Feasibility Report

Version 1

Project Name:	**CP5 Oxford Corridor Phase 2**
OP Reference:	**122151**
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Appendices

Issue Record

Issue No	Brief History Of Amendment	Date of Issue
Draft 1		19/11/13
Draft 2		12/12/13
Draft 3	Incorporation of Andy Willson's comments	15/01/14
Draft 4	Estimate updates	10/03/2014
1	Engineering revised comments added	28/03/2014

Distribution List

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1 Executive Summary

This report has been produced at the request of the Network Rail Group Strategy to look at the feasibility of a number of improvements in the Oxford Corridor area.

The Oxford corridor is a strategic part of the Western route and is busy for both passenger and freight services. The existing infrastructure cannot accommodate the proposed growth of these services and it is this growth and the constraints along the Oxford Corridor that drives the capacity requirements for this project.

This commission is to address what is being called Oxford Corridor Phase 2 and is primarily to facilitate the introduction of:

- An Island platform to replace the current single platform 2 on the “Down Side”
- Widen and deepen the carriageway through Botley Road bridge
- Provide a double junction at Oxford North Junction to accommodate the aspirations of East West Rail Phase 2.
- Provide a double track on the Bicester Branch as part of East West Rail Phase 2.

A separate Oxford Corridor Phase 1 report has been produced focusing on East West Rail Phase 1, higher line speeds on the Up Passenger line, bi-directional working between Didcot North/Appleford and Tackley and reconfiguring the up and down sidings to take into account longer trains and electrification.

Both Phases 1 and 2 make up the Oxford Corridor project including the extended scope of East West Rail.

Considering the most likely items to be taken forward for Phase 2, the total Anticipated Final Cost is c£96.72 million[#1]. 40% of this is the level of contingency expected at this stage of the project. Combine this estimate with Phase 1, the total Anticipated Final cost for the Oxford Corridor project is c£187.95 million.

The Phase 2 works follow on from Phase 1 and the build stage is not expected to start until 2017. The commissioning dates, although yet to be confirmed, has the Botley Road bridge carriageway widening at Christmas 2017, the Island platform at Easter 2018 and the double Junction at Christmas 2018. The double tracking dates have yet to be agreed as there is an opportunity during the Bicester Branch shutdown in 2015.

There are a number of risks associated with Phase 2 that have yet to be explored. The top three are:

- Impact in respect to the Oxford Masterplan
- Consents in respect to the island platform and Botley Road bridge
- Impact on 3rd party land and buildings

There are a large number of environmental issues that need further investigation and an Environmental Impact Assessment is recommended to be undertaken at the commencement of the next stage.

The options proposed in this report are feasible, but there are a number of items not addressed including: demolition and resiting of a YHA (Youth Hostel Association) and nursery, station building requirements, station staff accommodation needs, re routing Roger Dudman Way, electrification and public consultation to name but a few. These and many others items highlighted in this report will need to be explored further during the next stage.

The contents of the report also does not take into consideration any impact or works associated with the Oxford Masterplan as this information was not available at the time of writing this report.

Note: The detail in this report was based on the initial scope of works set back in January 2013. It is appreciated the project has moved on since and further work is still required and is identified as such throughout the report.

[#1] The estimate provided in this report has not been validated and is to be used for guidance only. A further validation exercise needs to be undertaken on the agreed single option.

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2 Introduction

2.1 Purpose of Report

The purpose of this report is to outline the possible options for the scope of work contained in what is being called Oxford Corridor Phase 2. Phase 1, has already been written and focuses primarily on East West Phase 1 and work required prior to electrification. As Phase 1 will be installed first, it is this reason why a two phased approach has been taken.

2.2 Project Background

The objective of the project is to improve capacity and capability through the “Oxford Corridor” to meet the Strategic Business Plan objectives for capacity enhancement and journey time improvements. The identified options are to align with the objectives of the joint Oxford City and County Council/Network Rail Masterplan for the Oxford Station area.

> “*The objective for the Masterplan is to develop a rail hub and interchange for Oxford, with enhanced station and passenger facilities, providing sufficient capacity to accommodate predicted growth in passenger numbers for the next 30 years and fulfil its role on the core cross country network at the heart of the ‘electric spine’* ”

The drivers are to increase route capacity through the provision of additional passenger and freight train paths per hour in each direction, and where feasible, reduce end-end journey time within the physical scope of the line of route between Didcot (North Junction) and Oxford (including to Wolvercot Junction).

The objective also includes improved provision for engineering access for future track, Civils and signalling asset works (renewals and maintenance) through improved infrastructure flexibility and bi-directional signalling throughout the scoped area.

The project started in 2010 with a GRIP 2 report signed off in June 2011. This covered the following elements –

- Down passenger loop linespeed increases
- Wolvercot Junction/Up Passenger Loop linespeed increases
- Hinksey Yard Down Goods Line as a freight passing loop
- South Bay Platform entry crossover speed increase
- New South Bay Platform
- Transfer Deck between station and new South Bay Platform
- Increased Car Parking
- Level Crossings alterations at Aristotle Lane

Since this report, the Down Passenger Loop Linespeed increase has progressed through the Freight Train Lengthening project - due to be commissioned in May 2015. Aristotle Lane Crossing is also being incorporated within this project.

The Bi-Directional signalling work on the Jericho Line as part of the Wolvercot Junction/Up Passenger Loop scope has been incorporated into the OARS (Oxford Area Re-signalling) project.

Following the GRIP 2 report, the project progressed into GRIP 3 single option (not Approval in Principle (AIP)) and addressed the following items:

- High speed turnout to the Up Passenger Line
- Speed raising on the Up Passenger Line
- Bi-directional working between Didcot North/Appleford and Tackley
- Higher junction turnout speeds at Hinksey North
- Recovery of 2 Switches & Crossings (235 and 238)
- South Bay Platform (no longer being considered)

This report was never formally signed off or published but has been appended in the Oxford Corridor Phase 1 report.

At this point, it was decided the South Bay Platform was not viable to meet the capacity demands hence has since been dropped, but the other elements of the study remain valid.

Since the GRIP 3 report, there has been the request to return to GRIP stage 2, to address items not previously explored in either the original GRIP2 or GRIP 3 reports.

Oxford Corridor Phase 1 covered the following:

- East West Rail (Phase 1) which includes:
    - High speed turnout at Oxford North Junction
    - Two bay platforms to fit 6/7 car lengths
    - Parallel moves into the bay platform
- Reconfiguration of the Up sidings to take longer trains
- Reconfiguration of the Down sidings to take longer trains
- Reconfiguration of Oxford North Ladder
- High speed turnout to the Up Passenger Line
- Speed raising on the Up Passenger Line
- Bi-directional working between Didcot North/Appleford and Tackley
- Higher junction turnout speeds at Hinksey North
- Recovery of 2 x S&C (Switches & Crossings) 235 and 238

This report addresses the following new elements –

- Convert the current platform 2 into an island platform.
- Carriageway widening and deepening of Botley Road bridge

- Double Junction at Oxford North (East West Rail Phase 2)
- Double track between Oxford North Junction and Woodstock Road (East West Rail Phase 2)

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3 Options Report & Concept Designs

This report covers a number of options to address the scope of works for this stage. These are summarised below.

Convert the current platform 2 into an island platform

To replicate a turnback facility at Oxford, Phase 1 provides a turnback facility from platform 2. However, this facility does not meet the capacity demands for through trains and turnback services taking place all on one platform.

This option provides an additional platform adjoining platform 4 providing the 'Down island platform'. Once completed these may be labelled as platforms 4 and 5.

The table below shows what might be the desired notation for the platforms.

Platform	Existing Numbering	Phase 1 Numbering	Phase 2 Numbering
New Bay Platform	-	1	1
Bay Platform	3	2	2
Up Platform	1	3	3
Down Platform	2	4	4
New Down Platform	-	-	5

Both platforms have through traffic and turnback functionality although it is anticipated platform 4 will be the turnback platform and platform 5 used for through traffic.

Carriageway widening and deepening of Botley Road bridge

Botley Road, positioned just south of Oxford station, is one of the few main points to cross the railway through Oxford City. Botley Road under the bridge is a two lane carriageway with a footpath either side

The road profile dips under the bridge and the base of the road is under the water table. This area is prone to flooding and a pumping system is in place to alleviate this problem.

The local councils have an aspiration to widen the carriageway under the bridge to three lanes with footpaths and cycleways on either side.

The bridge has very low headroom and requires Oxford double-decker buses to be specially built to fit under. The local Councils have an aspiration to change the layout so as to fit standard London Buses hence the roadway needs deepening.

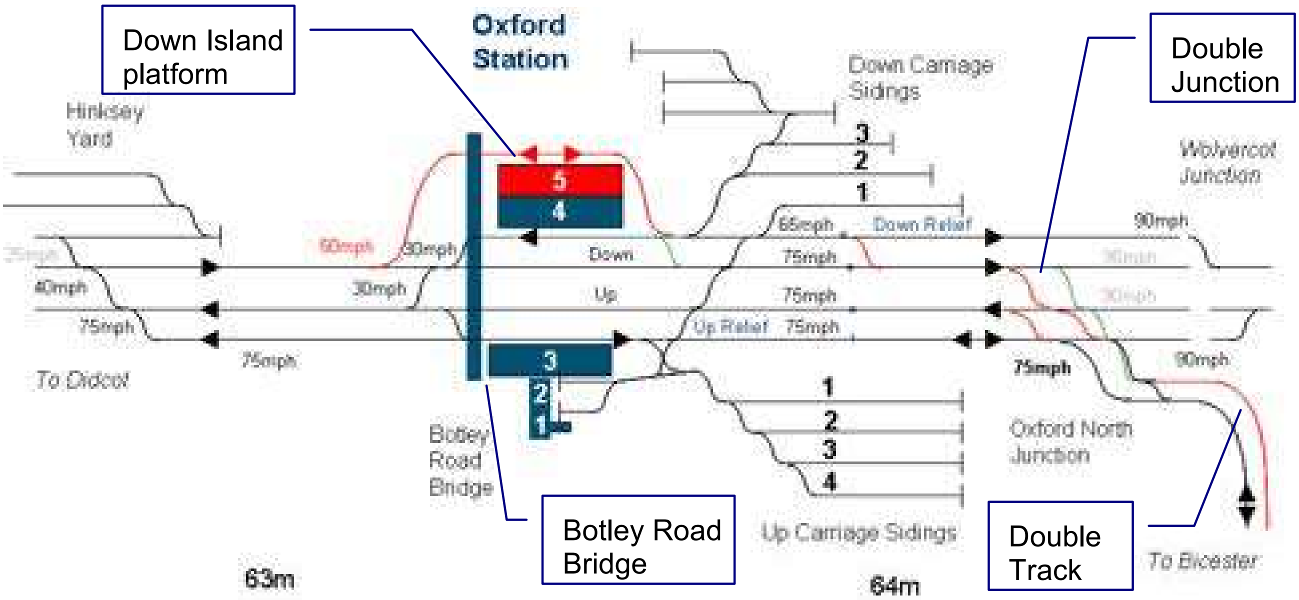
Doubling the Bicester Branch (East West Rail Phase 2)

The current single line Bicester Branch will be redoubled as part of East Rail Phase 2. Phase 1 took this and the double junction arrangement into consideration for the high speed turnout.

Double Junction at Oxford North (East West Rail Phase 2)

As part of Oxford Corridor Phase 1, the Bicester Branch joining at Oxford North Junction would be doubled with a high speed turnout onto the Up Relief. For completeness and as part of East Rail Phase 2, the junction at Oxford North Junction is to be a high speed double junction.

Oxford Corridor Phase 2 works pictured below:



🟥 New Items 🟩 Recovered Items

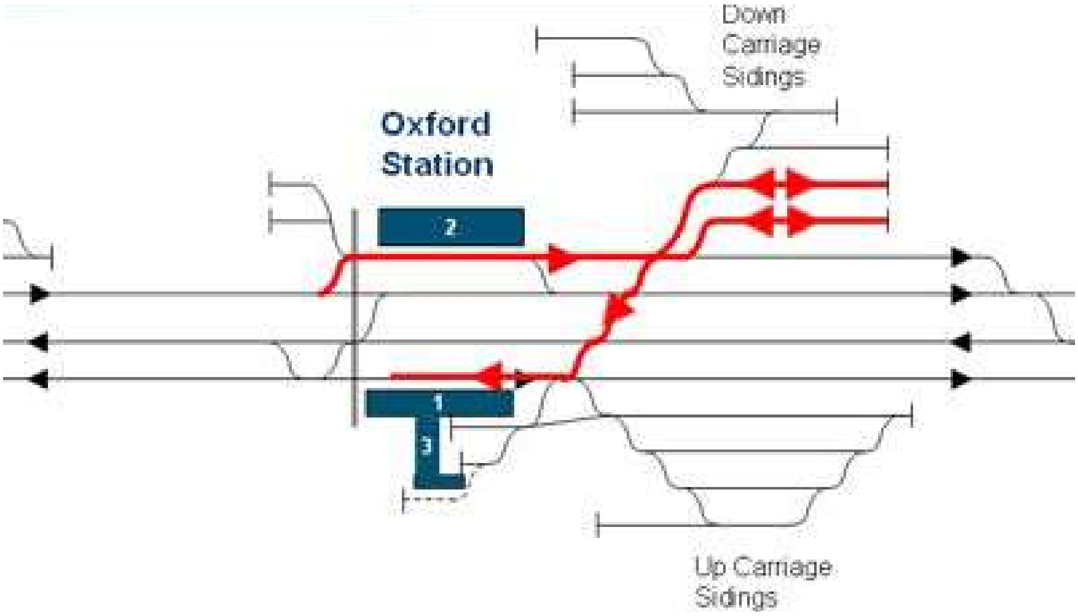
Platform numbering has been assigned to the drawing above based on Phase 1 works being completed.

This report also makes references to a number of buildings and roads surrounding Oxford station. Below is a map of the area to help with this.

3.1 Down Island Platform

Why is a Down Island Platform being proposed? Currently a number of services arriving at Oxford from the south turnback – 3 per hour. The trains drop off passengers on the current platform 2, goes into the down carriage sidings and turns-back across the Oxford station north ladder to pick passengers up from current platform 1.

The diagram below attempts to give a picture of this.



With the proposed future growth in freight traffic and longer freight trains, it is envisaged passenger movements will conflict with the number of freight trains on the main lines in the station area – making it more difficult to turnback across the north ladder. This is one of the reasons why options have been addressed, not only to turnback trains from platform 2, but to build a new platform face adjoining platform 2 making this the 'Down Island Platform'.

By building the additional platform face adjoining platform 2 and providing turnback facilities on both, will remove the need for the current turnback arrangements and any disruptions that may be caused by freight traffic in the Oxford station area.

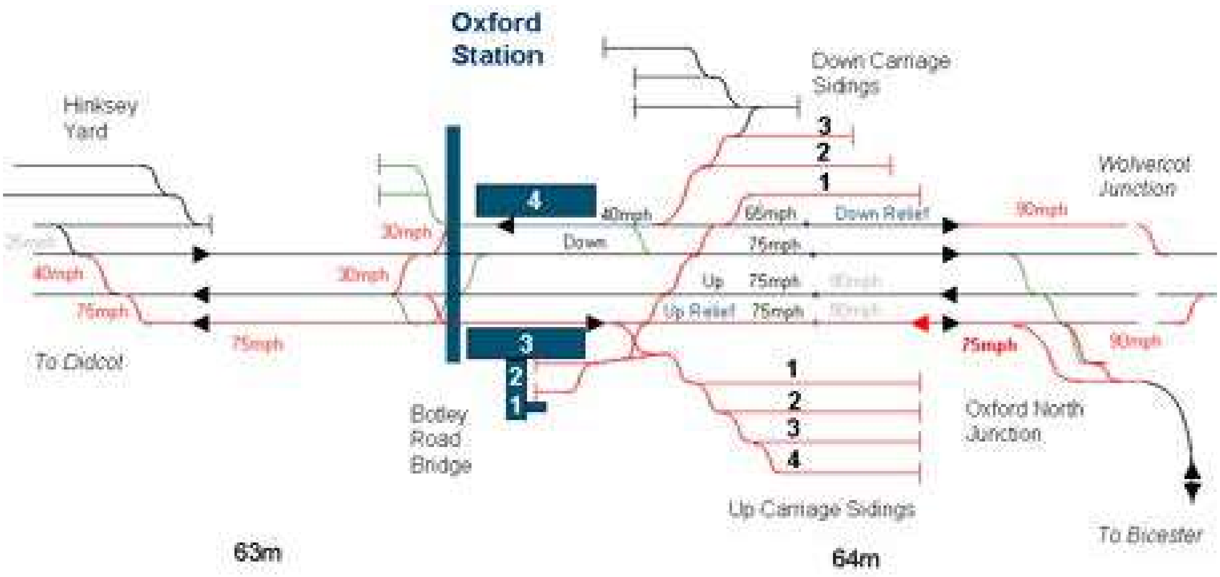
However, Oxford Corridor Phase 1 still maintains a turnback facility in the down sidings by using only one down turnback siding.

The current arrangement is wasteful of vehicle and traincrew recourses and it is considered by having a direct turnback from the down platform to London may free up two train diagrams allowing strengthening of other services.

3.1.1 Existing Layout Of Down Island Platform Post Phase 1

The site is centred on Oxford Station (ELR DCL at 63m 41ch). The following description should be read in conjunction with the schematic diagram below. This is post OARS and Oxford Corridor phase 1.

The station is approached from the south on a three track alignment consisting of the Down Main, Up Main and Up Relief. Just south of the station a 30mph facing turnout (237B Points) provides a connection from the Down Main to the Down Relief, widening the railway corridor to a four-track layout. This four-track layout continues north through the remainder of the site.



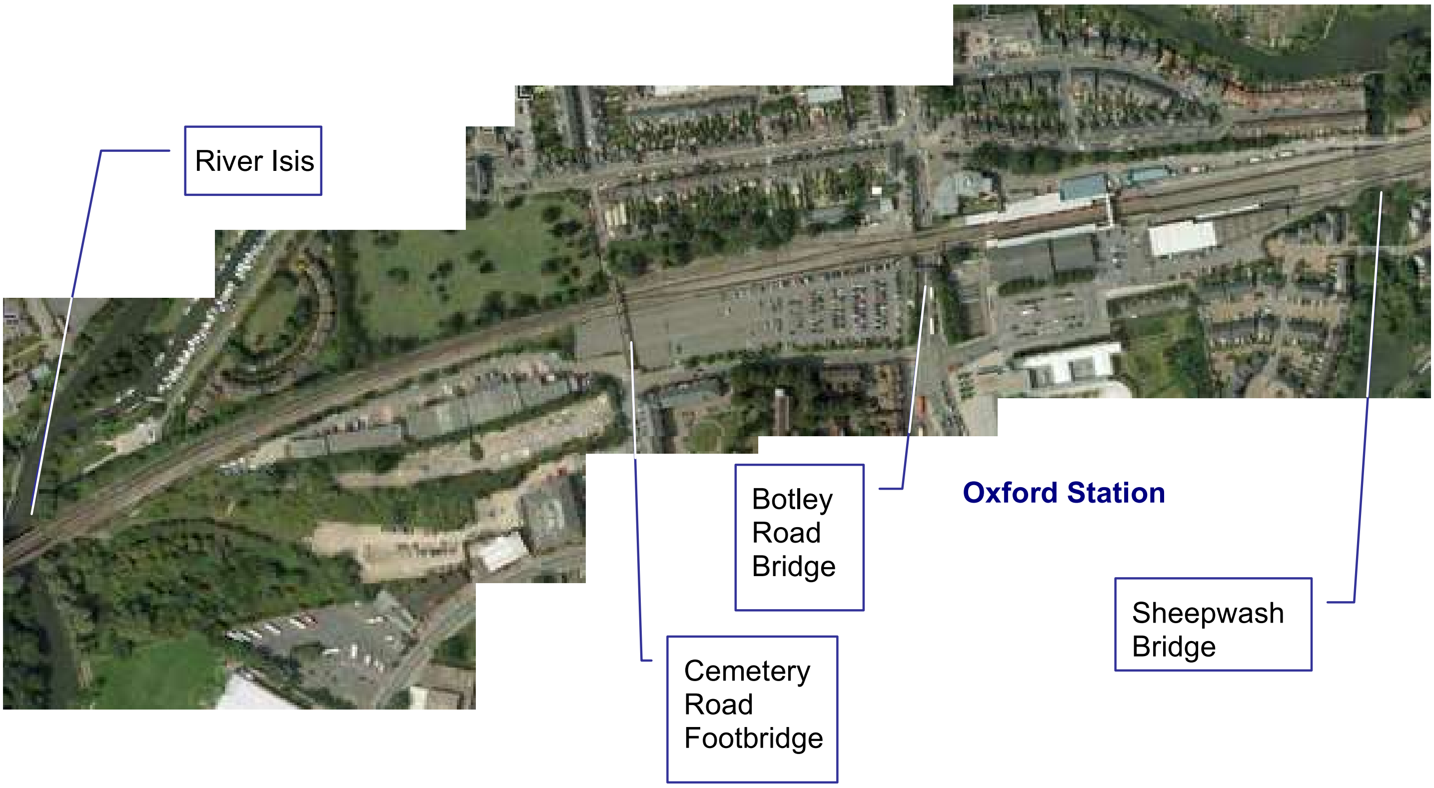
There are four operational platforms at Oxford Station. Platform 3 is located on the Up Relief and has an operational length of 274m. Platform 4 is located on the Down Relief and has an operational length of 275m. Platform 1 & 2 are terminal bay platforms located on the Up side of the north end of the station. Platforms 1, 2 and 3 are not affected by works associated with this study.

At the north end of Platform 4 a 25mph crossover (247A/B Points) is provided between the Down Relief and the Down Main. Beyond this is a ladder arrangement (referred to as Oxford station north ladder) between the Up Relief and the Down Relief and S&C connections to the Up Sidings and Down Sidings.

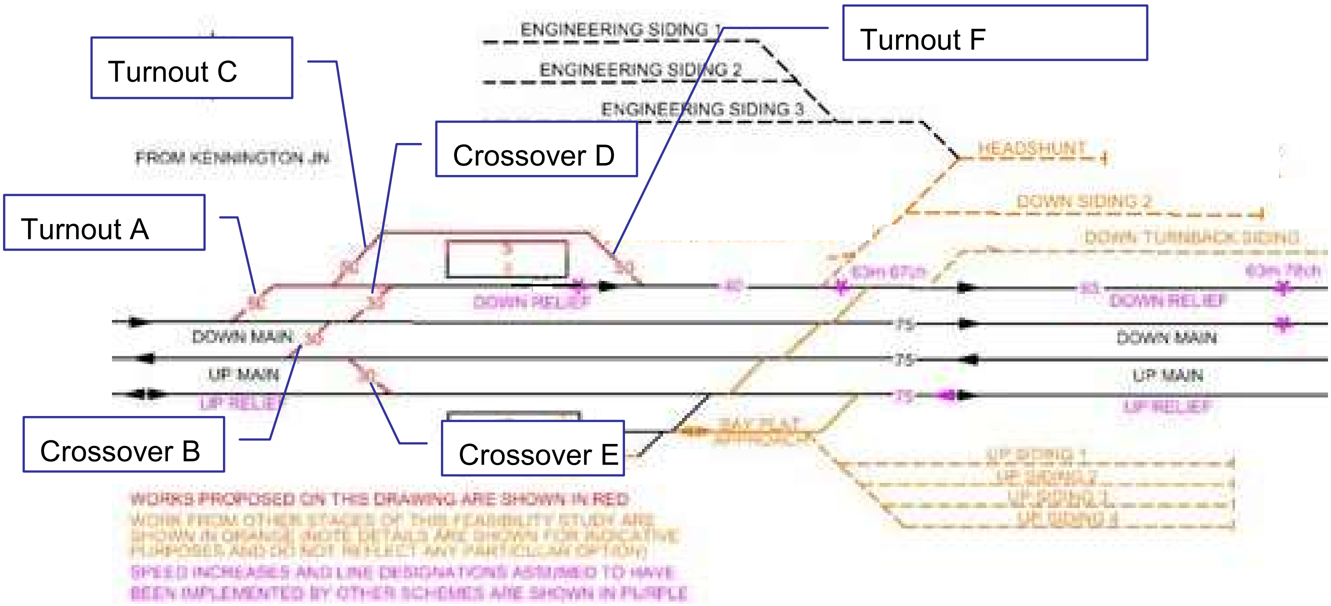
The line speed on the Down Main and Up Main is 75mph through the station area. The Down Relief is 25mph through the platform, then increases to 40mph, 65mph and 90mph as it approaches Wolvercot Junction.

There are a number of structures within the limits of the study -

- River Isis Underbridge is located at the far south end of the site at 62m 79ch.
- Cemetery Road Footbridge (also known as Osney Lane footbridge) is located approximately 230m south of the station at 63m 21ch.
- Botley Road underbridge is located immediately adjacent to the south end of Platforms 3 and 4. The track over this structure is of a direct fix form due to the limited headroom available for highway vehicles on Botley Road.
- Sheepwash River underbridge is located immediately adjacent to the north end of Platforms 3 and 4. There is a western side span adjacent to the Down Relief span which carries a road and footpath providing access along Roger Dudman Way.
- There is a station footbridge and lift spanning platforms 3 and 4.
- Records show a subway (currently out of use) located approximately 100m from the south end of the platforms.



3.1.2 Project Requirements For Down Island Platform



An additional platform face (Platform 5) on the Down side of the station to the rear of Platform 4 is being proposed, thus creating a new island platform.

Connections to the Down Main at the south end and Down Relief at the north end are required to effectively create a new loop line on the western side of the station.

Both faces of the new island platform need to provide an operational length of 269m. This will allow both platforms to serve 260m long IEP (Intercity Express Programme) services with a further 9m allowance for splitting and joining.

Platform starter signals are required at the north end of the new island platform. These signals need to be positioned to provide 17m sighting distance for the worst case train stopping position. Platform starter signals are also required at the south end of the new island platform for turnback moves. These signals only require a sighting distance of 10m as they will be read from a stationary position.

There is an aspiration to achieve a 40mph line speed on the new Platform 5 loop line. In addition, there is a requirement to remodel the existing layout to the south of Oxford Station to allow trains to terminate in Platform 4 and perform a turnback move onto the Up Main whilst simultaneously allowing a train to access the new Platform 5 from the Down Main.

In conjunction with the remodelling of the S&C layout to the south of the station, there is an option to reconstruct Botley Road underbridge. This work is being undertaken to allow the restricted headroom for highway traffic on Botley Road to be increased. This reconstruction provides an opportunity for the track layout, which is currently constrained by the direct fix track form over Botley Road, to be remodelled to suit the project requirements.

3.1.3 Option 1 Overview - Track

Option 1 is shown on drawing B90505-PWY-DRG2601 in Appendix E. This option provides an island platform arrangement with the following speeds and standages:

- Down Main to Platform 4 and 5 (South Connection) Turnouts “A” and “C” – 50mph
- Platform 5 to Down Relief (North Connection) Turnout “F” – 50mph
- Platform 4 Operational Length – 269m
- Platform 5 Operational Length – 269m

A schematic diagram of the proposed layout is provided below.

Note: As part of Oxford Corridor Phase 1, the double slip into the down sidings will be removed and as a result the linespeed could increase to 50mph or even 65mph. However, no design currently exists and to be explored at the next stage. 40mph is a standards limitation.

Technical Considerations

A track alignment design has been developed which provides the operational capacity discussed above. Key aspects of the track alignment design are as follows:

- Desirable 40m separation between S&C units has not been achieved due to space constraints.
- Desirable 40m constant horizontal geometry beyond S&C has not been achieved due to space constraints.
- Preferred geometry (in accordance with section J.1.1 of NR/L2/TRK/2049) used for all S&C units except for south and north end turnouts to Platform 5, which are non-preferred (Crossovers C and F).
- Section of four track railway south of Botley Road extended approximately 160m further south.
- 269m operational platform length provided on Platforms 4 and 5.

The key technical issues associated with this option which will require consideration at the next GRIP stage are as follows:

- The existing tracks South of Botley Road underbridge has been slued significantly towards the east (in excess of a gauge in some areas). This has been necessary to accommodate an additional fourth track on the west side of the railway corridor. The slued alignment also removes a horizontal reverse curve transition. This has the benefit of providing more space for placing new S&C units as S&C units cannot be placed on transition curves.

The proposed track realignment has the following implications:

- The Up Relief is slued towards the station car park, reducing the minimum clearance to the car park fence to approximately 1.2m. It will be necessary to realign the car park fence to provide a continuous position of safety and to achieve gauge clearance. Consideration will also have to be given to any requirements for Overhead Line Equipment (OLE) structures and lineside cable routes. These may already be in development on the signalling and electrification projects in the Oxford area. A number of car parking spaces will be chopped as a result, but there is space to move the spaces back to accommodate this therefore no spaces will be lost or affected once completed.

Alterations to the existing car park will require early liaison with First Great Western who lease the car park

- The proposed alignment of the Up Relief clashes with one of the central piers of the footbridge at Cemetery Road/Osney lane. Modifications will be required to the footbridge to allow the pier to be relocated.
- Although no significant slue is expected, the alignment geometry of the track immediately adjacent to the western abutment of the Cemetery Road footbridge will be altered by the proposed layout. This arrangement will be subject to a gauging analysis at the next GRIP stage to confirm that adequate gauge clearance can be achieved without the need to modify the abutment.
- The extent of realignment south of Cemetery Road footbridge is indicative only at this stage as there is no topographical survey available for this area. It is not anticipated that any realignment will be necessary over the River Isis underbridge. This will be subject to confirmation at the next GRIP stage. If realignment is necessary a gauging assessment of the structure will be required.
- No ten-foot interval has been provided within the extended section of four track railway south of Botley Road underbridge. It is assumed that this will be acceptable as it replicates the existing four track arrangement through the station. However, a derogation will be required if this option is progressed at the next GRIP stage.
- Signals OX20 and OX90 are to be renamed OD2365 and OD2369 by the Oxford Area Re-signalling project. The current scheme plan shows these signals to be retained in their current locations. In order to achieve a compliant overlap to the proposed crossover between the Up Main and the Down Main (Crossover "B") it will be necessary to relocate these signals further south. An indicative location for the repositioned signals has been shown on the current layout drawings, but will need to be subject to further

review by the signalling engineer at the next GRIP stage. Refer to signalling sketch in Appendix E

- The track alignment over Botley Road underbridge has been straightened out on the approach to the station to remove an existing reverse curve transition. The existing track construction over Botley Road is of a direct fix form. Therefore to install the layout will be dependent on reconstructing Botley bridge either for the two carriageway arrangement as today or for the proposed new layout.
- As the bridge will need to be reconstructed, it has been assumed that a ballasted bridge deck will be provided for the main lines spanning Botley Road. Initial designs support this assumption. However, in order to achieve the required headroom for highway vehicles, it is likely that the ballast depth will be restricted. This will require a derogation against section 8.2 of NR/L2/TRK/2102.

  If it proves necessary to install a direct fix form of track construction, either transition slabs will be required to manage the interface between the ballasted track and the direct fix track form or resilient baseplates with increasing stiffness could be considered. In order to keep the stock fronts of proposed crossovers “D” and “F” clear of any transition zone it may be necessary to either move the S&C units further south (further reducing the separation between crossovers “B” and “D”) or make use of shorter S&C units which will reduce the achievable crossover speed. This will require further investigation at the next GRIP stage.
- The extent of track renewal within the platforms associated with the remodelling of the Botley Road area is indicative only at this stage. Renewal of the Up Main and Down Main will be necessary to allow the recovery of 238A/B Points. The Up Relief and Down Relief renewals have been extended to avoid terminating in a horizontal alignment transition. The extent is shown on drawings B90505-DRG-PWY2601 and 2602 (Red showing the extent of renewals and blue the extent of realignment).

  The extents of realignment within the platforms are dependent on the option chosen for the remodelling of the ladder to the north of Oxford Station. Depending upon the final chosen options some minor realignment of platform coping stones may be required to accommodate the proposed track alignments.
- There are various operational buildings, facilities and items of lineside equipment located to the rear of existing Platform 2 which are foul of the proposed track and Platform 5 layout. It has been assumed that these items can be relocated as necessary (refer to discussion of civils design for further details back in section 3.1.5).
- The proposed track alignment will require alterations to the alignment of Roger Dudman Way. Further details are provided in the discussion of the civils design.
- A minimum distance of 9.6m has been provided between the proposed running edge and the boundary fence to the rear of the properties located on Abbey Road. These properties back on to Roger Dudman Way. This separation is considered sufficient to allow for the provision of a continuous position of safety, the installation of OLE structures and a boundary fence,

and the construction of a realigned highway and footpath. For further details refer to the discussion of the civils design.

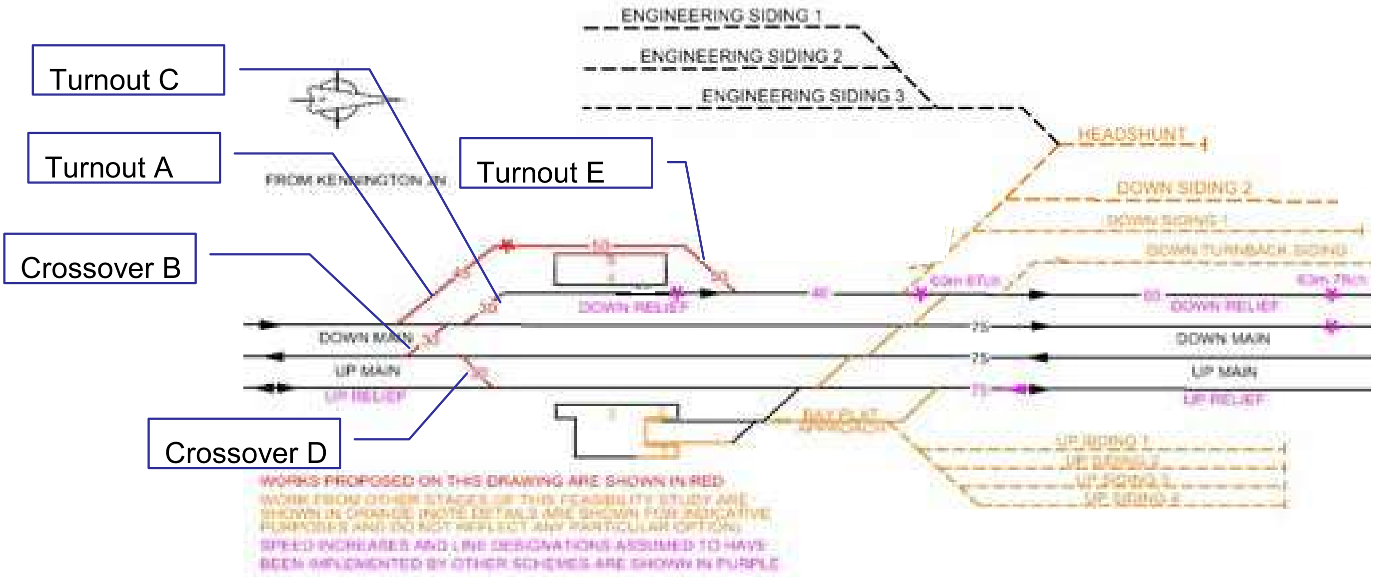
- Reference to Network Rail records indicate that the proposed alignment falls outside the existing railway land boundary in the vicinity of the Youth Hostel and Sheepwash River underbridge. This will require further investigation at the next GRIP stage to clarify the need for any additional land and appropriate powers for the new railway alignment.
- The north connection from new Platform 5 onto the Down Relief will require the reconstruction of the western most span of Sheepwash River underbridge. Due to the requirement to achieve 9.6m clearance to the rear of the properties on Abbey Road and the angle of the turnout from the Down Relief. Minimal clearance is provided to the existing western girder of the Down Relief span.

  This arrangement may require modifications to be made to the girder to achieve gauge clearance and to allow the reconstruction of the adjacent western span. If modifications are required to the girder it will be necessary to temporarily remove the Down Relief track over Sheepwash River whilst bridge works are carried out (refer to discussion of civils design for further details).
- The proposals for the island platform interfaces directly with the proposals for the remodelling of the Down Carriage Sidings and the ladder to the north of Oxford Station.
- A high level assessment of the vertical track alignment through the station area has been undertaken using topographical survey data. This assessment suggests that it would be feasible to develop a vertical alignment compatible with the location of the S&C units proposed in this option.

3.1.4 Option 2 Overview - Track

Option 2 is shown on drawing B90505-PWY-DRG2602 Appendix E. This option provides an island platform arrangement with the following speeds and standage:

- Down Main to Platform 5 (South Connection) – Turnout "A" 45mph although it is now believed this can be increased to 50mph. This to be reviewed at the next stage.
- Platform 5 to Down Relief (North Connection) – Turnout "E" 50mph
- Platform 4 Usable Operational Length – 269m
- Platform 4 Usable Operational Length – 269m



Note: The Down Relief will be speed raised to 40mph (then 65 and 90mph further north), but that the 40mph constraint was caused by the double slip S&C which would have been removed this phase. There is an opportunity therefore to consider a further speed raising of the south end of the Down Relief, to say 50mph, to ease traincrew route knowledge and to allow greater acceleration when leaving the platforms heading north. This to be further explored at the next stage.

Technical Considerations

A track alignment design has been developed which provides the operational Capacity discussed above. Key aspects of the track alignment design are as follows:

- Desirable 40m separation between S&C units is not achieved due to space constraints.
- Desirable 40m constant horizontal geometry beyond S&C is not achieved due to space constraints.

- Preferred geometry (in accordance with section J.1.1 of NR/L2/TRK/2049) used for all S&C units except for south and north end turnouts to Platform 5. These are non-preferred.
- 269m operational platform length provided on Platforms 4 and 5.

The key technical issues associated with this option requiring further consideration at the next GRIP stage are as follows:

- The Down Main South of Cemetery Road underbridge has been slued significantly towards the east (in excess of half a gauge in some areas). This has been necessary in order to accommodate the new turnout to the new Platform 5 line. The alignment of the Platform 5 line passes close to the existing Cemetery boundary fence (approx 1.7m minimum clearance). The alignment is also foul of the western abutment of Cemetery Road footbridge.
- An assessment will be required at the next GRIP stage to determine the gauge clearances to the boundary fence in the vicinity of the new turnout “A”. Consideration will also have to be given to any requirements for OLE structures and lineside cable routes. These may already be in development within the signalling and electrification projects. It is unlikely that a continuous position of safety can be provided in this location.
- Modifications will be required to the Cemetery Road footbridge to allow the abutment to be relocated to achieve gauge clearance.
- The extent of realignment south of Cemetery Road footbridge is indicative only at this stage as there is no topographical survey available for this area. It is not anticipated that any realignment will be necessary over the River Isis underbridge. This will be subject to confirmation at the next GRIP stage. If realignment is required a gauging assessment of the structure will be required.
- No ten-foot interval has been provided within the extended section of three track railway south of Botley Road underbridge. It is assumed that this will be acceptable as it replicates the existing arrangement through the station. However, a derogation will be required if this option is progressed at the next GRIP stage.
- Signals OX20 and OX90 are to be renamed OD2365 and OD2369 by the Oxford Area Re-signalling project. The current scheme plan shows these signals to be retained in their current locations. In order to achieve a compliant overlap to the proposed crossover between the Up Main and the Down Main (Crossover “B”) it will be necessary to relocate these signals further south. An indicative location for the repositioned signals has been shown on the current layout drawings (Appendix E), this will be subject to further review by the signalling engineer at the next GRIP stage.
- The track alignment over Botley Road underbridge has been replicated as closely as possible. The existing track construction over Botley Road is of a direct fix form. As the existing alignment has been replicated as closely as possible it may be possible to install turnout “C” and crossover “B” in advance of the other track works, thus allowing the introduction of turnback moves from Platform 4 before the completion of the new island platform and

if required a reconstruction of Botley Road underbridge (should the new three carriageway option not progress).

However, a staged approach to construction would be subject to further design development at the next GRIP stage and may require the installation of temporary staging alignments for the new S&C units.

- Should the Botley Road bridge road widening option progress, it has been assumed that a ballasted bridge deck will be provided for the main lines spanning the Botley Road. Initial design work by the bridge engineer supports this assumption. However, in order to achieve the required headroom for highway vehicles, it is likely that the ballast depth will be restricted. This will require derogation against section 8.2 of NR/L2/TRK/2102.

  If it proves necessary to install a direct fix form of track construction, either transition slabs will be required to manage the interface between the ballasted track and the direct fix track form or resilient baseplates with increasing stiffness could be considered. In order to keep the stock fronts of proposed crossover “D” clear of any transition zone it may be necessary to make use of a shorter S&C unit which will reduce the achievable crossover speed.

  The turnout to Platform 4 makes use of short horizontal elements to allow the turnout route to reverse to a parallel main line alignment (this has been taken from NR/L2/TRK/2049 clause B.3.7). If the track over Botley Road is installed as direct fix construction, this would result in one of the short horizontal transition elements straddling sections of ballasted track and direct fix track construction. This is likely to introduce difficulties for future maintenance of the alignment. If a direct fix track solution is required, consideration should be given to extending slab track construction into the regular 554m radius curve element. This curve is located between Botley Road underbridge and the last long bearer of turnout “C”. This will require further investigation at the next GRIP stage.

- The extent of track renewal within the platforms associated with the remodelling of the Botley Road area is indicative only at this stage. Renewal of the Up Main and Down Main will be necessary to allow the recovery of 238A/B Points. The Up Relief and Down Relief renewals have been extended to avoid terminating in a horizontal alignment transition. The extents of realignment within the platforms will depend, to an extent, on the option chosen for the remodelling of the ladder to the north of Oxford Station. Depending upon the final chosen options some minor realignment of platform coping stones may be required to accommodate the proposed track alignments.

- There are various operational buildings, facilities and items of lineside equipment located to the rear of Platform 2 which are foul of the proposed track and new Platform 5 layout. It has been assumed that these items can be relocated as necessary (refer to discussion of civils design for further details).

- The proposed track alignment will require alterations to the alignment of Roger Dudman Way. Further details are provided in the discussion of the civils design.

- A high level assessment of the vertical track alignment through the station area has been undertaken using topographical survey data. This assessment suggests that it would be feasible to develop a vertical alignment compatible with the location of the proposed S&C units.
- A minimum distance of 9.6m has been provided between the proposed running edge and the boundary fence to the rear of the properties located on Abbey Road. These properties back on to Roger Dudman Way. This separation is considered sufficient to allow for the provision of a continuous position of safety, the installation of OLE structures and a boundary fence, and the construction of a realigned highway and footpath. For further details refer to the discussion of the civils design.
- Reference to Network Rail records indicate that the proposed alignment falls outside the existing railway land boundary in the vicinity of the Youth Hostel and Sheepwash River underbridge. This will require further investigation at the next GRIP stage to clarify the need for any additional land and appropriate powers for the new railway alignment
- The north connection from the new Platform 5 onto the Down Relief will require the reconstruction of the western most span of Sheepwash River underbridge. Due to the requirement to achieve 9.6m clearance to boundary fence to the rear of the properties on Abbey Road and the angle of the turnout from the Down Relief, minimal clearance is provided to the existing western girder of the Down Relief span. This arrangement may require modifications to be made to the girder to achieve gauge clearance and to allow the reconstruction of the adjacent western span. If modifications are required to the girder it will be necessary to temporarily remove the Down Relief track over Sheepwash River whilst bridge works are carried out (refer to discussion of civils design for further details).
- The proposals for the island platform interface directly with the proposals for the remodelling of the Down Carriage Sidings and the ladder to the north of Oxford Station.
- A high level assessment of the vertical track alignment through the station area has been undertaken using topographical survey data. This assessment suggests that it would be feasible to develop a vertical alignment compatible with the location of the S&C units proposed in this option.

3.1.5 Down Island Platform - Civils

Existing Conditions

The existing layout is shown on drawing B90505-DRG-CIV0010 (Appendix E). The site is located on the western side of Oxford Station on ELR DCL at 63m 43ch.

Down platform 4 (for northbound trains) is a single face through platform extending for the full length of the station serving the Down Relief. At the south end of the platform is Botley Road underbridge (DCL06331/U) and at the north end is Sheepwash underbridge (DCL/06348/U).

Towards the centre of platform 4 there is a footbridge with stairs and lifts providing access across four tracks to the main station building and platforms 1, 2 & 3 on the eastern side of the station.

Between the centre and the south end of platform 4 there is a covered canopy and to the rear are station buildings comprising staff accommodation, buffet, waiting room, toilets and reception facilities. The north end of the platform is uncovered with two glazed waiting shelters.

The platform has a small entrance/exit gate to Rodger Dudman Way giving access to West of Oxford. This is presently only open peak times, but there are aspirations to build a Western access under the Oxford Masterplan. However, the entrance exists today and there may be a view to progress with a Western entrance at the same time of building the island platform.

To the rear of platform 4 just to the north of the footbridge is a palisade fence and to the rear is the Oxford PSB (Power Signal Box) building. To the rear of the signal box is Roger Dudman Way which continues for the full length of the station, converging towards the railway at the north end.

Adjacent to Roger Dudman Way towards the north end of Platform 4 are a number of temporary buildings in palisade compounds comprising storage, oil tanks, Relocatable Equipment Buildings (REBs) and Power Signal Supply containers. Adjacent to Roger Dudman Way at the extreme north end is the rear of residential properties on Abbey Road.

Roger Dudman Way is a local access road. It continues to the north crossing over Sheepwash Bridge on an independent span towards Oxford Down Sidings. It also serves a number of recently constructed residential and student flats, a nursery and allotments.

Project Requirements

The proposal is to convert the existing platform 4 into a new Down island platform served by an additional track to the rear. Upon completion the platforms would be re-numbered as platform 4 with new platform 5 at the rear of the island. The length of platforms 4 & 5 should be designed to accommodate as a maximum 2 x 5 Car IEP trains.

Island Platform Options

This study has considered the implications of two different track alignment options which are shown on track drawings B90505-DRG-PWY2601 & 2602 (Appendix E).

Each track alignment option has been developed based upon different considerations of line speed, operational flexibility and impacts upon infrastructure at the south end of the layout such as Cemetery Road footbridge and the station car park.

However, whereas each option is different, and produces a slightly different island platform layout, the infrastructure considerations and impacts are identical. The following text should therefore be read in conjunction with and as applicable to both Option 1 (Drawing B90505-DRG-CIV0011) & Option 2 (Drawing B90505-DRG-CIV0012). Drawings are contained in Appendix E.

Methodology

This study has been carried out primarily based upon Ordnance Survey mapping with Network Rail land boundaries taken from the Portal, photographs taken from the site visit held on 10th June 2013 and other desktop railway information sources.

A detailed topographical survey of platforms has not been carried out and platform lengths and widths have not been measured. Buried services information has not been reviewed. The outputs from this study should be verified following topographical survey at the next design stage.

Platform Length Calculation

The requirements for this project is based on a maximum proposed rolling stock comprising typically 2 x 5 Car IEP trains with an overall length of 260 metres.

It is recommended that the outputs from this study are verified using known rolling stock lengths following a topographical survey at the next design stage.

It has been assumed that the IEP trains would be configured as 2 x 5 Car sets for which an allowance has been made for splitting & joining trains in either platform 4 or 5.

Minimum Platform Lengths (P) have been calculated in accordance with Network Rail Standard NR/L3/CIV/162 “Platform Extensions” Issue 2 September 2011, Section 9. A number of methods for determining required platform length have been used within the industry. For consistency the method adopted within this report is the method as set out in Section A.8.14: Platform Alignments and Lengths in Network Rail Track Design Handbook NR/L2/TRK/2049.

First Great Western/East Coast document IEP Stopping Positions Principles for IEP Version 3 dated 15th September 2011 has been used for guidance.

For clarity the values used on this project to calculate Minimum Platform Length (P) are listed below;

- Allowance for inaccurate stopping (A) = 5 metres (Inter City).
- Allowance for splitting and joining (S) = 4 metres.
- Normal train stopping position with nose end 17 metres on approach to departure signal to give 20 metres stand-back from driver’s eye in the seated position.
- Normal train stopping position with nose end 10 metres on approach to arrival signal for reversing trains.

Based upon the worst case of 2 x 5 Car IEP the minimum required platform length (L) would be 260 + 5 + 4 = 269 metres with minimum distance between signals 296 metres. For the purposes of this study the maximum available platform length between signals has been illustrated. It has been assumed that the full length of the train would need to be on the platform.

However, it may be worth investigating further the possibility of reducing the operational lengths of platforms required by considering the actual positions of train doors - both crew and passenger. This can be addressed at the next stage.

Platform 4/5 has been designed to accommodate all possible train stopping scenarios with through moves, terminating & reversing and splitting & joining in both directions.

Platform & Building Requirements

GI/RT7016 7.2.2 states that the useable width of island platforms shall not be less than 4 metres (<100mph).

Based upon similar designs for island platforms recently built in Reading station (Platforms 12 to 15) and Peterborough (Platforms 6 / 7) it has been assumed that the minimum practical external width for a station building would be 4 metres.

GI/RT7016 7.2.1 states that the useable width of single face platforms (i.e. portions of island platform in front of buildings) shall not be less than 2.5 metres (<100mph). Subject to pedestrian flow analysis and consideration of secondary means of escape it is considered that at a major station such as Oxford a minimum of 3.5 metres clear platform width in front of platform buildings would be appropriate. This equates to an island platform width of 3.5m + 4m + 3.5m opposite the buildings giving a total length of 11m.

A circulation area of 10 metres width has been assumed adjacent to all platform access points to reduce possibility of crowding in these areas.

It has been assumed that the proposed island platform would require provision of a number of passenger and staff facilities which as a minimum would replicate the facilities currently provided on existing platform 2. Typical facilities would include passenger waiting rooms, toilets, buffet, retail, plant rooms, cleaning and staff accommodation.

In terms of weather protection it has been assumed that approximately two thirds of the platform length would be covered by a canopy. This would extend at least to cover the length of all buildings and cover all access points.

Demolition Requirements

As a result of the proposed track alignment a number of buildings and infrastructure will need to be demolished or modified.

Just to the north of Botley Road is Oxford YHA Youth Hostel – a three/four storey building which is of relatively modern construction. The eastern portion of this building would be affected by the track alignment and would need to be demolished. Land purchase would be required including the rear garden of the hostel. Partial demolition could be a possibility subject to structural assessment. However it has been indicated that a new south west station entrance may be created in this area.

A single storey brick building at the rear of platform 2 comprising staff accommodation, buffet, waiting room, toilets and reception facilities would need to be demolished. Replacement facilities would be provided within buildings in the centre of the proposed island platform. In addition platform canopies would need to be demolished.

Roger Dudman Way looking South (YHA in the distance)

Roger Dudman Way looking North (Sheepwash bridge in the distance)

The existing station footbridge, stairs and lifts would not be affected by the proposed works and it is assumed that this would remain as existing.

