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Final report addendum

ProjectYork Northwest masterplanning & infrastructure studyDate4 January 2012SubjectHolgate Park (Access corridor G)RefCTDAOB014

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1 Introduction

1.1 Background

The York Northwest development corridor, which includes York Central and the former British Sugar and Manor School sites, comprises a core element of York's long term housing and employment growth requirements. However, for the full development potential of the corridor to be realised, the introduction of new highway infrastructure is needed to improve access into each component site. This requirement is particularly acute at York Central, where the rail lines that determine the site's boundary effectively result in its severance from much of the existing highway network in the local area.

1.2 Context

City of York Council (CYC) previously commissioned Halcrow to examine the engineering feasibility, land take implications and cost of various new access options into York Central, including:

- Access corridor A via Chancery Rise;
- Access corridor B via Holgate Park Drive;
- Access corridor C via Water End; and
- Access corridors D, E & F via Leeman Road.

The findings from this study were set out in a final report produced by Halcrow in June 2011 ('the previous report'). The aim of the previous report was to assist CYC officers and York Central stakeholders in determining the most appropriate access points into the site, together with the required phasing of associated infrastructure delivery.

In considering the feasibility of Access corridor B (via Holgate Park Drive), two options were previously assessed, both involving the creation of a new bridge spanning the rail freight avoiding line (FAL):

- Option B1, using an alignment to the north western boundary of the 'Five Acre site'; and
- Option B2, using a parallel alignment along the same site's south eastern boundary.

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1.3 Purpose of this Technical Note

CYC has since commissioned Halcrow to examine the engineering feasibility, land take implications and cost of a further new access option (Access corridor G), involving the provision of a new bridge over the FAL using an alignment perpendicular to the A59 Poppleton Road, originating at its junction with Holgate Park Drive. This note sets out the findings of this investigation as an addendum to the previous report. The findings reported below should thus be considered against the context and background previously set out.

1.4 Land Availability

The original study examined the potential for each access corridor's delivery, given six differing scenarios involving the retention of varied land areas for rail operations, as set out in section 1.3 of the previous report. The current assessment of Access corridor G's feasibility is to be examined in the context of two rail land scenarios, namely:

- **Rail Land Option 4**, involving the retention of York South Sidings, the freight loops, and the maintenance delivery unit and potential training centre site at Leeman Road Yard; and
- Rail Land Option 7, a new rail land option, assuming retention of a single rail line only parallel
 to the current alignment of the FAL, immediately adjacent to the southern edge of the current
 railway boundary.

1.5 Design Standards

The design standards adopted by the proposed access corridor are consistent with the standards outlined in Chapter 3 of the previous report. Key design features adopted include:

- a 16.3m wide multi modal access corridor, as detailed in Figure 3.1 of the previous report;
- a design speed of 30mph;
- a 4.5m rail offset to any position abutments or piers so the structure does not need to be designed for train derailment loads; and
- a maximum gradient of 6%.

1.6 Design Assumptions

A topographical survey has been supplied for the York Central site which forms the basis of MX highway designs. However, this did not include levels on the FAL. For both rail land options, an assumed track level has been taken which is the level of the adjacent York Central tracks plus 200mm. This assumption is consistent with the previous report access corridor designs at Holgate Park Drive and Chancery Rise. Levels information to the south west of the FAL has been gleaned from previous surveys undertaken as part of the Holgate Park Drive development. These levels have not been validated by Halcrow; however, from a visual inspection of the site, the information supplied is deemed a reasonable interpretation of the 'as built' layout. The Holgate Park level information is included in Appendix A of this note.

1.7 Proposed Designs

The proposed designs are included in Appendix B of this note and comprise:

- CTDAOB014-001: Rail Land Option 4 General Arrangement;
- CTDAOB014-002: Rail Land Option 4 Long Section;
- CTDAOB014-003: Rail Land Option 7 General Arrangement;
- CTDAOB014-004: Rail Land Option 7 Long Section; and
- CTDAOB014-005: Rail Land Option 7 Bridge Design.

