as a result of road traffic exhaust emissions associated with vehicles travelling to and from the site during the operational phase. The main pollutants of concern from vehicle exhaust emissions are NO_2 and PM_{10}.

This chapter summaries the air quality assessment carried out for Option E. The full assessment can be found in the Access Options Air Quality Assessment Report (Appendix E).

The report includes:

- A review of relevant policy, legislation and guidance;
- Assessment methodology;
- A baseline assessment of existing air quality conditions in the vicinity of the site; and
- Operational assessment of road traffic emissions including indicative pollutant concentration results and an assessment of significance.

20.2 Assessment

A detailed modelling assessment has been undertaken to determine the potential local air quality effects associated with the potential trip generation as a result of the proposed development. Indicative pollutant concentrations have been forecast at selected receptors where the effects of the proposed road options on air quality are potentially the greatest, i.e. those properties closest to the road and within the air quality management areas (AQMAs).

Traffic data was provided by Arup transport consultants for a 2031 Do-Minimum (DM) and 2031 Do-Something (DS) scenario. These scenarios have been selected for assessment as the proposed opening year of the development, when vehicle movements will be at their peak. Emissions have been kept at 2016 levels, as a worst case assessment.

Following the EPUK/IAQM guidance, a screening assessment has been carried out which looked at the increase in vehicle numbers from the DM scenario to the DS scenario, for roads in the vicinity of the site. Where there was a change in HDV or LDV numbers which would be greater than the EPUK/IAQM screening numbers of 25 HDVs and 100 LDVs, these were included in the assessment.

The results have been categorised using the traffic light approach: red suggests a moderate adverse impact is likely to occur; amber suggests a minor adverse impact; and Green suggests a small or negligible impact on local air quality. All results are without mitigation in place.

For the assessment of NO_2, Option E is predicted to improve air quality at 1 modelled receptor, have a negligible impact at 48 assessed receptors, and have a slight adverse impact at 1 receptor. There are no moderate adverse impacts predicted.

The PM_{10} results show a similar trend to the NO_2 results, however a negligible impact for PM_{10} was predicted at all receptors.

Therefore, without mitigation in place, Option E is considered to have a slight adverse impact at worst, and has been classified as amber. The predicted results have not been verified and therefore have been used for comparative purposes.

20.2.1 Operational Mitigation

The proposed development will be designed to encourage walking and use of public transport rather than personal car ownership. Measures to reduce car or vehicle use on the site should be encourage as well as installing electric car charging points. These measures will help to reduce local air quality concentrations by reducing vehicle trips in the local area.

Sensitive receptors (residential dwellings, schools, hospitals etc) should not be located close to the proposed road option. Setting dwellings back from the roadside will reduce the concentrations of pollution at the façade of the properties.

21 Option E: Heritage

21.1 Introduction

This section considers, at a high level, the potential impact upon designated and non-designated heritage assets. It should be read alongside and in connection with the townscape appraisal to understand the overall approach to townscape and visual impacts associated with the access options.

The baseline data used for the appraisal has been drawn from a review of the available Historic Environment Record entries, retrieved in March 2017. This, together with the Audit of Heritage Assets (which identifies both listed buildings, locally listed buildings and the sites of now demolished railway buildings that have been subject to excavation) and data retrieved from the National Heritage List England.

The baseline for the assessment has also been the subject of discussions with the City of York Council Archaeologist to inform the baseline for the appraisal of the shortlisted access options and their impact on heritage assets. This assessment considers impacts on those assets either directly in the route of the access options or in the immediate vicinity.

It should be noted that the heritage overview of the access options has been prepared without consideration of the associated impact of the York Central development on the setting and value associated with those assets. Without the wider consideration of the full development, the mitigation which could be used to reduce any adverse impacts is difficult to quantify. Therefore the assessment focuses on the unmitigated impacts which could arise on designated and un-designated heritage assets.

21.2 Assessment

The assessment has been informed by an assessment of the magnitude of change to the assets identified against the value of the asset. The approach used to assess magnitude of impacts on heritage assets considers the change upon the receptor. This takes into account the severity of impact of the Proposed Development, together with the vulnerability of the receptor to change. The approach used is based on professional judgment and experience. It also reflects guidance on 'substantial harm' and 'less than substantial harm' in the NPPF and established methodologies in the Highways Agency Design Manual for Roads and Bridges Volume 11 (DMRB).

21.2.1 Archaeological Context

Option E passes through a nineteenth century industrial railway landscape for most of the proposed route. Like Option A, it also runs adjacent to an area known to have evidence of Roman funerary practices (to the west of the road). Directly to the east of the start point on Holgate Road, there have been a number of finds relating to the two Roman roads that run north-south and east-west close by and

the Roman era cemeteries associated with them. It should also be remembered that Roman ceramic material may be found scattered across an area that was previously arable fields, as manuring the fields can lead to finds being widely spread over a long period.

21.2.1.1 Designated and Un-designated Heritage Assets

Close (approximately 100m) to Option E's point of origin on Holgate Road is The Fox Inn, a post-medieval Public House (MYO1346) which is a Grade II listed building. An improved pedestrian access and cycleway will run to the east and north of the Fox Inn.

Option E crosses the line of the Roman road between Eboracum to Isurium (MYO2175), and also passes through a demolished post-medieval Carriage Works (MYO3802), associated stores and offices (MYO3790); demolished post-medieval smith shops (MYO3791); and post-medieval mess room (MYO3792)- it should be noted that the HER and Audit of Heritage Assets report states that this building has been demolished and replaced by a modern structure, however a building of apparent late Victorian date still remains at this location, and therefore the origins of this will require further investigation as part of a future EIA. Following the road north it proceeds to run through a demolished post-medieval Wagon Works (MYO3741).

The tables below describe at a high level the possible magnitude of impact and significance of effect on the heritage assets associated with Option E.

Table 22 Access Option E: Direct impacts on non-designated heritage assets

HER Number	Description	Heritage value (DMRB)	Magnitude of Impact	Significance of effect
MYO3802	Carriage Works carriage works gas and electric shops (demolished).	Low	Moderate adverse- buried remains would be partially removed by this option.	Slight adverse
MYO3790	Carriage Works stores and offices (Demolished).	Low	Moderate adverse- buried remains would be partially removed by this option.	Slight adverse
MYO3791	Carriage Works post-medieval smith shops (demolished).	Low.	Moderate adverse- buried remains would be partially removed by this option.	Slight adverse
MYO3792	post-medieval Carriage Works mess room.	Low	Major adverse- the building would be demolished.	Slight adverse.
MYO3741	Post-medieval Wagon Works (demolished).	Low.	Moderate adverse- buried archaeological remains would be partially removed by this option.	Slight adverse
MYO3763	Footbridge linking Carriage and Wagon Works. [demolished save for northern abutment and steps]	Low	Moderate adverse- northern abutment and steps would be demolished for this option.	Slight adverse

Table 23 Option E: Indirect impacts on designated heritage assets

NHLE Number	Description	Heritage value DMRB	Magnitude of Impact	Significance of effect
1257540	The Fox Inn Grade II Listed building.	Medium	Minor adverse- the setting of this building will be altered.	Slight adverse
1257537	Collingwood Hotel (Formerly Listed as: HOLGATE ROAD No.163 Holgate House) Grade II*	High	Minor adverse- the setting of this building will be altered.	Slight adverse
N/A	St Paul's Square/Holgate road Conservation Area York City CA no.4	Medium.	Minor adverse – the built form of the western end of the conservation area would be altered.	Slight adverse

22 Option E: Townscape

22.1 Introduction

This section looks at the townscape and visual baseline associated with the Option E access to the York Central site and provides a high level appraisal of the likely impacts. It only considers the impacts on the local townscape and visual amenity that would arise as a result of the proposed access option and not the proposed York Central development. It is not intended to replace a full townscape and visual impact assessment for the scheme.