Oxford Signal Box (PSB) would need to be demolished but it is understood that this is to be closed under Oxford Area Re-signalling project (OARS) Phase 1 and signalling control transferred to Didcot. Demolition would need to consider presence of contaminants and asbestos often associated with signalling equipment.

A number of temporary buildings in palisade compounds comprising storage, oil tanks, REBs and PSP containers would need to be removed and re-located. It is understood the PSP is to be relocated in the Down Sidings.

To the north of Sheepwash Bridge is Turbo Teds Nursery which would be affected and be either partially or fully demolished. Reconstruction on a reduced footprint would be possible but, to achieve the same functionality, additional storeys would be required. This may have planning implications.

Nursery shown to the right (Looking south) with Sheepwash Bridge shown in the distance.

South Western Entrance

Subject to confirmation of the final Station Masterplan, a new south western entrance building could be provided in the south west corner of the station. This could be positioned on the footprint of the existing YHA Youth Hostel building. For the purposes of this study it has been assumed that the YHA building would be demolished and a new purpose built single storey building constructed with facilities for ticket purchase and retail. However, subject to structural assessment it may be possible to partially demolish the Youth Hostel and convert it for alternative use.

Direct access could be provided to the station via a subway and lifts and stairs up onto the south end of the proposed island platform 4/5. It has been assumed that a subway would be typically 4 metres wide with vertical headroom of 3 metres. With a 500 mm construction depth and 300 mm ballast depth below sleepers a maximum 3 metres width staircase with two flights (150 riser, 300 going) would be possible with a separate DDA lift to provide access up onto the platform.

No work was undertaken on this during this commission.

Boundary requirements

To maintain security along the western boundary of the proposed track alignment it is assumed that a palisade fence would be required along with a dwarf retaining/vehicular collision protection wall and/or vehicular containment safety kerb to mitigate the risk of vehicular incursion.

Roger Dudman Way Highway Alterations

As a result of the proposed track alignment changes to Roger Dudman Way would be required. Design of the proposed road re-alignment has been developed in accordance with Oxfordshire County Council guidance Transport for New Developments.

The road is within Network Rail land but it is assumed that, based upon the properties it serves, this road would normally be classified as a Local Distributor Road. This would result in a two way carriageway 7.3 metres width with 2 metre width footways each side. This has been provided at the south end wherever available width allows. Existing parking bays and refuse/recycling bins would need to be removed, but this may not be a problem as they appear to serve the buildings at the rear of the station which would also be removed.

Towards the centre of the new road some vegetation may need to be removed and mature trees cut down with embankment widening and/or retaining wall required to accommodate the road alignment. New vegetation and or other environmental screening may be required – especially to the rear of Abbey Road properties.

Towards the north end of Roger Dudman Way, the rear of Abbey Road properties, there is a convergence of the proposed track alignment and the Network Rail boundary fence. In this area it is assumed that, in conjunction with Oxfordshire County Council, compromises would need to be made on highway width and footway provision in this area. It is anticipated that this would need to occur over a length of approximately 200 metres.

On the assumption that land purchase, and/or demolition, of Abbey Road residential properties would not be an option, it is assumed that the highway would narrow in this area, including over a reconstructed Sheepwash Bridge. The minimum permitted highway width would be 4.8 metres. In conjunction with this it is assumed that a reduced footway provision could also be agreed. Additional traffic control measures would be required here and a number of options could be considered;

- Re-classify road as a two way Minor Access Road and reduce traffic speed to 20 mph with traffic calming measures.
- Create a priority direction system “give way to oncoming vehicles”. Dependent upon traffic count this may not be appropriate here as the priority length would be 200 metres long with no opportunity for passing places.
- Introduce traffic lights to control one way traffic flow

Consideration should also be given to signing and lining to comply with Traffic Signs Regulations and General Direction to allow enforcement of unauthorised parking with application for a traffic regulation order.

Based upon OS mapping it appears that the narrowest width from proposed track running edge to property boundary occurs at the north end of the proposed island platform at the south end of Sheepwash Bridge. The available width increases to the south of this point, and at the north end it would tie in with the existing alignment towards the Down Stabling Sidings.

At Sheepwash Bridge the narrowest width is approximately 9.6 metres and it is assumed that this would comprise the following:

Width in mm	Feature
760	Clearance to proposed side girder to independent track span over Sheepwash Bridge - assumed typical platform gauge with throw allowance.
600	Side Bridge girder width
400	Inspection & maintenance gap between new bridge girders
600	Side Bridge girder width to proposed Sheepwash Bridge Highways span
600	Eastern Verge to highway
4800	Two way carriageway width
900	Western pedestrian footway
600	Side Bridge girder width to proposed Sheepwash Bridge Highways span
340	Available allowance for construction of abutments between girder and boundary fence

Just to the south of Sheepwash Bridge the proposed construction is assumed to comprise the following:

Width in mm	Feature
2150	Clearance from cess rail to wall. Based upon RT/CE/S/069 and Network Rail Rule Book RT3170 to create minimum 1300 width cess with 700 width continuous walkway / position of safety and additional allowance for cable troughing.
300	Dwarf retaining / vehicular collision wall
100	Palisade fence
600	Eastern Verge to highway
4800	Two way carriageway width
1500	Western pedestrian footway
150	Environmental screening

These dimensions should be verified following topographical survey at next design stage.

Botley Road Junction Highway Alterations

In association with this project, highway widening and lowering of the road beneath Botley Road bridge is proposed and as a result of the gradient run out the junction with Roger Dudman Way would be affected. Also in conjunction with a consideration to a new South Western entrance to Oxford Station and an aspiration to create an external pedestrian only concourse in this area, there may be limited space in this area for drop off and disabled parking.

As a result it is proposed to simplify the junction arrangements in this area by closing the Roger Dudman Way/Botley Road junction. A new T junction could be created between Roger Dudman Way and Cripley Road. For most of its length Roger Dudman Way is at approximately 2 metres higher level than the adjacent Cripley Road, separated by either an embankment or a retaining wall. However, at the western end of Roger Dudman Way the road ramps down over the extent of the Youth Hostel where the two roads are at approximately the same level.

Cripley Road to the left, Rodger Dudman Way in the centre and Botley Road bridge in the distance.

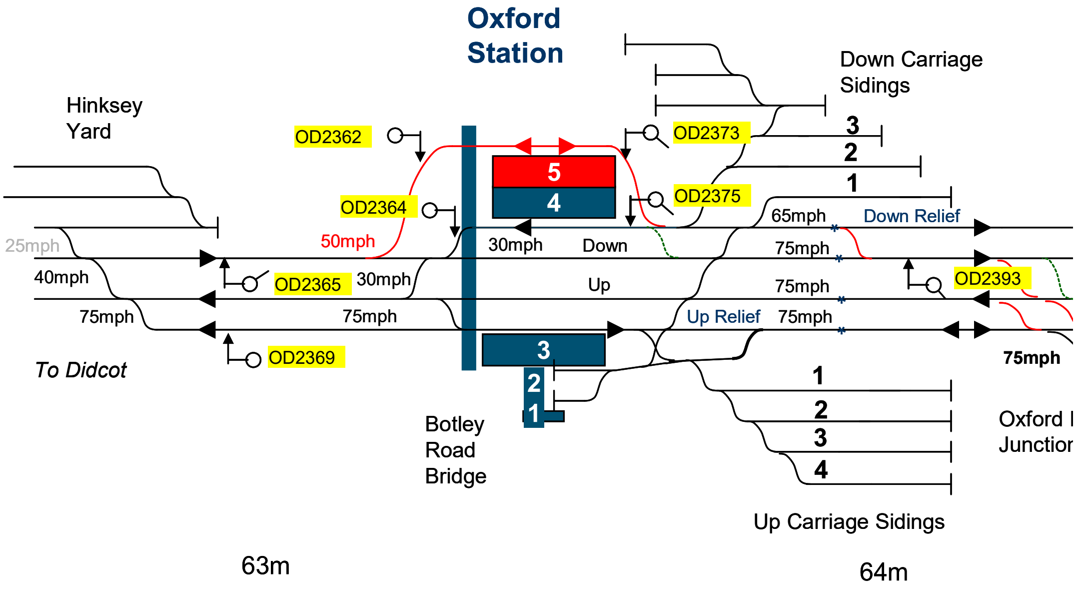
This appears to be the most appropriate point to create a new junction but in this area there are two single storey pitched roof buildings occupied by “Micks Café” and “Vlora House”.

Cripley Road. Vlora House to the left and Mick’s Café to the right. YHA in the background.

3.1.6 Signalling

Signalling Changes Due to the Provision of an Island Platform

This report is based on the track designs shown on drawings B90505-DRG-PWY2601 and B90505-DRG-PWY2602. These drawings and the signalling sketch can be found in Appendix E.



The following is only for GRIP 2 optioneering and a more detailed assessment of signal positioning will be required at later GRIP stages taking into account such things as signal sighting recommendations, risk assessments, detailed assessments and method of station working etc.

OX20 (OD2365) will be required to be moved south in Options 1 & 2 to allow for a compliant overlap and OX90 (OD2369) moved to remain parallel. The new positioning at 63MP + 84m would allow for a safe overrun of at least 317m for Option 1 and 476m for option 2. With additional TPWS loops added this would provide protection for 12% and 9% braked trains for the option 1 layout and for all passenger trains for option 2. In all cases a spading freight train travelling at line speed would over run the Safe Overrun Distance.

The movement of OD2365 would allow betterment in the braking profile for the signalling on the Down Oxford. OD2365 provides the first caution for OD2393 and this signal repositioning increases the braking to OD2393 from 114% to 131%, thus evening out braking distances in this vicinity.

The OARS design has specified that OD2365 would have flashing aspect approach controls (MAY-FA) for a turn out speed of currently 25mph, but increasing as part of this project. Option 1 allows these controls for both diverging routes into platform 4 and 5 as the speeds are identical (50mph). Option 2 however has lower but differing diverging speeds which will prohibit the use of MAY-FA for both routes as the speed differential exceeds 10mph. The higher speed (45mph) could be provided with MAY-FA but the lower speed turnout route (30mph) would require approach control from red (MAR).

The operational aspirations of Oxford Station will need to be considered. Current standards allow for a train to be signalled onto an occupied line for the purpose of attaching, detaching or removing of vehicles, following a risk assessment. The provision of platform sharing is more onerous and is only permitted where it is demonstrably both necessary and safe.

Platform sharing shall not be provided where it is reasonably practicable to apply alternative arrangements such as timetabling and platforming of trains to avoid the need for two trains to make use of the same platform simultaneously or the use of mid platform signals. The current arrangement at OD2365 of providing 2 white lights and a feather for the call on route is unlikely to be acceptable for future signalling. This arrangement was deemed acceptable under the compliance approach however due to the proposed changes in track and signalling required for the new island platform it is expected the call on route(s) from OD2365 will be made compliant with current standards. This will require a minor interlocking change. Parallel signal OD2369 has existing route indications to current standards and will require only repositioning to keep parallel with OD2365.

A signal sighting committee will need to consider the provision of OFF indicators, Train Ready to Start plungers and Right Away indicators associated with the new and altered signalling for the island platform. The constructability of providing this equipment within the platform area will need to be considered.

Platform 4 starting signal OX72 (OD 2375) could be retained and a new platform starting signal for platform 5 provided parallel to it. New turn back signals would be provided for both platforms 4 & 5. Trains turning back from platform 4 would use the new cross over from the Down Oxford to the Up Oxford provided as part of these enhancements. Trains turning back from platform 5 will need to travel wrong road to Hinksey South before being able to transit to the Up Oxford. To achieve this some bi-directional signalling will be required south of Oxford; this will comprise at least one new 3 aspect signal.

3.1.7 Electrification

The electrification works associated with phase 2 have not been addressed as part of this commission. The project will need to pick up the costs for the electrification as this will be implemented and commissioned after the Oxford electrification project. As such, a provision for electrification has been included in the estimate.

The electrification design will need to be progressed at the next GRIP stage.

3.2 Botley Road Bridge

Existing Conditions

Botley Road Bridge carries four tracks over Botley Road. It provides one of the few locations where the road crosses the railway in Oxford, although there is alternate pedestrian access available in either direction via Cemetery Road Footbridge or via Sheepwash canal underbridge.

Botley Road Bridge from the West

Botley Road Bridge from the East. Note the blue painted footbridge in the foreground with Botley Road bridge in the background

There are currently two lanes of road traffic through the centre span of the bridge with one footpath running in an adjacent arch subway on the London side, located at a higher level and one at road level on the station side. Current clearance to the underside of the bridge is 4.28m, signed at 13’ 6” (4.11m). There are bridge protection beams located on both approaches.

The Down Platform loop is carried on a modified Network Rail standard Z type deck. Most of the details remain as per the current suite of standard drawings other than that the track is directly fastened to the cross girders using ASP type base plates.

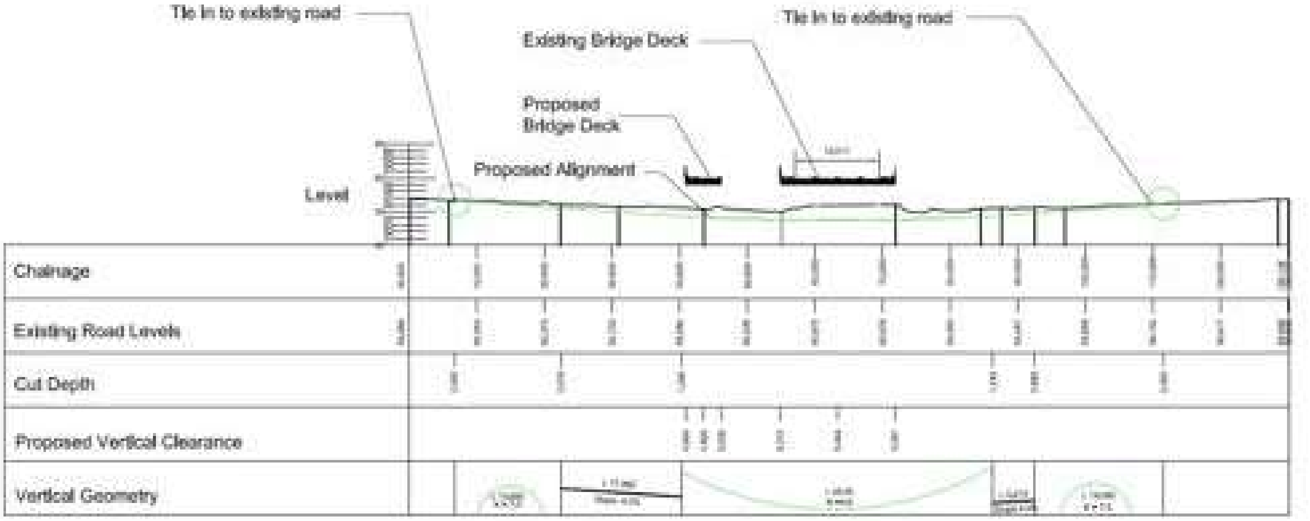
The Up Main, Down Main and Up Platform loop lines are carried on a Joist in Concrete deck with the track directly fastened using ASP type base plates. The construction depth between rail head and bridge soffit is currently a minimum of 545mm for the Down Platform Loop and 685mm for the other three lines. Beneath the road surface, the bridge abutments are propped by an inverted arch. There is a pumped drainage system in place to keep the road way clear. There is an adjacent steel footbridge linking the station with its long stay car park. Records suggest there is a large (24”) diameter water main located beneath the current emergency level crossing at the London end of the bridge.

Project Requirements

Oxford City Council and Oxfordshire County Council would like to increase to three traffic lanes, a pedestrian footpath and a cycle path to both sides of the road. This gives a total required clear span in the region of 19.2m. In addition they would like an increase in vertical clearance from road level to allow more economic acquisition of double deck buses. The absolute minimum clearance required is 4.80m plus an allowance for the sag in the road alignment of up to 80mm. This equates to an increase in clearance of 700mm on signed clearance. Network Rail have an aspiration to introduce ballasted track over the bridge, which would add a further 500mm to the required track lift or road lower required.

This may be achieved by full bridge re-construction, taking the foot/cycleways through via separate bores (allowing the road to be widened), raising the railway (probably not cost effective and probably too disruptive) or by lowering the road (complex junctions, services and barrel invert problems).

Following discussions with Oxford City and County Councils it has been agreed a proposed road configuration cross section has a full width of 19.2m (as against the present bridge width of 9m) but the combined width of the present underbridge and the adjacent level crossing means that theoretically the new proposal will fit within the present ‘highway’ space, keeping the north abutment where it is at present.



The Councils are obviously keen to ensure that the road gradient doesn’t extend into the junctions either side of the bridge (Fridewides Square on the east and Roger Dudman Way/Abbey Road/Mill Street on the west). One way of assisting this may be to divert Roger Dudman Way end into Abbey Road and then to join Botley Road as a single junction.

The specification for the highway is as follows:-

Item	Existing	Proposed
Footway width	N/A	2.5m x2=5m[#1]
Cycle path width	N/A	1.5m x2=3m[#1]
Carriageway width	N/A	3m x 3 plus 2 off safety kerbs, railings etc=11.2m[#2]
Total width	**9m**	**192m**
Height	4.22m headroom. Actual 4.28m	Required absolute minimum is 4.80m[#2]
Gradient	N/A	6% maximum[#3]
Lighting	OCC	OCC to continue to provide
Drainage	NR pumped	Network Rail to continue to provide pumped system

Highway standard TD36 allows a shared use ‘unsegregated’ subway of height 2.4m (2.7m if the subway is more than 23m long) and 4.0m width, so the council have gone for the absolute minimum allowable by standards.

Highway standard TD27/05 calls for minimum lane width of 3.6m, so there is already a significant concession. The standard calls for a height of 5.30m for new construction or 5.03m as an absolute ‘maintained’ minimum for existing bridges for e.g. carriageway re-surfacing etc. To both, these should be added. Another allowance is for ‘sag’ based on the radius of the downgrade to under the bridge to the upgrade (which could be anything up to 80mm for the worst gradient change (table 6-1 and 6-2). DMRB standard calls for 5.48m. The councils have however accepted that full compliance is not achievable and, as other main routes into the centre are compliant, they are prepared to lower the requirement to 4.80m (plus sag) which is based on being able to use ‘London specification’ double deck buses, which are more economically available than the present Oxford special specification (which is even smaller). The road will therefore be signed for headroom 4.5m/14’9”.

The carriageway width shown above is made up of 3 lanes at 3m wide, a 0.6m safety kerb each side, a 0.3m parapet wall/fence to the cycleway and a 0.2m allowance for the retaining wall between the cycleway and road to be at a 5° batter. The retaining wall should be smooth faced, to withstand vehicle impacts.

The minimum compliant vehicle gradient is 10°. TD36 says that foot/cycleways should ideally be 5°, should preferably be 8° and if severe difficulties can be 10° absolute maximum. The 6% figure quoted above is the Councils requirement for the foot and cycleways, which should be achievable, as these can be significantly shallower than the road depth. The road gradient shall as an absolute minimum be no worse than the existing road gradient, but an improvement would be useful.

The main issue is the height and the fact that the existing dip in the road is already below the water table (drainage is managed by Network Rail via a pumped system). The height is not currently sufficient for a standard double-decker bus and Oxford’s bus operators have their stock specifically made to go under this bridge. In renewing this bridge it is required to see this addressed to avoid special purchases being made in the future. However, this can only be achieved by a slimmer bridge deck, further lowering of the carriageway or raising the track. Lowering of the carriageway is what we have proposed.

Highway Profile

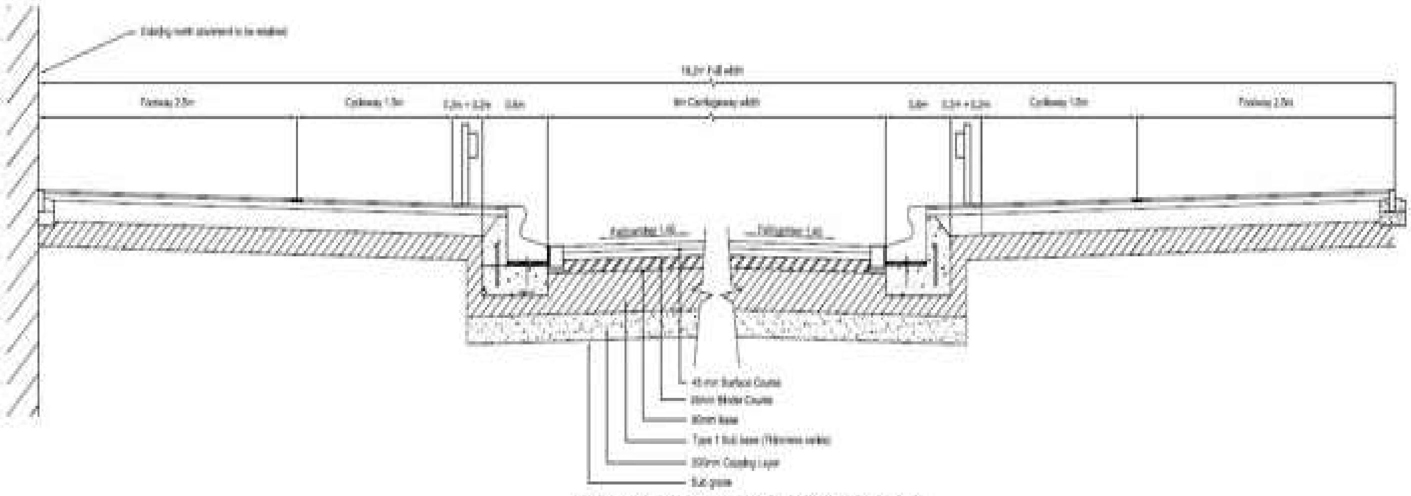
The new vertical alignment is shown below. This alignment would utilise vertical curves of 460m radius (K value = 4.6). The maximum proposed gradient is 6% which complies with the maximum gradient for all purpose single carriageways. A vertical clearance of 4.8m has been achieved clearing both the proposed bridge and the existing bridge; this may permit a ballasted deck but would require further site investigation to verify.

Design Parameters

The existing vertical alignment and headroom for Botley Road is below the standards given in the Design Manual for Roads and Bridges (DMRB). The minimum design speed given in DMRB is 50kph, which requires an absolute minimum sag K value of 9. Extrapolating the relationship between speed and minimum sag curve a K value of 4.6 corresponds to a design speed of 35kph. This design speed is suitable for this stretch of Botley Road because the junction with Becket Street and associated queues limit traffic speeds.

Section 4.14 of DMRB states that relaxations to the absolute minimum K value may be made at the discretion of the designer and that 2 steps below the absolute minimum is acceptable for low speed single carriageway roads. The K value of 4.6 specified above is two steps below the minimum quoted in line with this advice.

DMRB Volume 6 Section 1 Part 2 TD 27/05 states that compensation for Vertical Sag Curvature and Deflection is required, however this standard refers to Motorways and Highway Agency carriageways of vertical curvature greater than R1000 and is not applicable to Botley Road due to being classified as below the design speeds referred to in DRMB. Further consideration will be given if the scheme progresses from feasibility to outline design.



PROPOSED BOTLEY ROAD CROSS SECTION
SCALE N.T.S.

Highway Drainage

The existing highway drainage falls to a sump underneath the bridge with electric pumps carrying the water to an outfall. This would have to be reconstructed at a lower level if the road were lowered. The location of the electric pumps is not known at this stage. A typical cross section of the proposed widened carriageway is shown above. Consideration should be given to utilising existing drainage pipe runs in any future development

Highway Widening

Widening the carriageway from the northern abutment encroaches on the existing raised footpath on the south side and any associated statutory undertakers equipment situated underneath will need relocating/lowering and possible diversions, also agreements/permits will need to be acquired. It is not known if the continuation of the carriageway widening will continue further along to the junctions of Mill Street and Becket Street, if this is the case a junction re-alignment will be needed at these areas to accommodate the widening.

Technical Considerations

The key constraints on altering the bridge is the presence of the station to one side, a number of S&C units to the other, the vertical alignment of the road and presence of adjacent junctions and the level of the water table in the area.

The design of the bridge is governed by Network Rail Standard NR/L3/CIV/020; Design of Bridges and Railway Group Standard GC/RT5212 for gauge clearance to rail vehicles.

NR/L3/CIV/020 provides general guidance on the design of bridges and sets a deflection limit for the safe operation of rail traffic at span/600, which is the governing criterion in this instance.

GC/RT5212 does not allow any elements of bridge structure to protrude above rail level outside of platform gauge.

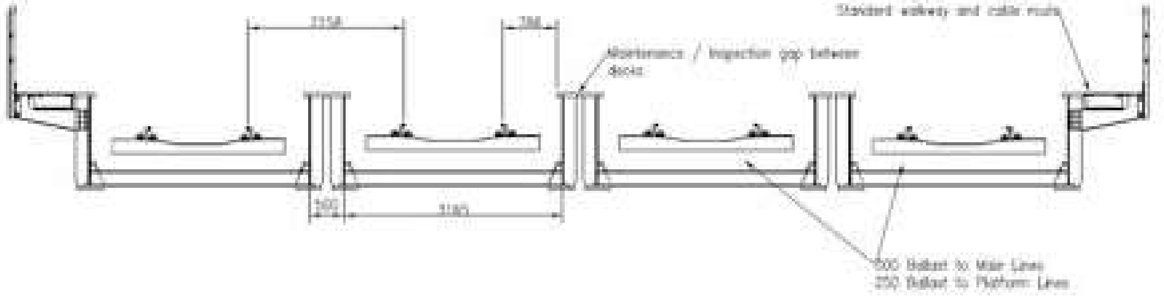
Four possible proposals were considered which are discussed below:

Network Rail Standard U-Deck

The required 20m effective span between bearings is within the allowable range for the Network Rail standard U-Deck bridge. With a ballasted deck suitable to the track category in the Oxford area this deck would have a construction depth from rail head to bridge soffit of approximately 900mm, thus requiring an additional 200mm of road lowering. Direct fastening to U-Deck bridges is possible but would be subject to a more detailed Approval in Principle and Design Check process than would otherwise be achieved using the standard design catalogue.

Conventionally when using the U-Deck for multiple track situations a combination of shallow and deep main girders would be required to meet with gauging requirements however in this instance the shallow depth girder cannot be used due to the anticipated traffic type and span. The use of the deep main girder to both sides results in increased track centres which are not achievable due to the existing constraints to the track alignment.

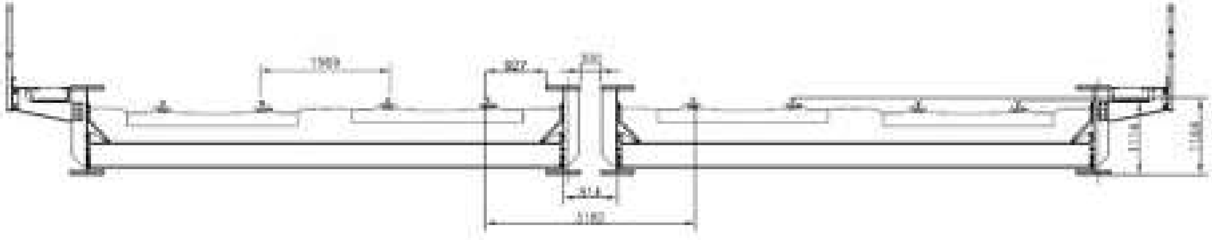
This option should be discounted due to the impact on the track alignment in close proximity to the station platforms and the increased depth of road lowering required.



Network Rail Standard D / E Deck

A combination of Network Rail standard D and E type decks could also be considered as this would allow either one or two pairs of tracks to be installed with a standard six-foot as at present, however a wide ten-foot would be required between the adjacent decks in order to allow for platform gauge and future maintenance. This will result in a similar track alignment problem into the platforms to the use of the U-Deck discussed above. The total construction depth between rail head and bridge soffit for a ballasted deck D or E type bridge is around 1200mm or an additional 500mm of road lowering. There are similar issues associated with the use of the standard box girder underbridge.

This option should be discounted due to the impact on track alignment and road lowering.



Direct Fastened Joist in Concrete Deck

The majority of the existing Botley Road Bridge is of Joist in Concrete construction with directly fastened track. Initial calculations suggest that it will be possible to utilise this form of construction to construct the longer bridge and maintain the current construction depth thus minimising the requirement for road lowering and drainage modifications. Given the length of span required, the joists will need to be fabricated sections. The arrangement as shown in the sketch below and in detail on drawing B90505-DRG-CIV0021 in Appendix E complies with the deflection requirements of NR/L3/CIV/020 and the gauging requirements of GC/RT5212. Transition slabs may be required on both approaches to manage the change in track support stiffness between ballasted and directly fastened track.

The edge girders of the edge units will require to be designed as robust kerbs to contain derailed vehicles. The proposed platform 5 track will be supported on a similar Joist in Concrete deck sited on new reinforced concrete abutments. In order to provide the minimum 4.8m clearance to the proposed platform 5 deck the minimum clearance to the main and relief line decks is around 5.2m. This may allow an increase in construction depth which can be investigated in more detail at a later GRIP stage in order to achieve greater efficiency. The currently proposed carriageway level does not give sufficient extra depth to allow ballasted track on this deck type, however the proposed gradient achieved is less than the Councils desired value of 6% so further road lowering to achieve a more efficient structure or ballasted deck should be further investigated at the next GRIP stage. As this design shows the track contained within a recess in the deck this will impose a restriction on future track slues in the area, and means the new deck would require to be constructed concurrently with any planned track alterations as part of this project.

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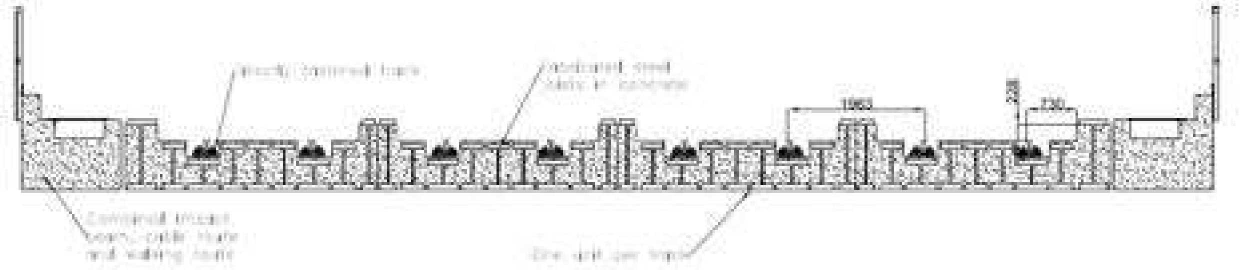


A sub-option to this would be to create a three span portalised structure which would improve the deflection characteristics and lead to reduced steel section sizes. This would see the foot and cycle ways segregated from the road way by a physical barrier. It is understood that this is a non-preferred option by the local councils due to the perception that it provides opportunities for criminal activity. Construction of a three span bridge would likely require greater disruption to both road and rail traffic.

Given the shallow depth of construction and the reduced headroom to the carriageway impact protection beams will be required on both approaches to the bridge. These can double as walking and cable routes.

The Network Rail standard design for bridge protection beams comprising a concrete filled Circular Hollow Section beam could be considered, however an additional cess walking route and cable route would be required which would increase the total deck width and require further works to widen the existing abutment. For this reason a combined walkway, cable route and protection beam of reinforced concrete construction similar to that currently in use at this site is the preferred option. Some strengthening to the abutment will be required to enable it to resist the loads associated with the containment of impact forces.

The increased length structure will require a new abutment to be formed in advance of the bridge installation. This is likely to be of piled construction installed through the existing track bed. The existing abutment which remains may also require strengthening to accommodate the new bridge loads. As the existing abutments are propped apart it is likely that the new abutment and revised abutment will also require some form of propping.

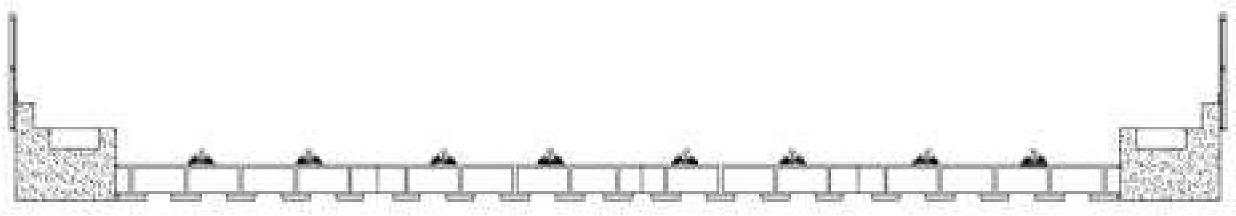
Construction will require a number of advanced works possessions to construct the new abutment followed by a major disruptive possession to carry out the deck replacement, excavation of new carriageway and track reinstatement.

As it would appear possible to provide ballasted track by utilising the orthotropic steel deck option described in the following section this option should be considered as non-preferred.

Orthotropic Steel Deck

As an alternative to the Joist in Concrete deck described above, an Orthotropic Steel deck could also be used. This would have a similar construction depth to the joist in concrete option but may offer a reduced lifting weight for installation purposes. Given the exceptionally shallow depth of construction the track would still be directly fastened to the deck, however there is potential for more flexibility in future positioning of the track due to the lack of upstands. In order to provide the minimum 4.8m clearance to the proposed platform 5 deck the minimum clearance to the main and relief line decks is around 5.2m for direct track fastening. If the headroom above Botley Road is reduced to 4.8m beneath the Main and Relief line deck can be of ballasted construction, particularly if shallow depth sleepers and a reduced ballast depth are adopted.

Early indications from the Track RAM suggest that this would be preferable for maintenance than the directly fastened option. As the new Platform 5 deck is now the pinch point for the road vertical alignment this may require utilising direct fastened track, however at the next GRIP stage the possibility of having a split level between platforms 4 & 5 should be investigated in order to ease this constraint on the bridge and highway design. Early indications based on desk top information suggest that it may be possible to set the platform 5 track approximately 80mm higher than the adjacent main lines, a greater level difference than this does not appear possible due to the constraints on the track vertical design. As the current highway vertical alignment achieves a maximum gradient of 4% compared to the value of 6% the Councils are prepared to accept there is further scope to lower the highway within the defined parameters such that a shallow depth of ballast over the platform 5 deck may also be achievable. This should be investigated further at the next GRIP stage.



A sub-option to this would be to create a three span portalised structure which would improve the deflection characteristics and lead to reduced steel section sizes. This would see the foot and cycle ways segregated from the road way by a physical barrier. It is understood that this is a non-preferred option by the local councils due to the perception that it provides opportunities for criminal activity.

The reconstruction of the deck as a three span structure could have a significantly greater impact on both road and rail traffic during construction work. For these reasons the single span option is seen to be the better solution.

Given the shallow depth of construction and the reduced headroom to the carriageway impact protection beams will be required on both approaches to the bridge. These can double as walking and cable routes.

The increased length structure will require a new abutment to be formed in advance of the bridge installation. This is likely to be of piled construction installed through the existing track bed. The existing abutment which remains may also require strengthening to accommodate the new bridge loads. As the existing abutments are propped apart it is likely that the new abutment and revised abutment will also require some form of propping.

Construction will require a number of advanced works possessions to construct the new abutment followed by a major disruptive possession to carry out the deck replacement, excavation of new carriageway and track reinstatement.

Subject to further development at the next GRIP stage, the use of an orthotropic steel deck is the preferred option. This is the preferred option as it appears to be possible to provide ballasted track to the existing railway corridor and may be possible to provide ballasted track to the platform 5 track.

3.3 Becket Street Footbridge

As a result of the widening of Botley Road, the footbridge between the station and the Beckett Street long stay car park will also require modification. The existing bridge is of steel vierendeel truss construction. The current span of the bridge is approximately 14.5m between supports. As the road widening is all to be to the south side of the road, the southern support will require to be moved and the bridge lengthened. The form and function of this bridge should be reviewed in conjunction with the wider Oxford Masterplan and station redevelopment proposals. The new footbridge design will need to accommodate the proposed new ‘transfer deck’ structure envisaged as part of the station development, the long term aspiration to add a further through platform to the east of the station leading from the proposed bay platforms; and the altered pedestrian flows as a result of the proposed redevelopment of the Becket Street car park site.

3.4 East West Rail Phase 2 Double Junction

Under Phase 1, the Oxford North Junction will be remodelled to include a high speed turnout whilst considering a future layout for a double junction and double tracking on the Bicester Branch.

Aristotle Lane foot crossing is located approximately 5m south of the crossover on the Down Main. Willow Walk footbridge is located a further 60m south of the foot crossing.

There is a drainage ditch which runs in the Down Relief cess for the length of the site. There is a short (60m long) break in the ditch at the point where the Up & Down Bletchley diverges from the main lines.

Project Remit

As part of East West Rail Phase 2, there is an aspiration to provide a double junction at Oxford North Junction and to double track the Bicester Branch. This project takes the double tracking as a far as Woodstock Road bridge. The LNW (London North West) team is to continue with the double tracking through to Bletchley and Bedford.

Two options have been developed for the double junction; one which provides a 60mph turnout speed and a second which provides a 70mph turnout speed with the option to achieve 75mph.

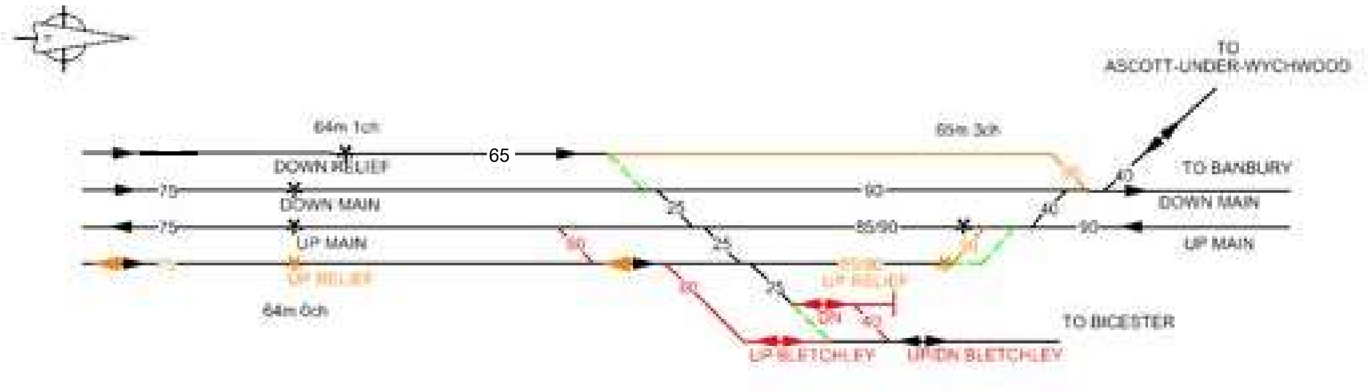
3.4.1 Oxford North Junction Option 1

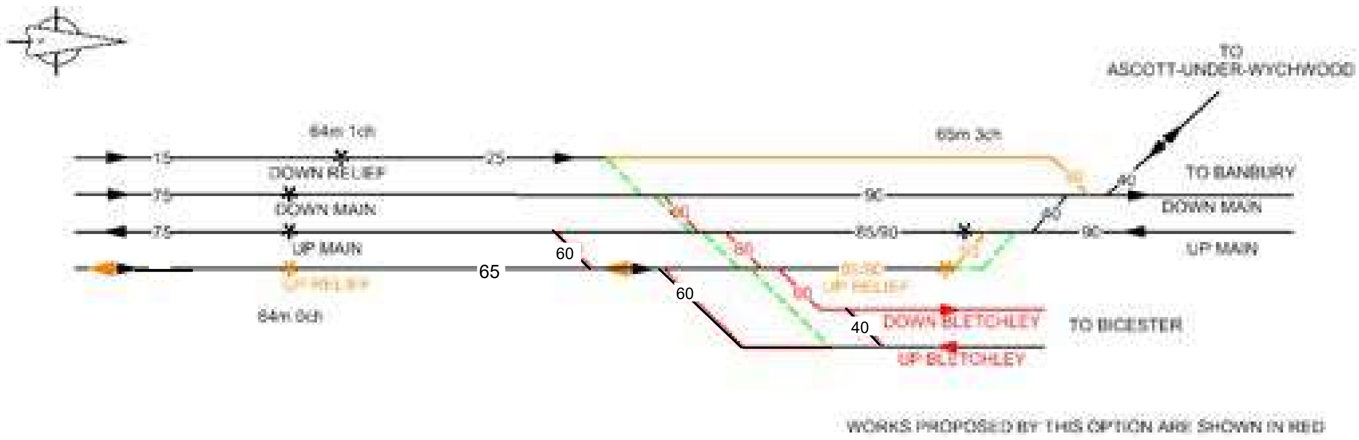
Option Overview

Option 1 is shown on drawing B90505-DRG-PWY2100 Appendix E. This option provides the following key features associated with Phase 1:

- 60mph opened out double junction arrangement onto a twin track Bicester Branch alignment.
- 40mph facing crossover (normal direction) provided on the Bicester Branch to allow a 775m freight train to be recessed on the Down Bletchley.
- The track alignment design allows for a two staged installation:
    - Stage 1 - existing 25mph ladder and turnout retained and new 60mph turnout from Up Relief to extended Up/Dn Bletchley provided.
    - Stage 2 – full double junction arrangement installed.
- Junction design compatible with 90mph through route linespeed on main lines.

Schematic diagrams of the proposed interim (Phase 1) and final layouts (Phase 2) are provided below.





Technical Considerations

A track alignment design has been developed which provides the operational capacity discussed above. In addition, the track alignment design also provides the following:

- S&C installed to provide minimum 75m separation between Willow Walk footbridge and OLE registration points.
- Desirable 40m separation between S&C units achieved.
- Desirable 40m constant horizontal geometry beyond S&C achieved.
- Preferred geometry (in accordance with section J.1.1 of NR/L2/TRK/2049) used for all S&C units.

The key technical issues associated with this option which will require consideration at the next GRIP stage are as follows:

- Approximately 200m of drainage ditch requires modifying to accommodate the proposed Up Bletchley turnout and associated plain line alignment.
- The existing signalling relay room at Oxford North Junction requires relocating to accommodate new Up Bletchley turnout. Relocation of the relay room is already planned as part of the separate Oxford Area Re-signalling Scheme, but co-ordination will be required to ensure any proposals are compatible with the proposed track layout.
- The overlap to proposed signal OD2392 is below the 225m required for the proposed main line speed. Options which could be considered to address this include:
  - Reduce separation between S&C units to less than 40m. This is not desirable due to the implications for future maintenance.
  - Reduce the main line speed to allow the use of a compliant 180m overlap.
  - Reconstruct Aristotle Lane footbridge to allow ladder to move further south. This is not considered feasible due to environmental constraints.
  - Reposition signal OD2392 further north although option 2 below removes this problem.

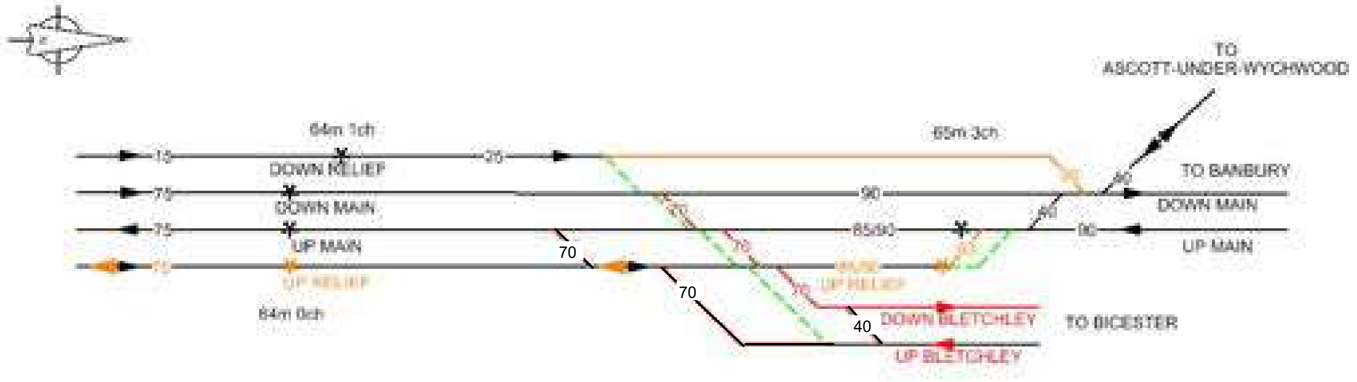
3.4.2 Oxford North Junction Option 2

Option Overview

Option 2 is shown on drawing B90505-DRG-PWY2110 Appendix E. This option provides the following associated with Phase 1:

- 70mph opened out double junction arrangement onto a twin track Bicester Branch alignment. There is the potential to achieve a 75mph turnout speed if the use of Exceptional track geometry parameters is acceptable and is likely to be the case.
- 40mph facing crossover (normal direction) provided on the Bicester Branch to allow a 775m freight train to be recessed on the Down Bletchley.
- The track alignment design allows for a two staged installation:
  - Stage 1 - existing 25mph ladder and turnout retained and new 60mph turnout installed to the south of 278 points in the Up Relief connecting to extended Up/Dn Bletchley.
  - Stage 2 – full double junction arrangement installed and line speed on turnout to Up Bletchley increased to 70mph; although 75mph is achievable.
- Junction design compatible with 90mph through route linespeed on main lines.

Schematic diagrams of the proposed interim (Phase 1) and final (Phase 2) layouts are provided below.



WORKS PROPOSED BY THIS OPTION ARE SHOWN IN RED

Technical Considerations

A track alignment design has been developed which provides the operational capacity discussed above. In addition, the track alignment design also provides the following:

- S&C installed to provide minimum 75m separation between Willow Walk footbridge and OLE registration points.
- Desirable 40m separation between S&C units achieved.
- Desirable 40m constant horizontal geometry beyond S&C achieved.
- Preferred geometry (in accordance with section J.1.1 of NR/L2/TRK/2049) used for all S&C units.
- 75mph turnout speed is achievable if use is made of an Exceptional 93.3mm/s rate of change of cant deficiency.

The key technical issues associated with this option which will require consideration at the next GRIP stage are as follows:

- Approximately 170m of drainage ditch requires modifying to accommodate the proposed Up Bletchley turnout and associated plain line alignment.
- The existing signalling relay room at Oxford North Junction requires relocating to accommodate new Up Bletchley turnout. Relocation of the relay room is already planned as part of the separate Oxford Area Re-signalling Scheme, but co-ordination will be required to ensure any proposals are compatible with the proposed track layout.
- In the interim stage it will be necessary to install the plain line off the last long bearer of the new Up Bletchley turnout to a temporary alignment to allow the existing 278 points to be retained. The speed over this temporary alignment would be limited to 60mph in the short term, until the double track layout is completed.

3.4.3 Signalling

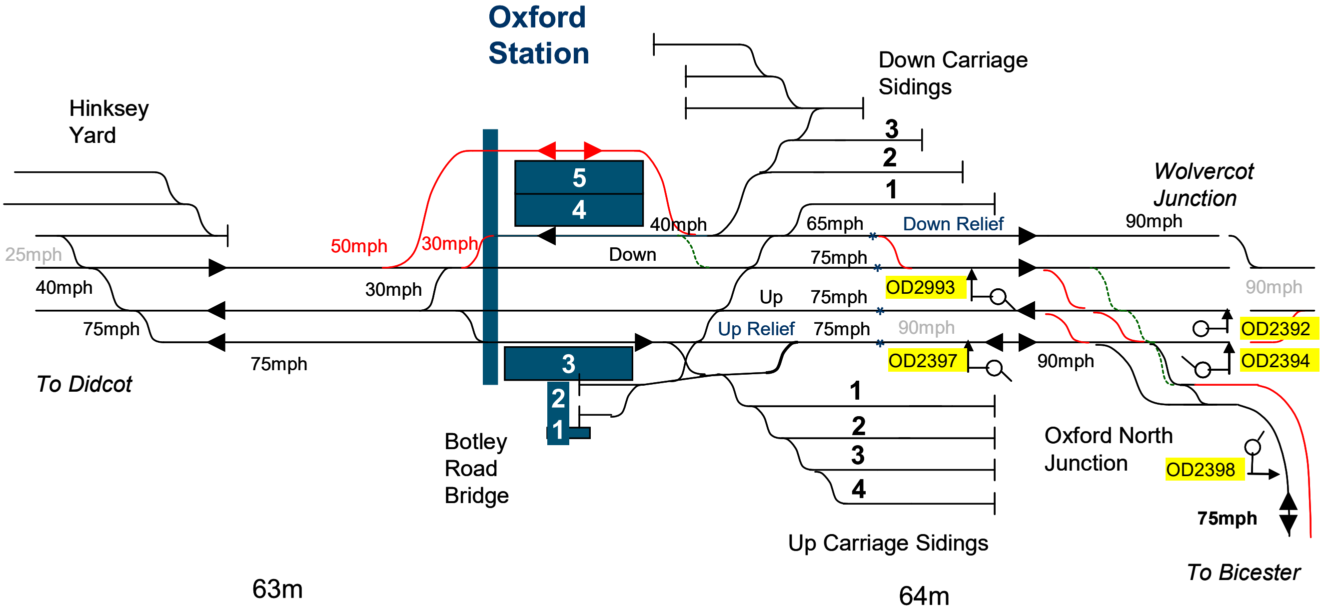
The signalling arrangement shown in the signalling sketch Appendix E is relevant to options 1 and 2.

The junction protecting signals in the down direction OD2393 and OD2397 will require approach release controls as the difference in speed between the diverging speed and the highest speed is greater than 10mph.

The junction protecting signals in the Up Direction OD2392 and OD2394 will require conditional red controls as a head on collision is possible as a result of one of the trains over running the protecting signal at line speed, which could result in a collision with a closing speed of 50mph or greater.

The junction protecting signal on the Down Bletchley line is subject to the LNW East West Rail design although might come under this project.

The diagram below shows where these signals are positioned.



However, if the main line speed was reduced to 85mph and the crossover speeds were 75mph, then ‘free aspects’ with no signalling approach control to control the train speed prior to the junction is required. The main line speed reduction is considered not likely to have a detrimental effect on the passenger trains as almost all are starting from rest at Oxford station and because this restriction will be only just beyond the existing 75mph section. For freight, the trains are limited to 75mph anyway so there will be no consequence.

The 85mph mainline speed and the differential of 10mph to the junction speed then allows the ‘free aspect’ as opposed to the situation of having a differential in junction and main line speeds are greater than 10mph.

3.5 East West Rail Phase 2 Double Track

Options have been developed for a higher speed double junction at Oxford North Junction as discussed in sections 3.3.1 and 3.3.2. As part of the development of these options an assessment was made for the potential future double track alignment on the Bicester Branch between Oxford North Junction and Woodstock Road Junction at the western portal of Wolvercot tunnel. This assessment was undertaken using LiDaR survey data and OS mapping.