1.8 Design Commentary

The working assumption for both access corridors options is that the existing signal controlled A59/Holgate Park Drive junction will not require any civils work to cater for the additional traffic demand imposed by York Central. This assumption is consistent with Section 5.3 of the previous report.

Moving away from the A59, both access corridors options begin to rise almost immediately to achieve the necessary clearance over the FAL sidings within the maximum gradient restriction of 6%.

Under both options, the existing Holgate Park Drive access road has been reconfigured to form a priority junction with the York Central access corridor. The existing Holgate Park Drive is considered the minor arm based on traffic movements and will give way to the York Central access corridor. The levels on Holgate Park Drive will need to be raised in the immediate vicinity of the access corridor, requiring a small amount of embankments and/or retaining walls where it may impinge on existing parking facilities associated with the CPP buildings. In order to improve traffic flow, the access corridor has been locally widened to provide a ghost right turn island into Holgate Park Drive. The proposed priority junction will also need to cater for the abnormal loads which occasionally access rail depot facilities. An examination of the peak hour queue lengths in Table 5.1 of the previous report indicates a predicted queue of 10 vehicles in the evening peak period. This is equivalent to 60 metres of queuing traffic and therefore on occasions the traffic queue leaving the York Central site to access the A59 Poppleton Road may extend beyond the newly formed Holgate Park priority junction. Although this is not a major issue and obstacle to the development of the access corridor, additional delays may be experienced on the local network.

Under both options, a reasonable amount of landscaping will be needed to assist in screening the access corridor from neighbouring residential and commercial properties to the west and east of the corridor.

As shown in the long section for Rail Land Option 4, a 161 metre bridge will be required in order to provide clearance over the retained rail infrastructure. A series of supporting piers can be provided at intermittent intervals in order to reduce individual bridge span lengths. Supporting piers are provided at chainage lengths 164m, 190m and 270m. Although these sites are constrained and surrounded by rail infrastructure, 4.5m clearance offsets are retained. Given the necessary interment bridge support piers, the required spans are approximately 32m, 26m, 80m and 23m. No individual bridge designs have been produced for the spans. However, with reference to Table 3.2 of the previous report, the span lengths less than 37m may be assumed to comprise pre-stressed concrete beam and deck types, similar to CTDAOB-002-005. For the longer 80metre span, this is likely to necessitate a tied arch with concrete deck, similar to Drawing No. CTDAOB-003-017 (both of these drawings are included in Appendix B of the previous report). On entering the York Central site, an elevated roundabout is shown with a spur off the roundabout provided to the east where the majority of development will take place.

For Rail Land Option 7, an 11 metre bridge span is required in order to provide the necessary clearance over the rail line to be retained. The bridge design is shown in Drawing No. CTDAOB-014-005 and would comprise 16 No. precast and pre-stressed concrete beams, 14 No. 'M7' beams internally and 2 No. 'UM7' beams at the deck edges. The beams would be spaced at 1000mm centres and an in-situ reinforced concrete deck slab of circa 200mm thickness would be cast over the beams onto permanent formwork soffit panels. The parapets would comprise precast concrete high containment units attached to the main body of the deck slab. The parapets would be a minimum of 1.5m above the adjacent carriageway/footway level. Similar to Rail Land Option 4, on entering York Central, an elevated roundabout is shown for Rail Land Option 7 with a spur to the east. The roundabout is currently shown as a grassed embankment but this could be substituted by a retaining wall.