22.2 Assessment

22.2.1 Key Elements of the Scheme relevant to Townscape and Visual

Option E involves a new signalised junction access from the A59 Poppleton Road to the west of Wilton Rise. In addition it is proposed that a new bus lane and an existing cycle path will be upgraded that will pass behind the Fox Inn public house. The proposed new junction will result in the loss of mature trees to the west within the open space. A short description of the key aspects of the proposed access road relevant to the consideration of townscape and visual amenity is provided below, full details of the option are provided in Section 2.

The proposed access road will include a two way road, with pavements and cycle lanes on both sides. The western end of the road will involve the demolition of a building, named as the Carriage Work Mess Room within the Audit of Heritage Assets of York Central[17] (see image below).

[17] York Central Audit of Heritage Assets, November 2013

The access road runs to the north-east from this location, passing through an existing car park to the rear of the Carriage Works at grade with the existing ground level. The road cuts through the Carriage Work Stores and Offices and Smith's Shop[18] buildings (Alliance House), and would require their demolition. At this point the road begins to rise above existing ground level on an embankment, leaving an open space to the south east between the road and the back of the residential road of Wilton Rise.

The proposed new access road would pass to the north-west of Cleveland Street and Upper St Paul's Terrace across the existing play area from east to west. There would be an earth retaining wall to the north-west of Cleveland Street, transitioning to an embankment through the existing play area. Due to the undulating nature of the existing play area, the height of the proposed new road fluctuates in relation to existing ground levels; however it rises to approximately six metres above ground level to the west of the railways tracks. The access road would result in the loss of the play area, ornamental planting and boundary trees.

A 45 metre single span multi girder bridge would cross the FAL at a height of approximately eight metres above the level of the railway tracks, transitioning to a road on earth retaining walls. The road then turns to the south east, involving the demolition of the Freightliner warehouse within the York Central site. A new link road would connect with the western entrance of York Railway Station and on to Leeman Road, and a second link to connect to Leeman Road via the Leeman Yard area.

22.2.2 Townscape Baseline

The site of the proposed access road is located within the suburban area of Holgate, and is located less than 1km to the city centre of York. The streets in this location are a mix of architectural styles.

[18] York Central Audit of Heritage Assets, November 2013

The adjoining railway does not appear to result in high level of disturbance and beyond localised levels of intrusion from traffic on the A59. The streets to the north experience moderate levels of tranquillity.

The proposed route of the access road passes between the residential streets of Wilton Rise within Holgate to the east and large red brick pitched roof warehouses within the Holgate Carriage Works to the west. Also to the west is an open space that wraps around the back of the Fox Inn and the A59 Poppleton Road/ Holgate Road to the south. The immediate area, which includes a mix of industrial and residential building, has a distinctive townscape character associated with the railway.

The Carriage Works have historic value due to their previous use as a railway carriage factory in the 19th century. The buildings have experienced 20th century modernisations and are currently owned by Network Rail and used for related railway maintenance. A number of buildings are associated with the Carriage Works, including old offices and stores and a mess room, all are unlisted but have some historic value, and are recorded within the York Central Audit of Heritage Assets[19].

The street of Wilton Rise is generally elevated above the Carriage Works, the streets connect the A59 Poppleton Road to Cleveland Street and Upper St Pauls Terrace, running on a south-west to north-east orientation. The houses on Wilton Rise are mostly modern (1960 - onwards) and are semi-detached residences constructed of brick. Cleveland Terrace, Upper St Pauls Terrace and Railways Terrace to the north-west are early 19th century to 20th century terraced streets, orientated in a north west to south east alignment. The railway runs to the north of these terraced streets and a bridge provides an important pedestrian access over the railway tracks to the National Railway Museum and the Railway Station. Otherwise pedestrian and cycle access to the city centre and the station is via the A59 Poppleton Road, involving a longer and more vehicular dominated route.

The Upper St Paul's play area (designated as an Open Space Policy GP7) in the Draft York Local Plan (2005)) is located to the north west of Upper St Pauls Terrace, also accessible from the adjoining Cleveland Street (designated as a Proposed Cycle/ Pedestrian Network [Policy T2] in the York Local Plan [2005]). The play area contains four pieces of play equipment, a basketball court, two benches, a public footpath and low level shrub planting. The park is bound by mature trees, fencing and a brick wall, separating it from the railway lines to the north and the Holgate Carriage Works to the west. Another open space is located within a five minute walk to these residences, within St Paul's Square.

[19] York Central: Audit of Heritage Asses, November 2013

The St Paul's Square/ Holgate Road Conservation area bounds the southern end of the proposed access road site, following the A59 Poppleton Road in this location. The residences on the southern side of the A59 tend to be three storey Victorian properties and are set back from the road and have tree and shrub planting on their boundary. The Grade II Listed Fox Inn is located along the A59 to the north of the conservation area.

Along the A59 road corridor, the proposed access road will result in the loss of mature trees in the open space to the east of the Fox Inn and the creation of a new bus lane within this space. This area of grass currently has a cycle path through it but is otherwise unused, there are opportunities to improve this space. The bus lane will result in an increase in visual clutter and vehicular routes within the A59 road corridor; however it is not uncharacteristic of the wider townscape.

The proposed access route would pass on a similar orientation to the existing Wilton Rise, and would generally have a mostly low impact as it passes at grade across the existing car park. However, the loss of the Mess Room within the Holgate Carriage Works would be perceptible from the A59 and though poorly maintained, would result in the loss of a building with some architectural detail and historic interest/ links to previous use, as such its loss and would have a locally high impact on townscape character. Additionally the demolition of the old shop and offices would have an adverse impact.

The highest impact would be upon the character of Upper St Pauls Terrace and Cleveland Street, due to the proposed embankment and retaining wall changing the open aspect of the northern end of the streets and resulting in the loss of the play area. The play area would be replaced by a large new feature that would be visible, and the movement of traffic would result in moderate- high levels of intrusion upon the existing relatively tranquil nature of these streets. However, these impacts would be localised.