The current linespeed on the Bicester Line is a mix of 30mph and 40mph and an assessment found the speed on the Bicester Branch will be constrained by the presence of 560mm radius curve located approximately 680m north of Oxford North Junction.

A maximum speed of 70mph would be feasible on this curve if equal cant and cant deficiency values were used. 75mph may be achievable if the Route Asset Manager (Track) is willing to use cant deficiency on the adjacent transitions. The rest of the alignment would be capable of supporting 75mph linespeed using normal design values.

In general, the plain line track along the route is in good condition and has been helped by some recent track renewals.

Further work will be required at the next stage to confirm that the alignment developed as part of this assessment is compatible with gauging requirements for structures along the route, in particular the underbridge located within the eastern most transition associated with the 560mm radius curve.

4 Compliance with Project Requirements Specification (PRS)

A PRS was produced at the commencement of the original GRIP stage 2 back in 2010. Although referred to, an update was not available for the commencement of this commission. However, the 2010 PRS was been complied with, where the client's requirements have not been amended.

An update will be made available prior to the commencement of GRIP stage 3 onwards.

5 Constructability Assessments

Due to the complexities and number of projects being planned in the Oxford area during Control Period 5 (CP5), a Programme Management team have established a proposal and timescales to undertake the work in a phased approach.

A breakdown for this phase of works is as follows:

Downside Island Platform

"Greenfield" works with a series of 29hr possessions to install the S& C connections.

The works are planned to start in 2017 and be commissioned Easter 2018.

Road widening of the Botley Rd Bridge

The widening and lowering of Botley Road represents a significant challenge to the project. The construction sequence will be similar whether the joist in concrete or orthotropic steel deck is taken forward.

The existing north abutment will require strengthening to resist the increased forces associated with both the longer bridge span and the reduced ground levels. The base of this abutment is likely to be below the water table. The first element of the bridge to be completed should be the underpinning and strengthening of this, if the option of maintaining the footpath and cycleway at the existing carriageway level is taken forward then this can be completed in advance of the deck replacement within a traffic light controlled single lane closure.

Installation of the new southern abutment will require a number of disruptive possessions of all lines to enable tracks to be removed and the new abutment to be constructed. Construction details are to be refined during subsequent GRIP stages but the ground conditions identified from the desk study report indicate that this is likely to be of piled construction. In advance of the works to install the new south abutment the 24” diameter water main shown on record drawings will require to be located and diverted.

The deck replacement will require a major disruptive possession of the railway and a full road closure of Botley Road. A large capacity crane will be needed, capable of lifting out the existing deck units and installing new cill units and deck units. This should be sited in the adjacent Becket Street long stay car park. On removal of the existing deck units, the existing pedestrian arch to the south side of Botley Road will require to be demolished and the initial dig down for the new roadway completed in advance of the new deck installation.

Once the new deck has been installed, waterproofing, track and services can be reinstalled. It is likely that the road will need to remain closed for some time after the deck installation to facilitate safe construction of the road lowering and grade separated footpaths. Traffic light controlled single lane working may become possible part way through the construction process. This should be investigated further at the next GRIP stage to minimise the disruption to this key artery across the city.

Commissioning date planned for Christmas 2017.

Double Junction at Oxford North Junction

6 x 29hr possessions + No Booked Services for preparation work and follow up.

Commissioning planned for Christmas 2018.

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6 Cost Estimates

Estimates have been produced, but have yet to be validated by the Network Rail Estimating Manager. The validation exercise will take some time hence was decided to include the estimates without validation.

The rates used are at quarter 4 2014/15. Escalation costs have been added to the estimates for work being undertaken beyond two years of this estimate.

A 40% risk/uncertainty figure has been added to each estimate which is standard for those projects at GRIP stage 2.

A summary of the estimate is given below. The full estimate reports can be found in Appendix A.

Work Item	Option	£million
New Down Island platform 5		58.00
Carriageway widening of Botley Road bridge		19.88
East West Rail Phase 2 double junction (70mph)	Option 2	12.27
East West Rail Phase 2 double track		6.57
	Project Total	**96.72**

One other point to note is there are a number of funding streams. The colours in the left column aim to dictate the dominate funder albeit contributions may be coming from others.

Key:

🟨	Funding primarily from Western Oxford Corridor route plan. There is also some renewals funding
🟨	Funding from East West Rail Phase 2

There are a large number of qualifications with these estimates and must be understood. These are contained in the estimate sheets held in Appendix A. Below is a list of important exclusions.

- Botley Road Bridge exclusions:
  - compensation payments to 3rd parties due to temporary road closure
- Down Island platform 5 exclusions:
  - services diversions
  - the costs for land purchase to accommodate the YHA and Nursery
  - FGW compensation costs due to displacements on existing platform 2
- East West Rail Phase double junction and double track exclusions:
  - alterations to existing signalling equipment and cables
  - culvert diversions

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7 High Level Business Case Appraisal

A Business Case appraisal has been prepared for this project. The appraisal takes into consideration the works associated with both phases 1 and 2.

A copy of the appraisal can be found in Appendix G, but based on increased passenger growth and 60% freight growth with longer trains at 775m produces a portfolio BCR (Benefit Cost Ratio) of 4.70.

This is a good BCR and helps promote this as a viable project.

8 Project Schedule

A P3e schedule has been produced and is in Appendix D. A summary of the key dates are tabled below.

Activity	Start Date	Completion Date
GRIP stage 3 Authority		20/12/13
GRIP stage 3 Option Selection and AiP	21/05/14	01/04/15
GRIP stage 4	02/04/15	01/06/15
GRIP stage 5 Detailed design	09/05/16	30/12/16
GRIP stage 6 Site works for (Phase 2)	17/01/17	30/11/18
Final commissioning		28/12/18

The gap in dates between the authority and GRIP stage 3 is down to procurement activities.

The gap in dates between GRIP stage 4 and GRIP stage 5 is down to authority for future stages and procurement activities.

All work will be completed in control period 5.

9 Project Risks

The project risk review was held on the 1st November 2013. The output can be found in Appendix B.

Separately to this, the design consultant Tata also produced a risk register. This also can be found in Appendix B.

Considering both registers, the top 5 commercial risks at this time include:

- Botley Road Bridge - Council Liaison. Botley Road Bridge is a key site within the project. The project is dependent on Local Authority input on the highway access, planning and other impacts. The risk is that these are delayed causing additional costs to project.
- December 2013 Authority not achieved. The risk here is if the Project is not sufficiently developed to go to Authority in December 2013 or that the information is rejected, additional costs for reprogramming or reworking could be incurred.

- Impact on Third Party property. Works will impact on Third party property in many areas where railway leaves the current envelope. The risk is that this impact is wider than anticipated at present resulting in more costs for land purchase or construction.
- Oxford Masterplan - Scope Change/Interface Risk. The Oxford Masterplan has works within and adjacent to this site. The risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.
- High Water Table - Excavation Risk. Oxford has a high water table. Risk is that this could affect excavation works associated with Botley Road bridge causing more cost.

In terms of the risks captured by the consultant, these are primarily design risks that need to be considered at the next stage. The majority of these are associated with work not understood or undertaken at this stage.

10 Assumptions

There are a number of assumptions that have been made in respect to the Phase 2 work. Some of these were considered in the risk review that took place in November 2013.

- It is assumed that Oxford Signal box, currently located to the rear of Platform 4, will have been abolished by the Oxford Area Re-signalling scheme by the time this project is implemented.
- It is assumed that the existing Youth Hostel and Turbo Teds (Co-op) nursery buildings located on Roger Dudman Way can be relocated and/or modified to suit the proposed track and platform layouts.
- There are various operational buildings located along the alignment of the proposed Platform 5 line. It is assumed that these can be relocated as necessary to accommodate the proposed layout.
- It is assumed that the existing West Midlands Sidings located to the south west of the station can be abandoned.
- It is assumed that the existing timber deck level crossing at Botley Road can be closed and recovered which is currently planned under OARS.
- Based upon the "Oxfordshire Residential Road Design Guide" it is considered that Roger Dudman Way would ideally be classified as a "Local Distributor" road with a speed limit of 30mph. This would require a 7300 carriageway with 2 x 2m footways. Due to the shortage of space, it is assumed the road could be re-classified as a "Minor Access Road" and the speed limit reduced to 20mph. For this type of road a 4.8m carriageway is permitted. It is also assumed that a single northern 900 footway (normally 1500) would be acceptable with just a 600 verge on the south side.
- Track access would be granted to undertake the work – especially the long disruptive possessions required.
- The East West Rail LNW project team will implement the double tracking between Bicester and Oxford North Junction
- Botley Road Bridge can be closed to allow works to complete (Highway and Rail)

- Property consents can be achieved (within Cost/Time allocation)

11 Capacity/Route Runner Modelling

A Capacity Analysis was completed by the Capability Analysis Team based in Milton Keynes in February 2013.

The work was based on the following services through the Oxford Corridor:

- IEP timetable, developed in the Great western Mail Line Capacity post 2019 report (May 2012), was used as a starting point for timings and services. Timings for Cross Country and Intercity trains were retained wherever possible.
- Chiltern Railways timetable for East West Rail services and Evergreen III services from Oxford to Marylebone were used and amended as required.
- Additional services to meet both freight and passenger forecast demands were included.
- The freight services are all timed as Class 66 + 1600T. A sensitivity test increasing the weight of freight services to 66 + 1800T was undertaken and the results gave an increase in timings between Didcot and Oxford by 45 seconds, but not enough to impact the findings of this study.

The capacity analysis confirms and supports the installation of the island platform in the preferred scenario B1 which can be read in the full report in Appendix G

12 Interface with other projects

The current plan is for the Phase 2 works to be completed after Phase 1. Refer to the Phase 1 report for the details.

Projects identified to have interfaces during the Phase 2 works include:

- Maintenance
- Electric Spine
- Route Renewals (All Assets)
- ETCS
- Oxford Station Master Plan
- East West Rail Phase 2
- Phase 2 enabling works to start during Oxford Corridor Phase 1

13 Impact on operators and maintenance practice

13.1 Operations

The island platform introduces a far more flexible layout which is less demanding than the current turnback arrangement. The new arrangement should also aid in times of perturbations.

Oxford North Junction phase 2 allows new journey opportunities between Reading/Oxford to Milton Keynes, Reading/Oxford to Bedford and an additional freight route to/from the WCML for Electric Spine (which in the southbound direction means container trains can use a flyover at Bletchley instead of crossing all four WCML tracks ‘on the flat’ at Nuneaton).

In respect to the platforms works during construction, passenger movements on the down platform will be disrupted due to the demolition and reconstruction of station buildings and facilities. Station staff and retail units will also be affected.

The western access to the platform will also be lost as a result of the works and access to the platform will be via the footbridge from the current platform 1 or via a new entrance.

All the work associated with the platform will need to be carefully managed especially relocating staff and facilities.

The rebuild of Botley Road bridge will also disrupt passenger during time of construction especially those using the footbridge from the station to the car park as this will also need to be replaced.

No disruption is planned on the Up side platforms.

The platform turnback will save shunt moves to/from the Down sidings, improving traincrew utilisation and allegedly saving 2 EMU train diagrams.

13.2 Maintenance

With the new island platform and 2 routes in the down direction, maintenance staff will benefit from the more flexible layout hence having the opportunity to have more possessions whilst trains are still running.

The maintenance depot on the south West of the station will need to be relocated as the new track alignment from the Down Main into the new island platform will take its alignment through this area.

14 Consents Strategy

The works proposed to create a double junction at Oxford North Junction would be highly likely to be permitted development as all the work is on Network Rail operational railway land”

“Work proposed to provide a new island platform at Oxford Station will be more complex for both planning and land acquisition reasons. These works will not be permitted development and will involve work on land that is currently not in Network Rail’s ownership nor have any rights over.

This project will therefore require a Transport and Works Act Order (TWAO) to implement this scheme. As part of the work to progress with a TWAO an Environmental Statement (ES) will be needed to accompany the application and therefore the appointment of Environmental consultants to start scoping work should be started soon. In addition it would be advisable to start stakeholder engagement with local interest groups, residents, rail users, Councillors etc to be co-ordinated through Government and Corporate Affairs.

Depending on how controversial the application is and how many objections are received to compulsory purchase (which could be mitigated by negotiation directly with land owners), planning powers and the impact on nearby residents etc this TWAO could be heard at a Public Inquiry.

As this is in Oxford and previous issues we have had in the city particularly when we proposed a southern bay platform and the Chiltern Railways East West Rail project the expectation is that this scheme will end up at a Public Inquiry"

More information about land boundaries

Network Rail does not own the land shown coloured grey marked DA0433/RT (which includes the bridge over the sheepwash channel). The red hatching which is shown on the land represents a route over which Network Rail has rights of way by the demarcation arrangements which were entered into with the BRB. Network Rail's rights of way at this location may be restricted. This will need to be investigated and confirmed at the next stage.

Arrangements in station area

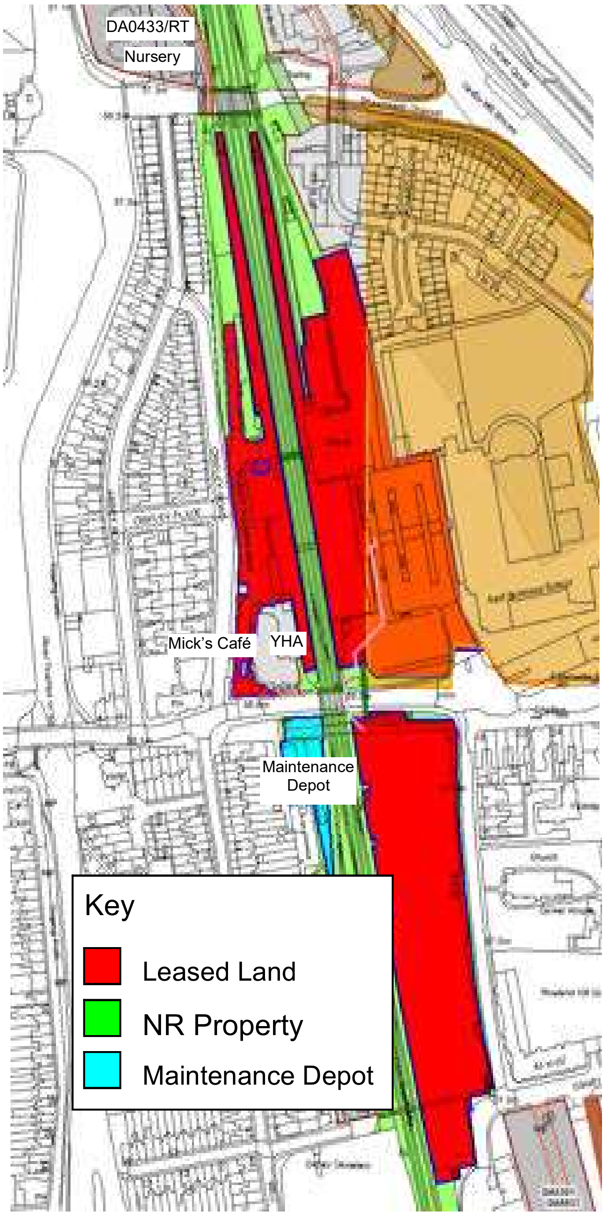
Land coloured edged blue and coloured pink (property ref: OXF03501 Appendix K).

This is an error on the GI Portal and that the arrangement referred to is a licence which was granted in respect of light and air etc to an adjoining property ('Mick's Café').

Land edged blue uncoloured. This land was included in the sale to the YHA and is not owned by Network Rail. (The YHA's ownership is shown edged and coloured red in HM Land Registry title plan ON223600 Appendix K).

Land coloured red edged blue. This is a maintenance depot.

The pink line represents an arrangement with Pembroke College for a cable and electricity pole.



In 1960, The British Transport Commission sold a small strip of land adjoining Roger Dudman Way to The Mayor Aldermen and Citizens of Oxford (Corporation), which may not be clear from the GI Portal. Appended a reference to the relevant HM Land Registry office copies and title plan (title no. ON6877 Appendix K).

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15 Environmental Appraisal

An environmental appraisal has been conducted for this phase of the project. This can be found in Appendix D.

There are a number of environmental risks and opportunities that have been identified as part of GRIP 2. An EIA (Environmental Impact Assessment) screening is required as soon as possible, not withstanding this, further environmental surveys are required in GRIP 3. The key concern areas are as follows:

- There are a number of town planning issues associated with: the demolition and relocation of the YHA and the nursery, the reconstruction of Botley Road bridge, re-routing of Rodger Dudman way.
- Noise is likely to increase during the first years of operation (prior to electrification) and construction impacts need to be taken into account during the design. A Noise Assessment will be required (part of EIA if required, standalone report if not).
- Most importantly, the work will affect local residents and past experience from other projects in the area suggests there is likely to be a number of protests.
- There are a number of conservation areas and SSSIs (Site of Special Scientific Interest) in the vicinity of the proposed development and the impact on these requires further development. There are also a number of historic landfill sites and contamination is identified as a potential risk area, particularly given the sensitive receptors and watercourses in the area.
- Flooding is a significant risk and a Flood Risk Assessment will be required, including surface water management (drainage proposals) and the impact on the local flood risk.
- The design will need to be resilient for future flooding and drainage requirements in line with current Standards and regulatory requirements,
- A number of consents will be required for the scheme including Flood defence Consents, Discharge consents, Screening for Habitat Regulations Assessment for the SSSIs.

In terms of the work, both the Oxford City and County Councils are in support of the proposals contain within this report. These have been shared as part of the Oxford Master Plan project.

Reconstruction of Botley Road bridge will be challenging, not only from a traffic management perspective, but due to the fact the base of the carriageway will be below the water table.

Going forward, it is advisable for the Network Rail Town Planner to start following through with the necessary consents as outline in section 14.

16 Contracting Strategy

The contract strategy going forward is to authorise GRIP Stage 3 and 4 December 2013 to take both Phase 1 and Phase 2 forward. The current thinking is to go Single Tender Award to Tata as they were the consultant used to date on all of the Oxford Corridor work. The Signalling Design Group (SDG) will be used to cover the signalling elements and this group has been involved for all the Oxford Corridor work to date.

In terms of the design and build, this is most likely to go out to competitive tender.

The above is likely to change as different initiatives are developed.

17 Concept Design Deliverables

Below is a list of engineering deliverables Captured in Appendix E and I.

Down Island Platform

Drawing	Drawing Number	Version	Appendix
Track GA	PWY2601 (Option1) PWY2602 (Option2)	P02 P02	E
Civils drawing	CIV0010 (Option 3) CIV0011 (Option 1) CIV0012 (Option 2)	P01 P02 P02	E
Bridges GAs/Drawings	CIV0031 (Sheepwash Option 1) CIV0035 (Cemetery Rd footbridge Option 1) CIV0036 (Cemetery Rd footbridge Option 2)	P02 P02 P02	E

Botley Road Bridge

Drawing	Drawing Number	Version	Appendix
Bridges GAs	CIV0021 CIV0022 CIV1020	P03 P03 P01	E
Highways GAs	INF0001 INF0002	P02 P02	E

EW Rail Double Junction

Drawing	Drawing Number	Version	Appendix
Double Junction @ 60mph	B90505-DRG-PWY2100	P02	E

Drawing	Drawing Number	Version	Appendix
Double Junction @ 70mph	B90505-DRG-PWY2110	P02	E

Signalling Sketches

Drawing	Drawing Number	Version	Appendix
Signalling	122151/GRIP2/1	1	E

Interdisciplinary Checks (IDCs)

Drawing	Drawing Number	Appendix
Island Platform	PEN0005	I
Botley Road Bridge	PEN0006	I

18 Conclusion and Recommendations

This phase of the project focuses primarily on work associated with a new down island platform, the reconstruction of Botley Road bridge and a double junction and double track associated with East West Phase 2.

Although the feasibility study articulates what can be achieved, all the options need to be explored further in the next GRIP stage.

In respect to the island platform, a platform footprint and track alignment were established. However, the study excluded work associated with the station buildings, a western entrance, relocating the YHA, nursery and maintenance depot, relocating of staff during construction and afterwards, consents, buried services, electrification etc. All this will need to be further investigated at GRIP Stage 3.

For the Island Platform Option 1, apart from a separate new span required for the new island platform track, the existing span on Botley Road bridge will need to be replaced to accommodate new track alignment. Option 2 avoids this. It therefore only makes sense to consider option 1 if the carriageway widening project was to progress.

In reference to Botley Road bridge, this will have its challenges to reconstruct whether for the 5th span or for carriageway widening or both. Traffic management, pedestrian access, the road being below the water table, main south entrance into Oxford station from the south are to name but a few.

The double junction at Oxford North Junction can be installed and commissioned providing a possession is made available especially at Christmas 2018. This is all on Network Rail land. The option 2 design is to be taken forward and it has been advised by the designer that 75mph is possible. This to be explored fully at the next stage.

What is becoming clear for works on the railway around the station area is the challenges from the public. This is expected to continue especially with the work being proposed in this phase of the project as it will affect a number of the residence during and after the commissioning of the station and bridge works.

This commission also does not take into account any work associated with the Oxford Masterplan. This is primarily due to undertaking this feasibility study in parallel with the Masterplan study. However, it is believed all the works described can integrate with the Oxford Masterplan proposals without difficulty.

The one important omission in this report is the validation of the estimate. The estimating manager was unable to validate the estimate against the ECAM (Enhancements Cost Adjustment Mechanism) process due to the different funding streams and with a number of these yet to be agreed.

19 Formal Acceptance by Client

Client:			
Comments:			
Acceptance:		Date:	

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Appendix A

(Estimates)

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Standard Template for Stage 1-2 Estimates prepared by Consultants

Enhancements Estimating

Oracle Project No.:	**122151**
Project Description:	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road Bridge)**
Estimate Stage:	**Grip 2**

Level of Confidence - +/- 40% (Stage 2)

Issue and Revision Record:

Rev.	Date	Consultant	Prepared by	Checked	Description
Rev 00	21-Aug-12	Franklin + Andrews	Melvyn Jones	Ian Smith	Based on Proposed Outline scope
Rev 01	31-Aug-12	Franklin + Andrews	Melvyn Jones		Following Comments from NR on 30/08/12
Rev 02	5-Feb-13	Franklin + Andrews	Melvyn Jones		Revised split of works at Oxford
Rev 03	5-Sep-13	Franklin + Andrews	Melvyn Jones		Updated scope at, Botley Bridge, YHA and Nursery
Rev 04	9-Sep-13	Franklin + Andrews	Melvyn Jones		Updated to 4Q2012 rates
Rev 05	16-Dec-13	Franklin + Andrews	Melvyn Jones	Jag Shoker	Updated to 4Q2013rates
Rev 06	14-Jan-14	Franklin + Andrews	Melvyn Jones	Jag Shoker	NR PM Cost Changed to 7%
Rev 08	26-Feb-14	Franklin + Andrews		Melvyn Jones	Grip 2 Estimate

Franklin + Andrews
35 Newhall Street
Birmingham B3 3PU

Estimate Document Contents

Estimate Stage: **Grip 2**
Oracle Project No.: **122151**
Project Description: **Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road Bridge)**

Assumptions

General / Drawings & Documents / Exclusions

General

G1 The estimate base date is 4Q 2013

G2 Escalation has been included within the Project AFC as the overall Oxford Corridor Project AFC is above £50m in value and the overall construction phase will be over two years in duration

G3 Escalation to the mid point of Construction is Dec 2017 which is equal to a 11.46% increase, This is based on the overall Oxford Integrated Programme which requires the crossovers to be operational by March 2016

G4 An uplift factor of 40% has been applied in consultation with the Estimating Manager for cost and scope uncertainty

G5 In the absence of a Schedule of Possessions an allowance has been included for Possession Management based on 1.5% of the Contractors base construction costs

G6 An allowance has been included for TOC & FOC Compensation based on 5% of the total Direct Costs plus Preliminaries and Testing and Commissioning

G7 Assumed that the majority of work will be carried out in possesions

Scope Of Work

S1 see attached Draft Scope

Drawings & Documents

The following documents have been used in the preparation of this estimate:

D1 Permanent Way, Proposed General Arrangement Oxford drawing ref B90505-DRG-PWY2601 at rev P02 and dated 11/10/13

D2 Proposed Additional Down Platform Face, General Arrangement ref B90505-DRG-CIV0011 at rev P02 and dated 11/10/13

Exclusions

E1 Excludes VAT

E2 Excludes 3rd party compensation costs

E3 Excludes planning and approval charges

E4 Land purchases

E5 Costs associated with Statutory Fees (e.g. HMRI, Local Authority, etc.) unless confirmed otherwise in the summary

E6 Costs associated with taxes and levies, including VAT

E7 Costs associated with licences and all associated costs and fees

E8 Costs associated with changes in legislation and any form of applicable standards

E9 Costs associated with changes in legislation, regulation and interpretation covering discriminatory, specific and general issues that may lead to design and cost changes

E10 Allowances for adverse ground conditions / provisions for ground stabilisation unless specifically identified

E11 Service diversions unless stated otherwise

E12 Excludes any costs associated with the Insurance Top Up Fund, the Network Rail Fee Fund or the Industry Risk Fund.

E13 Excludes spares

ESTIMATE SUMMARY REPORT

Estimate No.		**Revision**	**08**	**Estimate Stage**	**Grip 2**
Estimate Date	**26-Feb-14**	**Price 'Base date'**	**4 Q 2013**		
Anticipated Start Date	**T B C**	**Anticipated Finish Date**	**T B C**		
Project No.	**122151**				
Project Title / Location	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road Bridge)**				

WBS	Estimate Breakdown	Value	Escalation (Y/N)	%age of Point Estimate	Remarks
	Contractor's direct costs -				
10	Signalling	2,712,694	Y		
20	Electrification & Plant	460,856	Y		
30	Track	2,204,254	Y		
40	Telecoms	234,705	Y		
50	Operational Property	2,667,547	Y		
60	Structures	1,629,988	Y		
70	General Civils	10,227,218	Y		
80	Utilities	2,378,700	Y		
	Contractor's Base Construction Cost inc OH&P: Sub-Total A	22,515,960.95			
	Network Rail's "direct costs"				
tbc	NDS - Materials		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Fleet		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Engineering trains		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Tampers		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Possession / Isolation Management	337,739			Allow 1.5% of Signalling and track costs
	Sub - Total B	337,739			
	Total Base Construction Cost inc OH&P: Sub-Total C (A+B)	22,853,700		0.00%	
	Contractor's indirect costs				
tbc	Preliminaries	5,353,485	Y		
tbc	Design	2,343,767	Y		
tbc	Testing & Commissioning	763,519	Y		
tbc	Training - Drivers Training	150,000	Y		*Allowance*
tbc	Spares		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	Other	-	Y		
	Sub - Total D	8,610,771			
	Total Construction Cost E (C+D)	**31,464,471**			
	Network Rail's indirect & other costs				
tbc	Network Rail Project Management, (COWD)		N		
tbc	Network Rail Project Management, (forecasted remaining costs)	2,251,596	Y		*To be advised by NR*
tbc	Compensation charges (TOC & FOC), (costs from NDS)	1,431,648	Y		Calculated as 5% of construction costs
tbc	DCO Charges 0%		Y		
tbc	Land / Property Costs & compensation 0.00%		Y		Excluded
tbc	Escalation (see Note 1) % 11.46%	4,027,928	NA		*See Note 1*
tbc	Other (Legal costs)	2,250,000.00			
	Sub - Total F	9,961,173			
	Point Estimate - Sub - Total G (E+F)	**41,425,644**			
	Uplift for Risk and Contingency				
tbc	To Mean (see Note 3) £				*See Note 3*
	Project Budget (Point Estimate + Uplift to Mean)	41,425,644			***for Project Manager's reference***
tbc	QRA Value - at P50 (see Note 3) £				*Sponsor to advise if P50 or P80 value shall apply* *See Note 3*
tbc	QRA Value - at P80 - incremental on P50 value (see Note 3) £				*Sponsor to advise if P50 or P80 value shall apply* *See Note 3*
tbc	Adjustment for residual factors (see Note 2) % 40%	16,570,257			*Uplift on Point Estimate Value (excluding the Cost of Work Done)* *See Note 2*
	Project Anticipated Final Cost (AFC)	57,995,901			*Authorised AFC*
	Other Costs to the Customer				
tbc	Allowance for Escalation (see Note 1)				*See Note 1*
tbc	Allowance for Network Rail Fee Fund	-			*provided by Sponsor*
tbc	Allowance for Industry Risk Fund	-			*provided by Sponsor*
tbc	Allowance for Insurance Top-up				*provided by Sponsor*
	Cost to Customer	**57,995,901**			

APPROVAL & ENDORSEMENT

	Estimate Produced by :-	**Estimate Approved by (Network Rail) :-**	**Estimate Endorsed by (Network Rail) :-**
Name :-	Melvyn Jones		
Company :-	Franklin + Andrews		
Position :-	Lead Estimator		
Signed :-			
Date :-			

Estimate Stage: **Grip 2**
Oracle Project No.: **122,151**
Project Name: **Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley**

Calculation of Contractors and Network Rail's Indirect Costs

Asset	**Total Direct Costs**	**%**	**Preliminaries**	**%**	**Design**	**%**	**Test & Commission**	**%**	**Network Rail Management**	**%**	**Sponsor**
Signalling	2,712,694	35%	949,443	10%	271,269	15%	406,904	7%	189,889	3%	81,381
Electrification & Plant	460,856	35%	161,300	30%	138,257	13%	59,911	7%	32,260	3%	13,826
Track	2,204,254	25%	551,063	10%	220,425	7%	154,298	7%	154,298	3%	66,128
Telecoms	234,705	25%	58,676	10%	23,471	10%	23,471	7%	16,429	3%	7,041
Operational Property	2,667,547	25%	666,887	10%	266,755	0%	0	7%	186,728	3%	80,026
Structures	1,629,988	20%	325,998	10%	162,999	0%	0	7%	114,099	3%	48,900
General Civils	10,227,218	20%	2,045,444	10%	1,022,722	0%	0	7%	715,905	3%	306,817
Utilities	2,378,700	25%	594,675	10%	237,870	5%	118,935	7%	166,509	3%	71,361
			5,353,485		2,343,767		763,519		1,576,117		675,479

Total for TOC / FOC calculation (5% of Total Construction Cost)				
	22,515,961	5,353,485	763,519	
TOTAL	28,632,964	**Allowance for TOC / FOC compensation (%)**	**5%**	**1,431,648**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 2,712,693.72**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
10	**Signalling**				
	Work Item 1			£ -	£ -
	Install new 4 aspect signals complete with post, foundations, TSS and route indicators	2	nr	£ 104,455.09	£ 208,910.18
	New SSI LOC case complete with foundations	1	nr	£ 30,389.17	£ 30,389.17
				£ -	£ -
	Work Item 3			£ -	£ -
	HW Type Points motor	1	nr	£ 32,879.22	£ 32,879.22
				£ -	£ -
	Work Item 4			£ -	£ -
	Lift and slew all Power, Signalling and Telecomms cables on to temporary cable bridge whilst Botley Road Bridge is extended and reinstall cables on new bridge upon completion	1	item	£ 49,318.83	£ 49,318.83
				£ -	£ -
	Work Item 16			£ -	£ -
	HW Type Points motor	1	nr	£ 32,879.22	£ 32,879.22
				£ -	£ -
	Work Item 16			£ -	£ -
	Install new 4 aspect signals complete with post, foundations, TSS and route indicators	2	nr	£ 104,455.09	£ 208,910.18
	New SSI LOC case complete with foundations	2	nr	£ 30,389.17	£ 60,778.34
				£ -	£ -
	Work Item 17			£ -	£ -
	Lift and slew all Power, Signalling and Telecomms cables on to temporary cable bridge whilst Sheepwash Bridge is extended and reinstall cables on bridge upon completion	1	item	£ 49,318.83	£ 49,318.83
				£ -	£ -
	Work Item 19			£ -	£ -
	Install new 4 aspect signals complete with post, foundations, TSS and route indicators	2	nr	£ 104,455.09	£ 208,910.18
	New SSI LOC case complete with foundations	1	nr	£ 30,389.17	£ 30,389.17
	Recover existing signals controlling crossover	2	nr	£ 7,425.22	£ 14,850.44
	HW Type Points motor	2	nr	£ 32,879.22	£ 65,758.44
				£ -	£ -
	Work Item 20			£ -	£ -
	Install new 4 aspect signals complete with post, foundations, TSS and route indicators	3	nr	£ 104,455.09	£ 313,365.27
	New SSI LOC case complete with foundations	3	nr	£ 30,389.17	£ 91,167.51
	HW Type Points motor	3	nr	£ 32,879.22	£ 98,637.66
				£ -	£ -
	Page Total				**£ 1,496,462.64**

Ref	Description	Quantity	Unit	Rate	Cost
	Signalling (Contd)			£ -	£ -
	Work Item 21			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
				£ -	£ -
	Interlocking Systems - General			£ -	£ -
	Panel modification - **Display Systems alterations**	1	nr	£ 164,396.10	£ 164,396.10
	Interlocking modification - **allowance SSI**	1	nr	£ 164,396.10	£ 164,396.10
	Train describer data modifications - **Allowance**	1	nr	£ 164,396.10	£ 164,396.10
	TDM Data changes	1	nr	£ 164,396.10	£ 164,396.10
	Stageworks - General	4	nr	£ 54,798.70	£ 219,194.80
				£ -	£ -
				£ -	£ -
	Signage - General			£ -	£ -
	Signalling signage - includes removal of old and replacement with new signal numbers	1	item	£ 10,959.74	£ 10,959.74
				£ -	£ -
				£ -	£ -
	Reheading existing 3 aspect signals with 4 aspect signals			£ -	£ -
	Recover - 3 Aspect LED Signal head only	4	nr	£ 2,407.85	£ 9,631.40
	Signal Head 4 Aspect LED Type	11	nr	£ 9,109.74	£ 100,207.14
	New Tail cables	2750	m	£ 19.73	£ 54,257.50
				£ -	£ -
	Work Item 11			£ -	£ -
	Allow for lifting and shifting the remaining cables remaining in Platform 2 to allow the construction of the new platform nr 3	1	item	£ 164,396.10	£ 164,396.10
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 1,216,231.08**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 460,855.81**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
20	**Electrification and Plant**				
				£ -	£ -
	Work Item 3			£ -	£ -
	Point Heating, including strip heaters and control cabinets	1	item	£ 6,575.84	£ 6,575.84
	Upgrade existing DNO supply to service new turnout	1	nr	£ 10,959.74	£ 10,959.74
				£ -	£ -
	Work Item 5			£ -	£ -
	~~Slew OLE wires prior to demolition of old Botley Road Bridge - Allow 2 number OLE Gangs for 1 shift~~	0	item	£ 16,439.61	£ -
	~~Reinstall OLE wire upon completion of new Botley Road Bridge - Allow 2 number OLE Gangs for 1 shift~~	0	item	£ 16,439.61	£ -
				£ -	£ -
	~~Work Item 12a~~			£ -	£ -
	~~New passanger lift, to convey passenger from Botley Road to new platform 3~~	0	nr	£ 175,355.84	£ -
	~~New DNO power suppply to new lift~~	0	nr	£ 109,597.40	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	Point Heating, including strip heaters and control cabinets	1	item	£ 6,575.84	£ 6,575.84
	Upgrade existing DNO supply to service new turnout	1	nr	£ 10,959.74	£ 10,959.74
				£ -	£ -
	Work Item 19			£ -	£ -
	Point Heating, including strip heaters and control cabinets	2	item	£ 6,575.84	£ 13,151.68
	Upgrade existing DNO supply to service new crossover	1	nr	£ 10,959.74	£ 10,959.74
				£ -	£ -
	Work Item 20			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover & Turnouts~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover & Turnouts~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 59,182.58**

Ref	Description	Quantity	Unit	Rate	Cost
	Electrification and Plant (Contd)				
				£ -	£ -
	Work Item 26			£ -	£ -
	~~8m medium duty lighting column, installation on new footbridge~~	0	nr	£ 2,191.95	£ -
	~~Allow for a connection to new power supply (DNO)~~	0	nr	£ 27,399.35	£ -
	~~Supply and install new feeder pillar and all necessary connections~~	0	nr	£ 13,699.68	£ -
				£ -	£ -
	Work Item 27			£ -	£ -
	8m medium duty lighting column, installation on new footbridge	8	nr	£ 2,191.95	£ 17,535.60
	Allow for a connection to existing power supply (DNO)	1	nr	£ 10,959.74	£ 10,959.74
	Supply and install new feeder pillar and all necessary connections	1	nr	£ 13,699.68	£ 13,699.68
				£ -	£ -
	Work Item 28			£ -	£ -
	New DNO power cubicle for supply to station	1	nr	£ 109,597.40	£ 109,597.40
	Remove existing DNO power cubicle for station as it is located in the new footprint of the new works	1	nr	£ 8,219.81	£ 8,219.81
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 45			£ -	£ -
	Electrify new track to platform Nr 5 face, including over turnouts	700	m	£ 345.23	£ 241,661.00
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 401,673.23**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 2,204,253.51**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
30	**Track**				
				£ -	£ -
	Work Item 2			£ -	£ -
	Recover existing Turnouts in old sidings	2	nr	£ 16,439.61	£ 32,879.22
	Recover redundant track in sidings	220	m	£ 60.28	£ 13,261.60
	Excavate and dispose of contaminated spoil	550	m3	£ 145.22	£ 79,871.00
				£ -	£ -
	Work Item 3			£ -	£ -
	Install new 40 mph turnout (EV)	1	nr	£ 356,191.56	£ 356,191.56
	Recover redundant track for sidings	50	m	£ 60.28	£ 3,014.00
	Slew existing track approaching new turnout	200	m	£ 82.20	£ 16,440.00
				£ -	£ -
	Work Item 5			£ -	£ -
	~~Excavate and dispose of contaminated spoil~~	0	m	£ 60.28	£ -
	~~Reinstall track upon completion of new bridge - assume reuse of existing rail and sleepers but new ballast~~	0	m	£ 482.23	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new down passenger relief to Platform 5 **- part Green zone working**	300	m	£ 657.58	£ 197,274.00
	Lay new track bed using type 1 material - allow 360m by 5m wide by 0.5m deep	900	m3	£ 72.33	£ 65,097.00
	Install new 40 mph turnout (EV)	1	nr	£ 356,191.56	£ 356,191.56
	Install new track drains	360	m	£ 131.52	£ 47,347.20
	Install new catchpits at 30m centres	12	nr	£ 767.18	£ 9,206.16
	Install new outfall	1	nr	£ 5,479.87	£ 5,479.87
				£ -	£ -
	~~Work Item 17~~			£ -	£ -
	~~Take up the 4 tracks running over Sheepwash bridge - allow 50 m of track each time~~	0	m	£ 60.28	£ -
	~~Reinstall track upon completion of new bridge - assume reuse of existing rail and sleepers but new ballast~~	0	m	£ 482.23	£ -
	~~Take up exisring turnouts at entrance to sidings~~	0	nr	£ 16,439.61	£ -
	~~Reinstall existing turnouts upon completion on new bridge~~	0	nr	£ 27,399.35	£ -
				£ -	£ -
	Work Item 18			£ -	£ -
	Slew existing track approaching new bridge - New track layout, allow 250m each side for 5 tracks	2500	m	£ 82.20	£ 205,500.00
	Page Total				**£ 1,387,753.17**

Ref	Description	Quantity	Unit	Rate	Cost
	Track (Contd)				
				£ -	£ -
	Work Item 19			£ -	£ -
	Install new 40 mph Crossover (EV) - 247a/b points	1	nr	£ 712,383.12	£ 712,383.12
	recover existing crossover	1	nr	£ 32,879.22	£ 32,879.22
	Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new rail	100	m	£ 712.38	£ 71,238.00
				£ -	£ -
	Work Item 20			£ -	£ -
	-	0	nr	£ 821,980.52	£ -
	~~Install new 50 mph turnout (FV)~~	0	nr	£ 410,990.26	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~Install new 50 mph Crossover (FV)~~	0	nr	£ 821,980.52	£ -
	~~Install new 50 mph turnout (FV)~~	0	nr	£ 410,990.26	£ -
	~~Install new 25 mph Crossover (CV)~~	0	nr	£ 520,587.66	£ -
				£ -	£ -
	Work Item 22			£ -	£ -
	~~Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new rail~~	0	m	£ 712.38	£ -
				£ -	£ -
	Work Item 23			£ -	£ -
	~~Slew existing track on bicester line~~	0	m	£ 82.20	£ -
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Install new 75 mph Crossover (GV)~~	0	nr	£ 986,376.62	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 816,500.34**

Oracle Project No.	**122151**		
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**	**TOTAL**	**£ 234,705.23**

Ref	Description	Quantity	Unit	Rate	Cost
40	**Telecoms**				
				£ -	£ -
	Work Item 1			£ -	£ -
	SPT and Drivers Walkway	2	nr	£ 5,479.87	£ 10,959.74
	New Telecomms LOC case including foundations	1	nr	£ 16,439.61	£ 16,439.61
	Dial up for points heating	2	nr	£ 2,191.95	£ 4,383.90
				£ -	£ -
	Work Item 3			£ -	£ -
	SPT and Drivers Walkway	1	nr	£ 5,479.87	£ 5,479.87
	New Telecomms LOC case including foundations	1	nr	£ 16,439.61	£ 16,439.61
	Dial up for points heating	1	nr	£ 2,191.95	£ 2,191.95
				£ -	£ -
	Work Item 16			£ -	£ -
	SPT and Drivers Walkway	2	nr	£ 5,479.87	£ 10,959.74
	New Telecomms LOC case including foundations	1	nr	£ 16,439.61	£ 16,439.61
	New C/10 troughing route	360	m	£ 61.37	£ 22,094.84
	Dial up for points heating	2	nr	£ 2,191.95	£ 4,383.90
				£ -	£ -
	Work Item 19			£ -	£ -
	SPT and Drivers Walkway	2	nr	£ 5,479.87	£ 10,959.74
	New Telecomms LOC case including foundations	1	nr	£ 16,439.61	£ 16,439.61
	Dial up for points heating	2	nr	£ 2,191.95	£ 4,383.90
				£ -	£ -
	Work Item 20			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 23			£ -	£ -
	~~Lift and slew existing cables and cable trough to allow new track to be installed~~	0	m	£ 56.99	£ -
	Page Total				**£ 141,556.01**

Ref	Description	Quantity	Unit	Rate	Cost
	Telecoms (Contd)				
				£ -	£ -
	Work Item 33			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Telecoms - General			£ -	£ -
	Delid and relid existing cable troughs	2500	m	£ 15.34	£ 38,350.00
	Upgrading existing concentrator - **allowance**	1	nr	£ 32,879.22	£ 32,879.22
	Supply and lay new telecomms cable - assume not fibre optics	2,000	m	£ 10.96	£ 21,920.00
				£ -	£ -
				£ -	£ -
				£ -	£ -
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				£ -	£ -
				£ -	£ -
	Page Total				**£ 93,149.22**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 2,667,546.94**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
50	**Operational Property**				
				£ -	£ -
	Work Item 10			£ -	£ -
	Demolish existing building backing on to Platform 2 to make way for new Platform	2685	m3	£ 38.36	£ 102,996.60
				£ -	£ -
	~~Work Item 12a~~			£ -	£ -
	~~Allowance for new entrance to new Platform 3 , in the vacinity of old YHA~~	0	item	£ 547,987.01	£ -
	~~Installation of new half height Ticket barrier and gates to new entrance to Platform 3~~	0	item	£ 49,318.83	£ -
	~~Installation of new ticket machines and signs and lights to new entrance to Platform 3~~	0	item	£ 43,838.96	£ -
				£ -	£ -
	Work Item 12b			£ -	£ -
	Alterations to toilet block (Male, Female & Disabled) on new Island Platform - allow 5 x 10m	50	m2	£ 1,095.97	£ 54,798.50
	Alterations to existing waiting room on new Island Platform - allow 5 x 10m	50	m2	£ 1,095.97	£ 54,798.50
	Alterations to existing buildings to allow the construction of a small shop - allow 5 x 10m	50	m2	£ 1,095.97	£ 54,798.50
	Alterations to existing buildings to allow the construction of a Station supervisors accommodation - allow 5 x 10m	50	m2	£ 1,095.97	£ 54,798.50
				£ -	£ -
	Work Item 14			£ -	£ -
	Construct new Platform 5, complete with tactiles, allow 300m long by 3m wide	900	m2	£ 1,369.97	£ 1,232,973.00
	Construct new Platform 5 Canopy, allow 75% cover on new platform (300m long by 3m wide)	675	m2	£ 1,369.97	£ 924,729.75
	Canopy lighting including lights and conduit	675	m2	£ 49.32	£ 33,291.00
	6m lighting columns including 1000mm double projection arms and 150mm luminaries, include all connections to lighting cable	4	nr	£ 2,411.14	£ 9,644.56
	PA's	21	nr	£ 821.98	£ 17,261.58
	CIS	2	nr	£ 7,705.79	£ 15,411.58
	CCTV	6	nr	£ 3,835.91	£ 23,015.46
	Help point	1	nr	£ 6,831.21	£ 6,831.21
				£ -	£ -
	Work Item 15			£ -	£ -
	Extend Platform 4 by 20m to allow 10 car IEP trains to stop	60	m2	£ 1,369.97	£ 82,198.20
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 2,667,546.94**

Oracle Project No.	**122151**		
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**	**TOTAL**	**£ 1,629,987.87**

Ref	Description	Quantity	Unit	Rate	Cost
60	**Structures**				
				£ -	£ -
	Work Item 5			£ -	£ -
	~~Demolish existing Botley road bridge~~	0	item	£ 54,798.70	£ -
	Install new precast concrete extension to Under Bridge at Botley road - assume 9 x 6	54	m2	£ 5,753.86	£ 310,708.44
	~~Excavate an dispose in embankment for new road lane under bridge assume 30 x 14 x 7m~~	0	m3	£ 178.10	£ -
	~~Excavate an dispose in embankment for new road lane assume 55 x 14 x 7m~~	0	m3	£ 178.10	£ -
	Allow for a 1000t crane for 2 shifts to remove and install bridge	2	nr	£ 16,439.61	£ 32,879.22
	Allowance for Additional payments to labour for potential working over Christmas - allow 50 men for 2 shifts	100	nr	£ 328.79	£ 32,879.00
	Allow for a temporary road closure; signed diversionary route and or traffic lights whilst bridge deck is being replaced	1	item	£ 54,798.70	£ 54,798.70
	Remove existing emergency access point crossing track adjacent to Botley road and make good access points	1	item	£ 27,399.35	£ 27,399.35
				£ -	£ -
	~~Work Item 17~~			£ -	£ -
	~~Take up existing top deck only of Sheepwash bridge~~	0	item	£ 54,798.70	£ -
	~~Install new top deck to Sheep wash bridge using precasr concrete beams - assume area of deck is 15m by 40m~~	0	m2	£ 2,465.94	£ -
	~~Allow for a temporary river closure whilst bridge deck is being replaced~~	0	item	£ 10,959.74	£ -
	~~Allow for a 1000t crane for 8 shifts to remove and install bridge~~	0	nr	£ 16,439.61	£ -
	~~Allowance for Additional payments to labour for potential working over Christmas - allow 50 men for 6 shifts~~	0	nr	£ 328.79	£ -
				£ -	£ -
	Work Item 44			£ -	£ -
	Demolish existing Footbridge at Cementry Sidings	1	item	£ 27,399.35	£ 27,399.35
	Install new DDA Footbridge and ramp overall length 90m by 2.2 m wide	125	m2	£ 1,917.95	£ 239,743.75
	Blast cleaning and Painting of bridge, ramp and stairs	700	m²	£ 82.20	£ 57,540.00
	Allowance for Foundations/piling/embankment stabilisation works	1	item	£ 82,198.05	£ 82,198.05
				£ -	£ -
	Work Item 27			£ -	£ -
	~~Demolish existing Footbridge at on Botley road linking the carpark to the station~~	0	item	£ 21,919.48	£ -
	~~Install new DDA Footbridge and ramp overall length 24m by 4m wide, on Botley road linking the carpark to the station~~	0	m2	£ 1,917.95	£ -
	~~Blast cleaning and Painting of bridge, ramp and stairs~~	0	m²	£ 82.20	£ -
	~~Allowance for Foundations/piling/embankment stabilisation works~~	0	item	£ 109,597.40	£ -
				£ -	£ -
	Work Item 35			£ -	£ -
	Demolish existing bridge on Roger Dudman Way which crosses the Sheepwash River	1	item	£ 27,399.35	£ 27,399.35
	Install new DDA Footbridge and ramp overall length 15m by 9 m wide	135	m2	£ 3,835.91	£ 517,847.85
	Allowance for Foundations/piling/embankment stabilisation works	1	item	£ 219,194.81	£ 219,194.81
	Page Total				**£ 1,629,987.87**

Ref	Description	Quantity	Unit	Rate	Cost

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road Bridge)**			**TOTAL**	**£ 10,227,217.87**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
70	**General Civils**				
				£ -	£ -
	Work Item 6			£ -	£ -
	Allow for lowering the level of approach to Botley Rd Bridge, allow 100m one side by 9m by v depth (0.45 + 0.15)m	540	m3	£ 178.10	£ 96,174.00
	Allow for new Wearing course and binder course on both approaches to new bridge Allow 100m lg by 9m wide	900	m2	£ 32.88	£ 29,592.00
	Allow for new Road construction (Type 1, road base, binder and wearing course) allow 100m x 9m	900	m2	£ 109.60	£ 98,640.00
	Allow for new road markings - allow for a gang for 1 shift	1	nr	£ 1,369.97	£ 1,369.97
	Dispose off site existing road material (non Hazardous)	540	m3	£ 164.40	£ 88,776.00
				£ -	£ -
	Work Item 8			£ -	£ -
	Construct new Nursery - assume floor area of 350m2 over 1 floors (excludes cost of Land)	350	m2	£ 1,808.36	£ 632,926.00
	Fit out new nursery - allow for 100 children at £320 /child	100	nr	£ 350.71	£ 35,071.00
	Construct new external play area - assume 50 x 50 (location to be agreed	2500	m2	£ 109.60	£ 274,000.00
				£ -	£ -
	Work Item 9			£ -	£ -
	Demolish all of existing YHA on corner of Botley Road (4 floors) -	1	item	£ 219,194.81	£ 219,194.81
	Construct a new YHA in a location to be agreed approx floor plan 40 X 20	3200	m2	£ 2,397.44	£ 7,671,808.00
	Fit out of YHA - Allowance	1	item	£ 109,597.40	£ 109,597.40
	Allowance for building up Roger Dudman way to construct new hard standing 110m by 20m by av 4m deep	8800	m3	£ 49.32	£ 434,016.00
	Allow for new Wearing course and binder course on new road approach - Allow 110m lg by 20m wide	2200	m2	£ 32.88	£ 72,336.00
	Allowance for road closure during demolition, including all necessary hoarding	1	item	£ 27,399.35	£ 27,399.35
	Demolish existing Nursery - assume floor area 30 x 12 over 1 floor	1080	m3	£ 21.92	£ 23,673.60
	Demolish existing Stone masonary structures between Roger Dudman way and Cripley Rd - 2 number	1	sum	£ 10,959.74	£ 10,959.74
				£ -	
	Construct new slip road from Cripley Road to Roger Dudman Way - Approx area on plan 55m x 8m,			£ -	
	Excavate and dispose to form slip road (55 x 8 m x 3m)	1320	m3	£ 178.10	£ 235,092.00
	Allow for new Road construction (Type 1, road base, binder and wearing course) allow 55m x 8m	440	m2	£ 109.60	£ 48,224.00
				£ -	
	~~Work Item 12a~~			£ -	£ -
	~~New Pedestrian Drop off point for new Platform 3 - all use of paving sets~~	0	m2	£ 109.60	£ -
	~~Allowance for Kerbs to new drop off area~~	0	m	£ 27.40	£ -
	~~Allow for new road markings - allow for a gang for 1 shift~~	0	nr	£ 1,369.97	£ -
	~~Dispose off site existing road material (non Hazardous)~~	0	m3	£ 164.40	£ -
				£ -	£ -
	Work Item 13			£ -	£ -
	~~Stabilisation of embankment supporting track at corner of Botley Road/Roger Dudman Way - allow 60m x 4m~~	0	m2	£ 1,090.49	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	Noise barrier to protect residents in Roger Dudman Way - Allow 300m long by 2.4m high	720	m2	£ 164.40	£ 118,368.00
	Page Total				£ 10,227,217.87

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 2,378,700.00**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
80	**Utilities**				
				£ -	£ -
	Work Item 6			£ -	£ -
	Allow for the diverting 10 inch gas mains into new service trench	1	nr	£ 150,000.00	£ 150,000.00
	Allow for diverting existing Cable & Wireless Telecoms Cable into new service trench	1	nr	£ 75,000.00	£ 75,000.00
	Allow for diverting existing Water main into new service trench	1	nr	£ 50,000.00	£ 50,000.00
	Allow for diverting 4 number existing BT Cable into new service trench	1	nr	£ 45,000.00	£ 45,000.00
	Allow for diverting existing High Voltage Electrical Cable into new service trench	1	nr	£ 100,000.00	£ 100,000.00
	Allow for diverting existing Low Voltage Electrical Cable into new service trench	1	nr	£ 75,000.00	£ 75,000.00
	Allow for diverting existing NTL Cable into new service trench	1	nr	£ 45,000.00	£ 45,000.00
	Allow for installation of a new drain run along Botley Rd (allow 240m)	240	m	£ 200.00	£ 48,000.00
	Builders work associated with service diversions	15%		£ 438,000.00	£ 65,700.00
	Work Item 35			£ -	£ -
	Allow for diverting all services adjacent to the Roger Dudman Bridge as it crosses the Sheepwash River	1	item	£ 1,000,000.00	£ 1,000,000.00
				£ -	£ -
	General Utilities divesions			£ -	£ -
	Allowance for costs for temporary diverting services prior to the demolition of the bridges	1	item	£ 500,000.00	£ 500,000.00
				£ -	£ -
	Builders work associated with service diversions	15%		£ 1,500,000.00	£ 225,000.00
				£ -	£ -
				£ -	£ -
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				£ -	£ -
				£ -	£ -
	Page Total				**£ 2,378,700.00**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**				**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Other Contractors Indirect Costs				
	Other Costs *(The Consultant shall enter details)*			£ -	£ -
				£ -	£ -
				£ -	£ -
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			To Estimate Summary R		£ -

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - New Passenger Loop to Platform 5 plus various bridge replacements (excl widened Botley Road**			**TOTAL**	**£ 2,250,000.00**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Network Rail Direct Costs				
	NDS - Materials			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	NDS - Fleet				
	- Engineering trains			£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	-Tampers			£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	Page Total				**£ -**

Ref	Description	Quantity	Unit	Rate	Cost
	NDS Materials & Fleet (Tampers, etc.) costs generally within rates at GRIP 0-2			£ -	£ -
	NDS - Possession / Isolation management				
				£ -	£ -
	Possession Management			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	OLE Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	DC Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
		To Estimate Summary Report £			**£ -**
	Other (State)		sum	£ -	£ -
	Legal cost associated with Sheepwash Bridge and the Nursery	1	sum	£ 1,000,000.00	£ 1,000,000.00
	Legal costs associated with the YHA and RogerDudman way	1	sum	£ 1,000,000.00	£ 1,000,000.00
	Legal costs associated with the Bottley Road temporary closure	1	sum	£ 250,000.00	£ 250,000.00
		To Estimate Summary Report £			£ 2,250,000.00
	Page Total				**£ 2,250,000.00**

Oxford Corridor Option B1
(Renamed Option 2)

Draft Scope

This is the proposed scope of work based on sketch called Option B1 found in the Draft PRS issue 2 dated 01/08/12.
As discussed between R McCulloch & M Jones on 08/08/12 in Swindon.
Further amended on 03/19/13 in Swindon following Mtg R McCulloch / M Scrogings/ Ben Stevens / Penny Martin / M Jones

1 Modify the signals (London End) to include additional routes and revised junction signalling
2 Recover the old (Cemetery sidings)
3 Install1 new turnout ~~and 1 new crossover~~ on the London side of platform 2, at minimum approach speed of 40mph ideally faster to new through platform including slewing and recanting existing track and any new signals.
4 Lift and slew cable troughs and cables for the removal of Botley Road Bridge and subsequent reinstatement
5 Take up existing track for the removal of the existing "Botley Road Bridge (UB)". Widen existing footprint of bridge to take up to 3, or option for 4, lanes of road traffic to include footpath and cycleway one side. Install new wider under-bridge and replace track. Note at this stage that the OLE wires (to 40mph contact-wire only system) will be in place so the will have to be slewed out of the way.