1.9 Project Risks

The project risks detailed in Table 5.4 in the previous report for Access Corridor B are also valid for Access Corridor G. Additional corridor risks include:

Rail Land Option 4

- the complexities of the working arrangements for the pier supports and bridge works;
- significant cost and risks associated with track possessions;
- an extended construction programme due to the live rail operations around the engineering works;
- extensive negotiations with Network Rail which could delay the onset of construction;

Rail Land Option 4 & 7

- the impact of the new highway on the adjacent residential and commercial properties; and
- the raising in levels of Holgate Park Drive and the requirement for land from the CPP car parks during construction.

1.10 Buildability

Rail Land Option 7

The construction of Rail Land Option 7 access corridor does not pose any significant or unusual engineering problems, with the majority of the corridor constructed on an embankment.

Maintaining access to the network depot and office park will be an issue when the works are undertaken to raise the levels of Holgate Park Drive. Temporary access arrangements would be necessary which will require detailed planning and negotiation with the rail depot and the office development. One possible solution would be to reinstate temporarily the access to the south east which is currently used by pedestrians and cyclists.

The construction of the proposed bridge does not pose any significant or unusual engineering problems. However, the usual difficulties and restrictions of working adjacent to overhead electrified railway lines, in close proximity to urban areas and adjacent to existing business and industrial units will exist.

Access to the bridge site would be gained on the southern side utilising the existing access to Holgate Park. Access to the northern side would be gained using the existing access points from Leeman Road.

Rail Land Option 4

The issues discussed above are also relevant to Option 4. In addition, this option has significant additional complexities associated with the requirement to build three separate bridge structures and associated pier supports at intermittent locations, surrounded by live rail infrastructure. Whilst these issues are not insurmountable, deliverability of this option would be a complex, requiring a challenging programme of engineering works.

1.11 Departure from Standards

The designs presented comply with the CYC's geometric design standards for a local distributor road.

1.12 Scheme Costs

The costing proformas developed for the previous study have been used to derive equivalent scheme cost estimates. Optimism bias has been applied to scheme costs based on guidance issued by the Department for Transport. A detailed breakdown is provided in Appendix C appended to this note.

Table 1.1 Estimated Scheme Costs (2011 Prices)

Description	Cost (£)	Cost (£)
Rail Land Use Option	4	7
Junction Improvement (includes for minor works to A59 / Holgate Park junction and Holgate Park/Access Corridor junction)	311,844	311,844
Access corridor	2,740,733	2,317,021
Bridge Designs	12,336,424	869,876
Archaeology	90,000	90,000
Sub total (including General preliminaries, design and supervision costs and contingencies)	15,514,236	3,623,976
Optimism Bias (@ 44%)	6,826,264	1,594,549
Total	22,340,499	5,218,526

1.13 Summary

This note presents the engineering feasibility of constructing a new access into York Central via Holgate Park Drive, to the north west of the CPP building. Two rail land options have been examined which require significant highway and bridge infrastructure investment.