The proposed bridge crossing the railway has a generally low impact in consideration of the degraded and undeveloped nature of the townscape in this location and due to the bridge in keeping with adjacent site levels and not intervening in the skyline.

In consideration of the above the magnitude of change of the proposed access road upon the townscape is anticipated to be medium and the impact would be adverse. However, the section of the road in proximity to Upper St Pauls Terrace Play Area is anticipated to result in a localised high magnitude of change and an adverse impact.

22.2.3 Visual Considerations

The section of the access road from the A59 to the railways is generally well screened due to the developed nature of the area, as such views tend to be limited to a small number of nearby residences and park users and corridor views along streets. There are some longer distance views of the access road within views from across the York Central site. However, due to the longer distance of these views and the existing detracting railway infrastructure related features within the view, new features would be more likely to integrate within views. Mid distance views are available from a short section of the A59 Poppleton/ Holgate Road from the residences that bound the road and the Fox Inn, however views are localised.

The York Central Historic Core Conservation Appraisal[20] identifies a series of key views of York Minster that have been selected because they define the city and its image. Each view suggests ways in which it should be safeguarded or enhanced and this is a material consideration in the acceptance of planning applications. Viewpoint 7 represents views of Option E from Key View 10, it is not considered that any other Key View would be likely to be affected by this option. A series of viewpoints have been identified to represent views towards the proposed access route. These views are outlined below.

[20]York Central Historic Core Conservation Area Appraisal Part One,

Viewpoint 1: Cleveland Street and Upper St Paul's Terrace

This viewpoint represent views from residents located on Cleveland Street and Upper St Pauls Terrace. The terraced streets are orientated in a north west to south east alignment, windows of properties on the streets face towards the road. As such, the views from these properties are of properties on the opposite side of the street. However oblique views from windows of properties located to the northern end of the streets will extend to the Upper St Paul Terrace play area and to the trees and boundary fencing and walls that define its boundary. The northern gable end of the buildings on these street do not have windows (aside from a small window on the end dwelling of Cleveland Street) as such there are limited direct views across the play area from these properties. There are however, views along the roads and from the parking areas at the northern end of each street.

From Cleveland Street, oblique views from windows and views north- west along the street of the existing play area will be replaced by views of a road on a reinforced retaining wall up to 3 metres in height. From Upper St Paul's Terrace, oblique views from windows and views north- west along the street of the existing play area will be replaced by a grass embankment of up to 6-8 metres in height. The road will pass on top of the embankment and retaining wall, and will include a parapet/ noise barrier and light columns that will increase the extent of visual change. In addition, the movement of traffic along the road will be visible, and at night time there will be increased adverse impact from headlights.

The proposed new access road would result in the loss of the play area and park that are a key feature within views from the street. The proposed retaining wall and embankment will foreshorten views and will result in a substantial change in close proximity to the residences.

In consideration of the above, the magnitude of visual change for these residents is anticipated to be high and the impact would be adverse.

Viewpoint 2: Railway Station

This viewpoint represents views from people at York Railway Station. The photograph has been taken from an elevated location at the top of the stairs that provide access from the back of the station to the National Railway Museum and Leeman Road.

The foreground of the view comprises car parking to the rear of the train station, a large warehouse beyond screens views to the west and north-west. The end of the Freightliner warehouse and the canopies of trees that bound the Upper St Paul's Terrace play area and Railway Terrace are partially visible beyond the large building in the foreground. Views from the platforms within the station would be from a lower elevation and as such views to the north-west would be completely screened by intervening railway buildings.

The proposed access road would be predominantly screened by the intervening building to the back of the station. The only perceptible change to the view would be some loss of trees and the Freightliner warehouse. Views from the car park and from platforms to the south would be screened by intervening buildings. In consideration of the above, the magnitude of visual change for users of the Railway Station is anticipated to be negligible and the impact would be neutral.

Viewpoint 3: A59 Holgate Road

This viewpoint represents views from properties on the southern side of the A59 Poppleton Road/ Holgate Road within the St Paul Square/ Holgate Road Conservation Area. The properties to the south of the A59 are generally well set back from the road, with driveways and gardens facing the road.

The foreground of the view from these residences will be mostly formed by the mature trees within their front gardens. Where views are more open, the A59 and the movement of traffic along the road will form the mid-ground of the view. The background of the view will be formed by the line of shops and open space on the opposite side of the road and the Carriage Works buildings beyond.

Views of the proposed junction from the residences would be partially screened by trees within front gardens. However, it is assumed that views would extend to the proposed signalised junction, and that the demolition of the Carriage Works Mess House and the removal of trees within the open space will be noticeable.

The addition of the junction into the view would not be uncharacteristic of views of the A59, though the removal of trees and the demolition of the Mess House would result in the loss of existing features that are key characteristics within views from these properties. In consideration of the above, the magnitude of visual change for these residents is anticipated to be medium and the impact would be adverse.

Viewpoint 4: Back of Wilton Rise

This viewpoint represents views from the backs of properties on Wilton Rise. The photograph is taken from a small road that provides access to the back of approximately eight properties. The backs of these houses on Wilton Rise have views to the north east, across the route of the proposed access road. A high brick wall and wooden fencing defines the transition from the road to the Carriage Works site.

The properties are elevated and from upper floors views will extend above the intervening boundary wall and fencing to the roofs of the carriage works. The Carriage Works Mess Room is visible to the south east. A clump of mature trees define the northern end of this access road and screen views to the north east.

Views of the proposed access road from ground floor windows would be screened by the wall and fencing that defines the boundary between the access road and the Carriage Works site. However, due to the slight elevation of the houses in this location, views from upper floor windows will extend to the proposed access road. The road would be similar in character to views of the existing car park, though the movement of vehicles along the road would be likely to be more intrusive than levels currently experienced.

In consideration of the above, the magnitude of visual change for these residents is anticipated to be medium and the impact would be adverse.

Viewpoint 5: The Fox Inn

This viewpoint represents views from the Grade II Listed Fox Inn, located on the A59 Poppleton Road/ Holgate Road. The photographs are taken from the A59 in proximity to the frontage of the Fox Inn, looking towards the proposed site of the junction and the second is taken from the open space to the east beyond the boundary of the pub.

The frontage of the pub looks out across the A59 and views from the remaining aspects tend to be predominantly screened by trees on the boundary of the pub.

Some glimpsed views of the open space and cycle lane that wrap around the back of the pub will be available within views from the beer garden and car park.

Due to these boundary trees, views of the proposed access road and junction will mostly be screened from the pub. However, the proposed bus lane and loss of mature trees within the open space would be a noticeable change to the view from the external areas of the pub. The movement of buses to the rear of the pub would be partially visible through intervening boundary trees and would be perceived in combination with the movement of traffic along the existing A59.

In consideration of the above, the magnitude of visual change for these visitors to the pub is anticipated to be low and the impact would be adverse.