Note that the road profile is likely to render deck-transporter options not possible and craned-in beam construction may be necessary.
6 Re-grade and widen as necessary Botley Road to tie in with the Option F of the report prepared by ARUP 2005. . Note this will entail many service diversions
7 ~~Construct new Youth Hostel with a same floor area as existing on a site/location to be agreed with Oxford CC. (Compensation and land costs to be excluded from estimate)~~
8 Construct new Nursery building ('Turbo Teds') with a same floor area as existing on a site to be agreed. (Now included) (Assume nil costs for compensation and land).
9 Demolish ~~existing~~ part of Youth Hostel Association building and 'Turbo Teds' nursery on the corner of Botley road / Roger Dudman Way.
Extend YHA along Rodger Dudman Way to compensate part of building removed (assume a steel frame building)
10 Demolish part of the Platform 2 Station Buildings to make way for new face of new through Platform.
11 No allowance made for the signalling costs of closure of Oxford PSB currently located on Platform 2 (will be closed by OARS)
12 Estimate to include station works on downside so: -
  ~~a. Estimate to include for new station access for pedestrians from Roger Dudman Way/Cripley Road to the new Island Platform (Platform 2/3) via area of land vacated by YHA.~~
  b. New staion buildings/alterations on downside new island platform
  c. Assume however that no work is required to the existing footbridge and Passenger lifts linking the existing platforms 1 to 2 (this will be included in Masterplan works, nor any works to buildings on the Up side)
13 Allowance to be made for stabilising the new embankment holding the new through platform track in vicinity of exsiting YHA
14 Construct new through Platform with a length of up to 300m to allow 10-car IEP trains to stop.
15 Extend Platform 2 as required to allow 10-car IEP trains to stop and turnback.
16 Construct new through platform track total length of 300m - To include for the OHLE associated with this new track
17 Take up existing track over extent of Sheep-wash River (@ 63m 48ch) to allow for whole deck of bridge to be re-decked. Then replace track in new alignment to allow extra space on west side
18 Slew existing track approaching in and leaving Sheepwash bridge to a new alignment each over say a ~500m distance.
19 Install new crossover 247A/B and remove existing
20 Install new Crossover and turnout at the new approach to new track/line to Biscester. All at 50mph (Now included)
21 Install new 50mph double junction to allow traffic to move from the down main to the existing track to Bicester. (Now included) Leave in situ down loop to down main 25mph crossover. Include Bicester 50 mph crossover to facilitate bi- move to down side from Bicester (Now Included)
22 Install new track from Oxford North Jn to Woodstock Road Jcn. Total length 1000m (Now Included)
23 ~~Realign/slew existing track from Oxford North Jn to Wolvercote tunnel north portal . Total length ~??m~~
Take existing steel sleeper track and renew with new rail and concrete sleepers Total length 1000m (Now Included)
24 ~~Tracks in item 23 & 24 to be Bi-Di~~
25 ~~Re-house bats currently nesting in Wolvercote tunnel under the direction of Natural England (!)~~
26 ~~Allow for the complete replacement of Aristotle Lane Footbridge to WS Atkins new design~~
27 Allow for the installation of a new footbridge crossing Botley Road from the existing car park to the station entrance due to the widening of Botley Road
28 Install/relocate DNO cubicle/small substation due to widening of Botley Road
29 All other work proposed in Oxford Corridor Up Relief – Option A is identical in this scheme
30 All work proposed in Oxford Corridor Bi Di - Option A is identical in this scheme
31 All work proposed in Oxford Corridor Down Passenger Loop – Option A is identical in this scheme
32 The work to for a new South Bay and new transfer deck proposed on Option A is no longer required in this scheme.
33 ~~The work associated with Bay Platform approach & ladder – Option A is no longer required with the exception of the 1 crossover which needs to be replaced and the final turnout as detailed on Tata Drwg B80080-DRG-PWY0002 ref PO1 received July 2012.~~
34 Exclude the cost of compensation payments/ Compulsory Purchase Orders to any displaced businesses or allotment holders
35 Allow for the replacement of the existing Roger Dudman Way road bridge where it crosses the Sheepwash river. Also all the services crossing the river will need to be diverted
36 Replace the "Oxford Northern Ladder" Points 245A/B, 251A/B, 255A/B, 260A - To allow for this work to be carried out under OHLE Wires
37 Allow for DCO (Development Consent Order) associated with work at the YHA
38 Allow for closing part of Rodger Dudman Way and creating a new YHA carpark/entrance
39 Exclude all costs associated with renewing the Up and Down Sidings
40 Exclude the cost associated with the the new platform extension for the "Ever Green Trains" at Oxford Station
41 Installation of 2 new 4 aspect signals at 65.5 mile point on the Up relief and up Main as safety measures
42 Include an allowance of £1,000,000 for Barristers / Solicitors /lawyers fees associated with Sheepwash Bridge utilities disconnection and Work to the nursery
43 Include an allowance of £1,000,000 for Barristers /Solicitors /lawyers fees associated with YHA partial rebuild /Roger Dudman Way / Cripley road
44 Cementry Sidings Footbridge Replace deck
45 Electrify new track to new Island Platform no. 5

Standard Template for Stage 1-2 Estimates prepared by Consultants

Enhancements Estimating

Oracle Project No.: **122151**

Project Description: **Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**

Estimate Stage: **Grip 2**

Level of Confidence - +/- 40% (Stage 2)

Issue and Revision Record:

Rev.	Date	Consultant	Prepared by	Checked	Description
Rev 00	17-Dec-13	Franklin + Andrews	Melvyn Jones	Jag Shoker	Based on Proposed Outline scope at 4Q2013 rates
Rev 01	14-Jan-14	Franklin + Andrews	Melvyn Jones	Jag Shoker	NR PM Cost Changed to 7%
Rev 02					
Rev 03	26-Feb-14	Franklin + Andrews		Melvyn Jones	Grip 2 Estimate

Franklin + Andrews
35 Newhall Street
Birmingham B3 3PU

Estimate Document Contents

Estimate Stage:	**Grip 2**
Oracle Project No.:	**122151**
Project Description:	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**

Assumptions

General / Drawings & Documents / Exclusions

General

G1 The estimate base date is 4Q 2013

G2 Escalation has been included within the Project AFC as the overall Oxford Corridor Project AFC is above £50m in value and the overall construction phase will be over two years in duration

G3 Escalation to the mid point of Construction is Dec 2017 which is equal to a 11.46% increase, This is based on the overall Oxford Integrated Programme which requires the crossovers to be operational by March 2016

G4 An uplift factor of 40% has been applied in consultation with the Estimating Manager for cost and scope uncertainty

G5 In the absence of a Schedule of Possessions an allowance has been included for Possession Management based on 0.5% of the Contractors base construction costs

G6 An allowance has been included for TOC & FOC Compensation based on 5% of the total Direct Costs plus Preliminaries and Testing and Commissioning

G7 Assumed that the majority of work will be carried out in possesions

Scope Of Work

S1 see attached Draft Scope

Drawings & Documents

The following documents have been used in the preparation of this estimate:

D1 Permanent Way, Proposed General Arrangement Oxford drawing ref B90505-DRG-PWY2601 at rev P02 and dated 11/10/13

Exclusions

E1 Excludes VAT

E2 Excludes 3rd party compensation costs

E3 Excludes planning and approval charges

E4 Land purchases

E5 Costs associated with Statutory Fees (e.g. HMRI, Local Authority, etc.) unless confirmed otherwise in the summary

E6 Costs associated with taxes and levies, including VAT

E7 Costs associated with licences and all associated costs and fees

E8 Costs associated with changes in legislation and any form of applicable standards

E9 Costs associated with changes in legislation, regulation and interpretation covering discriminatory, specific and general issues that may lead to design and cost changes

E10 Allowances for adverse ground conditions / provisions for ground stabilisation unless specifically identified

E11 Service diversions unless stated otherwise

E12 Excludes any costs associated with the Insurance Top Up Fund, the Network Rail Fee Fund or the Industry Risk Fund.

E13 Excludes spares

ESTIMATE SUMMARY REPORT

Estimate No.		**Revision**	**02**	**Estimate Stage**	**Grip 2**
Estimate Date	**03-Feb-14**	**Price 'Base date'**	**4 Q 2013**		
Anticipated Start Date	**T B C**	**Anticipated Finish Date**	**T B C**		
Project No.	**122151**				
Project Title / Location	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**				

WBS	Estimate Breakdown	Value	Escalation (Y/N)	%age of Point Estimate	Remarks
	Contractor's direct costs -				
10	Signalling	49,319	Y		
20	Electrification & Plant	32,879	Y		
30	Track	162,753	Y		
40	Telecoms	-	Y		
50	Operational Property	-	Y		
60	Structures	6,309,363	Y		
70	General Civils	1,018,120	Y		
80	Utilities	803,700	Y		
	Contractor's Base Construction Cost inc OH&P: Sub-Total A	8,376,133.38			
	Network Rail's "direct costs"				
tbc	NDS - Materials		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Fleet		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Engineering trains		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Tampers		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Possession / Isolation Management	41,881			Allow 0.5% of Construction costs
	Sub - Total B	41,881			
	Total Base Construction Cost inc OH&P: Sub-Total C (A+B)	8,418,014		0.00%	
	Contractor's indirect costs				
tbc	Preliminaries	1,735,879	Y		
tbc	Design	804,004	Y		
tbc	Testing & Commissioning	63,250	Y		
tbc	Training - Drivers Training	150,000	Y		*Allowance*
tbc	Spares		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	Other	-	Y		
	Sub - Total D	2,753,133			
	Total Construction Cost E (C+D)	**11,171,147**			
	Network Rail's indirect & other costs				
tbc	Network Rail Project Management, (COWD)		N		
tbc	Network Rail Project Management, (forecasted remaining costs)	837,613	Y		*To be advised by NR*
tbc	Compensation charges (TOC & FOC), (costs from NDS)	508,763	Y		Calculated as 5% of construction costs
tbc	DCO Charges 0%		Y		
tbc	Land / Property Costs & compensation 0.00%		Y		Excluded
tbc	Escalation (see Note 1) % 11.46%	1,434,508	NA		*See Note 1*
tbc	Other (Legal costs)	250,000.00			
	Sub - Total F	3,030,885			
	Point Estimate - Sub - Total G (E+F)	**14,202,032**			
	Uplift for Risk and Contingency				
tbc	To Mean (see Note 3) £				*See Note 3*
	Project Budget (Point Estimate + Uplift to Mean)	14,202,032			***for Project Manager's reference***
tbc	QRA Value - at P50 (see Note 3) £				*Sponsor to advise if P50 or P80 value shall apply* *See Note 3*
tbc	QRA Value - at P80 - incremental on P50 value (see Note 3) £				*Sponsor to advise if P50 or P80 value shall apply* *See Note 3*
tbc	Adjustment for residual factors (see Note 2) % 40%	5,680,812.70			*Uplift on Point Estimate Value (excluding the Cost of Work Done)* *See Note 2*
	Project Anticipated Final Cost (AFC)	19,882,844			*Authorised AFC*
	Other Costs to the Customer				
tbc	Allowance for Escalation (see Note 1)				*See Note 1*
tbc	Allowance for Network Rail Fee Fund	-			*provided by Sponsor*
tbc	Allowance for Industry Risk Fund	-			*provided by Sponsor*
tbc	Allowance for Insurance Top-up				*provided by Sponsor*
	Cost to Customer	**19,882,844**			

APPROVAL & ENDORSEMENT

	Estimate Produced by :-	Estimate Approved by (Network Rail) :-	Estimate Endorsed by (Network Rail) :-
Name :-	Melvyn Jones		
Company :-	Franklin + Andrews		
Position :-	Lead Estimator		
Signed :-			
Date :-			

Estimate Stage: **Grip 2**
Oracle Project No.: **122,151**
Project Name: **Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**

Calculation of Contractors and Network Rail's Indirect Costs

Asset	**Total Direct Costs**	**%**	**Preliminaries**	**%**	**Design**	**%**	**Test & Commission**	**%**	**Network Rail Management**	**%**	**Sponsor**
Signalling	49,319	35%	17,262	10%	4,932	15%	7,398	7%	3,452	3%	1,480
Electrification & Plant	32,879	35%	11,508	30%	9,864	13%	4,274	7%	2,302	3%	986
Track	162,753	25%	40,688	10%	16,275	7%	11,393	7%	11,393	3%	4,883
Telecoms	0	25%	0	10%	0	10%	0	7%	0	3%	0
Operational Property	0	25%	0	10%	0	0%	0	7%	0	3%	0
Structures	6,309,363	20%	1,261,873	10%	630,936	0%	0	7%	441,655	3%	189,281
General Civils	1,018,120	20%	203,624	10%	101,812	0%	0	7%	71,268	3%	30,544
Utilities	803,700	25%	200,925	5%	40,185	5%	40,185	7%	56,259	3%	24,111
			1,735,879		804,004		63,250		586,329		251,284
Total for TOC / FOC calculation (5% of Total Construction Cost)	8,376,133		1,735,879				63,250				
TOTAL	10,175,262	**Allowance for TOC / FOC compensation (%)**					**5%**		**508,763**		

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 49,318.83**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
10	**Signalling**				
	Work Item 1			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
				£ -	£ -
	Work Item 3			£ -	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Work Item 4			£ -	£ -
	Lift and slew all Power, Signalling and Telecomms cables on to temporary cable bridge whilst Botley Road Bridge is demolished and reinstall cables on new bridge upon completion	1	item	£ 49,318.83	£ 49,318.83
				£ -	£ -
	Work Item 16			£ -	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
				£ -	£ -
	Work Item 17			£ -	£ -
	~~Lift and slew all Power, Signalling and Telecomms cables on to temporary cable bridge whilst Sheepwash Bridge is demolished and reinstall cables on new bridge upon completion~~	0	item	£ 49,318.83	£ -
				£ -	£ -
	Work Item 19			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~Recover existing signals controlling crossover~~	0	nr	£ 7,425.22	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Work Item 20			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Page Total				**£ 49,318.83**

Ref	Description	Quantity	Unit	Rate	Cost
	Signalling (Contd)			£ -	£ -
	Work Item 21			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Install new 4 aspect signals complete with post, foundations, TSS and route indicators~~	0	nr	£ 104,455.09	£ -
	~~New SSI LOC case complete with foundations~~	0	nr	£ 30,389.17	£ -
	~~HW Type Points motor~~	0	nr	£ 32,879.22	£ -
				£ -	£ -
				£ -	£ -
	Interlocking Systems - General			£ -	£ -
	~~Panel modification – **Display Systems alterations**~~	0	nr	£ 164,396.10	£ -
	~~Interlocking modification - **allowance SSI**~~	0	nr	£ 164,396.10	£ -
	~~Train describer data modifications - **Allowance**~~	0	nr	£ 164,396.10	£ -
	~~TDM Data changes~~	0	nr	£ 164,396.10	£ -
	~~Stageworks - General~~	0	nr	£ 54,798.70	£ -
				£ -	£ -
				£ -	£ -
	Signage - General			£ -	£ -
	~~Signalling signage - includes removal of old and replacement with new signal numbers~~	0	item	£ 10,959.74	£ -
				£ -	£ -
				£ -	£ -
	Reheading existing 3 aspect signals with 4 aspect signals			£ -	£ -
	~~Recover - 3 Aspect LED Signal head only~~	0	nr	£ 2,407.85	£ -
	~~Signal Head 4 Aspect LED Type~~	0	nr	£ 9,109.74	£ -
	~~New Tail cables~~	0	m	£ 19.73	£ -
				£ -	£ -
	Work Item 11			£ -	£ -
	~~Allow for lifting and shifting the remaining cables remaining in Platform 5 to allow the construction of the new platform nr 3~~	0	item	£ 164,396.10	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 32,879.22**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
20	**Electrification and Plant**				
				£ -	£ -
	Work Item 3			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new turnout~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 5			£ -	£ -
	Slew OLE wires prior to demolition of old Botley Road Bridge - Allow 2 number OLE Gangs for 1 shift	1	item	£ 16,439.61	£ 16,439.61
	Reinstall OLE wire upon completion of new Botley Road Bridge - Allow 2 number OLE Gangs for 1 shift	1	item	£ 16,439.61	£ 16,439.61
				£ -	£ -
	~~Work Item 12a~~			£ -	£ -
	~~New passanger lift, to convey passenger from Botley Road to new platform 3~~	0	nr	£ 175,355.84	£ -
	~~New DNO power suppply to new lift~~	0	nr	£ 109,597.40	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new turnout~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 19			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 20			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover & Turnouts~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover & Turnouts~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 32,879.22**

Ref	Description	Quantity	Unit	Rate	Cost
	Electrification and Plant (Contd)				
				£ -	£ -
	Work Item 26			£ -	£ -
	~~8m medium duty lighting column, installation on new footbridge~~	0	nr	£ 2,191.95	£ -
	~~Allow for a connection to new power supply (DNO)~~	0	nr	£ 27,399.35	£ -
	~~Supply and install new feeder pillar and all necessary connections~~	0	nr	£ 13,699.68	£ -
				£ -	£ -
	Work Item 27			£ -	£ -
	~~8m medium duty lighting column, installation on new footbridge~~	0	nr	£ 2,191.95	£ -
	~~Allow for a connection to existing power supply (DNO)~~	0	nr	£ 10,959.74	£ -
	~~Supply and install new feeder pillar and all necessary connections~~	0	nr	£ 13,699.68	£ -
				£ -	£ -
	Work Item 28			£ -	£ -
	~~New DNO power cubicle for supply to station~~	0	nr	£ 109,597.40	£ -
	~~Remove existing DNO power cubicle for station as it is located in the new footprint of the new works~~	0	nr	£ 8,219.81	£ -
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Work Item 45			£ -	£ -
	~~Electrify new track to platform Nr 5 face, including over turnouts~~	0	m	£ 345.23	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 162,753.00**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
30	**Track**				
				£ -	£ -
	Work Item 2			£ -	£ -
	~~Recover existing Turnouts in old sidings~~	0	nr	£ 16,439.61	£ -
	~~Recover redundant track in sidings~~	0	m	£ 60.28	£ -
	~~Excavate and dispose of contaminated spoil~~	0	m3	£ 145.22	£ -
				£ -	£ -
	Work Item 3			£ -	£ -
	~~Install new 40 mph turnout (EV)~~	0	nr	£ 356,191.56	£ -
	~~Recover redundant track for sidings~~	0	m	£ 60.28	£ -
	~~Slew existing track approaching new turnout~~	0	m	£ 82.20	£ -
				£ -	£ -
	Work Item 5			£ -	£ -
	Take up the 4 tracks running over Botley bridge - allow 75 m of track each time	300	m	£ 60.28	£ 18,084.00
	Reinstall track upon completion of new bridge - assume reuse of existing rail and sleepers but new ballast	300	m	£ 482.23	£ 144,669.00
				£ -	£ -
	Work Item 16			£ -	£ -
	~~Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new down passenger relief to Platform 5 -~~ ~~**part Green zone working**~~	0	m	£ 657.58	£ -
	~~Lay new track bed using type 1 material - allow 360m by 5m wide by 0.5m deep~~	0	m3	£ 72.33	£ -
	~~Install new 40 mph turnout (EV)~~	0	nr	£ 356,191.56	£ -
	~~Install new track drains~~	0	m	£ 131.52	£ -
	~~Install new catchpits at 30m centres~~	0	nr	£ 767.18	£ -
	~~Install new outfall~~	0	nr	£ 5,479.87	£ -
				£ -	£ -
	Work Item 17			£ -	£ -
	~~Take up the 4 tracks running over Sheepwash bridge - allow 50 m of track each time~~	0	m	£ 60.28	£ -
	~~Reinstall track upon completion of new bridge - assume reuse of existing rail and sleepers but new ballast~~	0	m	£ 482.23	£ -
	~~Take up exisring turnouts at entrance to sidings~~	0	nr	£ 16,439.61	£ -
	~~Reinstall existing turnouts upon completion on new bridge~~	0	nr	£ 27,399.35	£ -
				£ -	£ -
	Work Item 18			£ -	£ -
	~~Slew existing track approaching new bridge - New track layout, allow 250m each side for 5 tracks~~	0	m	£ 82.20	£ -
	Page Total				**£ 162,753.00**

Ref	Description	Quantity	Unit	Rate	Cost
	Track (Contd)				
				£ -	£ -
	Work Item 19			£ -	£ -
	~~Install new 40 mph Crossover (EV) - 247a/b points~~	0	nr	£ 712,383.12	£ -
	~~recover existing crossover~~	0	nr	£ 32,879.22	£ -
	~~Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new rail~~	0	m	£ 712.38	£ -
				£ -	£ -
	Work Item 20			£ -	£ -
	-	0	nr	£ 821,980.52	£ -
	~~Install new 50 mph turnout (FV)~~	0	nr	£ 410,990.26	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~Install new 50 mph Crossover (FV)~~	0	nr	£ 821,980.52	£ -
	~~Install new 50 mph turnout (FV)~~	0	nr	£ 410,990.26	£ -
	~~Install new 25 mph Crossover (CV)~~	0	nr	£ 520,587.66	£ -
				£ -	£ -
	Work Item 22			£ -	£ -
	~~Install 1 new track, incl 300 ballast, new concrete sleepers and CEN 56 new rail~~	0	m	£ 712.38	£ -
				£ -	£ -
	Work Item 23			£ -	£ -
	~~Slew existing track on bicester line~~	0	m	£ 82.20	£ -
				£ -	£ -
	Work Item 33			£ -	£ -
	~~Install new 75 mph Crossover (GV)~~	0	nr	£ 986,376.62	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
40	**Telecoms**				
				£ -	£ -
	Work Item 1			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 3			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 16			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~New C/10 troughing route~~	0	m	£ 61.37	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 19			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 20			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 21			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Work Item 23			£ -	£ -
	~~Lift and slew existing cables and cable trough to allow new track to be installed~~	0	m	£ 56.99	£ -
	Page Total				**£ -**

Ref	Description	Quantity	Unit	Rate	Cost
	Telecoms (Contd)				
				£ -	£ -
	Work Item 33			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 16,439.61	£ -
	~~Dial up for points heating~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Telecoms - General			£ -	£ -
	~~Delid and relid existing cable troughs~~	0	m	£ 15.34	£ -
	~~Upgrading existing concentrator - **allowance**~~	0	nr	£ 32,879.22	£ -
	~~Supply and lay new telecomms cable - assume not fibre optics~~	0	m	£ 10.96	£ -
				£ -	£ -
				£ -	£ -
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	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
50	**Operational Property**				
				£ -	£ -
	Work Item 10			£ -	£ -
	~~Demolish existing building backing on to Platform 2 to make way for new Platform~~	0	m3	£ 38.36	£ -
				£ -	£ -
	~~Work Item 12a~~			£ -	£ -
	~~Allowance for new entrance to new Platform 3 , in the vacinity of old YHA~~	0	item	£ 547,987.01	£ -
	~~Installation of new half height Ticket barrier and gates to new entrance to Platform 3~~	0	item	£ 49,318.83	£ -
	~~Installation of new ticket machines and signs and lights to new entrance to Platform 3~~	0	item	£ 43,838.96	£ -
				£ -	£ -
	Work Item 12b			£ -	£ -
	~~Alterations to toilet block (Male, Female & Disabled) on new Island Platform – allow 5 x 10m~~	0	m2	£ 1,095.97	£ -
	~~Alterations to existing waiting room on new Island Platform – allow 5 x 10m~~	0	m2	£ 1,095.97	£ -
	~~Alterations to existing buildings to allow the construction of a small shop - allow 5 x 10m~~	0	m2	£ 1,095.97	£ -
	~~Alterations to existing buildings to allow the construction of a Station supervisors accommodation - allow 5 x 10m~~	0	m2	£ 1,095.97	£ -
				£ -	£ -
	Work Item 14			£ -	£ -
	~~Construct new Platform 5, complete with tactiles, allow 300m long by 3m wide~~	0	m2	£ 1,369.97	£ -
	~~Construct new Platform 5 Canopy, allow 75% cover on new platform (300m long by 3m wide)~~	0	m2	£ 1,369.97	£ -
	~~Canopy lighting including lights and conduit~~	0	m2	£ 49.32	£ -
	~~6m lighting columns including 1000mm double projection arms and 150mm luminaries, include all connections to lighting cable~~	0	nr	£ 2,411.14	£ -
	~~PA's~~	0	nr	£ 821.98	£ -
	~~CIS~~	0	nr	£ 7,705.79	£ -
	~~CCTV~~	0	nr	£ 3,835.91	£ -
	~~Help point~~	0	nr	£ 6,831.21	£ -
				£ -	£ -
	Work Item 15			£ -	£ -
	~~Extend Platform 4 by 20m to allow 10 car IEP trains to stop~~	0	m2	£ 1,369.97	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 6,309,362.76**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
60	**Structures**				
				£ -	£ -
	Work Item 5			£ -	£ -
	Demolish existing Botley road bridge	1	item	£ 54,798.70	£ 54,798.70
	Install new precast concrete Under Bridge at Botley road - assume 24 x 30	720	m2	£ 5,753.86	£ 4,142,779.20
	Excavate an dispose in embankment for new road lane under bridge assume 30 x 14 x 7m	2940	m3	£ 178.10	£ 523,614.00
	Excavate an dispose in embankment for new road lane assume 55 x 14 x 7m	5390	m3	£ 178.10	£ 959,959.00
	Allow for a 1000t crane for 8 shifts to remove and install bridge	8	nr	£ 16,439.61	£ 131,516.88
	Allowance for Additional payments to labour for potential working over Christmas - allow 50 men for 6 shifts	300	nr	£ 328.79	£ 98,637.00
	Allow for a temporary road closure; signed diversionary route and or traffic lights whilst bridge deck is being replaced	1	item	£ 54,798.70	£ 54,798.70
	~~Remove existing emergency access point crossing track adjacent to Botley road and make good access points~~	0	item	£ 27,399.35	£ -
				£ -	£ -
	Work Item 17			£ -	£ -
	~~Take up existing top deck only of Sheepwash bridge~~	0	item	£ 54,798.70	£ -
	~~Install new top deck to Sheep wash bridge using precasr concrete beams - assume area of deck is 15m by 40m~~	0	m2	£ 2,465.94	£ -
	~~Allow for a temporary river closure whilst bridge deck is being replaced~~	0	item	£ 10,959.74	£ -
	~~Allow for a 1000t crane for 8 shifts to remove and install bridge~~	0	nr	£ 16,439.61	£ -
	~~Allowance for Additional payments to labour for potential working over Christmas - allow 50 men for 6 shifts~~	0	nr	£ 328.79	£ -
				£ -	£ -
	Work Item 44			£ -	£ -
	~~Demolish existing Footbridge at Cementry Sidings~~	0	item	£ 27,399.35	£ -
	~~Install new DDA Footbridge and ramp overall length 90m by 2.2 m wide~~	0	m2	£ 1,917.95	£ -
	~~Blast cleaning and Painting of bridge, ramp and stairs~~	0	m²	£ 82.20	£ -
	~~Allowance for Foundations/piling/embankment stabilisation works~~	0	item	£ 82,198.05	£ -
				£ -	£ -
	Work Item 27			£ -	£ -
	Demolish existing Footbridge at on Botley road linking the carpark to the station	1	item	£ 21,919.48	£ 21,919.48
	Install new DDA Footbridge and ramp overall length 24m by 4m wide, on Botley road linking the carpark to the station	96	m2	£ 1,917.95	£ 184,123.20
	Blast cleaning and Painting of bridge, ramp and stairs	336	m²	£ 82.20	£ 27,619.20
	Allowance for Foundations/piling/embankment stabilisation works	1	item	£ 109,597.40	£ 109,597.40
				£ -	£ -
	Work Item 35			£ -	£ -
	~~Demolish existing bridge on Roger Dudman Way which crosses the Sheepwash River~~	0	item	£ 27,399.35	£ -
	~~Install new DDA Footbridge and ramp overall length 15m by 9 m wide~~	0	m2	£ 3,835.91	£ -
	~~Allowance for Foundations/piling/embankment stabilisation works~~	0	item	£ 219,194.81	£ -
	Page Total				**£ 6,309,362.76**

Ref	Description	Quantity	Unit	Rate	Cost

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 1,018,119.57**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
70	**General Civils**				
				£ -	£ -
	Work Item 6			£ -	£ -
	Allow for lowering the level of both approaches to Botley Rd Bridge, allow 100m each side by 15m by av depth (0.45 + 0.15)m	2160	m3	£ 178.10	£ 384,696.00
	Allow for new Wearing course and binder course on both approaches to new bridge Allow 240m lg by 15m wide	3600	m2	£ 32.88	£ 118,368.00
	Allow for new Road construction (Type 1, road base,) allow 240m x 15m by .4m deep	1440	m3	£ 76.72	£ 110,476.80
	Allow for new road markings - allow for a gang for 1 shift	1	nr	£ 1,369.97	£ 1,369.97
	Dispose off site existing road material (non Hazardous)	330	m3	£ 164.40	£ 54,252.00
				£ -	£ -
	Work Item 8			£ -	£ -
	~~Construct new Nursery - assume floor area of 350m2 over 1 floors (excludes cost of Land)~~	0	m2	£ 1,808.36	£ -
	~~Fit out new nursery - allow for 100 children at £320 /child~~	0	nr	£ 350.71	£ -
	~~Construct new external play area - assume 50 x 50 (location to be agreed~~	0	m2	£ 109.60	£ -
				£ -	£ -
	Work Item 9			£ -	£ -
	~~Demolish all of existing YHA on corner of Botley Road (4 floors) -~~	0	item	£ 219,194.81	£ -
	~~Construct a new YHA in a location to be agreed approx floor plan 40 X 20~~	0	m2	£ 2,397.44	£ -
	~~Fit out of YHA - Allowance~~	0	item	£ 109,597.40	£ -
	~~Allowance for building up Roger Dudman way to construct new hard standing 110m by 20m by av 4m deep~~	0	m3	£ 49.32	£ -
	~~Allow for new Wearing course and binder course on new road approach - Allow 110m lg by 20m wide~~	0	m2	£ 32.88	£ -
	~~Allowance for road closure during demolition, including all necessary hoarding~~	0	item	£ 27,399.35	£ -
	~~Demolish existing Nursery - assume floor area 30 x 12 over 1 floor~~	0	m3	£ 21.92	£ -
	~~Demolish existing Stone masonary structures between Roger Dudman way and Cripley Rd - 2 number~~	0	sum	£ 10,959.74	£ -
				£ -	
	Construct new slip road from Cripley Road to Roger Dudman Way - Approx area on plan 55m x 8m,			£ -	
	~~Excavate and dispose to form slip road (55 x 8 m x 3m)~~	0	m3	£ 178.10	£ -
	~~Allow for new Road construction (Type 1, road base, binder and wearing course) allow 55m x 8m~~	0	m2	£ 109.60	£ -
				£ -	
	~~Work Item 12a~~			£ -	£ -
	~~New Pedestrian Drop off point for new Platform 3 - all use of paving sets~~	0	m2	£ 109.60	£ -
	~~Allowance for Kerbs to new drop off area~~	0	m	£ 27.40	£ -
	~~Allow for new road markings - allow for a gang for 1 shift~~	0	nr	£ 1,369.97	£ -
	~~Dispose off site existing road material (non Hazardous)~~	0	m3	£ 164.40	£ -
				£ -	£ -
	Work Item 13			£ -	£ -
	Stabilisation of embankment supporting track at corner of Botley Road/Roger Dudman Way - allow 60m x 4m	320	m2	£ 1,090.49	£ 348,956.80
				£ -	£ -
	Work Item 16			£ -	£ -
	~~Noise barrier to protect residents in Roger Dudman Way - Allow 300m long by 2.4m high~~	0	m2	£ 164.40	£ -
	Page Total				£ 1,018,119.57

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 803,700.00**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
80	**Utilities**				
				£ -	£ -
	Work Item 6			£ -	£ -
	Allow for the diverting 10 inch gas mains into new service trench	2	nr	£ 150,000.00	£ 300,000.00
	Allow for diverting existing Cable & Wireless Telecoms Cable into new service trench	1	nr	£ 75,000.00	£ 75,000.00
	Allow for diverting existing Water main into new service trench	1	nr	£ 50,000.00	£ 50,000.00
	Allow for diverting 4 number existing BT Cable into new service trench	1	nr	£ 45,000.00	£ 45,000.00
	Allow for diverting existing High Voltage Electrical Cable into new service trench	1	nr	£ 100,000.00	£ 100,000.00
	Allow for diverting existing Low Voltage Electrical Cable into new service trench	1	nr	£ 75,000.00	£ 75,000.00
	Allow for diverting existing NTL Cable into new service trench	1	nr	£ 45,000.00	£ 45,000.00
	Allow for installation of a new drain run along Botley Rd (allow 200m)	240	m	£ 200.00	£ 48,000.00
	Builders work associated with service diversions	15%		£ 438,000.00	£ 65,700.00
	Work Item 35			£ -	£ -
	~~Allow for diverting all services adjacent to the Roger Dudman Bridge as it crosses the Sheepwash River~~	0	item	£ 1,000,000.00	£ -
				£ -	£ -
	General Utilities divesions			£ -	£ -
	~~Allowance for costs for temporary diverting services prior to the demolition of the bridges~~	0	item	£ 500,000.00	£ -
				£ -	£ -
	Builders work associated with service diversions	15%		£ -	£ -
				£ -	£ -
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	Page Total				**£ 803,700.00**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**				**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Other Contractors Indirect Costs				
	Other Costs *(The Consultant shall enter details)*			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
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			To Estimate Summary R		£ -

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor Option 2 - Remove and replace with a wider bridge the existing Botley Road Bridge**			**TOTAL**	**£ 250,000.00**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Network Rail Direct Costs				
	NDS - Materials			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	**£**	**£ -**
	NDS - Fleet				
	- Engineering trains			£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	**£**	**£ -**
	-Tampers			£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	**£**	**£ -**
	Page Total				**£ -**

Ref	Description	Quantity	Unit	Rate	Cost
	NDS Materials & Fleet (Tampers, etc.) costs generally within rates at GRIP 0-2			£ -	£ -
	NDS - Possession / Isolation management				
				£ -	£ -
	Possession Management			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	OLE Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	DC Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	Other (State)		sum	£ -	£ -
	~~Legal cost associated with Sheepwash Bridge and the Nursery~~	0	sum	£ 1,000,000.00	£ -
	~~Legal costs associated with the YHA and RogerDudman way~~	0	sum	£ 1,000,000.00	£ -
	Legal costs associated with the Bottley Road temporary closure	1	sum	£ 250,000.00	£ 250,000.00
				To Estimate Summary Report £	£ 250,000.00
	Page Total				**£ 250,000.00**

Oxford Corridor Option B1
(Renamed Option 2)

Draft Scope

This is the proposed scope of work based on sketch called Option B1 found in the Draft PRS issue 2 dated 01/08/12.
As discussed between R McCulloch & M Jones on 08/08/12 in Swindon.
Further amended on 03/19/13 in Swindon following Mtg R McCulloch / M Scrogings/ Ben Stevens / Penny Martin / M Jones

1 Modify the signals (London End) to include additional routes and revised junction signalling
2 Recover the old (Cemetery sidings)
3 Install1 new turnout ~~and 1 new crossover~~ on the London side of platform 2, at minimum approach speed of 40mph ideally faster to new through platform including slewing and recanting existing track and any new signals.
4 Lift and slew cable troughs and cables for the removal of Botley Road Bridge and subsequent reinstatement
5 Take up existing track for the removal of the existing “Botley Road Bridge (UB)”. Widen existing footprint of bridge to take up to 3, or option for 4, lanes of road traffic to include footpath and cycleway one side. Install new wider under-bridge and replace track. Note at this stage that the OLE wires (to 40mph contact-wire only system) will be in place so the will have to be slewed out of the way.

Note that the road profile is likely to render deck-transporter options not possible and craned-in beam construction may be necessary.
6 Re-grade and widen as necessary Botley Road to tie in with the Option F of the report prepared by ARUP 2005. .
Note this will entail many service diversions
7 ~~Construct new Youth Hostel with a same floor area as existing on a site/location to be agreed with Oxford CC.~~
~~(Compensation and land costs to be excluded from estimate)~~
8 Construct new Nursery building (‘Turbo Teds’) with a same floor area as existing on a site to be agreed. (Now included)
(Assume nil costs for compensation and land).
9 Demolish ~~existing~~ part of Youth Hostel Association building and ‘Turbo Teds’ nursery on the corner of Botley road / Roger Dudman Way.
Extend YHA along Rodger Dudman Way to compensate part of building removed (assume a steel frame building)
10 Demolish part of the Platform 2 Station Buildings to make way for new face of new through Platform.
11 No allowance made for the signalling costs of closure of Oxford PSB currently located on Platform 2 (will be closed by OARS)
12 Estimate to include station works on downside so: -
  ~~a. Estimate to include for new station access for pedestrians from Roger Dudman Way/Cripley Road to the new Island Platform (Platform 2/3) via area of land vacated by YHA.~~
  b. New staion buildings/alterations on downside new island platform
  c. Assume however that no work is required to the existing footbridge and Passenger lifts linking the existing platforms 1 to 2 (this will be included in Masterplan works, nor any works to buildings on the Up side)
13 Allowance to be made for stabilising the new embankment holding the new through platform track in vicinity of exsiting YHA
14 Construct new through Platform with a length of up to 300m to allow 10-car IEP trains to stop.
15 Extend Platform 2 as required to allow 10-car IEP trains to stop and turnback.
16 Construct new through platform track total length of 300m - To include for the OHLE associated with this new track
17 Take up existing track over extent of Sheep-wash River (@ 63m 48ch) to allow for whole deck of bridge to be re-decked.
Then replace track in new alignment to allow extra space on west side
18 Slew existing track approaching in and leaving Sheepwash bridge to a new alignment each over say a ~500m distance.
19 Install new crossover 247A/B and remove existing
20 Install new Crossover and turnout at the new approach to new track/line to Biscester. All at 50mph (Now included)
21 Install new 50mph double junction to allow traffic to move from the down main to the existing track to Bicester. (Now included)
Leave in situ down loop to down main 25mph crossover. Include Bicester 50 mph crossover to facilitate bi- move to down side from Bicester (Now Included)
22 Install new track from Oxford North Jn to Woodstock Road Jcn. Total length 1000m (Now Included)
23 ~~Realign/slew existing track from Oxford North Jn to Wolvercote tunnel north portal . Total length ??m~~
Take existing steel sleeper track and renew with new rail and concrete sleepers Total length 1000m (Now Included)
24 ~~Tracks in item 23 & 24 to be Bi-Di~~
25 ~~Re-house bats currently nesting in Wolvercote tunnel under the direction of Natural England (!)~~
26 ~~Allow for the complete replacement of Aristotle Lane Footbridge to WS Atkins new design~~
27 Allow for the installation of a new footbridge crossing Botley Road from the existing car park to the station entrance due to the widening of Botley Road
28 Install/relocate DNO cubicle/small substation due to widening of Botley Road
29 All other work proposed in Oxford Corridor Up Relief – Option A is identical in this scheme
30 All work proposed in Oxford Corridor Bi Di - Option A is identical in this scheme
31 All work proposed in Oxford Corridor Down Passenger Loop – Option A is identical in this scheme
32 The work to for a new South Bay and new transfer deck proposed on Option A is no longer required in this scheme.
33 ~~The work associated with Bay Platform approach & ladder – Option A is no longer required with the exception of the 1 crossover which needs to be replaced and the final turnout as detailed on Tata Drwg B80080-DRG-PWY0002 ref PO1 received July 2012.~~
34 Exclude the cost of compensation payments/ Compulsory Purchase Orders to any displaced businesses or allotment holders
35 Allow for the replacement of the existing Roger Dudman Way road bridge where it crosses the Sheepwash river.
Also all the services crossing the river will need to be diverted
36 Replace the "Oxford Northern Ladder" Points 245A/B, 251A/B, 255A/B, 260A - To allow for this work to be carried out under OHLE Wires
37 Allow for DCO (Development Consent Order) associated with work at the YHA
38 Allow for closing part of Rodger Dudman Way and creating a new YHA carpark/entrance
39 Exclude all costs associated with renewing the Up and Down Sidings
40 Exclude the cost associated with the the new platform extension for the "Ever Green Trains" at Oxford Station
41 Installation of 2 new 4 aspect signals at 65.5 mile point on the Up relief and up Main as safety measures
42 Include an allowance of £1,000,000 for Barristers / Solicitors /lawyers fees associated with Sheepwash Bridge utilities disconnection and Work to the nursery
43 Include an allowance of £1,000,000 for Barristers /Solicitors /lawyers fees associated with YHA partial rebuild /Roger Dudman Way / Cripley road
44 Cementry Sidings Footbridge Replace deck
45 Electrify new track to new Island Platform no. 5

Standard Template for Stage 1-2 Estimates prepared by Consultants

Enhancements Estimating

Oracle Project No.:	**122151**
Project Description:	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**
Estimate Stage:	**Grip 2**

Level of Confidence - +/- 40% (Stage 2)

Issue and Revision Record:

Rev.	Date	Consultant	Prepared by	Checked	Description
Rev 00	21-Oct-13	Franklin + Andrews	Liam Shields	Melvyn Jones	Based on Proposed Outline scope
Rev 01	16-Dec-13	Franklin + Andrews	Jag Shoker	Melvyn Jones	Updated to 4Q13 prices
Rev 02	14-Jan-14	Franklin + Andrews	Jag Shoker	Melvyn Jones	NR PM Cost changed to 7%
Rev 04	26-Feb-14	Franklin + Andrews		Melvyn Jones	Grip 2 Estimate

Franklin + Andrews
35 Newhall Street
Birmingham B3 1LZ

Estimate Document Contents

Estimate Stage: **Grip 2**
Oracle Project No.: **122151**
Project Description: **Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**

Assumptions

General / Drawings & Documents / Exclusions

General

G1 The estimate base date is 4Q 2013
G2 This estimate is for the 70mph Option - which is planned to be carried out in 2 stages.
G3 Escalation has been included within the Project AFC as the overall Oxford Corridor Project AFC is above £50m in value and the overall construction phase will be over two years in duration

G4 Escalation to the mid point of Construction is Dec 2015 which is equal to a 5.57% increase, This is based on the overall Oxford Integrated Programme which requires the crossovers to be operational by March 2016
G5 A 40% uplift has been applied for cost and scope uncertainty; it reflects the level of design that has been carried out on the project

G6 In the absence of a Schedule of Possessions an allowance has been included for Possession Management based on 1.5% of the Contractors base construction costs ,
G7 An allowance has been included for TOC & FOC Compensation based on 5% of the total Direct Costs plus Preliminaries and Testing and Commissioning
G8 Assumed that the majority of work will be carried out in possesions
G9 No requirement for Isolations as the track is not under the OLE wires

Drawings & Documents

The following documents have been used in the preparation of this estimate:
D1 Preliminary drawing - Permanent Way, Proposed General Arrangement - Oxford North junction - 70 mph - Option ref B90505-DRG-PWY2110 rev P02 dated 20/09/13

Exclusions

E1 Excludes VAT
E2 Excludes 3rd party compensation costs
E3 Excludes planning and approval charges
E4 Land purchases
E5 Costs associated with Statutory Fees (e.g. HMRI, Local Authority, etc.) unless confirmed otherwise in the summary
E6 Costs associated with taxes and levies, including VAT
E7 Costs associated with licences and all associated costs and fees
E8 Costs associated with changes in legislation and any form of applicable standards
E9 Costs associated with changes in legislation, regulation and interpretation covering
E10 Christmas, Easter or Bank Holiday working
E11 Service diversions unless stated otherwise
E12 Excludes any costs associated with the Insurance Top Up Fund, the Network Rail Fee Fund or the Industry Risk Fund.