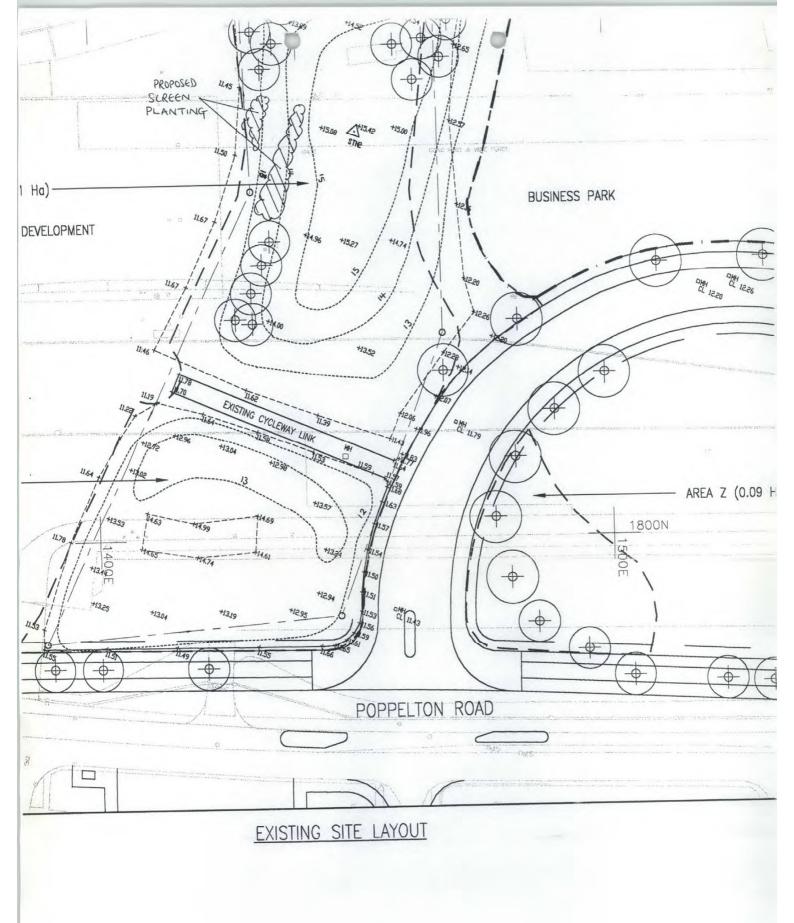
For Rail Land Option 4, a 510m section of new highway will be required along with four bridges spanning a combined length of approximately 160m. The access corridor for Rail Land Option 4 is expected to cost £22.3 million. This access corridor poses significant engineering challenges, complex working arrangements and major construction issues.

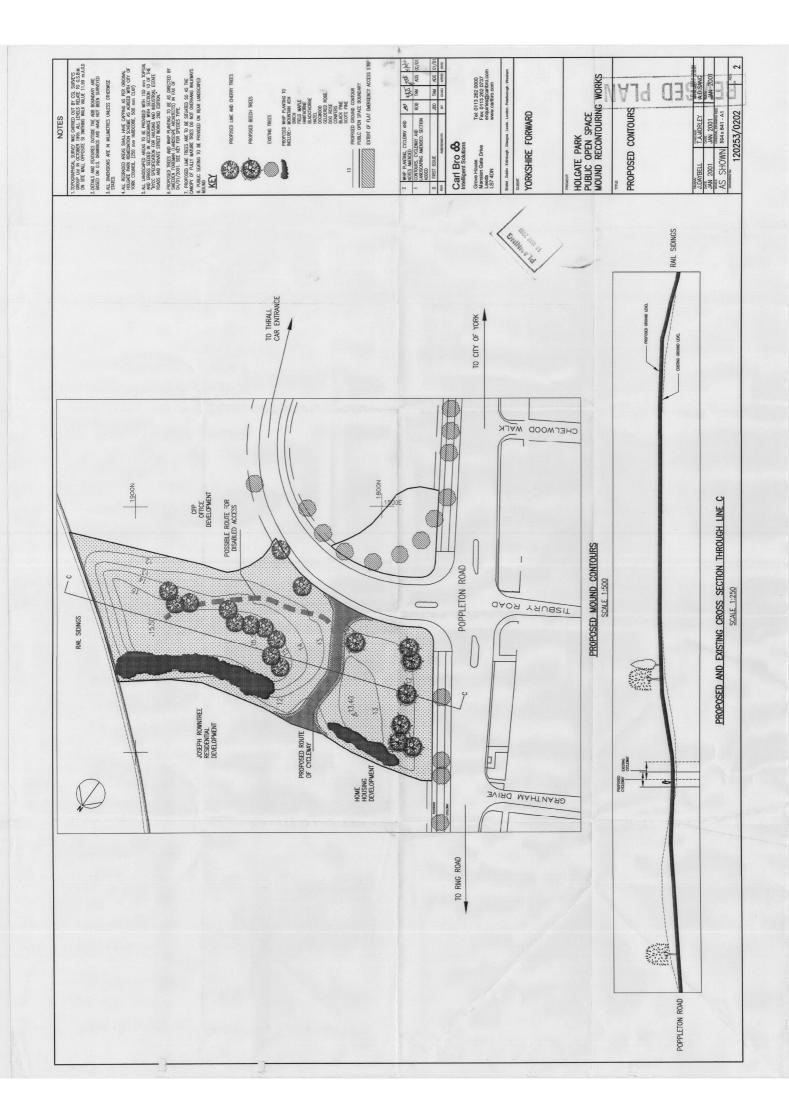
In comparison, Rail Land Option 7 requires a 280 metre section of new highway and an 11m bridge span across the one rail siding retained with this option. The access corridor is expected to cost £5.2M. The corridor works, whilst still challenging, are significantly less complex than Rail Land Option 4.