Viewpoint 6: Bishopsfield Drive

This view represents views from residences within the Bishopfields Drive housing development within the centre of the York Central site.

The development is generally inward facing and residences front on to internal roads. Views to the surrounding industrial buildings and railway infrastructure are screened by boundary fencing and trees.

The photograph has been taken from the Green to the south of the development, views are completely screened by boundary planting. As such the viewpoint will not experience a change to views as a result of the proposed access road.

Viewpoint 7: Water End

This viewpoint has been taken to represent views from road users on Water End road. It also represents Key View 10 in the York Central Historic Core Conservation Area Appraisal[21] as a key view of York Minster.

The photograph from Key View 10 in the Conservation Area Appraisal was taken from the centre of Water End bridge, however the height of the parapet is above eye level. As such the photograph has been taken to the south-western end of the bridge where the view extends through security fencing in the foreground.

Beyond the security fencing and bridge parapet in the foreground of the view, the railway lines and York Central site are located approximately 12 metres below Water End. Railway and road infrastructure dominates the view, extending into the background to the south east. The Holgate Carriage Works main buildings are partially visible, filtered by vegetation in the foreground of the view and the Freightliner warehouse and trees that define the boundary of the Upper St Paul's Terrace Play Area and Railway Terrace. Trees within the Millennium Green form the horizon of the view to the west, and screen views towards Leeman Road.

The main tower of the Minster is visible to the east in the background of the view, forming visible feature on the distant skyline of York between the trees in the mid ground of the view.

The proposed new bridge and access road going to grade within the York Central site, along with the loss of boundary trees within the play area and the loss of the Freightliner warehouse would be visible in the background of the view. However, the change to the view would be barely perceptible due to the distance and the

[21]York Central Historic Core Conservation Area Appraisal Part One,

extent of railway infrastructure that intervenes within the view. The proposed bridge would not interfere with views of the Minster from Key View 10.

In consideration of the above, the magnitude of visual change for road users is anticipated to be low to negligible and the impact would be adverse to neutral. The effect upon the Key View 10 of the access option alone is considered to be negligible.

Viewpoint 8: Holgate Park

This view represents views of users of Holgate Park and of nearby residences to the north of the park.

The foreground of the view is partially screened by trees, scrub and ornamental planting within the park and along the edge of the railway. Due to the elevated location on the eastern edge of the park, views extend across the railway lines. Railways infrastructure, including rolling stock, dominates the mid-ground extending to the Holgate Carriage Works buildings, Freightliner warehouse and trees that define the boundary of the Upper St Paul Terrace play area, visible in the background of the view.

Views from the elevated park would extend to the proposed new bridge and the removal of the existing Freightliner warehouse will be visible. Vegetation within the foreground of the view partially screens views, even from this moderately open and elevated location, along with the railway infrastructure that dominates the mid-ground the proposed access road and bridge would be barely perceptible.

In consideration of the above, the magnitude of visual change for road users is anticipated to be low and the impact would be adverse.

Mitigation Measures

Consideration should be given to:

- Incorporating direct connectivity between Cleveland Street and Upper St Pauls Terrace and the proposed access road;
- The lowering of retaining walls to the north-west of Cleveland Street;
- The re-design of the remaining area of the Upper St Paul Play Area as a useable space;
- Including opportunities to improve pedestrian and cycle access from Wilton Rise area to the railway station and the city centre through the York Central development;
- Retaining and improving the existing pedestrian bridge from Wilton Rise;
- Ensuring effective pedestrian links from existing streets to the proposed new development;
- Utilising the area between the proposed access road and Wilton Rise to improve access to the road from Wilton Rise and to provide screening through the introduction of tree planting; and
- Including opportunities to improve the open space adjoining the Fox Inn.

23 Option E: Noise

23.1 Introduction

This section considers potential noise impacts associated with the shortlisted access options. The potential impact of Option E has been assessed in this section. Road traffic noise from the access option has been predicted and existing baseline noise has been measured. As a consequence of the modelling, the assessment also considers any mitigation which may be necessary as part of the design of any access to be taken forward.

As with the other assessments, the noise study is independent of the full York Central development, which may also require mitigation to be incorporated into the scheme in relation to existing noise sources. This will be assessed as part of the Environmental Impact Assessment for any future planning application.

23.2 Methodology and Significance criteria

23.2.1 Noise Modelling Predictions

An assessment of the impact of the new access road option resulting from the Proposed Development has been conducted by comparing predicted road traffic noise against measured baseline ambient noise levels. Road traffic noise levels for the new access roads have been calculated using CRTN[22].

Road traffic noise levels at the closest receptors were calculated in accordance with the methodology outlined in ISO9613 "Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation" to replicate the CRTN results. This allows for better consideration of barrier attenuation as well as future compatibility with the prediction of other noise sources (rail, industrial, construction etc).

The results were then calculated in accordance with the methodology outlined in ISO9613 *"Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation"* to replicate the CRTN results. This allows for better consideration of barrier attenuation as well as future compatibility with the prediction of other noise sources (Rail, industrial, construction etc).

Noise changes arising from the proposed link roads are therefore assessed in both absolute terms as well as relative terms. Outline mitigation has been developed and optimised to determine efficacy.

23.2.2 Significance Criteria

The potential noise impacts associated with each access road option has been considered in relation to the:

[22] Calculation of Road Traffic Noise CRTN, Department of Transport, Welsh Office, 1998

- Alignment relative to surrounding noise sensitive receivers (NSRs);
- Proximity of the NSRs;
- Number of NSRs affected;
- Likely existing noise levels in relation to the introduced noise (i.e. impact); and
- Likely proportionate traffic change on existing, connecting roads.

Table 24 presents the noise change criteria against which potential noise impacts have been appraised, in conjunction with the number of NSRs affected. The noise change magnitude categories (e.g. negligible, minor, moderate) are based upon the traffic noise assessment guidance in DMRB HD 213/11[23] - Table 3.1 '*Classification of magnitude of noise impacts in the short term*'.

Table 24 Appraisal Criteria – Noise change (overall impact also considers number of NSRs affected)

Noise Impacts	**Criteria**
Negligible or Minor	Negligible = <1dB change Minor = 1 to 2.9dB change
Moderate	3 to 4.9dB change
Major	5+ dB change

DMRB, HD213/11 provides a basis for evaluating the magnitude of impact and the significance of an effect in order to arrive at an overall level of significance. Considering the magnitude of noise impacts in the long term (typically 15 years) for the Do-Minimum and Do-Something cases, a potentially significant effect for road traffic noise is identified where the Proposed Development would cause a 3dB or greater increase in road traffic noise level where the Do-Minimum noise level is below Significant Observed Adverse Effect Level (SOAEL). Where the Do-Minimum traffic noise level is above SOAEL, any increase in level greater than 1dB is assessed as a potentially significant effect. Lowest Observed Adverse Effect Level (LOAEL) and SOAEL for road traffic noise for this assessment are given table 25 below.