ESTIMATE SUMMARY REPORT

Estimate No.		**Revision**	**04**	**Estimate Stage**	**Grip 2**	
Estimate Date	**26-Feb-14**	**Price 'Base date'**	**4 Q 2013**			
Anticipated Start Date	**T B C**	**Anticipated Finish Date**	**T B C**			
Project No.	**122151**					
Project Title / Location	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**					

WBS	**Estimate Breakdown**	**Value**	**Escalation (Y/N)**	**%age of Point Estimate**	**Remarks**
	Contractor's direct costs -				
10	Signalling	1,598,123	Y		
20	Electrification & Plant	68,839	Y		
30	Track	3,313,905	Y		
40	Telecoms	-	Y		
50	Operational Property	-	Y		
60	Structures	-	Y		
70	General Civils	-	Y		
80	Utilities	-	Y		
	Contractor's Base Construction Cost inc OH&P: Sub-Total A	4,980,867.27			
	Network Rail's "direct costs"				
tbc	NDS - Materials		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Fleet		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Engineering trains		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Tampers		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Possession / Isolation Management	74,713			Allow 1.5% of Signalling and track costs
	Sub - Total B	74,713			
	Total Base Construction Cost inc OH&P: Sub-Total C (A+B)	5,055,580		0.00%	
	Contractor's indirect costs				
tbc	Preliminaries	1,411,913	Y		
tbc	Design	511,855	Y		
tbc	Testing & Commissioning	480,641	Y		
tbc	Training - Drivers Training		Y		*Allowance*
tbc	Spares		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	Other	-	Y		
	Sub - Total D	2,404,408			
	Total Construction Cost E (C+D)	**7,459,989**			
	Network Rail's indirect & other costs				
tbc	Network Rail Project Management, (COWD)		N		
tbc	Network Rail Project Management, (forecasted remaining costs)	498,087	Y		
tbc	Compensation charges (TOC & FOC), (costs from NDS)	343,671	Y		Calculated as 5% of construction costs
tbc	DCO Charges 0%		Y		
tbc	Land / Property Costs & compensation 0.00%		Y		Excluded
tbc	Escalation (see Note 1) % 5.57%	462,407	NA		*See Note 1*
tbc	Other (State)				
	Sub - Total F	1,304,165			
	Point Estimate - Sub - Total G (E+F)	**8,764,154**			
	Uplift for Risk and Contingency				
tbc	To Mean (see Note 3) £				*See Note 3*
	Project Budget (Point Estimate + Uplift to Mean)	8,764,154	***for Project Manager's reference***		
tbc	QRA Value - at P50 (see Note 3) £		*Sponsor to advise if P50 or P80 value shall apply*		*See Note 3*
tbc	QRA Value - at P80 - incremental on P50 value (see Note 3) £		*Sponsor to advise if P50 or P80 value shall apply*		*See Note 3*
tbc	Adjustment for residual factors (see Note 2) % 40%	3,505,662	*Uplift on Point Estimate Value (excluding the Cost of Work Done)*		*See Note 2*
	Project Anticipated Final Cost (AFC)	12,269,815	*Authorised AFC*		
	Other Costs to the Customer				
tbc	Allowance for Escalation (see Note 1)				*See Note 1*
tbc	Allowance for Network Rail Fee Fund	-	*provided by Sponsor*		
tbc	Allowance for Industry Risk Fund	-	*provided by Sponsor*		
tbc	Allowance for Insurance Top-up		*provided by Sponsor*		
	Cost to Customer	**12,269,815**			

APPROVAL & ENDORSEMENT

	Estimate Produced by :-	**Estimate Approved by (Network Rail) :-**	**Estimate Endorsed by (Network Rail) :-**
Name :-	Melvyn Jones		
Company :-	Franklin + Andrews		
Position :-	Lead Estimator		
Signed :-			
Date :-			

Notes:-

1. Escalation has been included within the Project Anticipated Final Cost (Project AFC) where the total Project AFC is in excess of £50m and where the total site works will be over 2 years duration.

2. An 'Uplift for residual factors' of 40% has been applied; this is an allowance for cost and scope uncertainty and is the "Benchmark" uplift for an estimate at Stage 2 where the estimate Quality, Risk Profile and Confidence level are seen as 'Moderate' . An 'adjustment for residual factors' has been applied in accordance with the Guidance Notes on Estimating.

3. No QRA P80 value is available at the current time.

Project Description: **Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**

Estimate Stage: **Grip 2**

Total expenditure by GRIP Stage		**78,698**	**69,870**	**185,061**	**369,061**	**1,052,554**	**9,712,476**	**749,465**	**52,631**
Project Anticipated Final Cost	12,269,815								

Estimate Stage: **Grip 2**
Oracle Project No.: **122,151**
Project Name: **Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**

Calculation of Contractors and Network Rail's Indirect Costs

Asset	Total Direct Costs	%	Preliminaries	%	Design	%	Test & Commission	%	Network Rail Management	%	Sponsor
Signalling	1,598,123	35%	559,343	10%	159,812	15%	239,718	7%	111,869	3%	47,944
Electrification & Plant	68,839	35%	24,094	30%	20,652	13%	8,949	7%	4,819	3%	2,065
Track	3,313,905	25%	828,476	10%	331,391	7%	231,973	7%	231,973	3%	99,417
Telecoms	0	25%	0	10%	0	10%	0	7%	0	3%	0
Operational Property	0	25%	0	10%	0	0%	0	7%	0	3%	0
Structures	0	20%	0	15%	0	0%	0	7%	0	3%	0
General Civils	0	20%	0	15%	0	0%	0	7%	0	3%	0
Utilities	0	25%	0	10%	0	0%	0	7%	0	3%	0
			1,411,913		511,855		480,641		348,661		149,426
Total for TOC / FOC calculation (10% of Total Construction Cost)	4,980,867		1,411,913				480,641				
TOTAL	6,873,421					5%	343,671				

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ 1,598,123.09**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
10	**Signalling**				
	Recoveries - Final Layout				
	IBJ	4	nr	£ 6,263.49	£ 25,053.96
	Recovery of Clamplocks (from 4 point ends)	4	nr	£ 2,537.18	£ 10,148.72
	Signalling New Items - Final Layout				
	GPLS PL1R	6	nr	£ 4,976.65	£ 29,859.90
	IBJ	12	nr	£ 8,634.08	£ 103,608.96
	Track Circuits - assumed DC type	12	nr	£ 5,614.67	£ 67,376.04
	New SSI Location Cases	3	nr	£ 30,139.29	£ 90,417.87
	In bearer clamp locks - G Crossover	6	nr	£ 139,290.44	£ 835,742.64
	Trackside - Cable routes and cables - Final Layout				
	Tail Cables	6000	m	£ 19.73	£ 118,380.00
	650V Power cable **- Allowance**	500	m	£ 15.34	£ 7,670.00
	Multicore cable **- Allowance**	500	m	£ 19.73	£ 9,865.00
				£ -	£ -
	Interlocking Systems - General			£ -	£ -
	Panel modification - **Display Systems alterations**	1	nr	£ 75,000.00	£ 75,000.00
	Interlocking modification - **allowance SSI**	1	nr	£ 75,000.00	£ 75,000.00
	Train describer data modifications - **Allowance**	1	nr	£ 75,000.00	£ 75,000.00
	TDM Data changes	1	nr	£ 75,000.00	£ 75,000.00
				£ -	£ -
	Page Total				£ 1,598,123.09

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ 68,838.92**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
20	**Electrification and Plant**				
				£ -	£ -
	New Work			£ -	£ -
	Point Heating, including strip heaters and control cabinets to Point ends			£ -	£ -
	Point Heating, including strip heaters and control cabinets	6	item	£ 6,575.84	£ 39,455.04
	Upgrade existing DNO supply to service new crossover & Turnouts - **Allowance**	1	nr	£ 25,000.00	£ 25,000.00
				£ -	£ -
	Removal			£ -	£ -
	Point Heating, including strip heaters and control cabinets	4	item	£ 1,095.97	£ 4,383.88
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ 68,838.92**

Oracle Project No.	122151				
Project Description	Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester			TOTAL	£ 3,313,905.26
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
30	**Track**				
	Removals - Final Layout				
	Take up existing crossover 276A/B points Down Main to Up Main at 22340 to 22380)	1	nr	£ 54,798.70	£ 54,798.70
	Take up existing crossover 277A/B points Up Main to up relief at 22420 to 22480)	1	nr	£ 54,798.70	£ 54,798.70
	Take up exist track for the installation of new Crossovers	450	m	£ 69.92	£ 31,464.00
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	New Track - Final Layout			£ -	£ -
	Install new rail sleepers and ballast where Crossovers have been removed	300	m	£ 712.38	£ 213,714.00
	Install new 70 mph Crossover G (Down Main to Up main at 22040 to 22210)	1	nr	£ 986,376.62	£ 986,376.62
	Install new 70 mph Crossover G (Up main to Up relief at 21990 to 22130)	1	nr	£ 986,376.62	£ 986,376.62
	Install new 70 mph Crossover G (Up Main to Up relief at 22400 to 22550)	1	nr	£ 986,376.62	£ 986,376.62
				£ -	£ -
				£ -	£ -
				£ -	
	Page Total				**£ 3,313,905.26**

Oracle Project No.	**122151**		
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**	**TOTAL**	**£ -**

Ref	Description	Quantity	Unit	Rate	Cost
40	**Telecoms**				
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
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	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
50	**Operational Property**				
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
60	**Structures**				
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
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	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
70	**General Civils**				
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
80	**Utilities**				
				£ -	£ -
				£ -	£ -
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	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**				**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	<u>Other Contractors Indirect Costs</u>				
	Other Costs *(The Consultant shall enter details)*			£ -	£ -
				£ -	£ -
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				To Estimate Summary R	£ -

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option Cross Over- New Passenger re-doubling link to Bicester**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Network Rail Direct Costs				
	NDS - Materials			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	£	**£ -**
	NDS - Fleet				
	- Engineering trains			£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	£	**£ -**
	-Tampers			£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	£	**£ -**
	Page Total				**£ -**

	NDS Materials & Fleet (Tampers, etc.) costs generally within rates at GRIP 0-2			£ -	£ -

Ref	Description	Quantity	Unit	Rate	Cost
	NDS - Possession / Isolation management				
				£ -	£ -
	Possession Management			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	OLE Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	DC Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	**£**	**£ -**
	Page Total				**£ -**

Standard Template for Stage 1-2 Estimates prepared by Consultants

Enhancements Estimating

Oracle Project No.:	**122151**
Project Description:	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**
Estimate Stage:	**Grip 2**

Level of Confidence - +/- 40% (Stage 2)

Issue and Revision Record:

Rev.	**Date**	**Consultant**	**Prepared by**	**Checked**	**Description**
Rev 00	21-Oct-13	Franklin + Andrews	Liam Shields	Melvyn Jones	Based on Proposed Outline scope
Rev 01	29-Nov-13	Franklin + Andrews	Jag Shoker	Melvyn Jones	Total scope for Double to Tunnel
Rev 02	17-Dec-13	Franklin + Andrews	Jag Shoker	Melvyn Jones	Total scope for Double to Tunnel at 4Q13
Rev 03	14-Jan-14	Franklin + Andrews	Jag Shoker	Melvyn Jones	NR PM Cost Changed to 7%
Rev 05	26-Feb-14	Franklin + Andrews		Melvyn Jones	Grip 2 Estimate

Franklin + Andrews
35 Newhall Street
Birmingham B3 1LZ

Estimate Document Contents

Estimate Stage: **Grip 2**
Oracle Project No.: **122151**
Project Description: **Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**

Assumptions

General / Drawings & Documents / Exclusions

General

G1 The estimate base date is 4Q 2013
G2 Escalation has been included within the Project AFC as the overall Oxford Corridor Project AFC is above £50m in value and the overall construction phase will be over two years in duration

G3 Escalation to the mid point of Construction is Dec 2017 which is equal to a 11.46% increase, This is based on the overall Oxford Integrated Programme which requires the crossovers to be operational by March 2016

G4 A 40% uplift has been applied for cost and scope uncertainty; it reflects the level of design that has been carried out on the project

G5 In the absence of a Schedule of Possessions an allowance has been included for Possession Management based on 1.5% of the Contractors base construction costs ,
G6 An allowance has been included for TOC & FOC Compensation based on 5% of the total Direct Costs plus Preliminaries and Testing and Commissioning
G7 Assumed that the majority of work will be carried out in possesions
G8 No requirement for Isolations as the track is not under the OLE wires

Drawings & Documents

The following documents have been used in the preparation of this estimate:
D1 Permanent Way, Proposed General Arrangement - Oxford North junction - 70 mph - Option ref B90505-DRG-PWY2110 rev P02 dated 20/09/13

Exclusions

E1 Excludes VAT
E2 Excludes 3rd party compensation costs
E3 Excludes planning and approval charges
E4 Land purchases
E5 Costs associated with Statutory Fees (e.g. HMRI, Local Authority, etc.) unless confirmed otherwise in the summary
E6 Costs associated with taxes and levies, including VAT
E7 Costs associated with licences and all associated costs and fees
E8 Costs associated with changes in legislation and any form of applicable standards
E9 Costs associated with changes in legislation, regulation and interpretation covering
E10 Allowances for adverse ground conditions / provisions for ground stabilisation unless specifically identified
E11 Service diversions unless stated otherwise
E12 Excludes any costs associated with the Insurance Top Up Fund, the Network Rail Fee Fund or the Industry Risk Fund.
E13 Christmas, Easter or Bank Holiday working

ESTIMATE SUMMARY REPORT

Estimate No.		**Revision**	05	**Estimate Stage**	**Grip 2**
Estimate Date	**26-Feb-14**	**Price 'Base date'**	**4 Q 2013**		
Anticipated Start Date	**T B C**	**Anticipated Finish Date**	**T B C**		
Project No.	**122151**				
Project Title / Location	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**				

WBS	Estimate Breakdown	Value	Escalation (Y/N)	%age of Point Estimate	Remarks
	Contractor's direct costs -				
10	Signalling	-	Y		
20	Electrification & Plant	-	Y		
30	Track	2,708,655	Y		
40	Telecoms	-	Y		
50	Operational Property	-	Y		
60	Structures	-	Y		
70	General Civils	-	Y		
80	Utilities	-	Y		
	Contractor's Base Construction Cost inc OH&P: Sub-Total A	2,708,654.84			
	Network Rail's "direct costs"				
tbc	NDS - Materials		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Fleet		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Engineering trains		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	- Tampers		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	NDS - Possession / Isolation Management	40,630			Allow 1.5% of Signalling and track costs
	Sub - Total B	40,630			
	Total Base Construction Cost inc OH&P: Sub-Total C (A+B)	2,749,285		0.00%	
	Contractor's indirect costs				
tbc	Preliminaries	677,164	Y		
tbc	Design	270,865	Y		
tbc	Testing & Commissioning	-	Y		
tbc	Training - Drivers Training	75,000	Y		*Allowance*
tbc	Spares		Y		*Generally within the rates (direct costs) at Stages 0 - 2*
tbc	Other	-	Y		
	Sub - Total D	1,023,029			
	Total Construction Cost E (C+D)	**3,772,314**			
	Network Rail's indirect & other costs				
tbc	Network Rail Project Management, (COWD)		N		To be advised by NR
tbc	Network Rail Project Management, (forecasted remaining costs)	270,865	Y		To be advised by NR
tbc	Compensation charges (TOC & FOC), (costs from NDS)	169,291	Y		Calculated as 5% of construction costs
tbc	DCO Charges 0%		Y		
tbc	Land / Property Costs & compensation 0.00%		Y		Excluded
tbc	Escalation (see Note 1) % 11.46%	482,749	NA		*See Note 1*
tbc	Other (State)				
	Sub - Total F	922,906			
	Point Estimate - Sub - Total G (E+F)	**4,695,219**			
	Uplift for Risk and Contingency				
tbc	To Mean (see Note 3) £				*See Note 3*
	Project Budget (Point Estimate + Uplift to Mean)	4,695,219	***for Project Manager's reference***		
tbc	QRA Value - at P50 (see Note 3) £		*Sponsor to advise if P50 or P80 value shall apply*		*See Note 3*
tbc	QRA Value - at P80 - incremental on P50 value (see Note 3) £		*Sponsor to advise if P50 or P80 value shall apply*		*See Note 3*
tbc	Adjustment for residual factors (see Note 2) % 40%	1,878,088	*Uplift on Point Estimate Value (excluding the Cost of Work Done)*		*See Note 2*
	Project Anticipated Final Cost (AFC)	6,573,307	*Authorised AFC*		
	Other Costs to the Customer				
tbc	Allowance for Escalation (see Note 1)				*See Note 1*
tbc	Allowance for Network Rail Fee Fund	-	*provided by Sponsor*		
tbc	Allowance for Industry Risk Fund	-	*provided by Sponsor*		
tbc	Allowance for Insurance Top-up		*provided by Sponsor*		
	Cost to Customer	**6,573,307**			

APPROVAL & ENDORSEMENT

	Estimate Produced by :-	**Estimate Approved by (Network Rail) :-**	**Estimate Endorsed by (Network Rail) :-**
Name :-	Melvyn Jones		
Company :-	Franklin + Andrews		
Position :-	Lead Estimator		
Signed :-			
Date :-			

Notes:-

1. Escalation has been included within the Project Anticipated Final Cost (Project AFC) where the total Project AFC is in excess of £50m and where the total site works will be over 2 years duration.

2. An 'Uplift for residual factors' of 40% has been applied; this is an allowannce for cost and scope uncertainty and is the "Benchmark" uplift for an estimate at Stage 2 where the estimate Quality, Risk Profile and Confidence level are seen as 'Moderte' . An 'adjustment for residual factors' has been applied in accordance with the Guidance Notes on Estimating.

3. No QRA P80 value is available at the current time.

Project Description: **Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**

Estimate Stage: **Grip 2**

Total expenditure by GRIP Stage		**42,797**	**37,921**	**104,098**	**206,572**	**616,055**	**5,087,765**	**447,448**	**30,651**
Project Anticipated Final Cost	6,573,307								

Estimate Stage: **Grip 2**
Oracle Project No.: **122,151**
Project Name: **Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Lay**

Calculation of Contractors and Network Rail's Indirect Costs

Asset	**Total Direct Costs**	**%**	**Preliminaries**	**%**	**Design**	**%**	**Test & Commission**	**%**	**Network Rail Management**	**%**	**Sponsor**
Signalling	0	35%	0	10%	0	15%	0	7%	0	3%	0
Electrification & Plant	0	35%	0	30%	0	13%	0	7%	0	3%	0
Track	2,708,655	25%	677,164	10%	270,865	0%	0	7%	189,606	3%	81,260
Telecoms	0	25%	0	10%	0	10%	0	7%	0	3%	0
Operational Property	0	25%	0	10%	0	0%	0	7%	0	3%	0
Structures	0	20%	0	15%	0	0%	0	7%	0	3%	0
General Civils	0	20%	0	15%	0	0%	0	7%	0	3%	0
Utilities	0	25%	0	10%	0	0%	0	7%	0	3%	0
			677,164		270,865		0		189,606		81,260
Total for TOC / FOC calculation (5% of Total Construction Cost)											
	2,708,655		677,164				0				
TOTAL	3,385,819						169,291		TOC/FOC at 5%		

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
10	**Signalling**				
	Recoveries - Final Layout				
	Lift and slew existing cable trough over length of Final Layout (from 29m 60 chains to Wolvercote Tunnell Entrance at 28m 67chains)	0	m	£ 138.18	£ -
	Recovery of Signal Head & Post (SLOX 76, 26, 86, 67 & 15)	0	nr	£ 7,425.22	£ -
	IBJ	0	nr	£ 6,263.49	£ -
	Track Circuit Alterations	0	nr	£ 3,888.52	£ -
	Location Cases	0	nr	£ 2,520.74	£ -
	TPWS TSS	0	nr	£ 1,779.86	£ -
	TPWS OSS	0	nr	£ 1,779.86	£ -
	AWS	0	nr	£ 1,879.60	£ -
	Recovery of Clamplocks (from 5 point ends)	0	nr	£ 2,537.18	£ -
	Signalling New Items - Final Layout				
	~~Signal Head 3/4 Aspect LED Type (OD2398)~~	0	nr	£ 9,109.74	£ -
	~~IBJ~~	0	nr	£ 8,634.08	£ -
	~~Track Circuits - assumed DC type~~	0	nr	£ 5,614.67	£ -
	~~New SSI Location Cases~~	0	nr	£ 30,139.29	£ -
	~~TPWS TSS~~	0	nr	£ 6,667.91	£ -
	~~TPWS OSS~~	0	nr	£ 8,591.34	£ -
	~~AWS~~	0	nr	£ 4,812.42	£ -
	~~Foundation for "Traditional" Type Signal Post including post (OD2398)~~	0	nr	£ 13,699.68	£ -
	~~In bearer clamp locks - G Turnouts~~	0	nr	£ 139,290.44	£ -
	~~In bearer clamp locks - E Crossover~~	0	nr	£ 94,753.77	£ -
	~~In bearer clamp locks - G Crossover~~		nr	£ 139,290.44	£ -
	Trackside - Cable routes and cables - Final Layout				
	~~Tail Cables~~	0	m	£ 19.73	£ -
	~~650V Power cable~~	0	m	£ 15.34	£ -
	~~Multicore cable~~	0	m	£ 19.73	£ -
	~~Earth cable~~	0	m	£ 2.74	£ -
				£ -	£ -
	Interlocking Systems - General			£ -	£ -
	~~Panel modification – **Display Systems alterations**~~	0	nr	£ 75,000.00	£ -
	~~Interlocking modification - **allowance SSI**~~	0	nr	£ 75,000.00	£ -
	~~Train describer data modifications - **Allowance**~~	0	nr	£ 75,000.00	£ -
	~~TDM Data changes~~	0	nr	£ 75,000.00	£ -
	~~Stageworks - General~~	0	nr	£ 50,000.00	£ -
				£ -	£ -
	Signage - General			£ -	£ -
	~~Signalling signage - includes removal of old and replacement with new signal numbers~~	0	item	£ 10,000.00	£ -
				£ -	£ -
	Page Total				£ -

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
20	**Electrification and Plant**				
				£ -	£ -
	New Work			£ -	£ -
	Point Heating, including strip heaters and control cabinets to Point ends			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 6,575.84	£ -
	~~Upgrade existing DNO supply to service new crossover & Turnouts - **Allowance**~~	0	nr	£ 10,959.74	£ -
				£ -	£ -
	Removal			£ -	£ -
	~~Point Heating, including strip heaters and control cabinets~~	0	item	£ 2,191.95	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ 2,708,654.84**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
30	**Track**				
	Removals - Final Layout				
	~~Take up existing crossover 276A/B points Down Main to Up Main at 22340 to 22380)~~	0	nr	£ 54,798.70	£ -
	~~Install new rail sleepers and ballast in place of Crossover (Down Main to Up Main)~~	0	m	£ 712.38	£ -
	~~Take up existing crossover 277A/B points Up Main to up relief at 22420 to 22480)~~	0	nr	£ 54,798.70	£ -
	~~Take up part of existing track - Up Relief (from 22200 to 22310 and from 22440 to 22900)~~	0	m	£ 69.92	£ -
	Note Balance of Up relief covered by the upgrading of the Up relief Estimate			£ -	
	~~Take up existing Turnout from up relief to up/down Bicester~~	0	nr	£ 27,399.35	£ -
	~~Take up existing track - Up/Down Biscester (from 22570 to 23250)~~	0	m	£ 69.92	£ -
	Take up existing track - Up/Down Biscester (from 29m 60 chains to Wolvercote Tunnell Entrance at 28m 67chains)	1550	m	£ 69.92	£ 108,376.00
				£ -	£ -
	New Track - Final Layout			£ -	£ -
	~~Minor Slew existing Down Main (from 21980 to 22490)~~	0	m	£ 23.67	£ -
	~~Minor Slew existing Up Main (from 21900 to 22660)~~	0	m	£ 23.67	£ -
	~~Install new rail sleepers and ballast as Up Main (from 22215 to 22670) less 2 nr crossovers~~	0	m	£ 712.38	£ -
	~~Install new rail sleepers and ballast as Up Relief (from 22200 to 22310 and from 22440 to 22900)~~	0	m	£ 712.38	£ -
	~~Install new 70 mph Crossover G (Down Main to Up main at 22040 to 22210)~~	0	nr	£ 986,376.62	£ -
	~~Install new 70 mph Crossover G (Up main to Up relief at 21990 to 22130)~~	0	nr	£ 986,376.62	£ -
	~~Install new 70 mph Crossover G (Up Main to Up relief at 22400 to 22550)~~	0	nr	£ 986,376.62	£ -
	~~Install new rail sleepers and ballast as Up Bletchley (from 22540 to 23120)~~	0	m	£ 712.38	£ -
	~~Install new rail sleepers and ballast as Down Bletchley (from 22780 to 23080)~~	0	m	£ 712.38	£ -
	Install new rail sleepers and ballast as Up Bletchley (from 29m 60 chains to Woodstock Overbridge at 28m 67chains)	1550	m	£ 712.38	£ 1,104,189.00
	Install new rail sleepers and ballast as Down Bletchley (from 29m 60 chains to Woodstock Overbridge at 28m 67chains)	1550	m	£ 712.38	£ 1,104,189.00
	~~Install new 70 mph Turnout from Up Relief to new Up Bletchley~~	0	nr	£ 493,188.31	£ -
	~~Install new 70 mph Turnout from Up Relief to new Down Bletchley~~	0	nr	£ 493,188.31	£ -
	~~Install new 40 mph Crossover E (Down Bletchley to Up Bletchley at 23080 to 23190)~~	0	nr	£ 712,383.12	£ -
				£ -	£ -
	Drainage			£ -	£ -
	Track drainage - (Oxford North Jcn to Wolvercote Tunnell)	1,550	m	£ 131.52	£ 203,856.00
	Catchpits - 30m centres	52	nr	£ 767.18	£ 39,893.36
	Outfall - **Allowance**	4	item	£ 5,479.87	£ 21,919.48
				£ -	£ -
	Ancillaries			£ -	
	Cess walkway (Oxford North Jcn to Wolvercote Tunnell)	1,550	m	£ 54.80	£ 84,940.00
	Vegetation clearance of second Track Bed (Oxford North Jcn to Wolvercote Tunnell)	6200	m2	£ 6.66	£ 41,292.00
				£ -	£ -

Ref	Description	Quantity	Unit	Rate	Cost
				£ -	
	Page Total				**£ 2,708,654.84**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
40	**Telecoms**				
				£ -	£ -
	Recoveries - Interim Layout			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 547.99	£ -
	~~Recover Telecomms LOC case including foundations~~	0	nr	£ 2,520.74	£ -
				£ -	£ -
	Telecoms New Items - Interim Layout			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 12,055.71	£ -
	~~Dial up for points heating (2 nr Crossovers)~~	0	nr	£ 2,191.95	£ -
				£ -	£ -
	Recoveries - Final Layout			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 547.99	£ -
	~~Recover Telecomms LOC case including foundations~~	0	nr	£ 2,520.74	£ -
				£ -	£ -
	Telecoms New Items - Final Layout			£ -	£ -
	~~SPT and Drivers Walkway~~	0	nr	£ 5,479.87	£ -
	~~New Telecomms LOC case including foundations~~	0	nr	£ 12,055.71	£ -
	~~Dial up for points heating (4 Crossovers and 2 Turnouts)~~	0	nr	£ 2,191.95	£ -
				£ -	
				£ -	£ -
	Telecoms - General - Final Layout			£ -	£ -
	~~Delid and relid existing cable troughs Interim Layout~~	0	m	£ 15.34	£ -
	~~Upgrading existing concentrator - **allowance**~~	0	nr	£ 32,879.22	£ -
	~~Supply and lay new telecomms cable - assume not fibre optics~~	0	m	£ 10.96	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
50	**Operational Property**				
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
60	**Structures**				
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
70	**General Civils**				
				£ -	£ -
	Culvert work				
	~~Allowance for new culvert work where New UP Bletchley crosses existing drainage ditch~~	0	nr	£ 125,000.00	£ -
	~~Allowance for new culvert work where New UP Bletchley crosses existing drainage ditch~~	0	nr	£ 125,000.00	£ -
				£ -	£ -
	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
80	**Utilities**				
				£ -	£ -
				£ -	£ -
				£ -	£ -
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	Page Total				**£ -**

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**				**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Other Contractors Indirect Costs				
	Other Costs *(The Consultant shall enter details)*			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
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			To Estimate Summary R		£ -

Oracle Project No.	**122151**				
Project Description	**Oxford Corridor - 70mph Option - New Passenger re-doubling link to Bicester (less cost of Oxford North Jcn) Final Layout**			**TOTAL**	**£ -**
Ref	**Description**	**Quantity**	**Unit**	**Rate**	**Cost**
	Network Rail Direct Costs				
	NDS - Materials			£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	NDS - Fleet				
	- Engineering trains			£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	-Tampers			£ -	£ -
				£ -	£ -
				£ -	£ -
				To Estimate Summary Report £	**£ -**
	Page Total				**£ -**

	NDS Materials & Fleet (Tampers, etc.) costs generally within rates at GRIP 0-2			£ -	£ -

Ref	Description	Quantity	Unit	Rate	Cost
	NDS - Possession / Isolation management				
				£ -	£ -
	Possession Management			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	OLE Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
	DC Isolations			£ -	£ -
	Midweek Day		nr	£ -	£ -
	Midweek Night		nr	£ -	£ -
	Weekend		nr	£ -	£ -
	Bank Holiday		nr	£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
				£ -	£ -
			To Estimate Summary Report	**£**	**£ -**
	Page Total				**£ -**

Appendix B

(Risk Register)

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Ref:	**GRIP2/Oxford Corridor/QCRA**
Version:	3
Date:	19th November 2013

Oxford Corridor Project

Qualitative Risk Assessment Report

Workshop Date: 1st November 2013

Project Name:	Oxford Corridor Project
OP Reference:	122151
Sponsor:	Ben Stevens
Scheme Project Manager:	Penny Martin

Prepared By: John Holdway	Signature: Job Title: Risk & Value Analyst
Date:	
Approved By: Penny Martin	Signature: Job Title: Development Manager
Date:	

Revision History

Version	**Status**	**Details**	**Date**
1	Draft	Draft for Project Team Review	12/11/2013
2	Draft	Draft for QA	15/11/2013
3	Final	Final report for issue	19/11/2013

Contents

1 Executive Summary

The Oxford Corridor Project is an interface for a number of projects around the Oxford Area during CP5. The project has its own scope to carry out track and civils works to enhance capacity through the area, but also will be carrying out works for, and in conjunction with other schemes such as East West Rail and GW Electrification. The Project is currently at GRIP Stage 2.

A Qualitative Risk Analysis workshop was held at Alexander House, Swindon on 1st November 2013 with the objective of identifying risks and ranking them qualitatively, so that development activities can focus on avoiding risk. The report is to support the GRIP Stage 2 Feasibility Study.

The Top 5 risks at this stage were brainstormed as;

- Botley Road Bridge - Council Liaison
- December 2013 Authority not achieved
- Impact on Third Party property
- Oxford Masterplan - Passive provision for additional track span at Botley Road Bridge
- High Water Table - Excavation Risk

Key actions that were recorded in the meeting

- Review the current status of Level Crossings

Key Assumptions that the model was based on

- Funding will be available
- OARS will have completed their works
- FTL will have completed works
- Integrated plan will be constructed to do all works in CP5

Exclusions/constraints that the model is based on

- National resources
- Site Constraints
- Commercial Contracting Strategy (Impact on timelines)

The project team noted that the size and complexity of the project would be a significant obstacle to completion.

2 Background

The Oxford Corridor Project is an interface for a number of projects around the Oxford Area during CP5. The project has its own scope to carry out track and civils works to enhance capacity through the area, but also will be carrying out works for, and in conjunction with, the following schemes;

- East West Rail
- OARS (Oxford Area Resignalling)
- GW Electrification Project
- IEP (Intercity Express Project)
- Strategic Freight Network Projects – Freight Train Lengthening
- Hinksey Flood Alleviation Project
- NR Renewals Programme Works
- Oxford Station Masterplan

These schemes are all at various stages of development, some of them do not have secured funding at present. There is also the possibility of other schemes developing during the period of works.

The project is currently at GRIP Stage 2. The works are programmed in a number of phases, surrounding works on other projects that depend on or facilitate the installation of the equipment within the Oxford Corridor Scope. Amongst the key milestones are;

- Aristotle Lane – Track and Civils – Christmas 2014
- OARS Down Platform Loop – May 2015
- Phase 1 – East West Rail Phase 1 and Initial Electrification – February 2016
- Phase 2 – for Full Electrification – December 2017

3 Methodology

A Qualitative Risk Analysis workshop was held at Alexander House, Swindon on 1st November 2013 with the objective of identifying risks and ranking them qualitatively, so that development activities can focus on avoiding risk. This report is to form part of the GRIP Stage 2 Feasibility Report. Representatives of Network Rail were present. All participated in the deliberations.

The objectives of the meeting were to:

- identify significant risks to the achievement of the project objectives
- establish a project risk register in Active Risk Manager (ARM)

The risks to the project were identified in a brainstormed session. The designers risk register was also reviewed. Each risk was then analysed to understand the probability of occurrence and impact of the risks on the project outcome. A risk owner was allocated and a treatment strategy decided upon.

4 Assumptions

The following assumptions were made for the purpose of this analysis. These assumptions are potentially risks that could occur and actions should be taken to reduce their likelihood of occurrence or impact.

- Funding will be available
- OARS will have completed their works by May 2015
- FTL will have completed works by Dec 2014
- Integrated plan will be constructed to do all works in CP5
- Access will be available
- Resources will be available
- East West Rail will complete doubling of Bicester Branch
- London Marylebone to Oxford Service to start March 2016
- Botley Road Bridge can be closed to allow works to complete (Highway and Rail)
- Property consents can be achieved (within Cost / Time allocation)
- Design will be constructable within the timescales and possessions that are available
- Aristotle Lane will be closed prior to project
- Sandy Lane / Yarnton Level Crossings are assumed to be as they are now although it is known that an attempt to close/mitigate associated risks is ongoing

The following constraints were also identified;

- National resources
- Site Constraints
    - Environmental
    - School (Aristotle Lane)
    - Sensitivity of local population
- Commercial Contracting Strategy (Impact on timelines)

The project team noted that the size and complexity of the project would be a significant obstacle to completion.

5 Results

The table below displays the new risks entered into ARM as a result of the workshop:

Risk			**Current Qualitative Impact**		**Current Score**	
Risk ID	**Risk Title**	**Risk Description**	**Probability**	**Cost**		
OXF-122151-023	Botley Road Bridge - Council Liaison	Botley Road Bridge is a key site within the project. Project is dependent on Local Authority input on highway access, planning and other impacts. Risk is that these are delayed causing additional costs to project.	4: High	5: Very High	9.	Critical
OXF-122151-017	December 2013 Authority not achieved	Risk is that Project is not sufficiently developed to go to Authority and that it is rejected. This could cause additional costs for reprogramming or reworking.	4: High	4: High	8.	Critical
OXF-122151-024	Impact on Third Party property	Works will impact on Third party property in many areas where railway will leave current envelope. Risk is that this impact is wider than anticipated at present resulting in more costs for land purchase or construction.	4: High	4: High	8.	Critical
OXF-122151-036	High Water Table - Excavation Risk	Oxford has high water table. Risk is that this could affect excavation works causing more cost.	4: High	4: High	8.	Critical
OXF-122151-001	Design is not constructable within available timescales	Design is currently under development. Risk is that design produced cannot be delivered within the constraints of time and available possessions.	3: Medium	4: High	7.	Major
OXF-122151-002	Level of possessions required unavailable	Limited possessions available at this site. Risk is that not enough possessions can be taken to complete works	3: Medium	4: High	7.	Major
OXF-122151-006	Oxford Masterplan - Scope Change / Interface Risk	Oxford Masterplan has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	3: Medium	4: High	7.	Major
OXF-122151-008	Banbury Resignalling Project - Scope Change / Interface Risk	Banbury Resignalling Project has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	3: Medium	4: High	7.	Major
OXF-122151-015	SBP05 Submission Rejected	Risk is that AFC is too high and that descoping exercise will have to be undertaken.	3: Medium	4: High	7.	Major
OXF-122151-016	Funding Source Issues	Funding is due to come from various sources including electrification and EW Rail. Risk is that funding is delayed from these sources causing prolongation or additional management costs.	3: Medium	4: High	7.	Major
OXF-122151-026	Oxford Masterplan - Passive provision for additional track span at Botley Road Bridge	Oxford Masterplan may need to install extra track span at Botley Road bridge. Risk is that Project may have to include passive provision for this when constructing bridge.	3: Medium	4: High	7.	Major
OXF-122151-020	Other Projects Prioritised	Other projects have works within and adjacent to this site. Risk is that it may be decided that they take priority for use of possessions, accesses etc. This could cause delay or prolongation costs.	3: Medium	4: High	7.	Major

OXF-122151-012	Castle Mill Stream Bridge - Reconstruction could be added to scope	Castle Mill Stream Bridge is not currently in scope but could be impacted by other works. Risk is that it is added to the scope and that accommodating it will cause acceleration elsewhere.	4: High	3: Medium	7.	Major
OXF-122151-021	Access Issues	Access to tracks is rated poor by project team along extent of works. Risk is that there could be issues which cause additional costs and reputational issues.	4: High	3: Medium	7.	Major
OXF-122151-027	Land / Buildings not available for alternative station accommodation	Alternative station accommodation needs to be found for TOC staff. Risk is that this is not available causing additional costs for additional buildings or rental arrangements. Could also be costs to pay to TOC.	4: High	3: Medium	7.	Major
OXF-122151-003	East West Rail - Scope Change / Interface Risk	East West rail has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	2: Low	4: High	6.	Significant
OXF-122151-004	GW Electrification - Scope Change / Interface Risk	GW Electrification has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	2: Low	4: High	6.	Significant
OXF-122151-005	OARS - Scope Change / Interface Risk	OARS has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	2: Low	4: High	6.	Significant
OXF-122151-010	Scope Change - Route Director	Scope change as a result of changes in specification or requirement eminating from Asset Manager / Rout Director as customer of corridor projects own scope.	2: Low	4: High	6.	Significant
OXF-122151-014	Botley Road Crossing (Next to bridge)	There is a disused crossing next to Botley Road bridge. Risk is that Council could ask for additional scope in return for the removal of this crossing.	2: Low	4: High	6.	Significant
OXF-122151-019	OARS Delays	OARS are delivering key elements that will be depended on by this project (Such as Bi-directional working). Risk is that this is not delivered on time, delaying project and causing delay and prolongation costs.	2: Low	4: High	6.	Significant
OXF-122151-042	DFT / ORR Input risks	DFT / ORR may ask for additional scope or a different way of delivery. Risk is that this could cause working arrangements that increase costs.	2: Low	4: High	6.	Significant
OXF-122151-013	Level Crossings - Project Scope may change to accommodate	There are 3 Level crossings within area of scope. Risk is that project scope may have to change to accommodate works to these which are not currently included.	3: Medium	3: Medium	6.	Significant
OXF-122151-025	Botley Road Bridge - Council design aspiration risk	Council may want additional capacity or design changes to bridge. Risk is that this could cause additional design and implementation costs.	3: Medium	3: Medium	6.	Significant
OXF-122151-028	Car Parking Provision may cost extra	Car Parking provision has to be changed in accommodating new works. Risk is that the change cannot be implemented and requires new land or other provision.	3: Medium	3: Medium	6.	Significant
OXF-122151-031	Contracting Strategy	Risk is that contracting strategy may change resulting in additional PM works and possibly delay costs.	3: Medium	3: Medium	6.	Significant
OXF-122151-032	TOC / FOC Buy in	Works will have to be approved by TOCs / FOCs at various stages (ROGs, Driver Training, Station Staff interface). Risk is that TOCs / FOCs do not want to co-operate and that additional costs will arise.	3: Medium	3: Medium	6.	Significant

OXF-122151-041	Access across Sheepwash Bridge for Emergency Service vehicles	Access requirements along Roger Dudman Way may mean additional works not included in current scope.	3: Medium	3: Medium	6.	Significant
OXF-122151-030	Water / Flooding Issues	Area is prone to flooding and poor drainage. Risk is that this could impact on the works. Works at Aristotle Lane are of particular concern.	4: High	2: Low	6.	Significant
OXF-122151-007	Freight Train Lengthening - Scope Change / Interface Risk	Freight Train Lengthening has works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	2: Low	3: Medium	5.	Significant
OXF-122151-009	Other Projects - Scope Change / Interface Risk	Other projects have works within and adjacent to this site. Risk is that their works could impact on this project or alternatively end up transferring scope into this project causing additional cost.	2: Low	3: Medium	5.	Significant
OXF-122151-018	NR Reorganisation - Loss of key expertise	NR is undergoing efficiency reorganisation. Risk is that individuals that are key to development of project are lost and that the programme will be put back whilst new ones are trained or recruited.	2: Low	3: Medium	5.	Significant
OXF-122151-022	East West Rail Delays	East West rail has works that this project depends on in order to implement. Risk is that their works could be delayed, causing delay or prolongation to this project.	2: Low	3: Medium	5.	Significant
OXF-122151-029	Noise Impact	Noise impact is significant both during construction and operation. Risk is that additional anti-noise measures will be called for during project at additional costs.	2: Low	3: Medium	5.	Significant
OXF-122151-037	Asbestos	Asbestos may be present in buildings affected by works. Risk is that more will have to removed than anticipated causing additional cost.	3: Medium	2: Low	5.	Significant
OXF-122151-033	Trespass / Theft / Vandalism disruption	Trespass during works could cause additional costs.	2: Low	2: Low	4.	Minor
OXF-122151-034	Weather Disrupton	Weather disruption during works	2: Low	2: Low	4.	Minor
OXF-122151-035	Flooding risk	Flooding during works could cause additional costs.	2: Low	2: Low	4.	Minor
OXF-122151-038	Asset Condition Issues	Asset condition on site (especially Track and Civils) is unknown. Risk is that this could require additional measures to make the asset ready for the new works.	2: Low	2: Low	4.	Minor
OXF-122151-039	Unforeseen Ground Conditions	Ground Conditions unknown in many locations. Risk is that this could cause additional works.	2: Low	2: Low	4.	Minor
OXF-122151-040	Services Diversions	Unknown locations of railway and statutory services.	2: Low	2: Low	4.	Minor
OXF-122151-011	Hinksey Flood Alleviation Interface - Track raising	Opportunity to interface with track raising to alleviate funding. This will be an opportunity to get additional funding in and save across several projects.	2: Low	-3: Moderate	-5.	Moderate

6 Actions

The following actions were recorded in the workshop. Owners were assigned from people within the room. These actions should be entered in to the project plan where capital expenditure or time is taken to complete the action.

Action	Owner	Close Out Date
Review the current status of Level Crossings	Ben Stevens	30th November 2013

7 Appendix A – Attendees

Name	Position	Company
Penny Martin	Scheme Project Manager	Network Rail
Derek Wilson	SDG – Lead DE	Network Rail
Ian Conduit	Strategic Planner	Network Rail
Ben Stevens	SDM (Sponsor)	Network Rail
John Holdway	Risk & Value Analyst	Network Rail

TATA STEEL

TATA

CONSTRUCTION (DESIGN & MANAGEMENT) REGULATIONS 2007

Designer's Health & Safety Risk Review

Document Reference Number:	B90505-CDM-PEN0001	**Version**	P01
Project Number:	B90505	**Applicable from Stage:**	GRIP 2
Project Title:	Oxford Corridor CP5 (Phase 1)		
Client:	Network Rail		
CDM Co-ordinator (Organisation & Contact Name)	Network Rail, Paul Richard		
Designer (Organisation & Contact Name)	TATA Steel Projects, David Brown		
Is the Structure to be used as a workplace?:	No		

(if yes, the design to take into account provisions of Workplace (Health, Safety and Welfare) Regulations 1992 and the 2002 amendments

I have reviewed the attached list of residual risks and identified those which are significant and included them in the Designer's Risk Log/Pre-Construction Information. These risks cannot be reasonably designed out.

The following Disciplines/Designers pro-actively contributed to the risk elimination, reduction and control on this project:

Discipline	Assessment Number	Discipline	Assessment Number
General/Project	PEN0001		
Civils/Platforms	CIV0001-0005		
Geotechincal	GEO0001-0015		
M&E	MEE0001		
Electrification	EFE0001		
Track	PWY0001-0011		

Project Engineer	David Brown	**Signature:**		**Date:**	02/10/2013

DESIGNERS RISK LOG			B90505 Oxford Corridor CP5												
Hazard Ref No.	**Category**	**Hazard**	**Risk Description**	**Frequency**	**Severity**	**Significance H, M, L**	**Design Control Action**	**Frequency**	**Severity**	**Significance H, M, L**	**Progress**	**Information Transmission Route**	**Residual Risk Action Owner**	**Comments**	**Risk Type**
e.g. project / 001	Construction, Maintenance, Operations, Demolition (Drop down + Multiple)	Brief description of feature (design or otherwise) with potential to cause risk to health or safety	Potential impact of the hazard on personnel or operations			Auto matic calc with colour	Action required to eliminate the hazard or Residual risk remaining and the suggested controls required to manage the risk			Auto matic calc with colour	Open / Closed (Drop down)	PCI, Construction sequence, Client Logs, H&S File (Drop down + multiple?)	Client, Contractor, Maintainer, Operator (Drop down + multiple)	e.g. assumptions, dependencies and constraints	CDM H&S or Project (Drop down)
General/PEN0001	Construction	Unknown buried service strike; design incompatabilty	Buried service records provided for GRIP stage 2 design dated 20th October 2011. No revised information provided/obtained	3	5	H	Revised buried service information to be obtained on commencement of next GRIP stage and revised as project develops	1	5	L	Open	PCI	Client		CDM H&S
Bi-Ox Platforms/CIV0001	Construction	Injuries or death due to interface between construction, station operations and the public.	Site will be access will be constrained due to location within busy town centre. Access to offices, buildings, station, car park, entrance, drop off, bus taxi area to be maintained throughout the works. Busy railway station to remain operational throughou	5	5	H	Activities to be planned and managed and staged with clear demarcation between construction activities the public and railway operations.	2	5	M	Open	Construction Sequence	Client	Station likely to remain open throughout the works.	CDM H&S
Bi-Ox Platforms/CIV0002	Construction	Injuries or death due to discovery of Buried Services during construction.	Buried services not identified at GRIP2 feasibility stage.	3	5	H	Carry out services search at GRIP3 and modify design or propose diversion of services.	2	5	M	Open	Construction Sequence	Client		CDM H&S
Bi-Ox Platforms/CIV0003	Construction	Collapse of Ground or Structures during construction.	Buidling & Canopy construction not known at GRIP2 feasibilty stage.	3	5	H	Carry out survey, review records drawings at GRIP3. Identify risks within design and suggest safe demolition sequence for Contractor.	2	5	M	Open	Construction Sequence	Client		CDM H&S
Bi-Ox Platforms/CIV0004	Construction	Lead & Asbestos	Buidling & Canopy construction not known at GRIP2 feasibilty stage.	3	5	H	Carry out lead & asbestos survey at GRIP3. Identify risks within design to allow removal in early stages of construction.	2	5	M	Open	Construction Sequence	Client		CDM H&S
Bi-Ox Platforms/CIV0005	Construction	Noise & Vibration	Construction operations causing excessive noise and nuisance to local residents and businesses.	3	3	M	Contractor to employ construction techniques that create low levels of noise. Isolation of workforce and public from noise sources. Ear protection to be worn as appropriate. Noisy operations to be undertaken outside late night-time working.	2	3	L	Open	Construction Sequence	Client		CDM H&S
General/PWY0001	Construction	The feasibility designs have been undertaken using a mixture of OS mapping, LIDAR survey data and Topo survey data. No structure gauging information is available at this stage.	There is a risk that the designs may prove to be not feasible or prohibitively expensive at the next GRIP stage.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project
General/PWY0002	Construction	There are proposals for the Oxford area to be electrified. At this stage no detailed review of the proposed track layouts and their compatibility with electrification requirements has been undertaken.	There is a risk that it will not be possible to electrify the proposed track layouts.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project

General/PWY0003	Construction	The extent of lineside buildings and equipment that needs to be relocated as a result of the proposed track layouts is not fully understood at this stage.	There is a risk that the feasibility and cost of relocating some items of infrastructure will be prohibitively expensive.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project
General/PWY0004	Construction	This scheme interfaces with a number of other schemes, being delivered by others, which are at different stages of development.	There is a risk that the options proposed by this scheme are not compatible with the proposals being developed by other projects.	3	4	M	Co-ordination with other projects required during next GRIP stage			L	Open	Client Logs	Client	Generic	Project
Oxford Station North Ladder/PWY0005	Construction	Track realignment work proposed by Option 3 may require platform alterations. The extent of these adjustments is currently unkown subject to a gauging assessment at the next GRIP stage.	There is a risk that the platform alteration works required to support these options will be prohibitively expensive.	3	4	M	To be assessed at next GRIP stage			L	Open	Client Logs	Client	Oxford Station North Ladder and Platform 5	Project
General/PWY0006	Construction	Due to the limited space available, it has been necessary to make use of fixed buffer stops and in some cases end impact walls, in order to maximise available siding standages.	The feasibility of this approach will be subject to the completion of buffer stop risk assessments. This approach may also not be acceptable to the TOCs.	3	5	H	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Down Sidings and Up Sidings	Project
Up Sidings/PWY0007	Operations	The existing track interval between the Up Sidings and the adjacent Down Jericho is currently to small to allow the depot facilities within the Up Sidings to be suitably fenced off from the main lines.	There is a risk that staff working within the depot could inadvertently encroach onto the adjacent main lines.	2	5	M	Track alignment to be designed to allow for provision of fencing between Up Sidings and proposed Up Relief.			L	Closed	Client Logs	Client	Up Sidings	CDM H&S
Bay Platforms/PWY0008	Operations	A possible option for the Bay Platforms includes the retention of the existing turnout (244C PTS).	There is a risk that the condition of this unit is not suitable for the proposed increase in traffic. Resulting in reliability and maintence issues.	3	4	M	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Bay Platforms	Project
Bay Platforms/PWY0009	Construction	The existing turnout to the Bay Platforms (244 PTS) located on Sheepwash River underbridge may require renewal.	There is a risk that renewal of this turnout on anything other than a like-for-like basis is not feasible in terms of available ballast depths, gauge clearance and structural capacity of Sheepwash River underbridge.	3	4	M	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Bay Platforms	Project
Up Sidings/PWY0010	Construction	Realignment of the main lines has meant that it is necessary to slue the entire sidings layout towards the east. The topography at the north east end of the proposed sidings layout is difficult to determine from OS mapping and aerial photography.	There is a risk that the proposed alignment of Up Siding 4 is prohibitively expensive due to the nature of the topography and work required to create a new track bed.	3	5	H	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Up Sidings	Project
General/MEE0001	Construction	Unknown equipment or services may prevent design development or cause major disruption to option or require GRIP 2 revisit	M&E records/installation records/maintenance information not provided as part of GRIP 2 project therefore only high level commentary provided on likely requirements at this stage. Submitted TQ/RFI 0004 contains details of requirements	3	5	H	Obtain current records from client prior to commencement of next GRIP stage	1	5	L	Open	PCI	Client	Records requested. No M&E walkout for GRIP 2	CDM H&S
General/GEO001	Construction	Manual Handling of geotextile sections into position for installation.	Injury to staff	4	4	H	All geotextile sections to be assessed based upon Manual Handling Requirements. Where weights exceed those required, lifting equipment be supplied to allow positioning of the sections.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO002	Construction	Noise from construction and effect on residents and adjacent landowners	Staff injury and noise complaints	3	2	L	Noise assessment to be carried out prior to commencement of the works.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S

General/GEO003	Construction	Encountering redundant and active services during pile installation	Electrocution to site staff, explosions on site, construction programme delays	3	5	H	using hand digging equipment and use of CAT Scan equipment	2	5	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO004	Construction	Encountering poorer / unexpected strata during construction once design depth achieved	Design may not be sufficient	3	4	H	The ground conditions are to be reviewed before and after design to mitigate risk as far as feasibly possible.	1	4	L	Open	PCI	Client		CDM H&S
General/GEO005	Construction	Construction causes movement of adjacent structures	Foundation failure	2	4	M	Confirm any sensitive structures that are adjacent to construction positions and monitor during the works.	1	4	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO006	Construction	Encountering contaminated ground and affect on operatives	Staff come into contact with contaminated soil.	3	5	H	Contractor to provide appropriate PPE based upon risk assessment of site and ground information provided	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO007	Construction	Encountering hazardous waste including landfill waste and asbestos	Staff come into contact with hazardous soil.	4	5	H	Contractor to further assess the contamination with additional trial pits and geochemical sampling. The Contractor is to provide appropriate PPE based upon risk assessment of site and ground information provided	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO008	Construction	Damage to geotextiles during construction	Geotextile sections will not function correctly	3	2	L	Monitoring during construction. Manufacturers recommendations regarding repairs to be followed should the geotextile be damaged in any way	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO009	Construction	Encountering pockets of clay at the formation design level during the track lower	Unprotected clay can cause trackbed failure	3	3	M	Localised 50mm sand blanket to be positioned over the clay.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO010	Construction	Encountering isolated 'hard spots' of bedrock at the formation design level during the track lower	The design depth may not be achieved	2	4	M	Suitable excavator with breaker	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO011	Construction	Structure foundation and track construiction on embankments could cause crest loading and effect the stability of the embankment slope	Slope failures or increased maintenance	2	4	M	Carry out a topographic survey confirm site specific space restrictions. Ground investigation required. Detailed slope stability calculations of the existing, temporary and design condition. Retaining wall design may be required.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO013	Construction	Encountering confined water tables	Excavations can flood	3	3	M	Construction Contractor to review the desk study and ground investigation information. Produce a temporary works design for dealing with water withjin excavations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO014	Construction	Encountering low strength Alluvium at founding level of structures	Low strength clay can promote settlement.	3	3	M	Detailed settlement calculations of all shallow foundations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S

General/GEO015	Construction	Encountering obstructions/pile refusal during boring of pile prior to reaching minimum design length	Pile length would be insufficient and the foundation may fail	3	5	H	Ground investigation required to determine the ground conditions and allow the Conttractor to select the most appropriate piling technique	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/EFE0001	Construction	Revisit GRIP 2	Options prove unworkable based on 3rd party OLE design being incompatible with proposals	5	3	H	Obtain Network Rail OLE layout plans and cross section information and overlay onto Oxford Corridor options	1	3	L	Open	PCI	Client		Project
General/GEO011	Construction	Structure foundation and track construiction on embankments could cause crest loading and effect the stability of the embankment slope	Slope failures or increased maintenance	2	4	M	Carry out a topographic survey confirm site specific space restrictions. Ground investigation required. Detailed slope stability calculations of the existing, temporary and design condition. Retaining wall design may be required.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO013	Construction	Encountering confined water tables	Excavations can flood	3	3	M	Construction Contractor to review the desk study and ground investigation information. Produce a temporary works design for dealing with water withjin excavations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO014	Construction	Encountering low strength Alluvium at founding level of structures	Low strength clay can promote settlement.	3	3	M	Detailed settlement calculations of all shallow foundations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO015	Construction	Encountering obstructions/pile refusal during boring of pile prior to reaching minimum design length	Pile length would be insufficient and the foundation may fail	3	5	H	Ground investigation required to determine the ground conditions and allow the Conttractor to select the most appropriate piling technique	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/EFE0001	Construction	Revisit GRIP 2	Options prove unworkable based on 3rd party OLE design being incompatible with proposals	5	3	H	Obtain Network Rail OLE layout plans and cross section information and overlay onto Oxford Corridor options	1	3	L	Open	PCI	Client		Project
Oxford Station North Ladder/PWY0011	Operations	Options 1 and 2 include a possible sub option for the non-provision of a ten-foot interval between the Down Relief and Down Main. This is proposed to allow a crossover to be installed on a section of straight parallel alignment.	There is a risk that this will not be acceptable to the Asset Manager.	3	5	H	Early engagement with RAM (Track) required.			L	Open	Client Logs	Client	Oxford Station North Ladder	Project
						L				L					
						L				L					
						L				L					
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Add in rows above this line															
Any New rows MUST be added in ABOVE the indicated line & the formula in 'Significance' column should be copied into any new cells.															