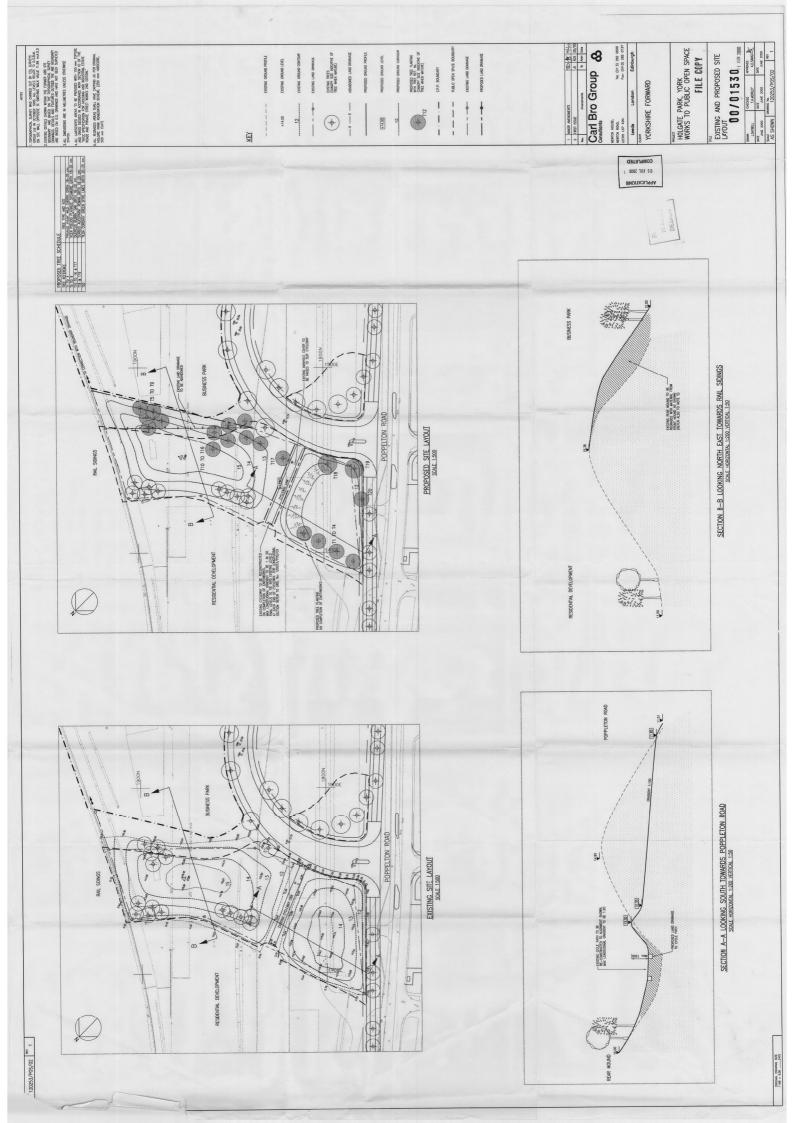
Appendix A

Holgate Park Levels Information





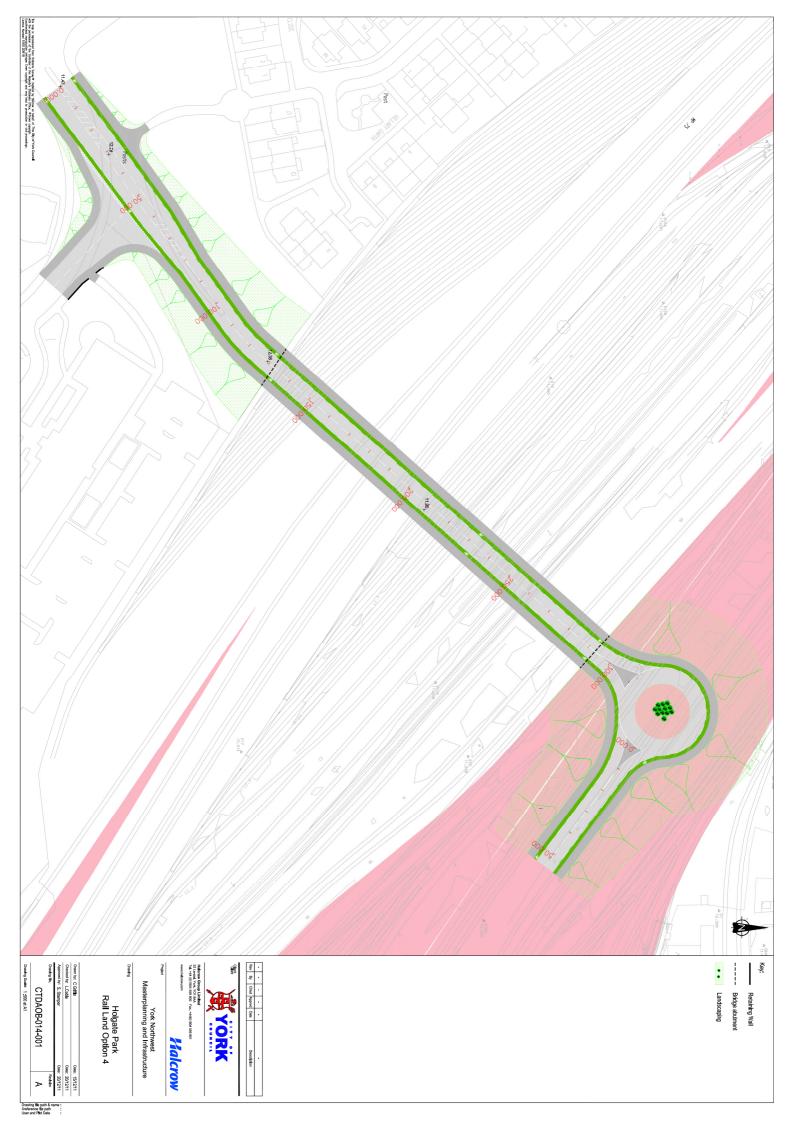