Table 25 Adverse effect levels for road traffic noise

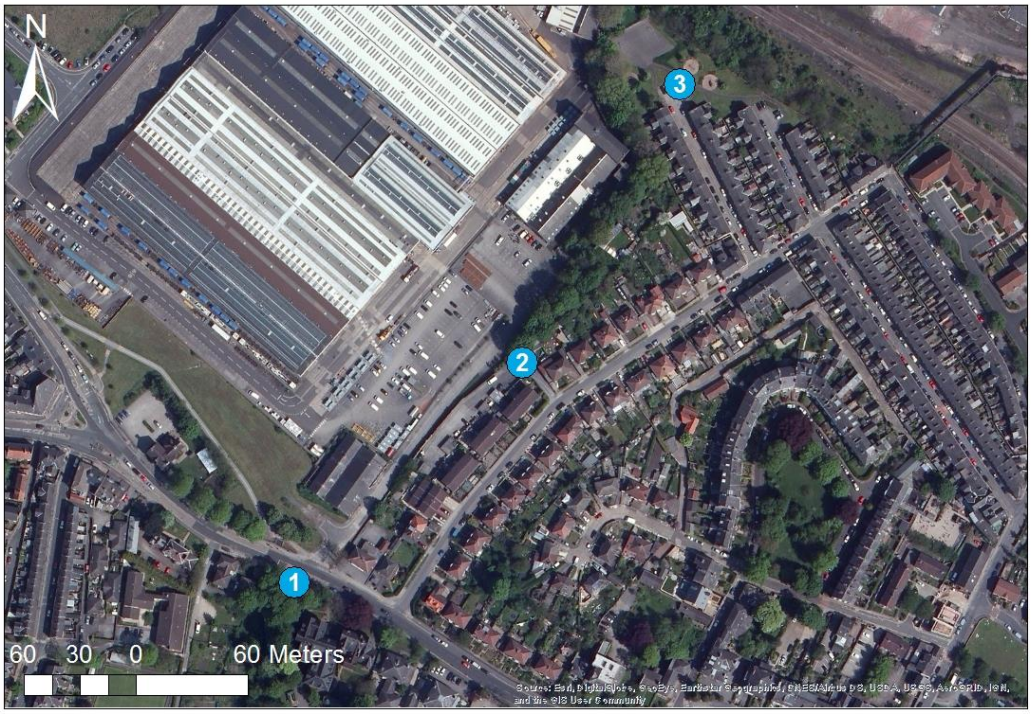
Noise	**Period**	**Noise level**
LOAEL	Day	50dB$L_{Aeq,16hr}$
SOAEL	Day	63dB$L_{Aeq,16hr}$

[23] THE HIGHWAYS AGENCY, TRANSPORT SCOTLAND, WELSH ASSEMBLY, DRD (2011), Design Manual for Roads and Bridges Volume 11, Section 3, Part 7,HD 213/11 – Revision 1, TSO

23.2.3 Baseline Noise Survey

A baseline noise survey was conducted on Wednesday 12 April 2017. The measured noise levels have been used to quantify the existing noise climate around the proposed development site. Noise measurements were undertaken at the locations shown in Figure 29 Option E measurement locations. Full details and results of the baseline noise survey are presented in Appendix D.

Figure 29 Option E measurement locations



A summary of the noise survey results is presented in Table 26 in terms of $L_{Aeq,T}$, $L_{A90,T}$, $L_{A10,T}$ and $L_{Amax,F}$. The table shows the logarithmic average for the $L_{Aeq,T}$ and the arithmetic average for the other indicators. $L_{Amax,F}$ is shown as a range.

Table 26 Summary of attended daytime noise levels

Measurement location (See Figure)	**Measured noise level dB (re 20µPa)**			
	$L_{A90,T}$	**$L_{Aeq,T}$**	**$L_{A10,T}$**	**$L_{Amax,F}$**
Location 1 (Holgate Road)	57	69	72	82-85
Location 2 (Wilton Rise)	49	54	57	71-74
Location 3 (Cleveland Street)	47	54	54	62-85

The daytime noise level at Location 1 (Holgate Road)) has been calculated from three individual noise measurements, based upon the principles of the 'shortened measurement procedure' described at Section 43 of Calculation of Road Traffic Noise (CRTN) because road traffic dominates.

This method has been used to calculate a noise level in terms of $L_{A10,(18\text{-hour})}$. A further correction has been applied in accordance with Section 9 of Annex 1 of the

now superseded PPG24 to convert the noise levels to $L_{Aeq,16\ hour}$. This process is summarised below.

$$L_{A10}\ (18\text{-hour}) = L_{A10}\ (3\text{-hour}) - 1dB(A) \qquad \text{(CRTN)}$$

$$L_{Aeq,16\ hour} \approx L_{A10}\ (18\text{-hour}) - 2dB(A) \qquad \text{(PPG24)}$$

$$L_{Aeq,16\ hour} \approx L_{A10}\ (3\text{-hour}) - 3dB(A)$$

For locations 2 and 3, the measured $L_{Aeq,T}$ has been used for the assessment. The resultant daytime noise levels are therefore taken as follows:

- Location 1: 69 $dBL_{Aeq,16h}$
- Location 2: 54 $dBL_{Aeq,T}$
- Location 3: 54 $dBL_{Aeq,T}$

23.2.4 Noise Assessment

The outline noise assessment results are presented are presented in Figure 30 and Table 27. The noise levels are quoted at a height of 4.5m above the terrain, representing the height of a 1st floor window. Modelling assumptions are provided in Appendix E.

Figure 30 Daytime noise map and receptors results (free-field at 4.5m above terrain) using un-mitigated design for Option E