RISK MATRIX

Risk Assessment process requires an examination of the workplace to establish what could cause harm to people. The Risk Matrix is designed to help the assessor to weigh up whether enough precautions have been taken or if more needs to be done to control the risks.

It should be noted that this method of rating risks is very subjective, based on a broad judgement of the values attached to frequency and severity. However, it does provide a practicable method of prioritising or rating risks and give an overall score.

Frequency of an Accident Occurring		Severity of Consequences	
1.	highly improbably	1.	minor injury, no time off
2.	remotely possible but know to occur	2.	injury resulting in up to 3 days off
3.	infrequent	3.	injury resulting in 3 or more days off
4.	occasional	4.	major disability (eg loss of limb, eye, etc)
5.	frequent and regular	5.	fatality

Overall Risk Rating								
		Severity					RISK (HAZARD RATING) = FREQUENCY x SEVERITY	
		5	4	3	2	1	This gives a matrix of possible rating values as follows:-	
Frequency	5	25	20	15	10	5	The rating values can then be grouped into three broad classes of risk:-	
	4	20	16	12	8	4		
	3	15	12	9	6	3	Critical Risks	15-25
	2	10	8	6	4	2	Significant Risks	8-12
	1	5	4	3	2	1	Minor Risks	1-6

Generic Risk Aide Memoire

The following is a list of generic areas/topics where hazards/risks are encountered and should be considered by a Designer to develop a specific risk assessment if the risk deemed 'significant'. A significant risk is one that a competent Contractor would not be reasonably expected to foresee. This table is intended as a memory-jogger, it is not intended to be a comprehensive list, nor a substitute for thorough consideration of construction and maintenance risks during the design process

Please note there is a 1000 character limit in each cell in the table below. Anything above this limit will not display in the cell

	Areas/Topic to be be considered	Hazard(s)	Significant? Yes/No	Risk Assessment No.
1	Site access/egress	a) b) c)		
2	Moving vehicles and plant	a) b)		
3	Unauthorised access	a) b)		
4	Conflicting operations/trades	a) b)		
5	Slips & Trips	a) b)		
6	Falls from Height	a) b)		
7	Electricty	a) b)		
8	Manual Handling	a) b)		
9	Confined Spaces	a) b)		
10	Reduced Light Levels	a) b)		
11	Fire/Emergency Evacuation	a) b)		
12	Cuts/Abraisons	a) b)		
13	Carcinogenic Prodcuts	a) b)		
14	Respiratory Injuries	a) b)		
15	Skin Diseases	a) b)		
16	UXB (Ordnance)	a) b)		
17	Dust	a) b)		
18	Fumes/Chemicals	a) b)		
19	Radiation	a) b)		
20	Live Services	a) b)		
21	Collapse of Ground/Structures	a) b)		
22	Hazardous Materials	a) b)		
23	Noise/Vibration	a) b)		
24	Ground Contamination	a) b)		
25	Flooding/Ground Water	a) b)		
26	Removal/Demolition	a) b)		

DESIGNERS RISK LOG			B90505 Oxford Corridor CP5												
Hazard Ref No.	**Category**	**Hazard**	**Risk Description**	**Frequency**	**Severity**	**Significance H, M, L**	**Design Control Action**	**Frequency**	**Severity**	**Significance H, M, L**	**Progress**	**Information Transmission Route**	**Residual Risk Action Owner**	**Comments**	**Risk Type**
e.g. project / 001	Construction, Maintenance, Operations, Demolition (Drop down + Multiple)	Brief description of feature (design or otherwise) with potential to cause risk to health or safety	Potential impact of the hazard on personnel or operations				Action required to eliminate the hazard or Residual risk remaining and the suggested controls required to manage the risk				Open / Closed (Drop down)	PCI, Construction sequence, Client Logs, H&S File (Drop down + multiple?)	Client, Contractor, Maintainer, Operator (Drop down + multiple)	e.g. assumptions, dependencies and constraints	CDM H&S or Project (Drop down)
General/CI V0001	Construction	Injuries or death due to interface between construction, station operations and the public.	Site will be access will be constrained due to location within busy town centre. Access to offices, buildings, station, car park, entrance, drop off, bus taxi area to be maintained throughout the works. Busy railway station to remain operational throughou	5	5	H	Activities to be planned and managed and staged with clear demarcation between construction activities the public and railway operations.	2	5	M	Open	Construction Sequence	Client	Station likely to remain open throughout the works.	CDM H&S
General/CI V0002	Construction	Injuries or death due to discovery of Buried Services during construction.	Buried services not identified at GRIP2 feasibility stage.	3	5	H	Carry out services search at GRIP3 and modify design or propose diversion of services.	2	5	M	Open	Construction Sequence	Client		CDM H&S
General/CI V0003	Construction	Collapse of Ground or Structures during construction.	Buidling & Canopy construction not known at GRIP2 feasibilty stage.	3	5	H	Carry out survey, review records drawings at GRIP3. Identify risks within design and suggest safe demolition sequence for Contractor.	2	5	M	Open	Construction Sequence	Client		CDM H&S
General/CI V0004	Construction	Lead & Asbestos	Buidling & Canopy construction not known at GRIP2 feasibilty stage.	3	5	H	Carry out lead & asbestos survey at GRIP3. Identify risks within design to allow removal in early stages of construction.	2	5	M	Open	Construction Sequence	Client		CDM H&S
General/CI V0005	Construction	Noise & Vibration	Construction operations causing excessive noise and nuisance to local residents and businesses.	3	3	M	Contractor to employ construction techniques that create low levels of noise. Isolation of workforce and public from noise sources. Ear protection to be worn as appropriate. Noisy operations to be undertaken outside late night-time working.	2	3	L	Open	Construction Sequence	Client		CDM H&S
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Prepared By:	M. A. Gill	**Date:**	11/09/2013
Checked By:	O. Birkill	**Date:**	13/09/2013
Approved By:	M. A. Gill	**Date:**	13/09/2013

DESIGNERS RISK LOG **B90505 Oxford Corridor CP5**

Hazard Ref No.	Category	Hazard	Risk Description	Frequency	Severity	Significance H, M, L	Design Control Action	Frequency	Severity	Significance H, M, L	Progress	Information Transmission Route	Residual Risk Action Owner	Comments	Risk Type
e.g. project / 001	Construction, Maintenance, Operations, Demolition (Drop down + Multiple)	Brief description of feature (design or otherwise) with potential to cause risk to health or safety	Potential impact of the hazard on personnel or operations				Action required to eliminate the hazard or Residual risk remaining and the suggested controls required to manage the risk				Open / Closed (Drop down)	PCI, Construction sequence, Client Logs, H&S File (Drop down + multiple?)	Client, Contractor, Maintainer, Operator (Drop down + multiple)	e.g. assumptions, dependencies and constraints	CDM H&S or Project (Drop down)
General/EFE0001	Construction	Revisit GRIP 2	Options prove unworkable based on 3rd party OLE design being incompatible with proposals	5	3	H	Obtain Network Rail OLE layout plans and cross section information and overlay onto Oxford Corridor options	1	3	L	Open	PCI	Client		Project
						L				L					
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Checked By:		**Date:**	
Approved By:		**Date:**	

DESIGNERS RISK LOG **B90505 Oxford Corridor CP5**

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General/GEO001	Construction	Manual Handling of geotextile sections into position for installation.	Injury to staff	4	4	H	All geotextile sections to be assessed based upon Manual Handling Requirements. Where weights exceed those required, lifting equipment be supplied to allow positioning of the sections.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO002	Construction	Noise from construction and effect on residents and adjacent landowners	Staff injury and noise complaints	3	2	L	Noise assessment to be carried out prior to commencement of the works.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO003	Construction	Encountering redundant and active services during pile installation	Electrocution to site staff, explosions on site, construction programme delays	3	5	H	using hand digging equipment and use of CAT Scan equipment	2	5	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO004	Construction	Encountering poorer / unexpected strata during construction once design depth achieved	Design may not be sufficient	3	4	H	The ground conditions are to be reviewed before and after design to mitigate risk as far as feasibly possible.	1	4	L	Open	PCI	Client		CDM H&S
General/GEO005	Construction	Construction causes movement of adjacent structures	Foundation failure	2	4	M	Confirm any sensitive structures that are adjacent to construction positions and monitor during the works.	1	4	L	Open	Construction Sequence	Contractor		CDM H&S
General/GEO006	Construction	Encountering contaminated ground and affect on operatives	Staff come into contact with contaminated soil.	3	5	H	Contractor to provide appropriate PPE based upon risk assessment of site and ground information provided	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO007	Construction	Encountering hazardous waste including landfill waste and asbestos	Staff come into contact with hazardous soil.	4	5	H	Contractor to further assess the contamination with additional trial pits and geochemical sampling. The Contractor is to provide appropriate PPE based upon risk assessment of site and ground information provided	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
General/GEO008	Construction	Damage to geotextiles during construction	Geotextile sections will not function correctly	3	2	L	Monitoring during construction. Manufacturers recommendations regarding repairs to be followed should the geotextile be damaged in any way	1	2	L	Open	Construction Sequence	Contractor		CDM H&S

General/G EO009	Construction	Encountering pockets of clay at the formation design level during the track lower	Unprotected clay can cause trackbed failure	3	3	M	Localised 50mm sand blanket to be positioned over the clay.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/G EO010	Construction	Encountering isolated ‘hard spots’ of bedrock at the formation design level during the track lower	The design depth may not be achieved	2	4	M	Suitable excavator with breaker	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/G EO011	Construction	Structure foundation and track construiction on embankments could cause crest loading and effect the stability of the embankment slope	Slope failures or increased maintenance	2	4	M	Carry out a topographic survey confirm site specific space restrictions. Ground investigation required. Detailed slope stability calculations of the existing, temporary and design condition. Retaining wall design may be required.	1	2	L	Open	Construction Sequence	Contractor		CDM H&S
General/G EO013	Construction	Encountering confined water tables	Excavations can flood	3	3	M	Construction Contractor to review the desk study and ground investigation information. Produce a temporary works design for dealing with water withjin excavations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S
General/G EO014	Construction	Encountering low strength Alluvium at founding level of structures	Low strength clay can promote settlement.	3	3	M	Detailed settlement calculations of all shallow foundations	1	3	L	Open	Construction Sequence	Contractor		CDM H&S
General/G EO015	Construction	Encountering obstructions/pile refusal during boring of pile prior to reaching minimum design length	Pile length would be insufficient and the foundation may fail	3	5	H	Ground investigation required to determine the ground conditions and allow the Conttractor to select the most appropriate piling technique	2	4	M	Open	Construction Sequence	Contractor		CDM H&S
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Prepared By:	M. Deighton	**Date:**	29/08/2013
Checked By:	M. Bickley	**Date:**	29/08/2013
Approved By:	M. Bickley	**Date:**	29/08/2013

DESIGNERS RISK LOG			B90505 Oxford Corridor CP5											
Hazard Ref No.	Category	Hazard	Risk Description	Frequency	Severity	Significance H, M, L	Design Control Action	Frequency	Severity	Significance H, M, L	Progress	Information Transmission Route	Residual Risk Action Owner	Comments	Risk Type
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General/M EE0001	Construction	Unknown equipment or services may prevent design development or cause major disruption to option or require GRIP 2 revisit	M&E records/installation records/maintenance information not provided as part of GRIP 2 project therefore only high level commentary provided on likely requirements at this stage. Submitted TQ/RFI 0004 contains details of requirements	3	5	H	Obtain current records from client prior to commencement of next GRIP stage	1	5	L	Open	PCI	Client	Records requested. No M&E walkout for GRIP 2	CDM H&S
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Prepared By:		**Date:**	
Checked By:		**Date:**	
Approved By:		**Date:**	

DESIGNERS RISK LOG

B90505 Oxford Corridor CP5

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General/P WY0001	Construction	The feasibility designs have been undertaken using a mixture of OS mapping, LIDAR survey data and Topo survey data. No structure gauging information is available at this stage.	There is a risk that the designs may prove to be not feasible or prohibitively expensive at the next GRIP stage.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project
General/P WY0002	Construction	There are proposals for the Oxford area to be electrified. At this stage no detailed review of the proposed track layouts and their compatibility with electrification requirements has been undertaken.	There is a risk that it will not be possible to electrify the proposed track layouts.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project
General/P WY0003	Construction	The extent of lineside buildings and equipment that needs to be relocated as a result of the proposed track layouts is not fully understood at this stage.	There is a risk that the feasibility and cost of relocating some items of infrastructure will be prohibitively expensive.	3	5	H	To be addressed at next GRIP stage			L	Open	Client Logs	Client	Generic	Project
General/P WY0004	Construction	This scheme interfaces with a number of other schemes, being delivered by others, which are at different stages of development.	There is a risk that the options proposed by this scheme are not compatible with the proposals being developed by other projects.	3	4	M	Co-ordination with other projects required during next GRIP stage			L	Open	Client Logs	Client	Generic	Project
Oxford Station North Ladder/P WY0005	Construction	Track realignment work proposed by Option 3 may require platform alterations. The extent of these adjustments is currently unkown subject to a gauging assessment at the next GRIP stage.	There is a risk that the platform alteration works required to support these options will be prohibitively expensive.	3	4	M	To be assessed at next GRIP stage			L	Open	Client Logs	Client	Oxford Station North Ladder and Platform 5	Project
General/P WY0006	Construction	Due to the limited space available, it has been necessary to make use of fixed buffer stops and in some cases end impact walls, in order to maximise available siding standages.	The feasibility of this approach will be subject to the completion of buffer stop risk assessments. This approach may also not be acceptable to the TOCs.	3	5	H	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Down Sidings and Up Sidings	Project

Up Sidings/PWY0007	Operations	The existing track interval between the Up Sidings and the adjacent Down Jericho is currently to small to allow the depot facilities within the Up Sidings to be suitably fenced off from the main lines.	There is a risk that staff working within the depot could inadvertently encroach onto the adjacent main lines.	2	5	M	Track alignment to be designed to allow for provision of fencing between Up Sidings and proposed Up Relief.			L	Closed	Client Logs	Client	Up Sidings	CDM H&S
Bay Platforms/PWY0008	Operations	A possible option for the Bay Platforms includes the retention of the existing turnout (244C PTS).	There is a risk that the condition of this unit is not suitable for the proposed increase in traffic. Resulting in reliability and maintence issues.	3	4	M	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Bay Platforms	Project
Bay Platforms/PWY0009	Construction	The existing turnout to the Bay Platforms (244 PTS) located on Sheepwash River underbridge may require renewal.	There is a risk that renewal of this turnout on anything other than a like-for-like basis is not feasible in terms of available ballast depths, gauge clearance and structural capacity of Sheepwash River underbridge.	3	4	M	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Bay Platforms	Project
Up Sidings/PWY0010	Construction	Realignment of the main lines has meant that it is necessary to slue the entire sidings layout towards the east. The topography at the north east end of the proposed sidings layout is difficult to determine from OS mapping and aerial photography.	There is a risk that the proposed alignment of Up Siding 4 is prohibitively expensive due to the nature of the topography and work required to create a new track bed.	3	5	H	To be reviewed at next GRIP stage			L	Open	Client Logs	Client	Up Sidings	Project
Oxford Station North Ladder/PWY0011	Operations	Options 1 and 2 include a possible sub option for the non-provision of a ten-foot interval between the Down Relief and Down Main. This is proposed to allow a crossover to be installed on a section of straight parallel alignment.	There is a risk that this will not be acceptable to the Asset Manager.	3	5	H	Early engagement with RAM (Track) required.			L	Open	Client Logs	Client	Oxford Station North Ladder	Project
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Prepared By:	M Cunningham	**Date:**	02/10/2013
Checked By:	J. Avery	**Date:**	02/10/2013
Approved By:	M. Cunningham	**Date:**	02/10/2013

Appendix C

(Schedule)

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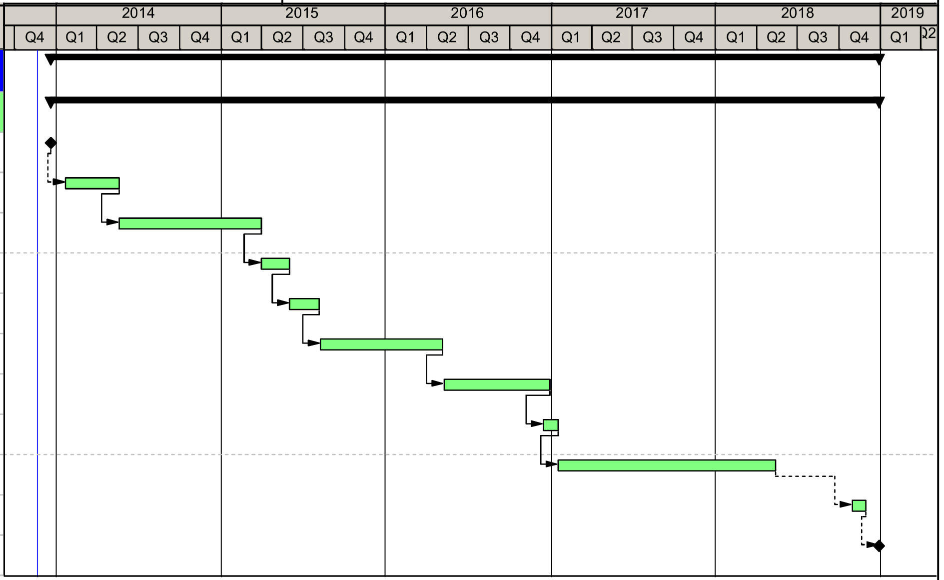
CP5 Oxford Corridor	Oxford HL	21-Nov-13 14:15

Activity ID	Activity Name	Start	Finish	Remaining Duration
Total		20-Dec-13	28-Dec-18	1269d
OXF3	**CP5 Oxford Corridor**	20-Dec-13	28-Dec-18	1269d
A1000	Grip 3/4 Authority	20-Dec-13*		0d
A1010	Procurement	22-Jan-14*	20-May-14	82d
A1020	GRIP 3 Design	21-May-14	01-Apr-15	221d
A1030	GRIP 4 Design	02-Apr-15	01-Jun-15	39d
A1040	Authority GRIP 5-8	02-Jun-15	07-Aug-15	49d
A1050	Grip 5-8 Procurement	10-Aug-15	06-May-16	188d
A1060	GRIP 5 Design	09-May-16	30-Dec-16	166d
A1070	GRIP6 Site Work Stage 2	15-Dec-16	16-Jan-17	20d
A1080	GRIP 6 Site work Stage 3	17-Jan-17	14-May-18	334d
A1100	GRIP 6 Site Work Stage 4	30-Oct-18*	30-Nov-18	24d
A1110	Commission Complete		28-Dec-18*	0d



🟩	Remaining Level of Effort	🟩	Remaining Work
🟦	Actual Level of Effort	🟥	Critical Remaini...
🟦	Actual Work	◆ ◆	Milestone

Oxford Corridor High Level Programme

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Appendix D

(Environmental Appraisal)

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Environmental Appraisal/ Action Plan

122151
CP5 Oxford Corridor - Phase 2

Project Name: CP5 Oxford Corridor - Phase 2	
Sponsor: Ben Stevens	
Project Manager: Gary Oakes	OP number: 122151

Signature	
Prepared by	Name: Gary Oakes
	Job Title: Development Manager
	Date: 21 November 2013
Reviewed by	Name: Louise Evatt
	Job Title: Environment Manager
	Date: 2 DECEMBER 2013

CONTENTS

1 INTRODUCTION

Project Name: **CP5 Oxford Corridor - Phase 2**

Address/Location: North and south of Oxford station

Project Manager: **Gary Oakes**

The project is currently at Stage Gate 2

Oxford Station

2 PURPOSE

YHA

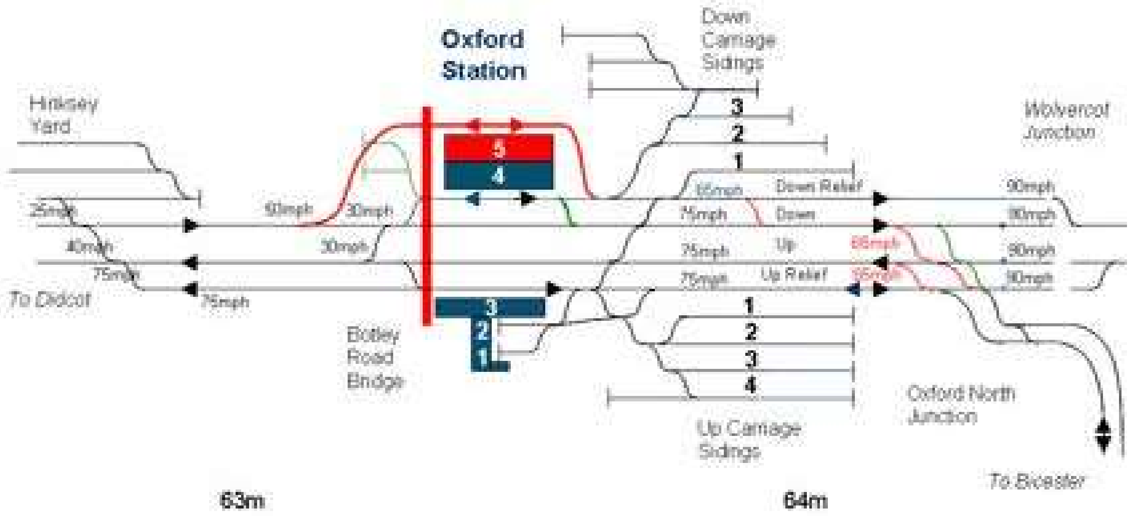
The purpose of this document is to identify potential envir ental issues and risks that may arise during the design and construction of Phase 1 of the CP5 Oxford Corridor - Phase 2 project and to ensure that actions are undertaken to manage these aspects.

3 SCOPE AND PROJECT DESCRIPTION

Scope

This phase of the project will address the following areas of scope:

- Covet the current platform 2 into an island platform.
- Road widening of Botley Road bridge
- Double Junction at Oxford North (East West Rail Phase 2)used until you get the updated drawings and text)



The Project is being conducted in two phases. Phase 1 Facilitates work associated with the East West Rail services, new trains and electrification.

Phase 2 focuses on additional capacity.

Both phase 1 and phase 2 make up the work associated with CP5 Oxford Corridor.

Key

🟥 Leased Land

🟩 NR Property

🟦 Maintenance Depot

4 ENVIRONMENTAL ISSUES FROM EARLIER GRIP STAGES

GRIP stage	Status
2 Option B Phase 2	

NOTE: IF CHECKED "YES", BEST TO EVALUATE WHETHER THE PROJECT/SITE AND/OR ACTIVITIES CAN BE MOVED TO AVOID THE NEED TO ADDRESS THESE ENVIRONMENTAL RISKS/CONSTRAINTS.

	Information Sources	Environmental Considerations and Risks	Yes	?	No	Possible action (but not limited to)	Comments
5	**GENERAL RISKS**						
5.1	Project Description, Town Planning/ Infrastructure Liabilities/ Operational Surveyor Teams, MARLIN	Does land or land rights (easements/way leaves/permanent – temporary site compounds, etc.) need to be purchased? Note: even if works are within permitted development (PD) rights there may be restrictions as to what activities are allowed (e.g vegetation clearance during nesting season).	✓			• Seek advice from Town Planning/Property/ Environment/Community Relations Teams and consult with external stakeholders/ local authorities (LA) where necessary • Site investigation/ surveys • Design aspects: include in/modify design/relocate to avoid the need to address these issues/ incorporate mitigation measures • Develop a Consent/ Environment/Communication Strategy Plan(s) as required • Obtain consent (TWA Order/ planning permission/ area land rights) if required • Specify protective measures in design/contract/construction requirements	Works associated with the island platform affects the reconstruction or removal of a YHA, a nursery and other small station buildings along the alignment of the new platform. Changing the Roger Dudman Way road layout will affect Mick's Café and Vlora House. Vlora House is a building of special significant – but not listed.
5.2	Project Description, Town Planning/ Infrastructure Liabilities/ Operational Surveyor Teams, MARLIN, RAR, Utility Diagrams	Is the land leased out or are there 3rd party interests or onsite utilities, telecommunication, etc.)?	✓				Station leased to FGW
5.3	Town Planning Team	Does the acquisition or lease of the land change the status of the land		✓			Not sure. The works proposed is on network Rail owned land.
5.4	Project Description, MARLIN, Town Planning Team	Is land that may need to be purchased / leased contaminated or a licensed waste facility?		✓			Risk is the land is likely to be contaminated.

	Information Sources	Environmental Considerations and Risks	Yes	?	No	Possible action (but not limited to)	Comments
5	**GENERAL RISKS**						
5.5	Town Planning Team	Does the project require Transport and Works Act (TWA) order/planning permission or similar?	✓				Rerouting Rodger Dudman Way and carriage widening under Botley Road bridge.
5.6	Town Planning/ Environment/ Community Relations Teams	Has the Local Planning Authority or any other Statutory Body expressed concern over the project or similar projects?		✓		• Seek advice from Town Planning/Property/ Environment/Community Relations Teams • Consult with external stakeholders/LA	The Local Councils are in support of the project proposals. Not sure if there are any opposing bodies although most likely based on other projects being disrupted by such means. (Environmental Agency and Natural England)
5.7	Town Planning/ Community Relations/ Environment Teams	Have residents or any other interest group indicated concern over the project or similar projects? Note: even if the works are within PD rights and are common activities, e.g. vegetation/tree clearance, this may still be sensitivity for stakeholders.	✓			• Seek advice from Town Planning/Property/ Environment/Community Relations Teams • Consult with external stakeholders/LA	Projects such as freight lengthening, closure of Aristotle Lane crossing and the East West Rail projects have all encountered issues with local residents.
5.8	Town Planning Team/local authority	Are there any local plans/development proposals of land adjacent to/near the project that may have future ramifications on the project?	✓			• Seek advice from Town Planning/Property/ Environment/Community Relations Teams	There is a proposal to undertake some work around the station buildings under the Oxford Master Plan. There maybe conflicts in respect to the island platform works and all the other work mentioned earlier.

	Information Sources	Environmental Considerations and Risks	Yes	?	No	Possible action (but not limited to)	Comments
5	**GENERAL RISKS**						
5.9	Project Description	Are there new or unusual features associated with the project that may become an issue with internal/external stakeholders e.g. tall masts, incompatible features with existing Network Rail structures?			✓	• Consult internal Network Rail stakeholders • Design aspects: include in/modify design/incorporate mitigation measures	
5.10	Guidance from Asset steward/ other Network Rail departments,	Any relevant Network Rail policies (such as TWA / planning process / conditions that may require derogation (e.g. sighting issues: substations next to telecommunication masts) or adjacent Network Rail projects?		✓		• Consult internal Network Rail stakeholders • Design aspects: include in/modify design/incorporate mitigation measures	Double tracking for the EW Rail phase 2 project might require derogations
	Environmental Constraints						
5.11	Project Description, MARLIN, RAR, site investigation	Does the local environment constrain the project e.g:				• Consult internal Network Rail stakeholders • Design aspects: include in/modify design/incorporate mitigation measures • Consult with/obtain consent if required (e.g. building on a flood plain/change to coastal defences)	
		Flood plain?	✓				The work will be undertaken in a floodplain. Flood Risk Assessment will be required. Botley Road bridge will be a challenge.
		Flooding?	✓				Botley Road bridge carriageway has been prone to flooding and has a pumping system in place. The new work will need to be designed to be resilient and not to increase flooding elsewhere.
		Landslide?			✓		

	Information Sources	Environmental Considerations and Risks	Yes	?	No	Possible action (but not limited to)	Comments
5	**GENERAL RISKS**						
		Difficult access (e.g. steep embankment)?			✓		
		Other (specify e.g. pests such as rabbits)?			✓		

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
6	**AGRICULTURE /FORESTRY/VEGETATION MANAGEMENT**						
6.1	MARLIN, BAP, Site survey	Does the project require taking good quality agricultural land, or affect any agriculture holding (e.g. severance)?			✓	• Site investigation • Consult with external stakeholders (particularly if noticeable amounts of vegetation/trees/ habitat are affected) • Design aspects: include in/ modify design/incorporate mitigation measures • Obtain consent (LA permission, etc.) if required • Specify protective measures	
6.2		Does the project need to clear vegetation or trees on railway land or access routes?	✓				De-vegetation in the sheepwash bridge area and between Rodger Dudman Way and Cripley Road where required. Also de-vegetation on both sides of Botley Road bridge
6.3		Does the project need to remove hedgerows?		✓			
6.4	MARLIN, BAP, HERITAGE, Town Planning/ Environment Teams	Will the project need to remove, trim, cut trees under Tree Preservation Order (TPO) or in local planning conservation areas?		✓			It could be possible that TPOs will be applied once the local residence become aware of any tree felling.
7	**AIR QUALITY**						
7.1	Project Description, MARLIN, Town Planning Team/ LA – (Environmental Health Officers)	Will there be significant project activity that could generate large quantities of dust/noxious fumes or change the local air quality?	✓			• Modify design/ incorporate mitigation measures • Consult with local authorities • Specify protective measures	Construction of new island platform, replacement of Botley Road bridge and demolition of the YHA and other small buildings.
7.2		Are there adjacent/nearby receptors: residences, businesses, schools, medical facilities, etc.?	✓				The proposed work is located on the outskirts of Oxford City hence surround by residences and businesses.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
7.3		Are there any local authority policy constraints (e.g. within/close to an Air Quality Management Area, breaching of government air quality objectives or limit values)?		✓			The whole area is in the Oxford Air Quality Management Area. Impact is unlikely but needs to be identified.
8	**BUILDING, STRUCTURES, HISTORIC ASSOCIATION**						
8.1	MARLIN, RAR, HERITAGE, LA, Town Planning Team	Does the project affect a Listed Building, structure and/or Scheduled Ancient Monument; e.g. from piling, excavation, demolition, change of use, visual obstruction, potential for subsidence, cable attachments, bridge platforms?	✓			• Seek advice from Town Planning • Consult with LA/Heritage Agencies • Design aspects: include in/ modify design/ incorporate mitigation measures • Obtain local authority/ heritage consent if required	Vlora House is a listed building. This is situated between Rodger Dudman Way and Cripley Road. There are plans to divert the Rodger Dudman Way entrance via Cripley Road going through Vlora House. Port Meadow is a Scheduled Ancient Monument
8.2		Does the project affect a local planning Conservation Area, historic landscape features or similar designated area?		✓			There are areas of conservation in the vicinity and the development may have an impact. Designs to be sympathetic and mitigation may be required.
8.3		Does the project affect any other historical or man made feature likely to be of value?			✓		

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
9	**CONTAMINATED LAND**						
9.1	MARLIN, RAR, Contaminated land reports/ database, Railway Estates/ Environment team	Will the project disturb contaminated land?		✓		• Site investigation • Seek advice from Environment Team • Consult with LA if remediation required • Specify protective measures	Building the island platform will involve digging on what was a former track bed and there are areas of former landfill sites in the area.
9.2	MARLIN, RAR Contaminated land reports/ database, site survey, Railway Estates/ Environment team	Is the project site located adjacent to/near an externally owned (e.g. landfill/industrial site) or Network Rail potentially contaminated site or sidings?	✓			• Seek advice from Environment Team • Seek alternative site • Site investigation • Specify protective measures, including possible remediation	Yes. There are former landfill sites in the area.
9.3	Project Description, MARLIN, RAR	Will the project activities open up pathways (e.g. channels) from contaminated areas to environment/stakeholder receptors; e.g. SSSIs		✓		• Site investigation • Seek advice from Environment Team • Design aspects: include in/modify design/ incorporate mitigation measures • Specify protective measures	**P**ossible channels to watercourses and/or SSSIs

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
9.4	Project Description	Will produced wastes/spent ballast likely to be contaminated?		✓		• Seek advice from Environment Team • Site investigation/ sampling • Follow RT/LS/P/044 for used ballast and/or Special Waste requirements	Spoil in the station area is likely to be contaminated.
10	**ECOLOGY (protected species/areas and invasive species)**						
10.1	MARLIN, BAP, RAR, HERITAGE, Town Planning/ Environment Teams, site survey, LA BAP local conservation organisations	Is the project site/access/staging areas/ compounds on/adjacent/nearby a statutory nature conservation site (e.g. SSSI, RAMSAR, SPA/SAC/cSAC/pSPA site) or other ecological designations?		✓		• Seek advice from Environment Team • Site survey • Consult with local Conservation Agencies/LA • Design aspects: include in/ modify design/ incorporate mitigation measures • Obtain protected species license if required • Specify protective	There is a need to identify the number of SSSI s in the area of Port Meadow Special Area of Conservation. This to be done at the next stage.
		Will the activity (e.g. working in a culvert, drainage works) and/or materials used have the potential to indirectly affect the designation and/or a protected area (e.g. downstream SSSI water quality)?		✓			This may be possible when drainage work commences.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
10.2		Are there any protected species and/or habitats e.g. bats, badgers, newts etc. at or near the project site?		✓		measures/follow site management plan (SMS) if SSSI • Train staff • Continue monitoring if required	Not known at this stage, but none discovered on any of the walkouts. Badgers were removed as part of the Freight Lengthening project. Reports highlighted water voles and otter presence.
10.3	BAP, RAR, Site survey	Are there any invasive vegetation species (Japanese knotweed, Giant hogweed, etc.) at or near the project site?	✓			• Site investigation • Enabling works for removal • Specify protective measures	It has been reported invasive plants do exist in the area.
11	**LANDSCAPE/TOWNSCAPE/VISUAL**						
11.1	Project Description, Town Planning/ Environment Teams, LA/ Heritage/ Conservation Agencies	Is the site at/near or can be seen from a National Park/World Heritage Site/Area of Outstanding Natural Beauty (AONB)/local landscape/coastal/townscape designation?			✓	• Site investigation • Consult with local Heritage/ Conservation Agencies • Design aspects: include in/ modify design/incorporate mitigation measures (e.g. restoration plan) • Specify protective measures	
11.2		Will the visual amenity of lineside residents be affected; e.g. removing vegetation, erecting new/taller structures than existing surroundings, demolition in Conservation Areas?	✓				Vegetation clearance between Rodger Dudman Way and Cripley Road will affect residence. This is expected to be limited.
11.3		Will new structures/project components obstruct visual amenity of dwellings/recreational areas/cultural heritage/conservation areas?		✓			It is possible compounds etc may be established where it will affect the local residence.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
11.4		Will grading and vegetation removal with subsequent landscaping be required?	✓				There is a discussion to reroute the entrance to Rodger Dudman Way via Cripley Road. This will involve regarding of a bank to re-route the road.
12	**NUISANCE: NOISE, VIBRATION AND LIGHT**						
12.1	Project Description, MARLIN	Is noise/vibration likely to increase from existing levels at site during construction?	✓			• Site noise investigation • Consult w/local authorities (EHO) • Design aspects: include in/ modify design/incorporate mitigation measures • Neighbour letter drops/ consultation • Obtain Section 61 consent if required • Specify protective measures • Train staff • Continue monitoring	New platform and Botley road bridge works will make noise during construction.
12.2		Will it affect?					
		Adjacent/nearby residences?	✓				Yes although the platform works could be limited to daytime week hours. However, the bridge replacement will need to be done in long abnormal possessions so will involve night and day working.
		Adjacent/nearby businesses, worship, schools, hospitals, hotels etc.?	✓				
		Adjacent/nearby SPA/SAC, nesting birds, seasonal constraints?		✓			
12.3		Will the project occur at night/weekend or public holiday (use of lights/noise)	✓				Platform works could be limited to socialable hours, however the Botley Road bridge will involve day and night working.
12.4	Project Description/ Noise Insulation Regulations	Is noise/vibration likely to increase from existing levels at site during operation?	✓			• Site noise investigation • Seek advice from Environment Team/Other Network Rail departments • Design aspects: include in/ modify design/incorporate mitigation measures	As a new platform face will be built closer to residence, noise during operation will be increased. However, this will be limited with the use of electric trains.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
13	**TRAFFIC GENERATION AND ACCESS**						
13.1	Project Description	Will significant traffic (vehicular/heavy loads) particularly through villages and along farm/country roads be generated (Public Rights of Way)?	✓			• Consult local authorities/highways dept. • Design aspects: include in/ modify design • Obtain Highways consent if required • Specify protective measures	Although the site is adjacent to the railway, it is most likely materials to build the platform and Botley Road bridge will be transported by road.
13.2		Will the scheme result in new vehicular traffic flows? (Before and/or after)	✓				There will be new traffic flows during construction as a result of diverting Rodger Dudman Way and diverting traffic as a result of reconstructing Botley Road Bridge. After the work, the carriageway under Botley Road bridge will become a three carriageway as oppose to the two today. Rodger Dudman Way will be as today albeit with a different entrance point.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
13.3		Will it cause new pedestrian movements? (Before and/or after)	✓				Currently there is a pedestrian route alongside Rodger Dudman Way leading to the University accommodation. This route will removed as a result of building the new platform and the road being repositioned over the pedestrian route. Alternative routes are being discussed. Pedestrian movements under the Botley Road bridge and across the station footbridge spanning Botley Road will be affected by the bridge works.
13.4	As above	Any footpath, road closures/diversions required during construction?	✓			• As above	Rodger Dudman Way and the route under Botley Road bridge will be closed during construction. Both will require limited closure and details have yet to be formalised. Closure of Botley Road will be a big issue as it is one of three main routes into Oxford from the south/West. Pedestrian movements will be diverted as a result of works associated with Botley Road bridge.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
13.5	Project Description	Will parking outside railway land be required (e.g. on streets, on/near lineside neighbour's land)	✓			• Specify protective measures • Train staff	Most likely although could be limited. Cars may need to park on Cripley Road.
13.6		Are access points near adjacent properties (nuisance including noise)	✓				All the work associated with the Island platform and Botley Road bridge will impact nearby properties.
14	**WATER RESOURCES, POLLUTION (including Silt) AND DRAINAGE**						
14.1	Project Description, MARLIN, RAR, Surface water risk assessment model, Site investigation	Is the project on/near/adjacent to a watercourse and drainage channels?	✓			• Site investigation • Consult with local Environment Agency/DEFRA for coastal/ marine/estuary areas • Design aspects: include in/ modify/design to remove the need for a consent • Obtain work near watercourses, obstruction to watercourse, discharge to controlled waters and/or sewerage system, etc. consents if required • Specify protective measures (e.g. Site Drainage Plan, Emergency Incident Plan) • Continue monitoring	Work will be conducted over Sheepwash bridge and over Castle Mill stream. The carriage way under Botley Road bridge is below the water table and is prone to flooding. There is a pumping system in place. When the bridge is reconstructed, the road will need to be lower than what it does today. The pumping system will therefore need to remain
14.2		Will the works occur within 8-m of the bank and/or in a **designated** main river	✓				As above
14.3		Will the project need to remove vegetation close to/on or in a riverbank?	✓				For work associated with Sheepwash bridge
14.4		Is it likely to affect the flow of watercourses?	✓				Culverting for the higher speed turnouts at Oxford North Junction.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
14.5		Will works occur around a water source protection area or require abstraction of water from a well?			✓		
14.6		Will works occur near marine waters, on coastal areas below mean high tide or affecting navigation?			✓		
14.7		Will it generate a discharge either directly to a watercourse or to soakaway/ground; e.g. dewatering operation/discharge from a bund?		✓			New drainage may be required.
14.8		Will it generate a discharge to a foul sewer?			✓		
14.9	Project Description, MARLIN, RAR, Site investigation	Will waste/spoil be stockpiled, materials/chemicals/fuels/oils stored at site that could enter a watercourse, major aquifer underneath or on a flood plain?			✓	• Establish protective measures • Train staff	
15	**WASTE/SURPLUS MATERIAL**						
15.1	Project Description, NDS/ Town Planning/ Environment Teams	Will it generate large quantities of surplus material; i.e. spoil, sleepers?	✓			• Design aspects: include in/ modify design: reuse, recover, recycle • Consult with and obtain consent from local authorities/Environmental Agencies for storage/ management concerns • Specify protective measures (e.g. Waste Management Strategy/Plan)	Work associated with the island platform, reconstruction of Botley Road bridge and the demolition of the YHA and other station buildings. The nursery is also being planned to be demolished.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
15.2	Project Description, NDS/ Town Planning/ Environment Teams	Can surplus material be reused (spares, spoil, etc.)?	✓			• Design aspects: include in/ modify design/incorporate mitigation measures • Ensure that the surplus remains in the chain of utility and is not seen as “getting rid of”; a waste exemption if applicable may also be required, seek advice from Environment Team	To be explored at the next stage.
15.3		Will onsite disposal or land purchase be required?			✓	• Seek advice from Planning/Environment Team • Consult with LA/Environment Agency • Design aspects: include in/ modify design/incorporate mitigation measures • Obtain waste management consent/exemption if required • Specify protective measures	
15.4	Project Description, NDS/ Town Planning/ Environment Teams	Will it generate special wastes; e.g. oil, paint cans, contaminated land?		✓		• Design aspects: include in/ modify design/incorporate mitigation measures • Obtain consent if required/follow Special Waste regulations • Specify protective measures Specify protective measures (e.g. Waste Management Strategy/Plan)	Spoil removed from site is likely to be contaminated.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
16	**SUSTAINABILITY: ENVIRONMENTAL OPPORTUNTITIES**						
16.1	Project Description/ Environment Team	Can recycled/reclaimed materials such as sleepers/ballast/spoil/cables be used instead of raw materials?	✓			• Modify design/contract/ construction strategy to capitalise on opportunities	Might be able to use recycled materials in the sidings.
16.2		Can energy/water efficiency be gained through building design/supply chain?	✓				CEEQUAL to be considered for any new buildings i.e. YHA, nursery.
16.3	Project Description/ Environment Team	Can work be performed in parallel with another project reducing wastage, duplication and redundancy of materials, timing and resources?	✓			• Modify design/contract/ construction strategy to capitalise on opportunities	There are a number of projects progressing in parallel to save money and time.
16.4		Can effluents and discharges be minimised?	✓				
16.5		Can potentially polluting materials be replaced with less harmful materials (e.g. biodegradable oils)?	✓				To be designed accordingly.
16.6		Are there other areas where environmental and sustainable benefits can be gained; such as	✓				See below:
		Positive communication/interactive consultation with lineside neighbours/other stakeholders?	✓				All will need to be consulted.
		Innovative environmental designs/methods of work?	✓				Needs to be considered
		Positive contribution to habitats/protected species?	✓				If required
16.7		Other (specify on action log)?	✓				To be explored at the next stage.

	Information Sources	Environmental Implications and Risks	Yes	?	No	Possible action (but not limited to)	Comments
OTHER							
17.1		Are there any other possible environmental effects specific to this project? If so list them: e.g. electro-magnetic effects, settlement, local issues/policies		✓			Oxford station will be an electrified route.

ACTION PLAN

Note: For each positive or ? response, the issue must be taken forward into the action plan for further management with the specific actions required, the responsible party for that action, start and target completion date identified. Evaluating the probability and the significance of the risk will assist to prioritise the issues and identify areas with unacceptable risk that will need to be eliminated, reduced and/or controlled.