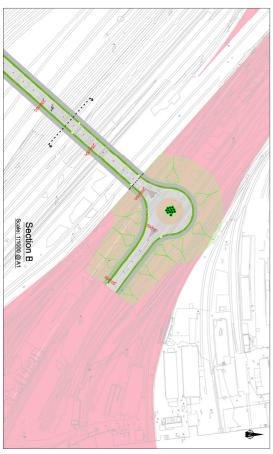
Appendix B

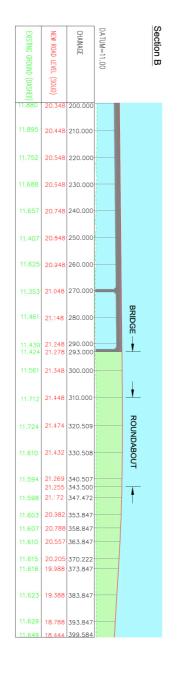
Design Drawings

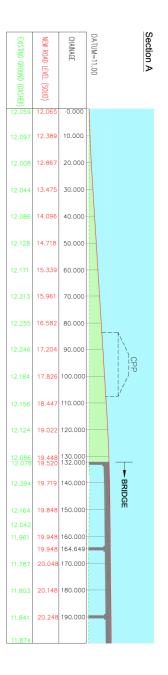