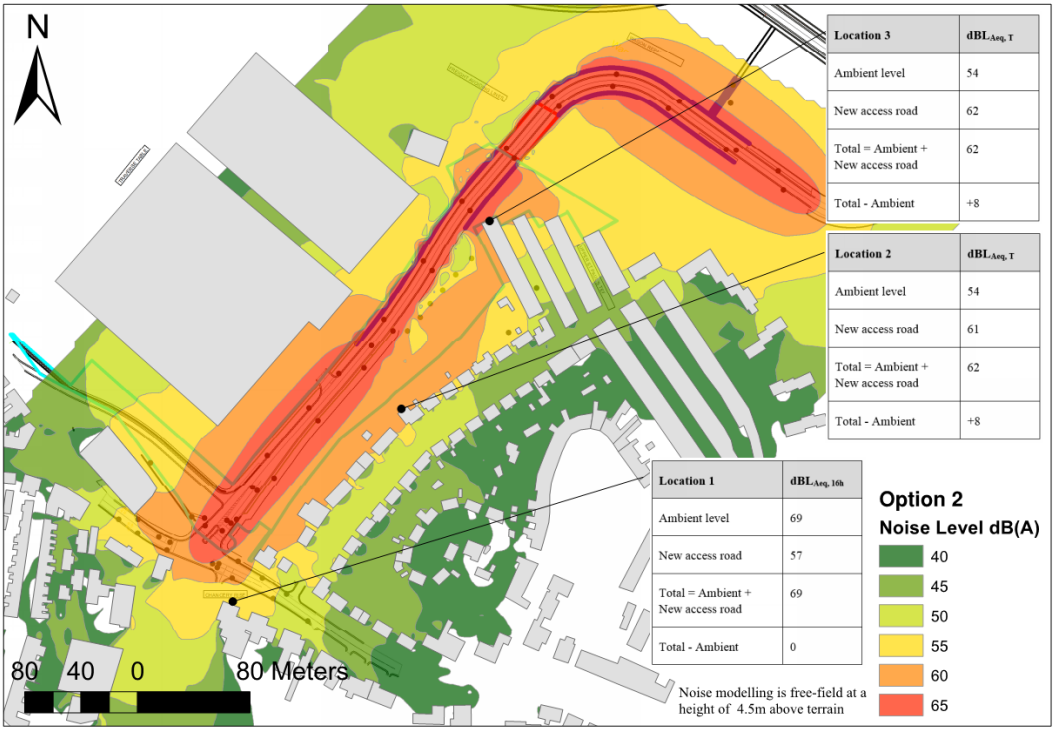


Table 27 Daytime noise results dBLAeq, 16h (free-field at 4.5m above terrain)

	Location 1 (Holgate Road)	**Location 2 (Wilton Rise)**	**Location 3 (Cleveland Street)**
Ambient level	69	54	54
New access road	57	61	62
Total = Ambient + New access road	69	62	62
Change due to proposal (Total – Ambient)	0	+8	+8
Impact	Negligible	Major	Major

The existing ambient noise levels at Locations 2 and 3 are between the daytime LOAEL and SOAEL. The totals (ambient + new access road) remain below the daytime SOAEL. The assessment indicates the proposed new 'unmitigated' access road has a negligible noise impact at Location 1 but a Major impact at Locations 2 and 3.

23.2.5 Mitigation / Residual effects

A 1.8m high noise barrier is proposed along the length of the new access road in order to reduce noise levels at nearby receptors as shown in Figure 31.

Figure 31 Proposed noise barrier location (indicative)

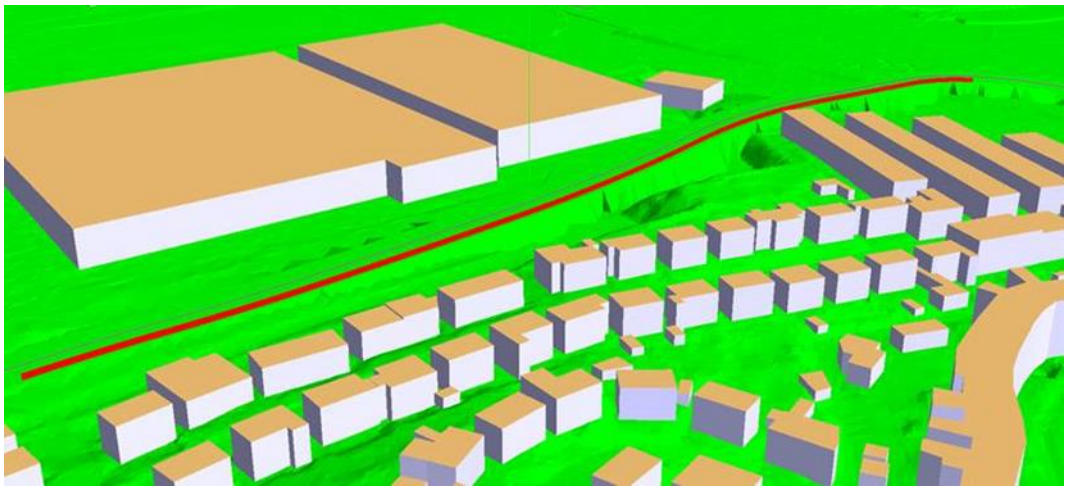


Table 28 Daytime noise results dBLAeq, 16h (free-field at 4.5m above terrain)

	Location 1 (Holgate Road)	**Location 2 (Wilton Rise)**	**Location 3 (Cleveland Street)**
Ambient level	69	54	54
New access road	57	58	56
Total = Ambient + New access road	69	59	58
Total - Ambient	0	+5	+4
Impact	Negligible	Moderate	Moderate

The assessment indicates the proposed new ‘mitigated’ access road has a negligible noise impact at Location 1 but a moderate impact at Locations 2 and 3.

The proposed road surface employed will need to be reviewed to ensure consistency with respect to noise modelling assumptions. Where possible low noise road surfaces should be considered to minimise noise levels.

To achieve significant improvements over the above would require a significant increase in the height of the barrier. The noise barrier will need to be optimised at the detailed design stage to maximise the benefit to nearby properties. This would entail varying the height along its length and co-ordinating its location more fully relative to the kerb / pavements / street furniture etc.

24 Option E: Ecology

24.1 Introduction

A Preliminary Ecological Appraisal (PEA) of the emerging York Central masterplan site was undertaken in June 2016 as part of the Stage 1 Assessment.[24] In May 2017 a PEA of the Millennium Green area, which had not previously been accessed, was undertaken in support of this Access Options Study.

The findings of the PEAs have been used to inform the assessment of access options A and E contained in this study. The findings of this study are based on the current condition of the site. However, the condition may change with time and therefore surveys may require updating if there is a delay in the proposed works.

Further protected species surveys are being undertaken at the time of writing.

24.2 Assessment

24.2.1.1 Desk Study

The following statutory designations exist within 2km radius surrounding the proposed Option E access road:

- Hob Moor Local Nature Reserve (LNR) located approximately 650m south west.
- Clifton Ings and Rawcliffe Meadows SSSI located approximately 1.1km north west.
- The following non-statutory designations exist within a 2km radius surrounding the proposed access road:
- York Central Site of Local Interest located approximately 150m north.
- Holgate Park Drive Site of Local Interest located approximately 230m west.
- River Ouse SINC located approximately 450m north east.
- Severus Hill Reservoir Basin SINC 700m north west.
- Extn. to Hob Moor Community School SINC located approximately 900m south west.
- Clifton Bridge SINC 1.1km north.
- Clifton Ings SINC located approximately 1.1km north west.
- Danebury Court SINC located approximately 1.1km south west.
- Fishpond Wood SINC located approximately 1.5km west.
- Rawcliffe Meadows SINC located approximately 1.6km north west.

[24] Arup (2017) Preliminary Ecological Appraisal. Issued to York Central Partnership.

- British Sugar Sidings SINC located approximately 1.9km north west.
- Bachelor Hill SINC located approximately 1.9km west.
- Cherry Lane SINC located approximately 1.9km south.
- Knavesmire Stables Meadow SINC located approximately 2km south.