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
5.1 Does land or land rights (easements/way leaves/permanent – temporary site compounds, etc.) need to be purchased?			✓			✓	**There are a large number of environmental issues raised here. These will all be addressed during GRIP stage 3.** **Will need to screen for EIA.**	**IP Delivery**	**3**	**During 2014**
5.2 Is the land leased out or are there 3rd party interests or onsite utilities, telecommunication, etc.)?			✓		✓					
5.3 Does the acquisition or lease of the land change the status of the land		✓			✓					
5.4 Is land that may need to be purchased/leased contaminated or a licensed waste facility?			✓		✓					

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
5.5 Does the project require Transport and Works Act (TWA) order/planning permission or similar?			✓			✓				
5.6 Has the Local Planning Authority or any other Statutory Body expressed concern over the project or similar projects?			✓			✓				
5.7 Have residents or any other interest group indicated concern over the project or similar projects?			✓			✓				
5.8 Are there any local plans/development proposals of land adjacent to/near the project that may have future ramifications on the project?			✓			✓				
5.11 Does the local environment constrain the project e.g: flloding		✓			✓					

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
5.11 Project Description, MARLIN, RAR, site investigation	✓			✓						
6.2 Does the project need to clear vegetation or trees on railway land or access routes?		✓			✓					
6.3 Does the project need to remove hedgerows?		✓		✓						
6.4 Will the project need to remove, trim, cut trees under Tree Preservation Order (TPO) or in local planning conservation areas?		✓				✓				
7.1 Will there be significant project activity that could generate large quantities of dust/noxious fumes or change the local air quality?		✓				✓				

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
7.2 Are there adjacent/nearby receptors: residences, businesses, schools, medical facilities, etc.?			✓			✓				
7.3 Are there any local authority policy constraints (e.g. within/close to an Air Quality Management Area, breaching of government air quality objectives or limit values)?	✓			✓						
8.1 Does the project affect a Listed Building, structure and/or Scheduled Ancient Monument; e.g. from piling, excavation, demolition, change of use, visual obstruction, potential for subsidence, cable attachments, bridge platforms?			✓			✓				

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
8. 2 Does the project affect a local planning Conservation Area, historic landscape features or similar designated area?		✓			✓					
9.1 Will the project disturb contaminated land?			✓			✓				
9.2 Is the project site located adjacent to/near an externally owned (e.g. landfill/industrial site) or Network Rail potentially contaminated site or sidings?		✓				✓				
9.3 Will the project activities open up pathways (e.g. channels) from contaminated areas to environment/stakeholder receptors; e.g. SSSIs		✓		✓						
9.4 Will produced wastes/spent ballast likely to be contaminated?			✓		✓					

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
10.1 Is the project site/access/staging areas/ compounds on/adjacent/nearby a statutory nature conservation site (e.g. SSSI, RAMSAR, SPA/SAC/cSAC/pSPA site) or other ecological designations?	✓			✓						
10.2 Are there any protected species and/or habitats e.g. bats, badgers, newts etc. at or near the project site?	✓				✓					
10.3 Are there any invasive vegetation species (Japanese knotweed, Giant hogweed, etc.) at or near the project site?	✓				✓					

ISSUE	**PROBABILITY OF OCCURRENCE** [1]			**LEVEL OF RISK**[2]			**ACTIONS TO BE TAKEN**[3]	**RESPONSIBLE PARTY(IES)**	**GRIP STAGE**	**TARGET DATE**
	Low	**Medium**	**High**	**Low**	**Medium**	**High**				
11.2 Will the visual amenity of lineside residents be affected; e.g. removing vegetation, erecting new/taller structures than existing surroundings, demolition in Conservation Areas?			✓			✓				
11.3 Are there any invasive vegetation species (Japanese knotweed, Giant hogweed, etc.) at or near the project site?		✓		✓						
11.4 Will grading and vegetation removal with subsequent landscaping be required?		✓		✓						
12.1, 12.2 & 12.3 Is noise/vibration likely to increase from existing levels at site during construction?			✓			✓				

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
12.3 Will the project occur at night/weekend or public holiday (use of lights/noise)			✓			✓				
12.4 Is noise/vibration likely to increase from existing levels at site during operation?			✓			✓				
13.1, 13. 2 &13.3 Will significant traffic (vehicular/heavy loads) particularly through villages and along farm/country roads be generated (Public Rights of Way)?		✓			✓					
13.4 Any footpath, road closures/diversions required during construction?			✓		✓					
13.5 Will parking outside railway land be required (e.g. on streets, on/near lineside neighbour's land)		✓			✓					

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
13.6 Are access points near adjacent properties (nuisance including noise)		✓				✓				
14.1 Is the project on/near/adjacent to a watercourse and drainage channels?			✓			✓				
14.2 Will the works occur within 8-m of the bank and/or in a designated main river			✓		✓					
14.3 Will the project need to remove vegetation close to/on or in a riverbank?			✓	✓						
14.4 Is it likely to affect the flow of watercourses?	✓			✓						
14.7 Will it generate a discharge either directly to a watercourse or to soakaway/ground; e.g. dewatering operation/discharge from a bund?		✓		✓						

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
15.1 Will it generate large quantities of surplus material; i.e. spoil, sleepers?		✓			✓					
15.2 Can surplus material be reused (spares, spoil, etc.)?		✓		✓						
15.4 Will it generate special wastes; e.g. oil, paint cans, contaminated land?			✓			✓				
16.1 Can recycled/reclaimed materials such as sleepers/ballast/sp oil/cables be used instead of raw materials?	✓			✓						
16.2 Can energy/water efficiency be gained through building design/supply chain?	✓			✓						

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
16.3 Can work be performed in parallel with another project reducing wastage, duplication and redundancy of materials, timing and resources?		✓			✓					
16.4 Can effluents and discharges be minimised?	✓			✓						
16.5 Can potentially polluting materials be replaced with less harmful materials (e.g. biodegradable oils)?		✓		✓						
16.6 Are there other areas where environmental and sustainable benefits can be gained	✓			✓						
16.7 Other (specify on action log)?		✓		✓						

ISSUE	PROBABILITY OF OCCURRENCE [1]			LEVEL OF RISK[2]			ACTIONS TO BE TAKEN[3]	RESPONSIBLE PARTY(IES)	GRIP STAGE	TARGET DATE
	Low	Medium	High	Low	Medium	High				
17.1 Are there any other possible environmental effects specific to this project? If so list them: e.g. electro-magnetic effects, settlement, local issues/policies		✓			✓					

Note: The Environmental Appraisal and Action Plan should be reviewed through the GRIP design stages and/or if the project design is modified

NOTES:

[1] Probability	[2] Risk
1. Low: Unlikely to occur during the lifetime of the project 2. Medium: Can be expected to occur 3. High: Almost certain to occur	1. Low: Unlikely to affect to cost or schedule of the programme 2. Medium: Fairly likely to affect the cost or schedule of the programme 3. High: Almost certain to have a significant adverse impact on the project
[3] Actions to be Taken: Be specific in what, where, how and who	
1. Undertake more detailed assessment work/site investigation 2. Consult with affected parties and/or statutory authorities 3. Obtain environmental consents/permissions 4. Modify design to reduce or mitigate impact 5. Specify environmental protective measures within EMP to mitigate during construction	

GLOSSARY

Abbreviations

AONB	Area of Natural Beauty
BAP	Biodiversity Action Plan (plus accompanying guidance sheets/toolkits)
CR-E	RT/LS/S/015 Network Rail Contract Requirements, Environment
cSAC	Candidate Special Areas of Conservation
EA	Environmental Appraisal
EHO	Environmental Health Officer
EMP	Environment Management Plan
GRIP	Guide to Railway Investment Projects
HERITAGE	Network Rail-wide database of protected land and/or buildings
LA	Local Authority
MARLIN	Network Rail-wide property Geographical Information System
NDS	National Delivery Service
PD	Permitted Development
PSPA	Potential Special Protection Area
RAMSAR Site	Wetlands of International Importance Designation
RAR	Railtrack Asset Register
SAC	Special Areas of Conservation
SMS	Site Management Statement
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TPO	Tree Preservation Order
TWA	Transport and Works Act

Statutory Agencies

Environment Agencies	Environment Agency for England and Wales Scottish Environment Protection Agency (SEPA)
Conservation Agencies	Department of Environment, Food and Rural Affairs (DEFRA) Scottish Executive Environment and Rural Affairs Department (SEERAD) English Nature (EN) Countryside Council for Wales (CCW) Scottish Natural Heritage (SNH)
Heritage Agencies	English Heritage Welsh Heritage Agency (CADW) Historic Scotland

Possible Consent Needed for Project Work

Landtake	**Responsible Agency**
• TWA Order if require compulsory purchase of land	Planning authority
• Planning permission from local authorities (Town and Country Planning Act 1990). Prior Approval or Permitted Development	Local Planning Authority
Scheduled Ancient Monument/Listed Building/Conservation Area	
Consent to disturb a scheduled ancient monument (Ancient Monument and Archaeological Areas Act 1979)	Secretary of State/Local Planning Authority
• Listed Buildings/Conservation Area (Town and Country Planning Act)	Planning authority
Trees and Ecology	
• Work affecting Tree Preservation Orders, which offer legal protection to trees (Town and Country Planning (Trees) Regulations 1999)	Local Planning Authority
• Licence for felling timber (Forestry Act 1967)	Local Planning Authority
• Works affecting Important Hedgerows (Hedgerow Regulations 1997)	Local Planning Authority
• Licence for disturbance to badgers (Protection of Badgers Act 1992)	DEFRA
• Other wildlife consents required for works affecting protected species e.g. great crested newts, bats	EN/SNH/CCW; DEFRA
Noise and Vibration	
• Section 61 consent on nuisance (noise) during construction (under the Control of Pollution Act 1974)	Local Authority – Environment Health Officer
Traffic Generation and Access	
• Highways stopping/diversion consent (including temporary closures) • Vehicle crossing consents (Highways Act 1980)	Highways authority
Water Resources (quality and hydrology)	
• Consent for works over, under or adjacent to **designated** main rivers (Land Drainage Act /Water Resources Act 1991)	Environment Agency/SEPA
• Works affecting flow/structures in watercourse or navigation (Land Drainage Act 1991)	Environment Agency/SEPA
• Works around water source protection area (Water Resources Act 1991)	Environment Agency/SEPA
• Consent for works within 8m of a watercourse (Land Drainage bylaws)	Local Planning Authority
• Water abstraction license (Water Resources Act 1991)	Environment Agency/SEPA
• Consent for dewatering/discharge of water from excavations (Land Drainage Act 1991)	Environment Agency/SEPA
• Consent for discharge to controlled water and/or groundwater (Water Resources Act 1991/Groundwater Regulations)	Environment Agency/SEPA
• Water Authority Consent to discharge to foul sewer (Water Industries Act 1991)	Sewerage undertaker/ Environment Agency/SEPA
• Consent for works in coastal areas and marine waters (Coastal Protection Act 1949/Harbours Act 1964)	Marine Consents & Environment Unit (DEFRA)/Local Harbour Authority
Waste Management	
• Waste management licences under the Waste Management Licensing Regulations 1994	Environment Agency/SEPA

Note Legislation refers to regulations in England and Wales; regulation in Scotland differs; however, similar permission/consents apply

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Appendix E

(Feasibility Design)

Down Island Platform

Drawing	Drawing Number	Version
Track GA	PWY2601 (Option1) PWY2602 (Option2)	P02 P02
Civils drawing	CIV0010 (Option 3) CIV0011 (Option 1) CIV0012 (Option 2)	P01 P03 P03
Bridges GAs/Drawings	CIV0031 (Sheepwash Option 1) CIV0035 (Cemetery Rd footbridge Option 1) CIV0036 (Cemetery Rd footbridge Option 2)	P02 P02 P02

Botley Road Bridge

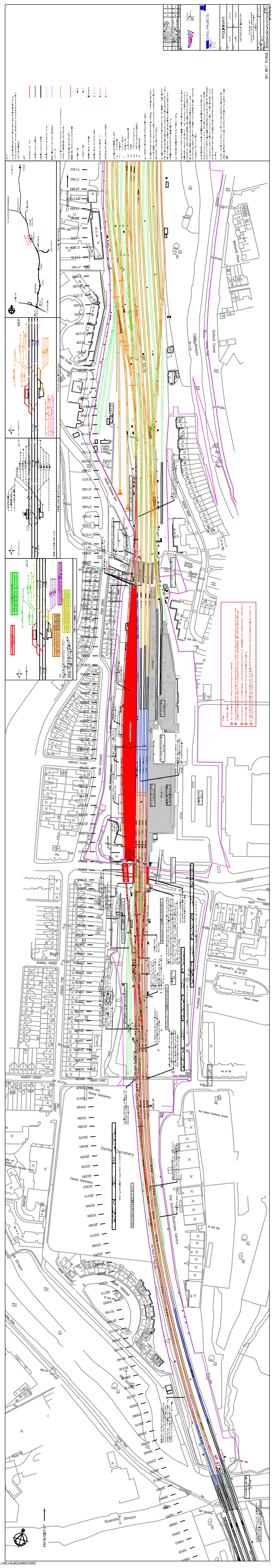
Drawing	Drawing Number	Version
Bridges GAs	CIV0021 CIV0022 CIV1020	P03 P03 P01
Highways GAs	INF0001 INF0002	P02 P02

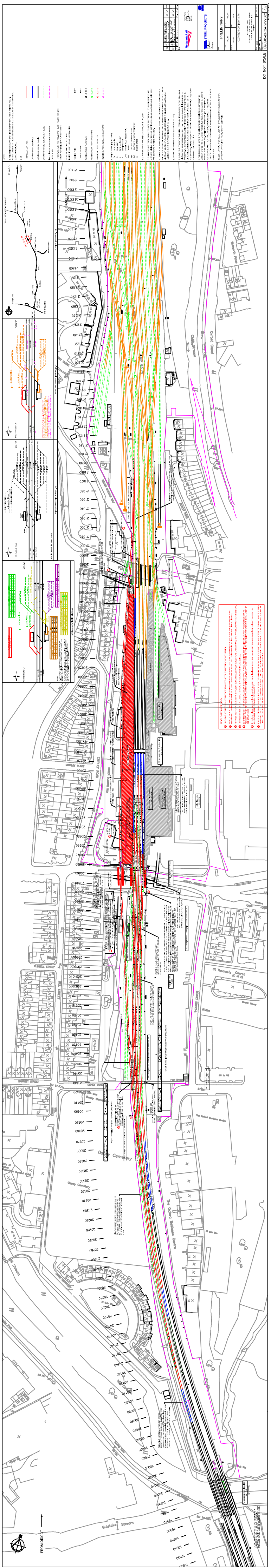
EW Rail Double Junction

Drawing	Drawing Number	Version
Double Junction @ 60mph	B90505-DRG-PWY2100	P02
Double Junction @ 70mph	B90505-DRG-PWY2110	P02

Signalling Sketches

Drawing	Drawing Number	Version
Signalling	122151/GRIP2/1	1

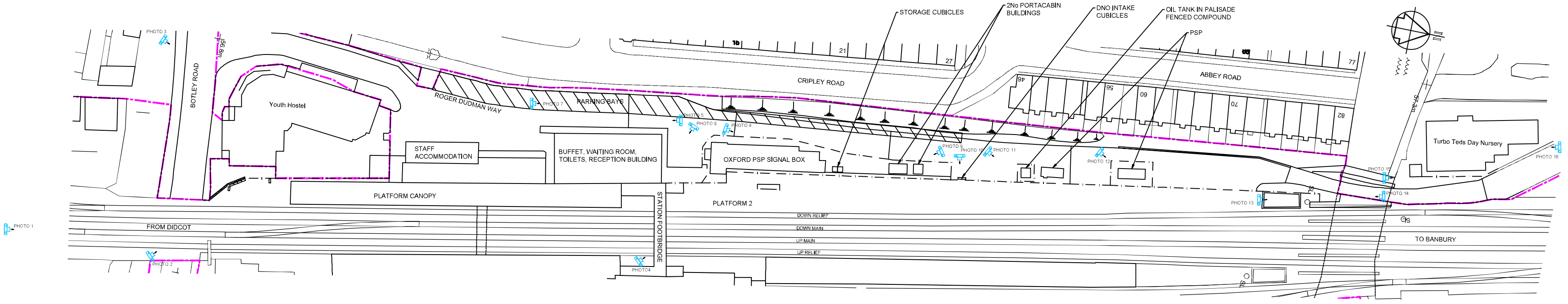

Network Rail
STEEL PROJECTS
PRELIMINARY
OXFORD CORRIDOR CP5
B90505-DRG-PWY26001
P02
DO NOT SCALE
Osney Cemetery
Bulstake Stream



B90505-DRG-PWY2602

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. DRAWINGS ARE BASED ON ORDNANCE SURVEY LANDLINE PLUS DATA TILES THAT ARE CURRENT IN MARCH 2011. ACCURACY OF THE BACKGROUND INFORMATION SHOULD BE VERIFIED BY A TOPOGRAPHICAL SURVEY AS PART OF THE GRIP 4 DESIGN. LEVEL DATA IS NOT INCLUDED WITHIN THE ORDNANCE SURVEY TILES. FOR THE PURPOSES OF THIS STUDY ALL RELATIVE DIFFERENCES IN SITE LEVELS HAVE BEEN VISUALLY ESTIMATED DURING SITE VISITS. ALL LEVELS SHOULD BE VERIFIED BY SITE SURVEY
3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.



SITE PLAN
SCALE 1:500

KEY

NETWORK RAIL BOUNDARY

CAMERA POSITION AND PHOTOGRAPH NUMBER

PHOTO 1


PHOTO 1


PHOTO 2


PHOTO 3


PHOTO 4


PHOTO 5


PHOTO 6


PHOTO 7


PHOTO 8


PHOTO 9


PHOTO 10


PHOTO 11


PHOTO 12


PHOTO 13


PHOTO 14


PHOTO 15


PHOTO 16

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P01	01 10 13	INITIAL ISSUE FOR ESTIMATOR	MAG	OB	MAG

Network Rail
Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

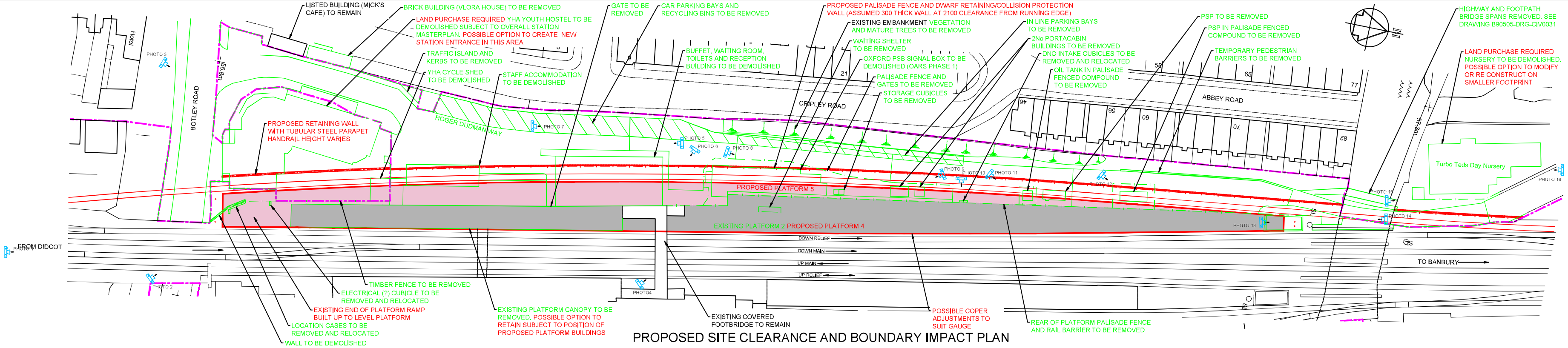
Designed	Checked
M.A.GILL	O.BIRKILL
Approved	**Date**
M.A.GILL	01/10/13

OXFORD CORRIDOR CP5

PROPOSED ADDITIONAL DOWN PLATFORM FACE
EXISTING GENERAL ARRANGEMENT

Scales 1:500
CAD DN
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0010
Revision P01

Plot Date: 11/10/2013 13:59



PROPOSED SITE CLEARANCE AND BOUNDARY IMPACT PLAN

SCALE 1:500


PHOTO 1


PHOTO 2


PHOTO 3


PHOTO 4


PHOTO 5


PHOTO 6


PHOTO 7


PHOTO 8


PHOTO 9


PHOTO 10


PHOTO 11

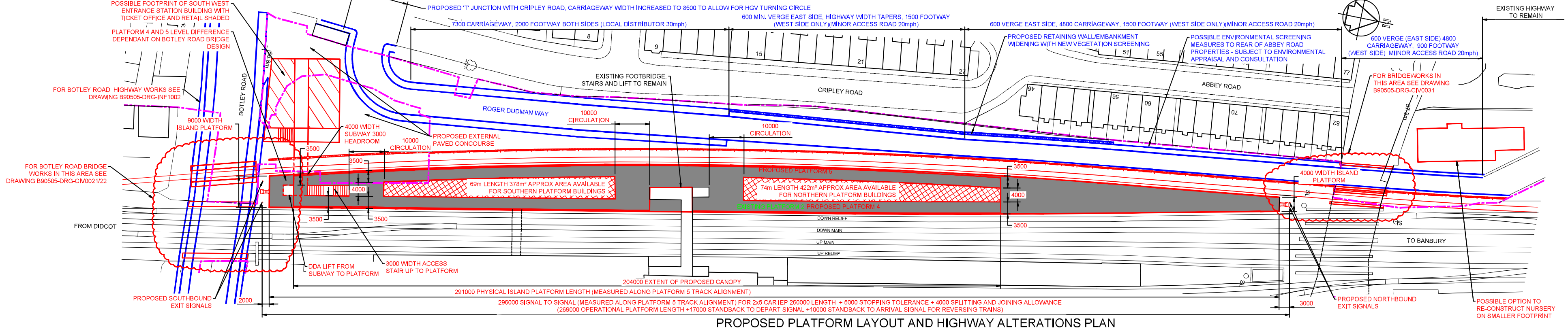

PHOTO 12


PHOTO 13


PHOTO 14


PHOTO 15


PHOTO 16



PROPOSED PLATFORM LAYOUT AND HIGHWAY ALTERATIONS PLAN

SCALE 1:500

DO NOT SCALE

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. DRAWINGS ARE BASED ON ORDNANCE SURVEY LANDLINE PLUS DATA TILES THAT ARE CURRENT IN MARCH 2011. ACCURACY OF THE BACKGROUND INFORMATION SHOULD BE VERIFIED BY A TOPOGRAPHICAL SURVEY AS PART OF THE GRIP 4 DESIGN. LEVEL DATA IS NOT INCLUDED WITHIN THE ORDNANCE SURVEY TILES. FOR THE PURPOSES OF THIS STUDY ALL RELATIVE DIFFERENCES IN SITE LEVELS HAVE BEEN VISUALLY ESTIMATED DURING SITE VISITS. ALL LEVELS SHOULD BE VERIFIED BY SITE SURVEY
3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.
4. RED TEXT AND LINETYPE INDICATE PROPOSED WORKS. GREEN TEXT AND LINETYPE INDICATE REMOVED.

KEY

-·-·-	NETWORK RAIL BOUNDARY
🟥	EXTENT OF PLATFORM WIDENING/EXTENSION
▨	EXISTING PLATFORM TO REMAIN
■	PROPOSED PLATFORM RE-SURFACING WITH PRECAST CONCRETE COPERS AND TACTILE PAVERS.
PHOTO 1	CAMERA POSITION AND PHOTOGRAPH NUMBER

PROPOSED HIGHWAY WORKS SHOWN IN BLUE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P03	06 03 14	REVISED FOLLOWING DISCUSSION OF DRAFT DRN COMMENTS	MAG	OB	MAG
P02	11 10 13	REVISED FOLLOWING DESIGN REVIEW WEBEX 2 OCTOBER 2013	MAG	OB	MAG
P01	25 09 13	PRELIMINARY ISSUE FOR IDC	MAG	OB	MAG

Network Rail
Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

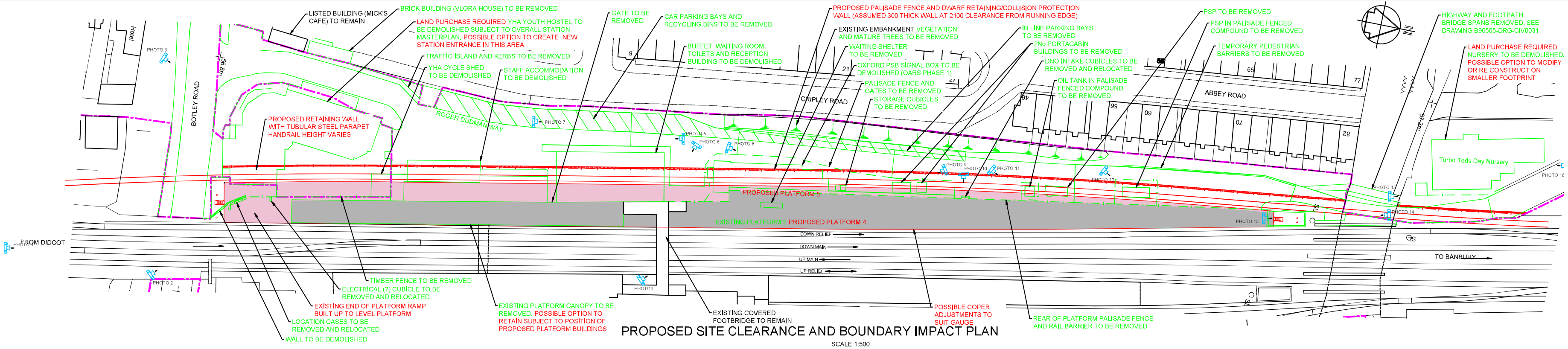
Designed	Checked
M.A.GILL	O.BIRKILL
Approved	**Date**
M.A.GILL	25/09/13

OXFORD CORRIDOR CP5

PROPOSED ADDITIONAL DOWN PLATFORM FACE
GENERAL ARRANGEMENT
OPTION 1

Scales 1:500
CAD DN
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0011
Revision P03

Plot Date: 07/03/2014 16:18



PROPOSED SITE CLEARANCE AND BOUNDARY IMPACT PLAN

SCALE 1:500


PHOTO 1


PHOTO 2


PHOTO 3


PHOTO 4


PHOTO 5


PHOTO 6


PHOTO 7


PHOTO 8


PHOTO 9


PHOTO 10


PHOTO 11

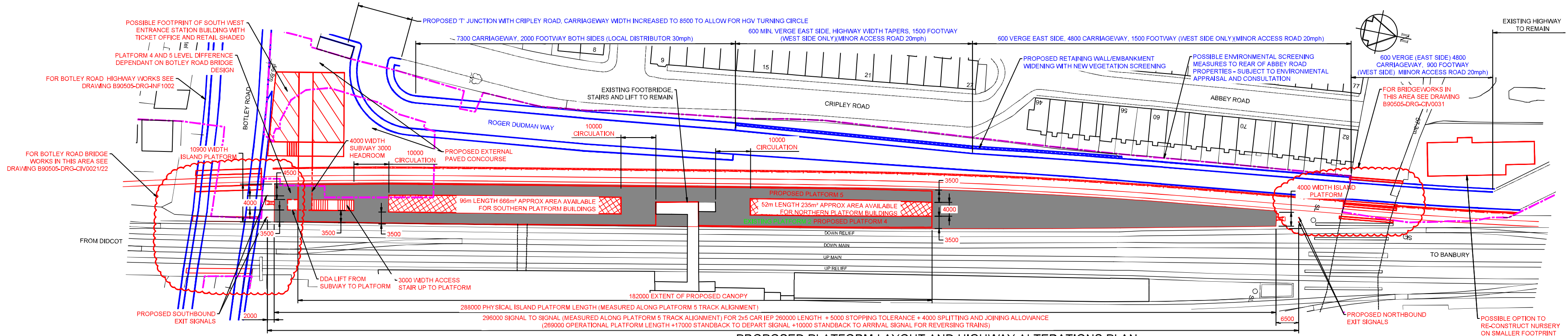

PHOTO 12


PHOTO 13


PHOTO 14


PHOTO 15


PHOTO 16



PROPOSED PLATFORM LAYOUT AND HIGHWAY ALTERATIONS PLAN

SCALE 1:500

DO NOT SCALE

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
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3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.
4. RED TEXT AND LINETYPE INDICATE PROPOSED WORKS. GREEN TEXT AND LINETYPE INDICATE REMOVED.

KEY

-·-·-	NETWORK RAIL BOUNDARY
🟪	EXTENT OF PLATFORM WIDENING/EXTENSION
▨	EXISTING PLATFORM TO REMAIN
■	PROPOSED PLATFORM RE-SURFACING WITH PRECAST CONCRETE COPERS AND TACTILE PAVERS.
PHOTO 1	CAMERA POSITION AND PHOTOGRAPH NUMBER

PROPOSED HIGHWAY WORKS SHOWN IN BLUE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P03	06 03 14	REVISED FOLLOWING DISCUSSION OF DRAFT DRN COMMENTS	MAG	OB	MAG
P02	11 10 13	REVISED FOLLOWING DESIGN REVIEW WEBEX 2 OCTOBER 2013	MAG	OB	MAG
P01	25 09 13	PRELIMINARY ISSUE FOR IDC	MAG	OB	MAG

Network Rail
Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

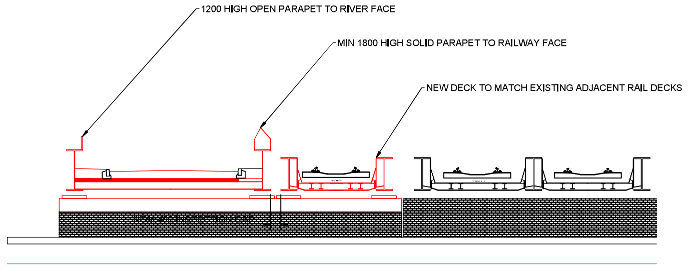
Designed M.A.GILL	Checked O.BIRKILL
Approved M.A.GILL	Date 25/09/13

OXFORD CORRIDOR CP5

PROPOSED ADDITIONAL DOWN PLATFORM FACE
GENERAL ARRANGEMENT
OPTION 2

Scales 1:500	CAD DN
PW Workflow State Issued	
Drawing Number B90505-DRG-CIV0012	Revision P03

Plot Date: 07/03/2014 16:20



PROPOSED SECTION

SCALE 1:100

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
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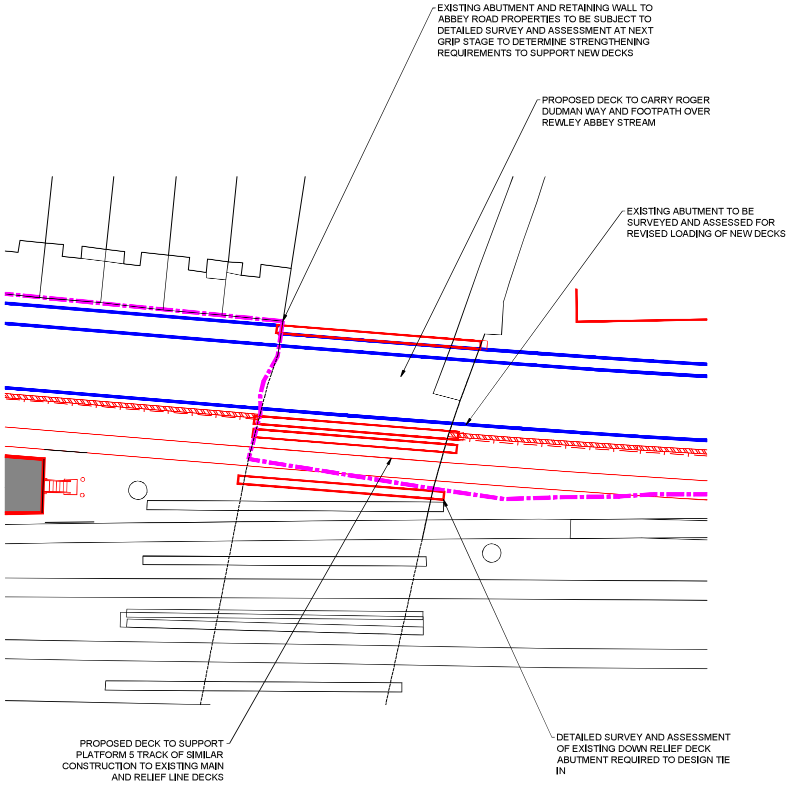
3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.
4. RED LINETYPE INDICATE PROPOSED WORKS. GREEN LINETYPE INDICATE REMOVED BLUE LINETYPE INDICATES PROPOSED HIGHWAY WORKS

KEY

🟩	EXISTING BRIDGE ELEMENT TO BE DEMOLISHED
☐	PROPOSED BRIDGE GIRDER

EXISTING PLAN

SCALE 1:500



PROPOSED PLAN

SCALE 1:500

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P02	07 03 14	TITLE BLOCK AMENDED	AGW	LO	AGW
P01	15 10 13	FIRST ISSUE FOR COMMENT	AGW	LO	AGW

Network Rail
Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

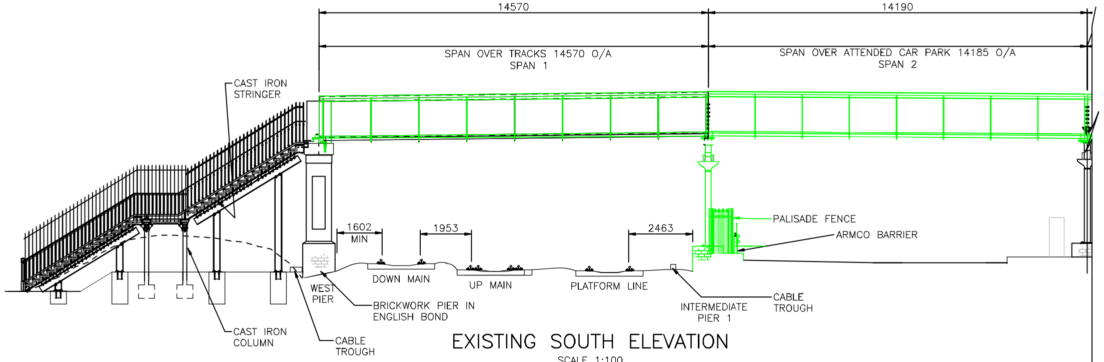
Designed A. G. WILKINSON
Checked L. OWEN
Approved A. G. WILKINSON
Date 15/10/13

OXFORD CORRIDOR CP5

DOWN ISLAND PLATFORM
SHEEPWASH BRIDGE ALTERATIONS

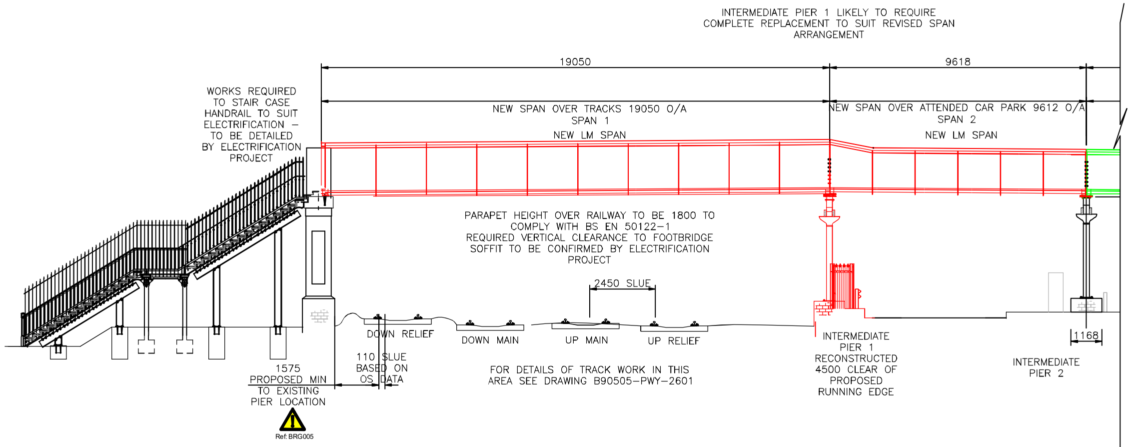
Scales AS SHOWN
CAD AGW
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0031
Revision P02

Plot Date: 07/03/2014 15:51



EXISTING SOUTH ELEVATION

SCALE 1:100



PROPOSED SOUTH ELEVATION

SCALE 1:100

NOTES

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4. EXISTING BRIDGE ELEVATION IS TAKEN FROM PREVIOUS DESIGN WORK CARRIED OUT BY TATA STEEL PROJECTS

SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: BRG/005 - Limited Clearance

Ref: CIV/001

- For more detailed information refer to Designers Risk Log within B90505-CDM-PEN0002
- Every day or low Risk Hazards have not been indicated on this drawing, neither have Hazards that should be obvious to a competent Contractor
- Should any additional Hazards be identified the Contractor should notify all relevant project Team members

COLOUR KEY ON PLAN:

BLACK INDICATES EXISTING OR UNCHANGED ASSETS.
GREEN INDICATES EXISTING ASSETS TO BE REMOVED OR ABANDONED.
RED INDICATES PROPOSED ASSETS.
BLUE INDICATES ASSETS TO BE MODIFIED OR TO BE MOVED.

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P02	07 03 14	EXISTING/PROPOSED WORKS LINE COLOURS ADDED	AGW	LO	AGW
P01	15 10 13	FIRST ISSUE FOR COMMENT	AGW	LO	AGW

Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

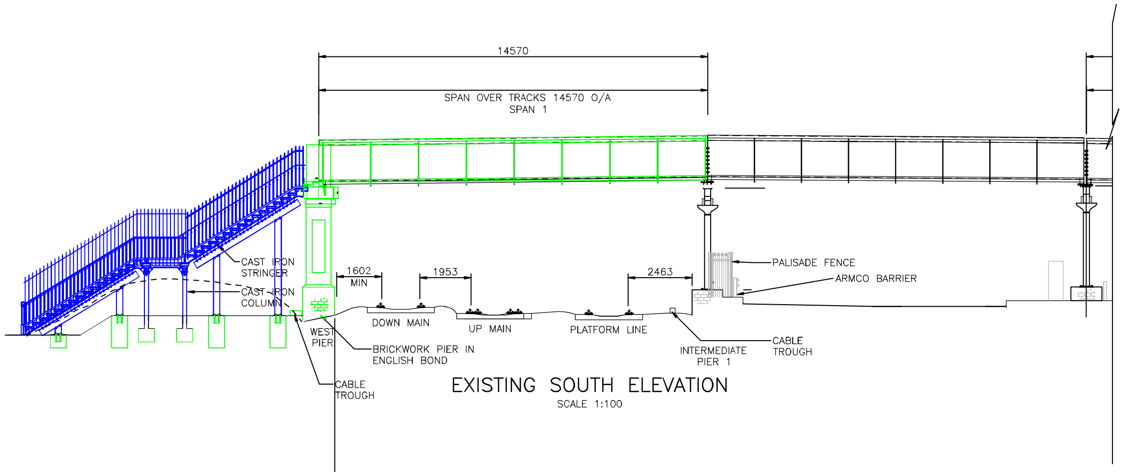
Designed: A. G. WILKINSON
Checked: L. OWEN
Approved: A. G. WILKINSON
Date: 15/10/13

OXFORD CORRIDOR CP5

CEMETERY FOOTBRIDGE MODIFICATIONS
PROPOSED GENERAL ARRANGEMENT
TRACK OPTION 1

Scales: AS SHOWN
CAD: AGW
PW Workflow State: Issued
Drawing Number: B90505-DRG-CIV0035
Revision: P02

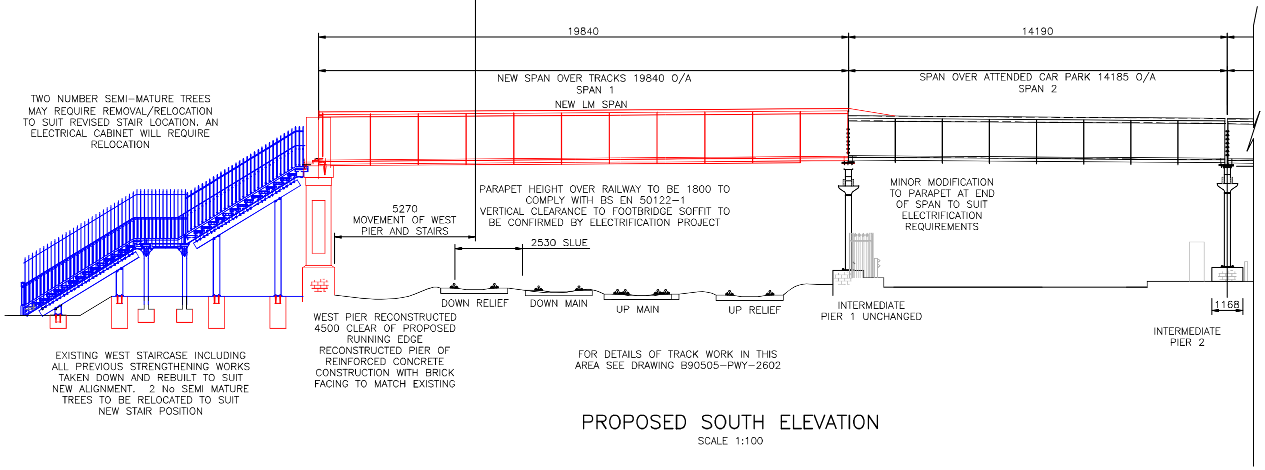
Plot Date: 07/03/2014 15:48



EXISTING SOUTH ELEVATION

SCALE 1:100

DETAILED ASSESSMENT OF SUITABILITY OF EXISTING CAST IRON INTERMEDIATE PIER 1 REQUIRED FOR ALTERED SPAN ARRANGEMENT. ALTERNATE PIER DETAIL MAY BE REQUIRED.



PROPOSED SOUTH ELEVATION

SCALE 1:100

NOTES

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4. EXISTING BRIDGE ELEVATION IS TAKEN FROM PREVIOUS DESIGN WORK CARRIED OUT BY TATA STEEL PROJECTS

COLOUR KEY ON PLAN:

BLACK INDICATES EXISTING OR UNCHANGED ASSETS.
GREEN INDICATES EXISTING ASSETS TO BE REMOVED OR ABANDONED.
RED INDICATES PROPOSED ASSETS.
BLUE INDICATES ASSETS TO BE MODIFIED OR TO BE MOVED.

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P02	07 03 14	EXISTING/PROPOSED WORKS LINE COLOURS ADDED	AGW	LO	AGW
P01	15 10 13	FIRST ISSUE FOR COMMENT	AGW	LO	AGW

Network Rail

Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

TATA

Status
FEASIBILITY

Designed	Checked
A. G. WILKINSON	L. OWEN
Approved	Date
A. G. WILKINSON	15/10/13

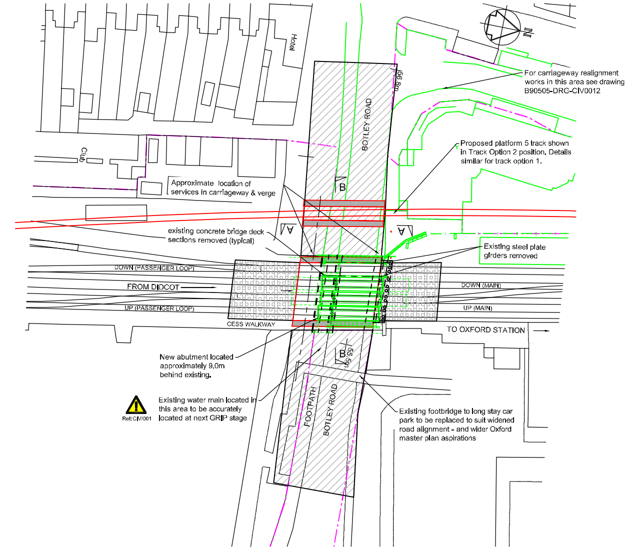
OXFORD CORRIDOR CP5

CEMETERY FOOTBRIDGE MODIFICATIONS
PROPOSED GENERAL ARRANGEMENT
TRACK OPTION 2

Scales AS SHOWN
CAD AGW
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0036
Revision P02

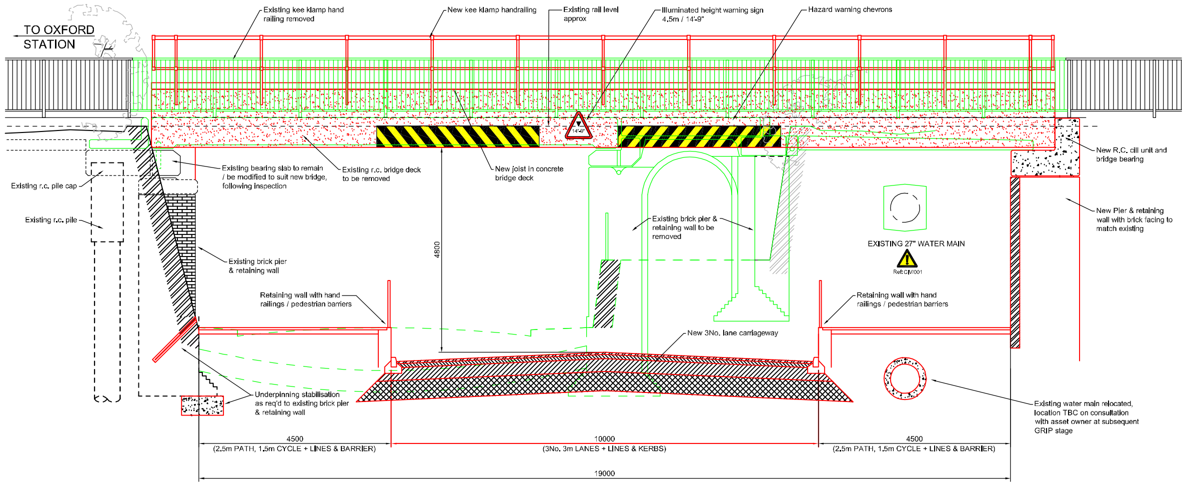
DO NOT SCALE

Plot Date: 07/03/2014 15:49



PROPOSED BRIDGE AND HIGHWAY MODIFICATIONS - PLAN

SCALE 1:500



SECTION A-A

SCALE 1:50

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
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SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: CIV/001 - Buried Services
CIV/002 - Hidden Structural Elements
CIV/003 - Ground Water Levels

Ref: CIV/001

- For more detailed Information refer to Designers Risk Log within B90505-CDM-PEN0002
- Every day or low Risk Hazards have not been indicated on this drawing, neither have Hazards that should be obvious to a competent Contractor
- Should any additional Hazards be identified the Contractor should notify all relevant project Team members

COLOUR KEY ON PLAN:

BLACK INDICATES EXISTING OR UNCHANGED ASSETS.

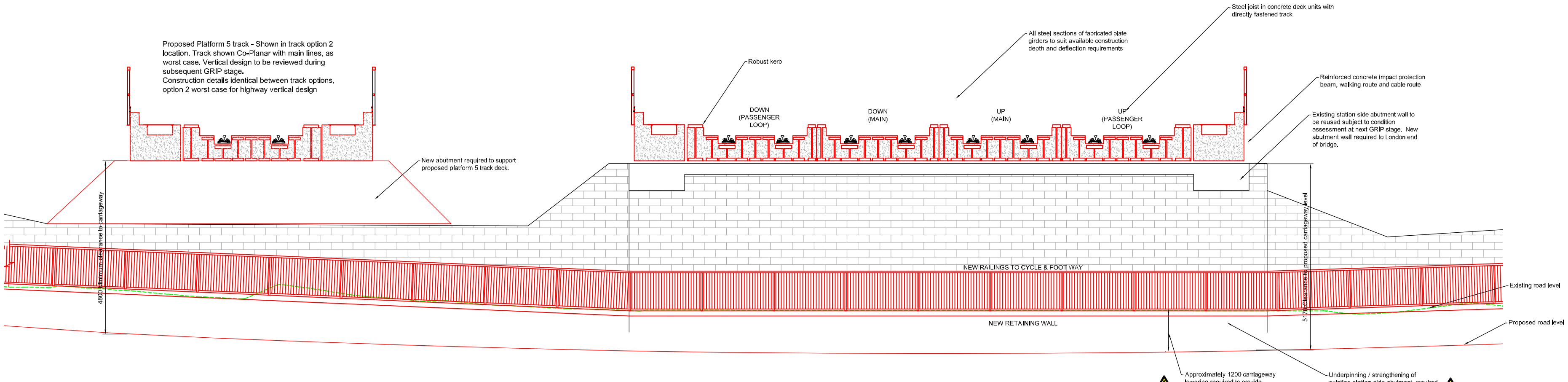
GREEN INDICATES EXISTING ASSETS TO BE REMOVED OR ABANDONED.

RED INDICATES PROPOSED ASSETS.

BLUE INDICATES ASSETS TO BE MODIFIED OR TO BE MOVED.

KEY

▨	EXTENT OF HIGHWAY VERTICAL REALIGNMENT - SEE DRAWING B90505-DRG-INF1002
▦	APPROXIMATE EXTENT OF TRANSITION SLAB IF DIRECT TRACK FASTENING USED
🟪	CESS WALKWAY TO BOTLEY ROAD BRIDGE



SECTION B-B
PROPOSED BRIDGE AND HIGHWAY ALTERATIONS

SCALE 1:50

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P03	07 03 14	UPDATED TO DRN COMMENTS	AGW	DAW	AGW
P02	01 10 13	UPDATED TO IDC COMMENTS	AGW	DAW	AGW
P01	26 09 13	PRELIMINARY ISSUE FOR IDC	AGW		

Network Rail
Western House
3rd Floor
121 Holbrook Way
Swindon
SN1 1BD

TATA STEEL PROJECTS
Meridian House
The Crescent
York
YO24 1AW

Status
FEASIBILITY

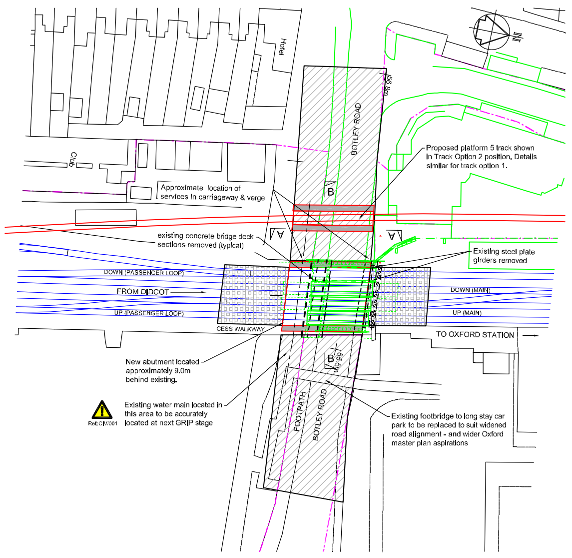
Designed A. G. WILKINSON	Checked D. A. WARRIOR
Approved A. G. WILKINSON	Date 27/09/13

OXFORD CORRIDOR CP5

BOTLEY ROAD BRIDGE RECONSTRUCTION
PROPOSED GENERAL ARRANGEMENT
STEEL JOISTS IN CONCRETE DECK

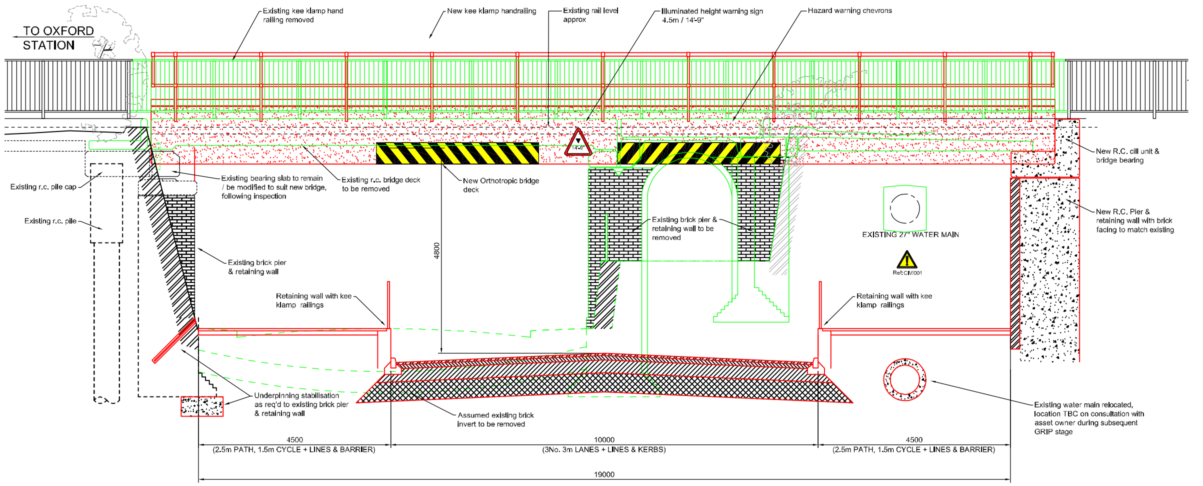
Scales AS SHOWN
CAD AGW
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0021
Revision P03

Plot Date: 10/03/2014 12:17



PROPOSED BRIDGE AND HIGHWAY MODIFICATIONS - PLAN

SCALE 1:500

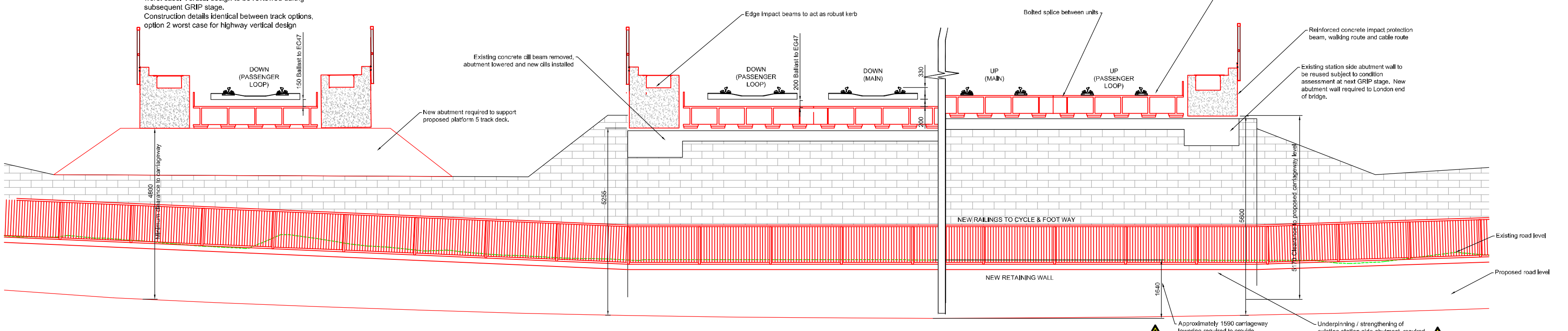


SECTION A-A

SCALE 1:50

The clearance generated at the location of the existing Botley Road Bridge in order to clear the proposed Platform 5 Track may allow the introduction of ballasted track to the existing main and relief lines.