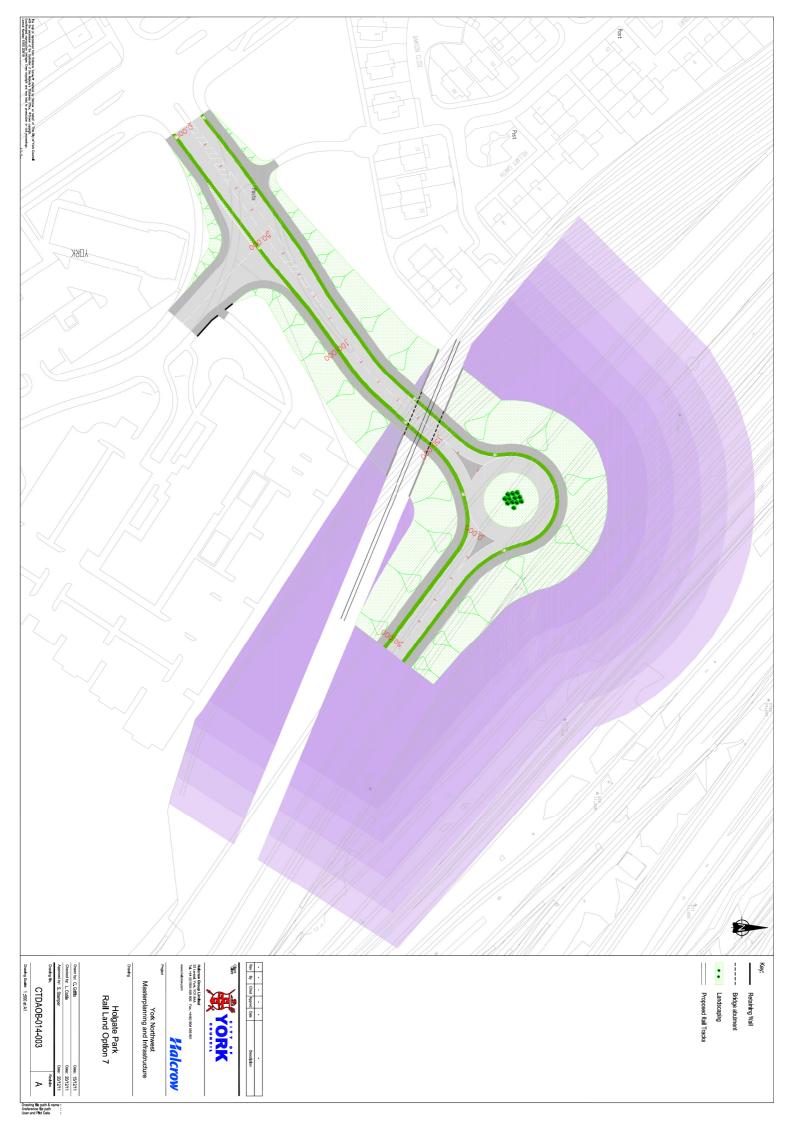




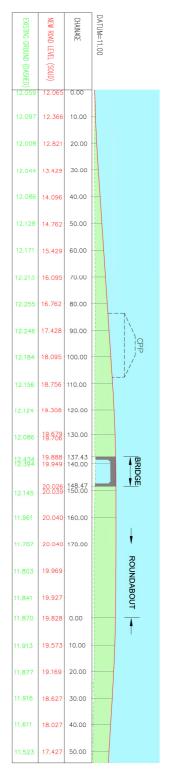




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