Local records were obtained from North East Yorkshire Ecological Data Centre (NEYEDC) for the York Central site. Full details are available on request.

24.2.1.2 Field Study

The key findings of the PEA survey relating to Option E include (full details can be found within the full report):

- Habitats: The site consists of hardstanding, ephemeral vegetation and broadleaf woodland and scrub.
- Invasive plant species: Giant hogweed was recorded adjacent to the A59.
- Bats: Seven buildings within the route of the proposed access road were identified to have bat roost suitability (one low, four moderate and two with high bat roost suitability). Additionally, the broadleaf woodland will provide suitable foraging habitat for bats.
- Badger: Information regarding badgers is treated as confidential. Further information however can be made available on request to bona fide individuals.
- Black redstart and breeding birds: Suitable buildings for breeding black redstart and suitable foraging habitat was identified by the freightliner building. Additionally, the broadleaf woodland and scrub at Holgate Facilities provide suitable habitat for common nesting birds.
- Invertebrates: The early successional mosaic habitat present within the sidings provides highly valuable habitat to invertebrates. The mosaic provides a range of opportunities for nesting and breeding invertebrates in close proximity to foraging locations.

These key ecological constraints may require the project to obtain European Protected Species from Natural England dependent on the impact of protected species. These issues will need to be further investigated as part of the overall preparation of the Environmental Impact Assessment, including as appropriate the requirement for further surveys to fully assess the ecological impacts associated with the scheme. If licences are required from Natural England, these are subject to a separate consenting regime, and require Planning approval.

24.2.2 Potential Effects

The potential effects identified below are based on survey and desk study findings available at the time of writing. Detailed species-specific surveys have been commissioned for bats, black redstart and invertebrates, which will determine whether those species are likely to be impacted by the proposed option. Until

these results are available a precautionary approach has been taken assuming that these species may be present.

- There is potential for the disturbance or loss of bat roosts (subject to further survey) during the demolition phase of the development. A European Protected Species Licence may be required from Natural England if bat roosts are identified within the site.
- Potential direct effect on badger (subject to further survey) during the construction phase of development. A mitigation licence may be required from Natural England if badger are identified on site and proposed work will impact on this species.
- Potential direct effect on black redstart and breeding birds during the demolition of buildings and construction phase of development.
- Potential direct effect on invertebrates during the construction phase of development.

24.2.3 Potential Mitigation

The nearest statutory designated site is Hob Moor LNR located approximately 650m south east. Due to the distance between the sites it is not anticipated that the proposed access option will impact directly or indirectly on this site, nor are there any identified pollution pathways. Additionally, the nearest non-statutory designated site is York Central Site of Local Interest, approximately 150m north. However, development of the access option is not anticipated to have any direct or indirect effects on this site. Nevertheless it is recommended that consultation with the CYC Ecologist regarding the current status of this designated site is undertaken.

Clearance of trees or scrub should be undertaken outside of the breeding bird season (March to August inclusive). If clearance works must be undertaken during this period, a nesting bird check should be completed by a suitably qualified ecologist up to 24 hours in advance of works commencing.

Any trees or scrub removed should be replaced on a 2:1 ratio using native species, in keeping with the local area. Native tree species include oak *Quercus robur,* silver birch *Betula pendula* and sycamore *Acer pseudoplatanus.* Additionally, creation of hedgerows will improve species movement and permeability throughout the site. Species for use in a hedgerow may include hawthorn *Crataegus monogyna*, hazel *Corylus avellana* and dog rose *Rosa canina* agg.

Appropriate mitigation will be developed if an European Protected Species Natural England licence is required for bats. Mitigation may include the use of bat slates installed within new buildings or bat boxes erected on suitable trees. Additionally, bird boxes may be erected within suitable trees to provide additional nesting opportunities to common nesting birds.

In the event that badgers colonise the site between development phases, appropriate mitigation will be required including the potential submission of a Natural England badger licence.

Mitigation for the loss of nesting sites, foraging habitat and song posts for black redstart may include the provision of Green roofs which support a variety of ruderal plants and suitable terrestrial landscaping schemes.

Appropriate mitigation for loss of suitable habitat for invertebrates includes provision of open areas, ideally with a southerly aspect. These open areas should include a mosaic of open ground, patchy open swards and bare ground. In addition the creation of a flower-rich bund or bank which provides essential habitat for butterflies and pollinating invertebrates.

25 Option E: Community & Place Making

25.1.1 Existing Conditions

As proposed, the Option E access is taken from the rear of Wilton Rise, across land to the rear of Network Rail's Holgate Works depot. The route would provide a new route, parallel to the existing section of Chancery Rise and oriented in a north-easterly direction, across a proposed road bridge into the York Central site. The area to the south and east of the option largely comprises a residential area characterised by post war semi-detached properties and terraced Victorian properties. A children's equipped play provision, garden area and tarmacked basketball court is located to the north-west of Cleveland Street.

As shown in Figure 32, the basketball court, children's equipped play facilities and surrounding open space benefit from an allocation as open space under policy GP7 in the 2005 CYC Draft Development Control Local Plan incorporating the 4th set of changes. The area is also proposed as an indicative location for proposed cycle/pedestrian networks.

Figure 32 Extract for CYC Development Control Local Plan 2005, with the Green area denoting protected Open Space, and red hatching denoting proposed cycling/pedestrian network.

25.1.2 Potential Effects

The main community effect will be the impact of the new access road across the basketball court. This will result in the loss of the facility, and depending upon the extent of the bridge's supporting embankment this may impact upon the protected

open space adjacent to the area of children's equipped play. The equipped play space will also be lost as a consequence of the access option being constructed.

The loss of the basketball court will result in the loss of a facility within York's inner urban area. This will impact negatively upon the local community and reduce opportunities for recreation, health and leisure in this area.

It is likely that the construction of the new route will provide positive benefits for the Holgate community in terms of walking and cycling, providing a new linkage to the station. The current pedestrian bridge at Wilton Rise is stepped with a crude, retrofitted cycle ramp to aid cyclists to push their bikes across. The bridge is narrow and does not provide a desirable and welcoming route. There is the potential to embed a better cycling and pedestrian environment within the new access route, thereby enhancing this route for cyclists and pedestrians.

25.1.3 Potential Mitigation

The main mitigation measure that will be necessary to implement if this option is pursued will be the re-provision of the basketball court and the equipped play space. The current condition of the facility is poor and the re-provision of an enhanced facility in a nearby location could deliver positive benefits for the local community. This would be in line with Policy GP7.

Implementation of a well-designed landscaping scheme could offset the potential safety impacts represented by the proximity to the new highway by limiting access between the facility and the road.

The new highway link should include provision to encourage use by pedestrians and cyclists in order to deliver a demonstrable benefit to the nearby local communities.

25.2 Place Making and Scheme Delivery

Placemaking considerations have been informed by discussions with suitably qualified urban design and property market agents.

With regards Option E, there would be a need to consider where the road lands in the site, changes in levels and relationship of the road to new buildings.

26 Option E: Flood Risk & Water Resources

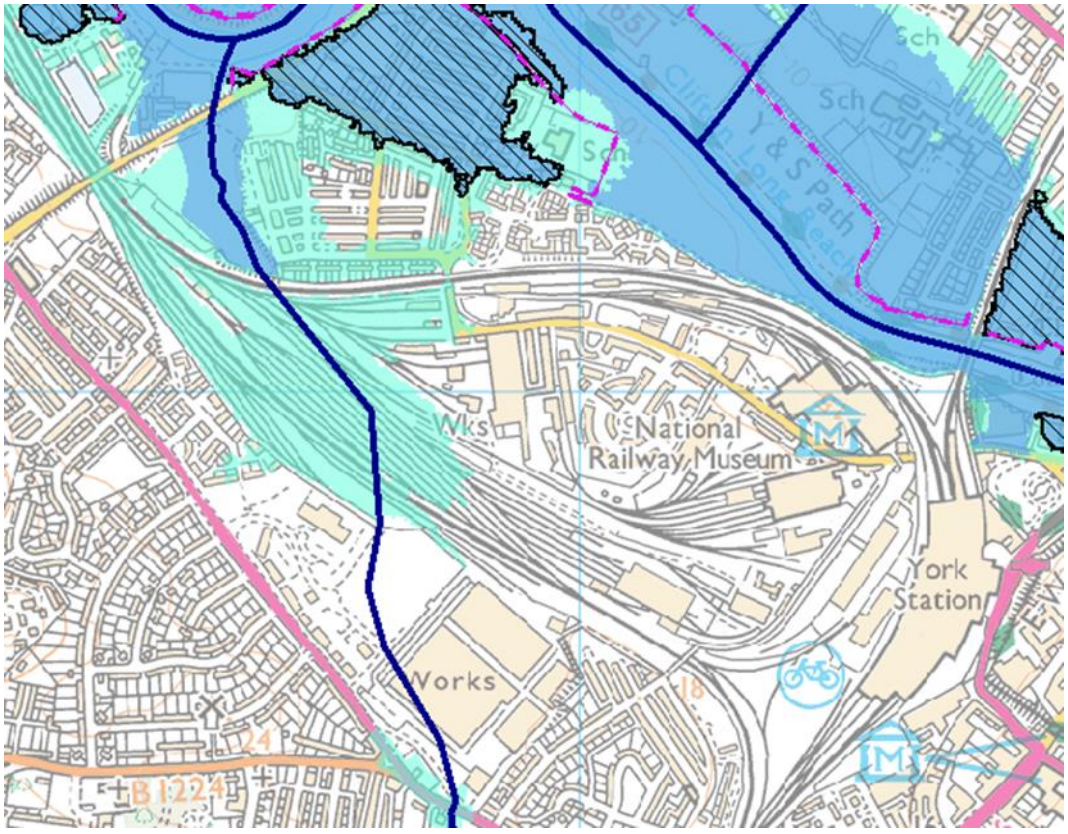
26.1 Introduction

This section of the report considers the existing Flood Risk Zones applicable to the access option, and in particular the extent of development within Flood Risk Zone 2 and 3, to understand the approach to the sequential and exception test in any future planning application. This assessment solely focuses on the access options and does not assess the full build out of the York Central site.

26.2 Assessment

Reference to Environment Agency mapping (refer Figure 33) highlights that a section of the proposed access road would be located within Flood Zone 2 at the junction of Holgate Road and Chancery Rise.

Figure 33 Extract from Environment Agency Flood Map



It is assumed that the source of flood risk in this location is the Holgate Beck, which enters in to culvert south of Holgate Road and has a metal grille covering to the north of Holgate Road, through which flood water could be conveyed during storm events due to either surcharging of the culverted watercourse, and/or failure of the pumping station downstream.

To permit construction of the access road across Flood Zone 2 it would need to be sequentially tested against alternative options (including Option A). Should it be

determined that Option E is preferable, taking account of wider sustainability objectives, then the exception test would need to be applied to justify construction of the access road in this location.

27 Conclusion

A new point of access is needed to deliver the full development potential of the York Central site. This study has provided an initial review of five different access options to determine if any factors rendered the options as unachievable. As a result, three options were not reviewed further.

A more detailed review was undertaken of two shortlisted options; Option A, Water End to York Central and Option E Holgate Road to York Central. A variant of Option A (Option A2) was also considered which would offer reduced cost, construction complexity and programme duration relative to Option A1.

This review considered the constructability and a series of environment impacts of these shortlisted options and has presented this information transparently.

What is certain from this review is that no one option has neutral or beneficial impact against all criteria. The option which has less environmental impact is also more complex, costly and time consuming to build (Option A – A1 variant). The option which is cheaper, easier and quicker to construct also presents localised environmental impacts (Option E). There is a variant to Option A which is moderately easier to construct, and cheaper than A1 but is reliant on YCP acquiring the use of land in Millennium Green.

27.1 Option A1

Option A1 is the most costly of the shortlisted options at an estimated capital cost of £[redacted]. It also has the longest programme duration and is technically the most complex to deliver.

Opportunities to fund construction of the access road, e.g. through WYCA's West Yorkshire Transport Fund (WYTF) are time constrained, and it is understood that funding allocated for the York Central Access project should be drawn down by April 2021. Therefore the approval and construction timeframe for option A1 would need to be considered carefully against the ability to meet the current WYCA funding timeframes.

Option A1 offers limited environmental impacts in some instances, and in particular noise and air quality impacts are judged to be minor. However, there will be a need to develop mitigation strategies in relation to other environmental considerations, such as ecology, flood risk and community uses. This would form part of the overall mitigation contained within a planning application for the full York Central development.

27.2 Option A2

Option A2 shares many of the benefits of A1 but at a reduced cost, estimated as £[redacted]

However, to deliver this option would require negotiation with the Leeman Road Millennium Green Trustees to complete the land assembly required.

This option will also result in a wider loss of land from the Millenium Green open space, which would need to be considered as part of the overall mitigation contained within a planning application for the full York Central development. There is the potential to mitigate these impacts to a degree as with Option A1.

27.3 Option E

Option E is the least costly of the shortlisted options at an estimated capital value of £[redacted]. It also has the shortest construction programme duration and is the least technically complex to deliver. This option can be delivered within land owned by YCP and which can be made readily available for construction.

Option E offers limited impact in terms of flood risk, but does still require the development of some land in flood risk zone 2. However, there is a need to balance the construction benefits with amenity considerations, including noise and air quality. Indicative mitigation for noise impacts is set out within the assessment; whilst air quality mitigation would need to be considered as part of the overall mitigation for the full York Central development. As with options A1 and A2, there are also impacts on community facilities (Holgate Gardens Play Area).