Proposed Platform 5 track - Shown in track option 2 location. Track shown Co-Planar with main lines, as worst case. Vertical design to be reviewed during subsequent GRIP stage.
Construction details identical between track options, option 2 worst case for highway vertical design



SECTION B-B
PROPOSED BRIDGE AND HIGHWAY ALTERATIONS

SCALE 1:50

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
2. DRAWINGS ARE BASED ON ORDNANCE SURVEY LANDLINE PLUS DATA TILES THAT ARE CURRENT IN MARCH 2011. ACCURACY OF THE BACKGROUND INFORMATION SHOULD BE VERIFIED BY A TOPOGRAPHICAL SURVEY AS PART OF THE GRIP 4 DESIGN. LEVEL DATA IS NOT INCLUDED WITHIN THE ORDNANCE SURVEY TILES, FOR THE PURPOSES OF THIS STUDY ALL RELATIVE DIFFERENCES IN SITE LEVELS HAVE BEEN VISUALLY ESTIMATED DURING SITE VISITS. ALL LEVELS SHOULD BE VERIFIED BY SITE SURVEY
3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.

SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: CIV/001 - Buried Services
CIV/002 - Hidden Structural Elements
CIV/003 - Ground Water Levels

Ref: CIV/001

- For more detailed Information refer to Designers Risk Log within B90505-CDM-PEN0002
- Every day or low Risk Hazards have not been indicated on this drawing, neither have Hazards that should be obvious to a competent Contractor
- Should any additional Hazards be identified the Contractor should notify all relevant project Team members

COLOUR KEY ON PLAN:

BLACK INDICATES EXISTING OR UNCHANGED ASSETS.
GREEN INDICATES EXISTING ASSETS TO BE REMOVED OR ABANDONED.
RED INDICATES PROPOSED ASSETS.
BLUE INDICATES ASSETS TO BE MODIFIED OR TO BE MOVED.

KEY

▨	EXTENT OF HIGHWAY VERTICAL REALIGNMENT - SEE DRAWING B90505-DRG-INF1002
▦	APPROXIMATE EXTENT OF TRANSITION SLAB IF DIRECT TRACK FASTENING USED
🟪	CESS WALKWAY TO BOTLEY ROAD BRIDGE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P03	07 03 14	UPDATED TO DRN COMMENTS	AGW	DAW	AGW
P02	01 10 13	UPDATED TO IDC COMMENTS	AGW	DAW	AGW
P01	26 09 13	PRELIMINARY ISSUE FOR IDC	AGW		

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Status
FEASIBILITY

Designed	Checked
A. G. WILKINSON	D. A. WARRIOR
Approved	Date
A. G. WILKINSON	27/09/13

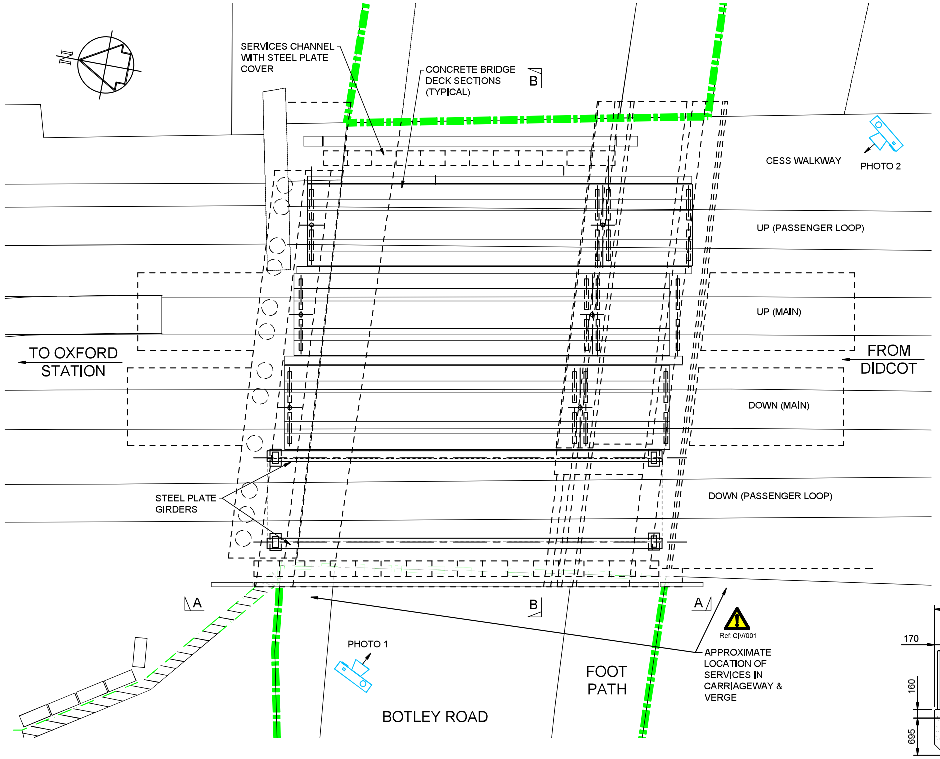
OXFORD CORRIDOR CP5

BOTLEY ROAD BRIDGE RECONSTRUCTION
PROPOSED GENERAL ARRANGEMENT
ORTHOTROPIC STEEL DECK

Scales AS SHOWN
CAD AGW
PW Workflow State Issued
Drawing Number B90505-DRG-CIV0022
Revision P03

DO NOT SCALE

Plot Date: 10/03/2014 12:20



PLAN

SCALE 1:100

NOTE:
DIMENSIONS TO BE CONFIRMED WITH SITE SURVEY PRIOR TO DETAIL DESIGN STAGE

LOCATION PLAN

(OS MAP REF: SP 5050 0630)

SCALE 1:2500

PHOTO 1

PHOTO 2

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES UNLESS STATED OTHERWISE.
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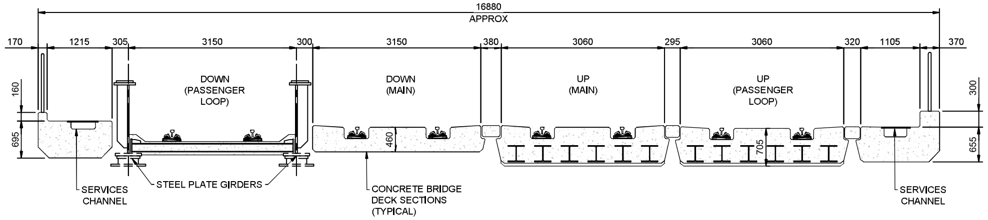
3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.

KEY TO SERVICES & ABBREVIATIONS:

—— ELEC ——	= ELECTRIC CABLES
—— GAS ——	= TRANSCO GAS
—— S&T —— S&T ——	= S & T
—— OHL —— OHL ——	= OVERHEAD ELECTRICITY TRANSMISSION LINE
—— BT ——	= TELECOM CABLE (BT)
—— W ——	= WATER SUPPLY
—— FW ——	= FOUL SEWER
—— TD —— TD ——	= TRACK DRAIN
—— S ——	= DRAINAGE/SEWER
▬ ▬ ▬	= NETWORK RAIL BOUNDARY
—— NTL ——	= FIBRE OPTIC CABLE
—— UNID ——	= UNIDENTIFIED SERVICES
PHOTO 1	= PHOTOGRAPH AND DIRECTION SHOWN



SECTION B-B

SCALE 1:100

SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: CIV/001 - Buried Services
CIV/002 - Hidden Structural Elements
CIV/003 - Ground Water Levels

Ref: CIV/001

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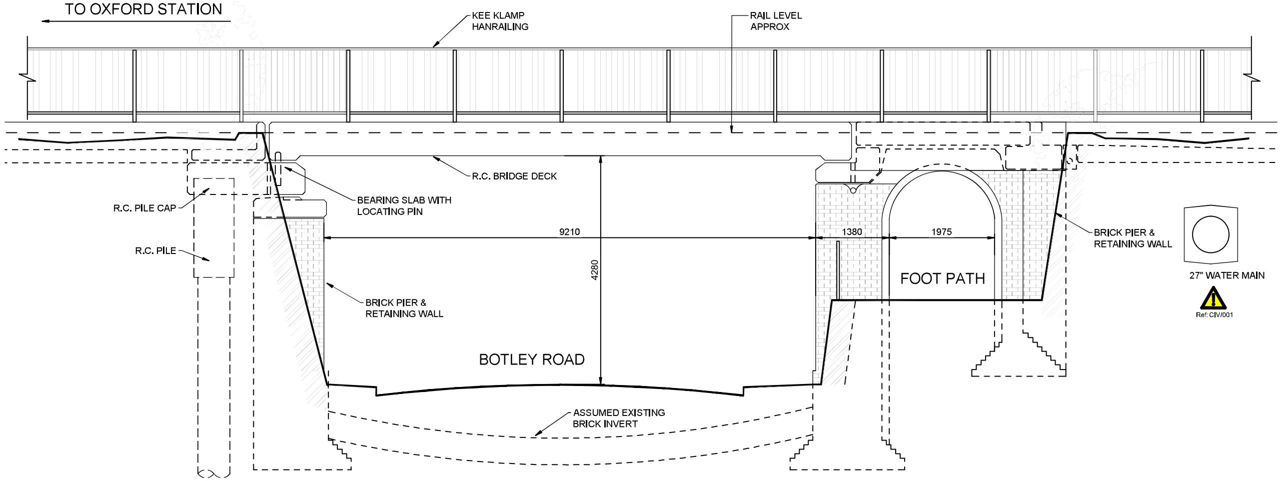

SECTIONAL ELEVATION A-A

SCALE 1:50

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P01	10 03 14	FIRST ISSUE	AGW	LO	AGW

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Status
FEASIBILITY

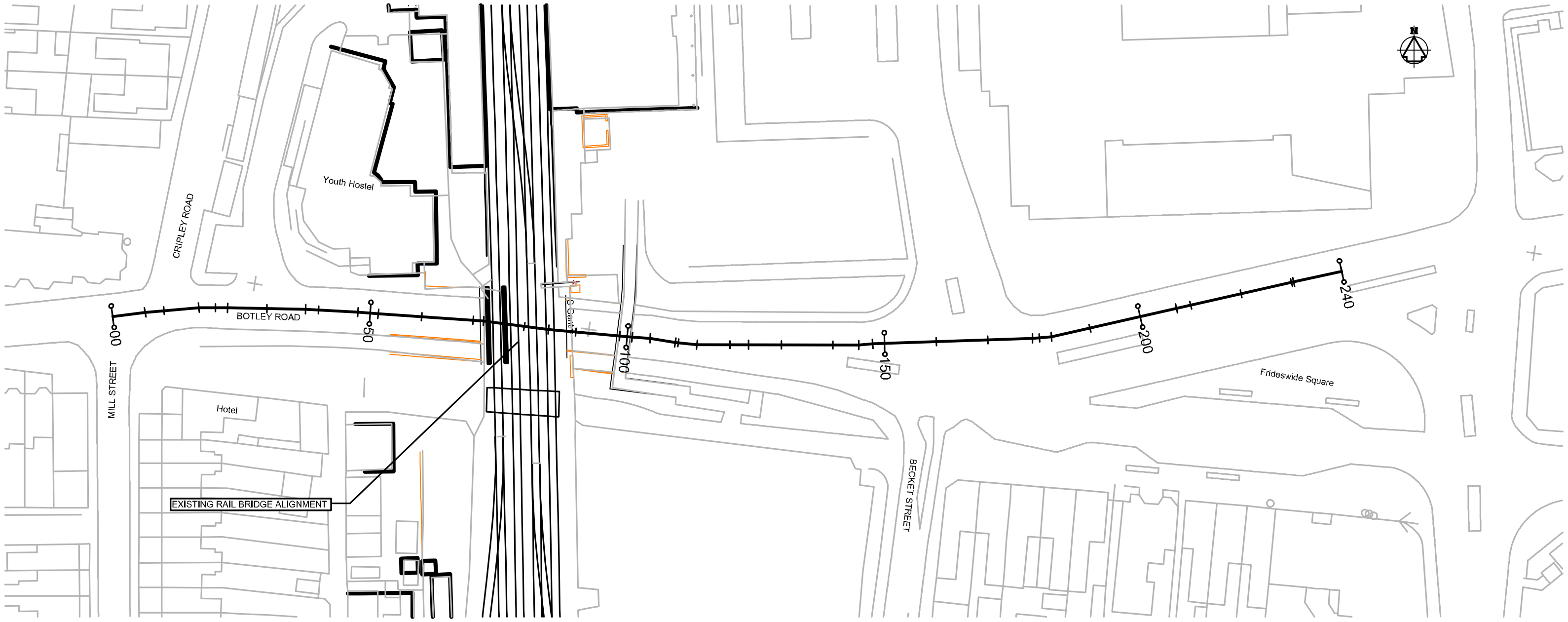
Designed A. G. WILKINSON
Checked L. OWEN
Approved A. G. WILKINSON
Date 10/03/2014

OXFORD CORRIDOR CP5

BOTLEY ROAD BRIDGE RECONSTRUCTION
EXISTING GENERAL ARRANGEMENT

Scales AS SHOWN
CAD NR
PW Workflow State Issued
Drawing Number B90505-DRG-CIV1020
Revision P01

Plot Date: 13/03/2014 09:35



EXISTING ROAD LAYOUT

SCALE: 1:500

NOTES

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3. NETWORK RAIL AND STATUTORY OWNED SERVICES INFORMATION IS NOT AVAILABLE AT THE TIME OF THE GRIP 2 STUDY. IT IS RECOMMENDED THAT THE DESIGN INFORMATION ON THIS DRAWING IS VERIFIED AGAINST CONTEMPORARY SERVICES INFORMATION WHEN IT BECOMES AVAILABLE.

SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: CIV/001 - Buried Services
CIV/002 - Hidden Structural Elements

⚠ Ref: CIV/001

- For more detailed information refer to Designers Risk Log within B90505-CDM-PEN0002
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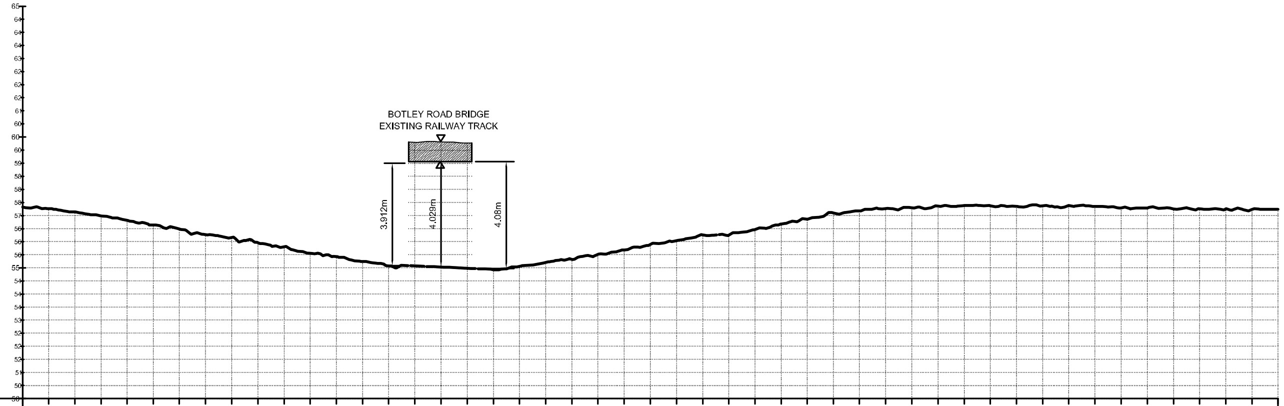

Chainage	00.000	05.000	10.000	15.000	20.000	25.000	30.000	35.000	40.000	45.000	50.000	55.000	60.000
Existing Road Levels	57.327	57.261	57.142	56.982	56.818	56.642	56.479	56.270	56.165	55.962	55.808	55.558	55.433
Railway Track Levels													

Chainage	65.000	70.000	75.000	80.000	85.000	90.000	95.000	100.000	105.000	110.000	115.000	120.000	125.000
Existing Road Levels	55.244	55.074	55.076	55.031	54.984	54.930	55.062	55.204	55.324	55.512	55.687	55.896	56.040
Railway Track Levels			59.801	59.816	59.768								

Chainage	130.000	135.000	140.000	145.000	150.000	155.000	160.000	165.000	170.000	175.000	180.000	185.000	190.000
Existing Road Levels	56.260	56.254	56.462	56.673	56.862	57.100	57.173	57.267	57.296	57.356	57.380	57.372	57.347
Railway Track Levels													

Chainage	195.000	200.000	205.000	210.000	215.000	220.000	225.000	230.000	235.000	240.000
Existing Road Levels	57.373	57.381	57.346	57.288	57.292	57.250	57.260	57.249	57.231	57.234
Railway Track Levels										

EXISTING ROAD
CENTRELINE LONG-SECTION

SCALE: H=1:500 - V=1:100

DO NOT SCALE

Rev.	Date	Descriptions of Revision	Des.	Chkd.	Appr.
P02	13 03 14	PRELIMINARY - NOTE 2 - UPDATED TO INCORPORATE COMMENTS FROM DRN MEETING 28.02.14	RB	AJP	JN
P01	04 10 13	PRELIMINARY	PEH	AJP	PV

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Status
PRELIMINARY

Designed AJP	Checked PV
Approved PV	Date 04/10/13

OXFORD CORRIDOR CP5

BOTLEY ROAD BRIDGE
EXISTING GENERAL ARRANGEMENT

Scales	AS SHOWN	CAD	PEH
PW Workflow State	ISSUED		
Drawing Number	B90505-DRG-INF1001	Revision	P02

Plot Date: 13/03/2014 12:56

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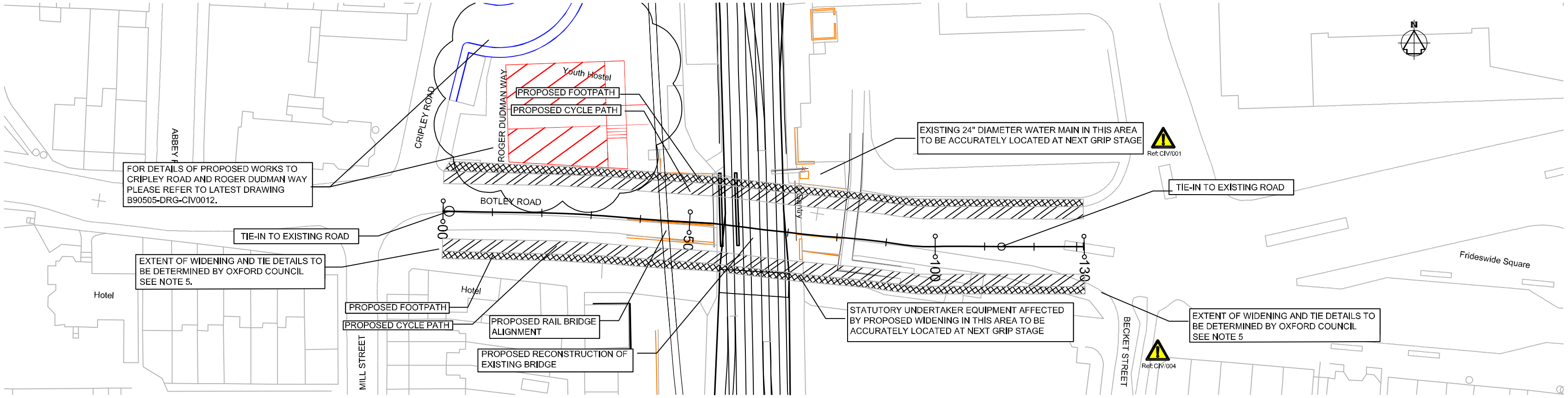
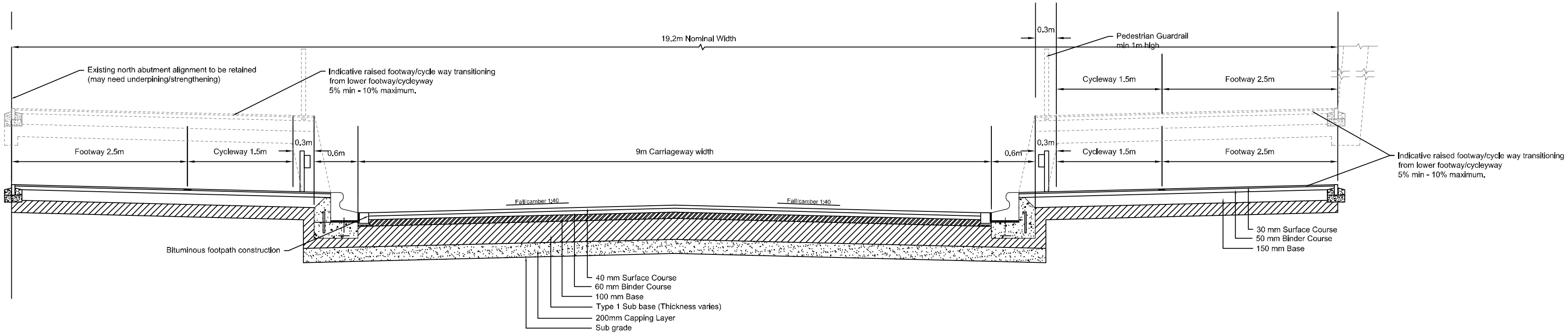


PROPOSED BOTLEY ROAD LAYOUT

SCALE: 1:500

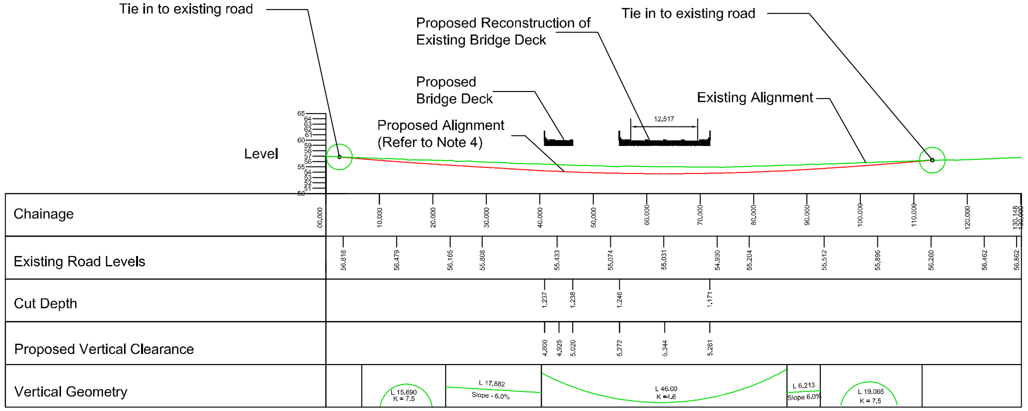


Width of proposed carriageway specified by Oxford Council

For existing bridge general arrangement please refer to latest drawing B90505-DRG-CIV1020

PROPOSED BOTLEY ROAD CROSS SECTION

SCALE: N.T.S.



PROPOSED BOTLEY ROAD CENTRELINE LONG-SECTION

SCALE: H=1:1000 - V=1:1000

Item	Proposed
Footway width	2.5m x2=5m
Cycle path width	1.5m x2=3m
Carriageway width	3m x 3 plus 2 off safety kerbs, railings etc=11.2m
Total width	19.2m
Height	Required absolute minimum is 4.80m
Gradient	6% maximum
Drainage	Network Rail to continue to provide pumped system

OXFORD COUNCIL CARRIAGEWAY REQUIREMENTS

NOTES

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4. THE MINIMUM DESIGN SPEED GIVEN IN DMRB IS 50KPH HOWEVER THE PROPOSED VERTICAL ALIGNMENT WOULD UTILISE VERTICAL CURVES OF 460M RADIUS (K VALUE = 4,6), THIS IS BASED ON EXTRAPOLATING THE RELATIONSHIP BETWEEN SPEED AND MINIMUM SAG CURVE THIS IS IN LINE WITH SECTION SECTION 4.14 OF DMRB AND THE RELAXATIONS TO THE ABSOLUTE MIN K VALUE WHICH CORRESPONDS TO A DESIGN SPEED OF 35 KPH - THE MAXIMUM PROPOSED GRADIENT IS 6% WHICH IS COMPLIES WITH THE MAXIMUM GRADIENT OF 6% FOR ALL PURPOSE SINGLE CARRIAGEWAYS. A VERTICAL MINIMUM CLEARANCE OF 4,8M HAS BEEN ACHIEVED CLEARING BOTH THE PROPOSED BRIDGE AND THE EXISTING BRIDGE,THE DESIGN IS BASED ON A PROPOSED SIGNED LEGAL SPEED OF 20MPH, DESIGN PARAMETERS TO BE AGREED WITH THE HIGHWAY AUTHORITY.
5. WIDENING THE CARRIAGEWAY FROM THE NORTHERN ABUTMENT ENCROACHES ON THE EXISTING RAISED FOOTPATH ON THE SOUTH SIDE AND ANY ASSOCIATED STATUTORY UNDERTAKERS EQUIPMENT SITUATED UNDERNEATH WILL NEED RELOCATING/LOWERING AND POSSIBLE DIVERSIONS, ALSO AGREEMENTS/PERMITS WILL NEED TO BE ACQUIRED. IT IS NOT KNOWN IF THE CONTINUATION OF THE CARRIAGEWAY WIDENING WILL CONTINUE FURTHER ALONG TO THE JUNCTIONS OF MILL STREET AND BECKET STREET, IF THIS IS THE CASE A JUNCTION RE-ALIGNMENT WILL BE NEEDED AT THESE AREAS TO ACCOMMODATE THE WIDENING.

SIGNIFICANT DESIGNERS IDENTIFIED HAZARDS

Ref: CIV/001 - Buried Services
CIV/002 - Hidden Structural Elements

⚠ Ref: CIV/001

- For more detailed Information refer to Designers Risk Log within B90505-CDM-PEN0002
- Every day or low Risk Hazards have not been indicated on this drawing, neither have Hazards that should be obvious to a competent Contractor
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P02	07 03 14	PRELIMINARY - UPDATED TO INCORPORATE COMMENTS FROM DRN MEETING 28.02.14	RB	AJP	JN
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Status
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Designed PEH
Checked AJP
Approved PV
Date 04/10/13

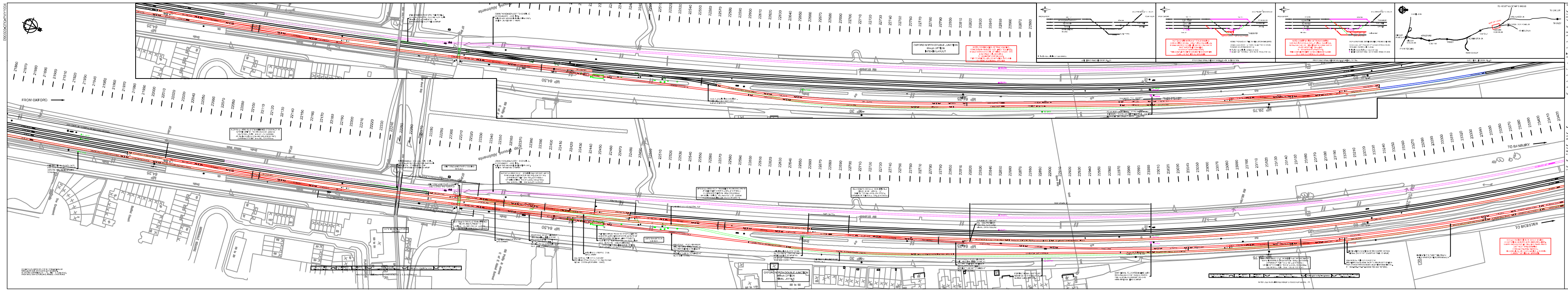
OXFORD CORRIDOR CP5

BOTLEY ROAD BRIDGE
PROPOSED GENERAL ARRANGEMENT

Scales AS SHOWN
CAD PEH
PW Workflow State Issued
Drawing Number B90505-DRG-INF1002
Revision P02

DO NOT SCALE

Plot Date: 10/03/2014 16:34



NOTES

2. KEY

PROPOSED TRACK ALIGNMENT	🟥
EXISTING TRACK TO REMAIN	▬
EXISTING TRACK TO BE REMOVED	🟩
INDICATIVE PROPOSED TRACK ALIGNMENT (BY OTHERS)	⋯
EXISTING SIGNAL TO REMAIN	○
NEW SIGNAL TO BE INSTALLED (BY OTHERS)	○

3. DESIGN ABBREVIATIONS USED:

Ch	CHAINAGE
D	CANT DEFICIENCY
E	APPLIED CANT
CWR	CONTINUOUS WELDED RAIL
Rad	RADIUS
RoD	RATE OF CHANGE OF DEFICIENCY

5. CHAINAGES AND TRACK RADII ARE SHOWN IN METRES. ALL OTHER DIMENSIONS ARE SHOWN IN MILLIMETRES UNLESS OTHERWISE STATED. ALL CLEARANCES AND DIMENSIONS ARE QUOTED TO RUNNING EDGES (RE).

6. CHAINAGE SHOWN IS MEASURED IN METRES ALONG THE EXISTING UP MAIN SIX-FOOT RAIL AND INCREASES WITH MILEAGE. THE DATUM FOR CHAINAGE IS 20000.000m AT THE 63 MILE POST. MILE POST LOCATIONS AND ASSOCIATED CHAINAGE ARE BASED ON OS MAPPING AND ARE THEREFORE INDICATIVE ONLY.

7. CENTRE LINE RADII HAVE BEEN QUOTED IN ALL CASES.

Network Rail

STEEL PROJECTS

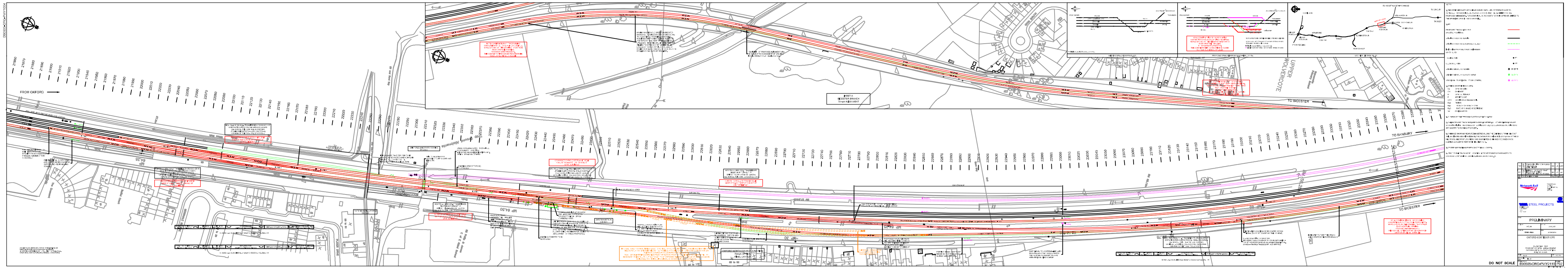
PRELIMINARY

OXFORD CORRIDOR CP5

PERMANENT WAY
PROPOSED GENERAL ARRANGEMENT

DO NOT SCALE

B90505-DRG-PWY2100 P02



PRELIMINARY

OXFORD CORRIDOR CP5

DO NOT SCALE

B90505-DRG-PWY2110 P02

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Appendix F

(Capacity Study)

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Network Strategy and Planning – Capability Analysis
Oxford Corridor Capacity

Document Control

Scheme Name:	Oxford Corridor
Document Ref. No.:	CA
Location:	V:\SAP-Project\CA000000 - Oxford Corridor\004Report

Version No:	1.0
Status:	Final
Author:	Tom Porter
Version Date:	18 February 2013
Security Level:	Unrestricted

Authorisation Control

		4/3/13
Lee Mowle	Signature	Date

Project Manager - Capability Analysis (Document Owner)

Richard McCulloch	Signature	Date

Lead Development Manager

Claire Mahoney	Signature	Date

Lead Strategic Planner

Introduction

The objective of the overall scheme is to improve capacity and capability on the Oxford Corridor to meet the Strategic Business Plan objectives for capacity and journey time improvements. A number of options to increase platform capacity have been developed and this study tests three options against two potential future service specifications. This report summarises the findings.

The first infrastructure option (A) introduces a new south facing bay platform to the east of the station. The alternative options (B1 and B2) introduce a new Down island platform to the west of the station. B1 allows parallel moves to the north and south; B2 allows these only to the south.

The train service specifications used to test these options have been developed to reflect two future scenarios. In Scenario 1, East West Rail services terminate at Oxford, and a local service provides connection from Oxford to Reading as today. In Scenario 2, East West Rail services run through to Reading or beyond and replace the local services. For the purposes of this study all East West Rail services (through or terminating) are assumed to be provided using diesel stock although since the commencement of this study the electrification of the East West Rail route has been announced as part of the HLOS (2012). It is probable that the performance of any electric rolling stock is better and therefore this would have no impact on the findings of this study. Subsequent studies will take account of the proposed electrification, including the current study into Crossrail integration due to complete by January 2013. The attached remit gives sketches of each option and a list of all services included.

For each of these scenarios, a peak and off peak indicative standard hour future service pattern has been developed and used to test the different options. The actual serviced pattern is not known at this stage so the specification in the remit provides an assumption to allow this analysis to take place.

This high level report identifies where the infrastructure does not support the future services, and describes the platforming approach for each scenario. Key findings are summarised at the end of the report.

Assumptions

Infrastructure

The increase in platform capacity forms part of a programme of works which when taken together aim to deliver an overall increase in capacity through Oxford Station. This study therefore assumes the following:

- 3 minute junction margins at platform ends at Oxford station between conflicting movements;
- Signalling improvements to allow a 3 minute planning headway from Oxford – Didcot North Junction and a 4 minute planning headway between Oxford and Aynho Junction;
- Implementation of the extension of the SFN down freight loop and associated works.

In all scenarios the following infrastructure was also assumed to be in place because it is required to deliver the required service levels into Oxford:

- Doubling of track between Wolvercot tunnel and a double junction at Oxford North Junction, as per Option B1 and B2 given in the remit.

Train Services

The following sources form the basis of the development timetables for the peak and off-peak:

- IEP timetables developed in the Great Western Main Line Capacity post 2019 report (May 2012) are used as a starting point for timings of services. Timings for CrossCountry and Intercity trains are retained wherever possible;
- Chiltern Railways timetable for East West Rail (EWR) services and Evergreen III services (EGIII) from Oxford to Marylebone are used and amended as required. (All diesel stock);
- Additional services to meet both freight and passenger forecast demand are included as per the remit.
- The freight services are all are timed as Class 66 + 1600T. A sensitivity test increasing the weight of freight services to Class 66 + 1800T was undertaken and results in an increase in the timings between Didcot and Oxford by 45 seconds, and would not impact on the findings of this study. Further work to understand the impact of 2400T freight services has been completed and documented in a separate note (Oxford File Note_Sensitivity test 18_02_13.doc).

Scenario 1 (East West Rail services terminate at Oxford)

Infrastructure Option A

A new south facing bay platform is introduced to the east of the station.

It was not possible to achieve a compliant timetable and include all the required services in this scenario. The local Cotswold services and a fourth freight service were removed in order to achieve a compliant timetable.

The local Reading to Oxford services terminate in the new bay platform. The EWR and EGIII services terminate in Platform 3 and an additional platform (included as Platform 3b for this study). All other services where included use Platforms 1 and 2.

Infrastructure Option B1 and B2

Platform 4 is introduced as a through platform to the West of the station.

A compliant peak and off peak timetable have been developed with some retiming of services. An additional platform is required for EGIII and EWR services.

All through services use Platform 1 in the up direction and Platform 4 in the down direction. Terminating Intercity services use Platform 4, are transferred to the Down Carriage Sidings and come back into service on Platform 1.

The additional peak SET train from Paddington through to Hereford is split in the Down direction on Platform 4, with one 5-car unit moved to the Carriage Sidings and the remaining 5-car unit continuing in service. The train is reattached on Platform 1 to return as a 10-car service to London.

The local services to and from Reading terminate in Platform 2, where they are held until their departure time to the South; there are no ECS moves associated with this service. This reduces the number of crossing movements at the northern end of the station by two per hour compared with Option A.

Terminating EGIII use Platform 3, EWR services will require the use of another platform (3b) in that area. Cotswolds services also use Platforms 3b.

With mid platform signals and the additional crossover in Option B1, there is the opportunity to implement platform sharing and terminate the local Reading services from the south, and the Cherwell Valley services from the north. With Option B2 (or without platform sharing in Option B1) this is not possible and therefore the Cherwell Valley services terminate on Platform 4.

There are 10 services in the hour using the reversible Jericho line, 6 in the Up direction and 4 in the Down direction.

Approximately half of the freight services are looped in the Oxford area, in this and most scenarios. The layout would appear to provide sufficient capacity to allow all freight services to be looped, if wider timetable constraints require this.

Platform occupation – EWR services terminating

The following table gives the platform occupation levels (including signalling headways) for each of these scenarios.

Table 1 Platform Occupation (off-peak) – EWR services terminating

Platform	Option B1 (with platform sharing in place on Platform 2)	Option B2 (also equivalent to B1 without platform sharing)
1	34%	34%
2	50%	34%
3	68%	68%
3b	66%	66%
4	33%	50%

Scenario 2 (East West Rail services run through Oxford)

Infrastructure Option A

A compliant timetable can be achieved.

All through services (including EWR) use Platform 1 in the Up direction and Platform 2 in the Down. The EGIII Oxford-Marylebone services, the Cherwell valley services and the Cotswold services all terminate on Platforms 3 and 3b. Removing either the Cherwell Valley services or the Cotswolds services could remove the need for Platform 3b in this scenario, and Platform 3 would be utilised at 72%.

The Paddington to Oxford service (1tph in the off peak, 2tph in the peak) uses the new south facing bay. Peak hour platform occupation in the new platform is 73% in this scenario.

Seven services use the reversible Jericho line in an off peak hour (5 in the Up direction and 2 in the Down), increasing to eight in a peak hour (6 in the Up and 2 in the Down).

Infrastructure Option B1 and B2

For both B options, a compliant timetable can be achieved with some retiming of services. In general the retiming of services is consistent for both Options A and B, however Option A requires the retiming of all CrossCountry services due to crossing moves into the South facing bay platform. Option B only requires the retiming of one CrossCountry service.

In both options, all through services (including EWR) use Platform 1 in the Up direction and the new Platform 4 in the Down direction. Platform 3 is used for EGIII services.

With Option B1, assuming mid platform signals or platform sharing are in place, the local Cherwell and Cotswold services could turn back from the north on Platform 2 whilst the terminating Intercity EMU services in the peak could use the southern end. If this were feasible, the additional Platform 3b is not required.

With Option B2 (and B1 without platform sharing) the Cotswold and Cherwell Valley services cannot use Platform 2 as a turnback in the peak because of additional terminating Intercity EMU services. Therefore, even without the terminating EWR, the additional northside bay (3b) is still required.

Seven services (2 Up, 5 Down) use the reversible Jericho line in the off peak, rising to 8 in the peak (2 Up, 6 Down).

Platform Occupation – through EWR services

The following tables provide the platform occupation (including signalling headways) for each of these infrastructure options.

Table 2 Platform Occupation (off-peak) – through EWR services

Platform	Option A	Option B1 (with platform sharing on Platform 2)	Option B2 (also equivalent to B1 without platform sharing)
1	46%	50%	50%
2	53%	47%	not used
3a	41%	56%	56%
3b	56%	not used	47%
4	n/a	49%	49%
south facing Bay	44%	n/a	n/a

Peak platform occupation is provided in the next section, alongside the findings for an alternative platforming arrangement.

The new bidirectional crossover in Option A is not used. Given the level of platform occupation, all turnback moves are planned to use the carriage sidings rather than Platform 2. The sketches at the end of the report highlight the peak and off peak use.

All infrastructure is used in B1 and B2 options, however some sections are only used in the peak. An alternative strategy to platforming removes the need for the ladder from the Down Carriage Sidings to Platform 1. This is outlined below.

Scenario 2 Alternative Platforming

There is an alternative approach to platforming the services in the Oxford area. The Cherwell and Cotswold local services could use Platform 3b, allowing all terminating Paddington trains to turn back on Platform 2.

In the off peak, the Intercity EMU service from London Paddington is turned back on Platform 2, without the need to use the carriage sidings. In the peak the additional Intercity EMU also uses Platform 2. The IEP service to Worcester arrives into Platform 4 where it splits and then the ECS is moved to the carriage siding. The train rejoins on Platform 2 (as opposed to Platform 1 in the above scenario).

This would result in the crossover between the Down Passenger Loop and Down Main not being used as no trains are travelling from the Down Carriage Sidings to Platform 1. There is no extra usage of the Jericho Line in this scenario, as Cherwell Valley and Cotswold services are required to cross to the Down Main immediately (in order to avoid wrong line running, and use the crossing facilities provided).

Table 3 Platform Occupation (peak) – through EWR services

Platform	Option A	Option B1 (with platform sharing on Platform 2)	Option B1 'Alternative Platforming'	Option B2 (also equivalent to B1 without platform sharing)
1	58%	34%	28%	34%
2	58%	66% southern end, northern end 60%	51%	66%
3	41%	56%	56%	56%
3b	59%	not used	55%	60%
4	n/a	50%	50%	50%
south facing Bay	73%	n/a		n/a

The alternative platforming arrangements make more use of the Down Carriage Sidings to turnround services, and therefore have lower platform utilisation.

In this scenario, the maximum number of trains using the Down Carriage Sidings at any one time is two in the peak (a 5-car SET and an Intercity EMU) and one in the off-peak (an Intercity EMU). These services shunt back into Platform 2 in the Option B scenario and to Platform 1 in the Option A scenario.

If the ladder to Platform 1 is cut, Option A cannot accommodate the service level. Option B can accommodate the service level under either scenario.

Summary Findings

A table summarising the findings for each option is given at the end of this report.

Key findings are as follows:

- Option A offers less flexibility for future demand and alternative service patterns. The opportunities for platforming and retiming trains in order to achieve a compliant timetable are limited. In particular, with EWR services terminating at Oxford, 2 of the 16 tph required must be removed in order to achieve a compliant timetable. However, a compliant timetable can be achieved on Option A infrastructure when EWR services run through;
- Options B1 or B2 can support a compliant timetable with all passenger and freight services included. This applies in both EWR service pattern scenarios;
- Options B1/B2 provide more scope for additional future services than Option A. For example, with Options B1/B2 there is the theoretical potential to run two additional services in each direction in the peak; Option A can only accommodate one additional service. There is more platform capacity provided in Options B1/B2.
- The most flexibility would be achieved with Option B1, with the use of platform sharing on Platform 2. If EWR services are proposed to run through Oxford as in Scenario 2, this could also remove the need for an additional northside bay platform in the Platform 3 area;
- Terminating EWR services at Oxford is likely to put more pressure on the reversible Jericho line, as opposed to running the services through to the south. In addition, platform usage is more balanced when these services run through;
- Given EWR services replace the local services to Reading in Scenario 2, crossing moves to the east are planned at Oxford North Junction, as opposed to just south of Oxford Station as in Scenario 1. These movements can be accommodated more easily at Oxford North Junction because of the presence of the freight loop as an additional running line. This allows additional flexibility as to when each train is planned to cross the junction;

- With EWR services running through Oxford, the ladder from the carriage sidings is regularly used in all options, with one movement in each off peak hour and two in each peak hour;
- There is the possibility to reduce the usage of the ladder from the carriage sidings, by moving the Cherwell Valley and Cotswold services to an additional Platform 3b, turning London services using Platform 2. However, this would only remove the usage of the ladder between the Down Passenger Loop and Down Main, as the Cherwell Valley and Cotswold services would still require access from Platform 3b to the Down Main;
- Not all freight trains are looped in the Oxford area. In all scenarios, more Up freights are looped than Down freights. The layouts appear to provide sufficient capacity to allow all freight services to be looped, if wider timetable constraints require this;
- A performance assessment of the area (focussed on the reversible Jericho line, platform usage and crossing moves to the north and south of the station) is advisable regardless of the preferred infrastructure option and service specification.

Figure 1 Through EWR services on Option A infrastructure – all usage

(peak and off peak use)

New bi-directional crossover (circled) is not used in the timetable; given platform usage all planned turnback moves must use carriage sidings. Note: the new South facing turnback signal on Platform 2 is also not used for the same reason.

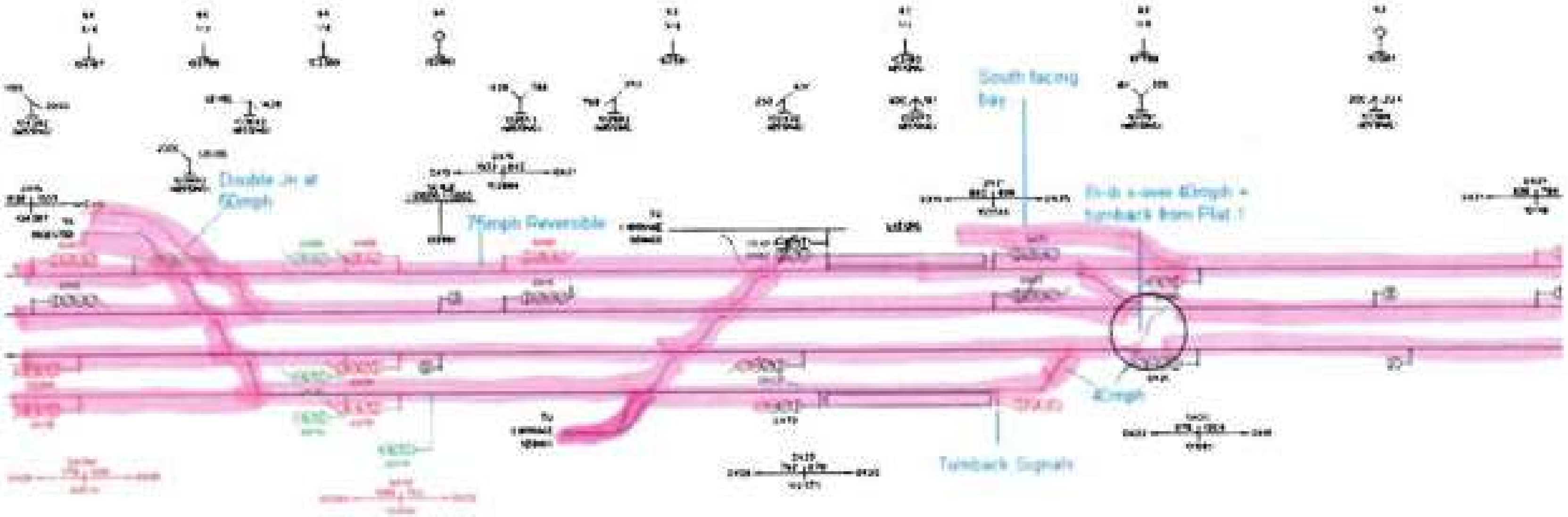

Figure 2 Through EWR services on Option B1 infrastructure – peak and off peak usage

(peak use only, peak and off peak use)

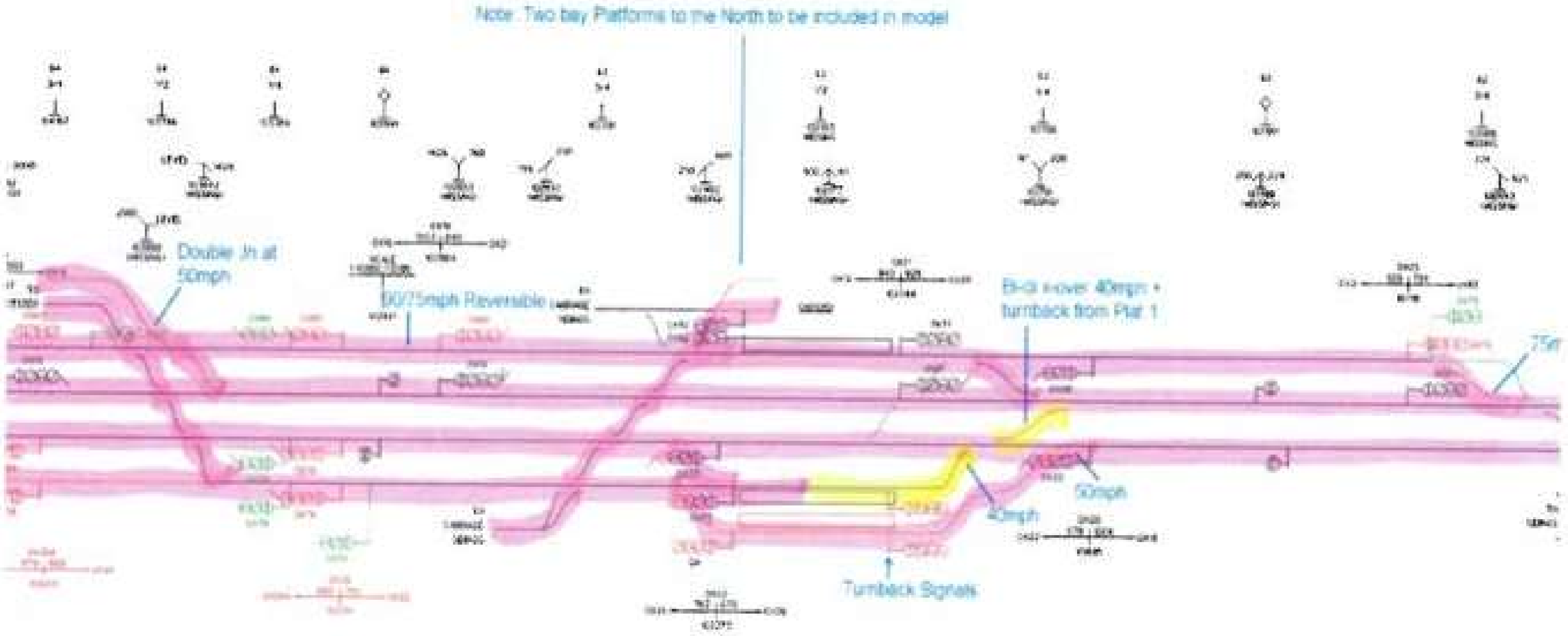

Figure 3 Through EWR services on Option B2 infrastructure – peak and off peak usage

(peak use only, peak and off peak use)

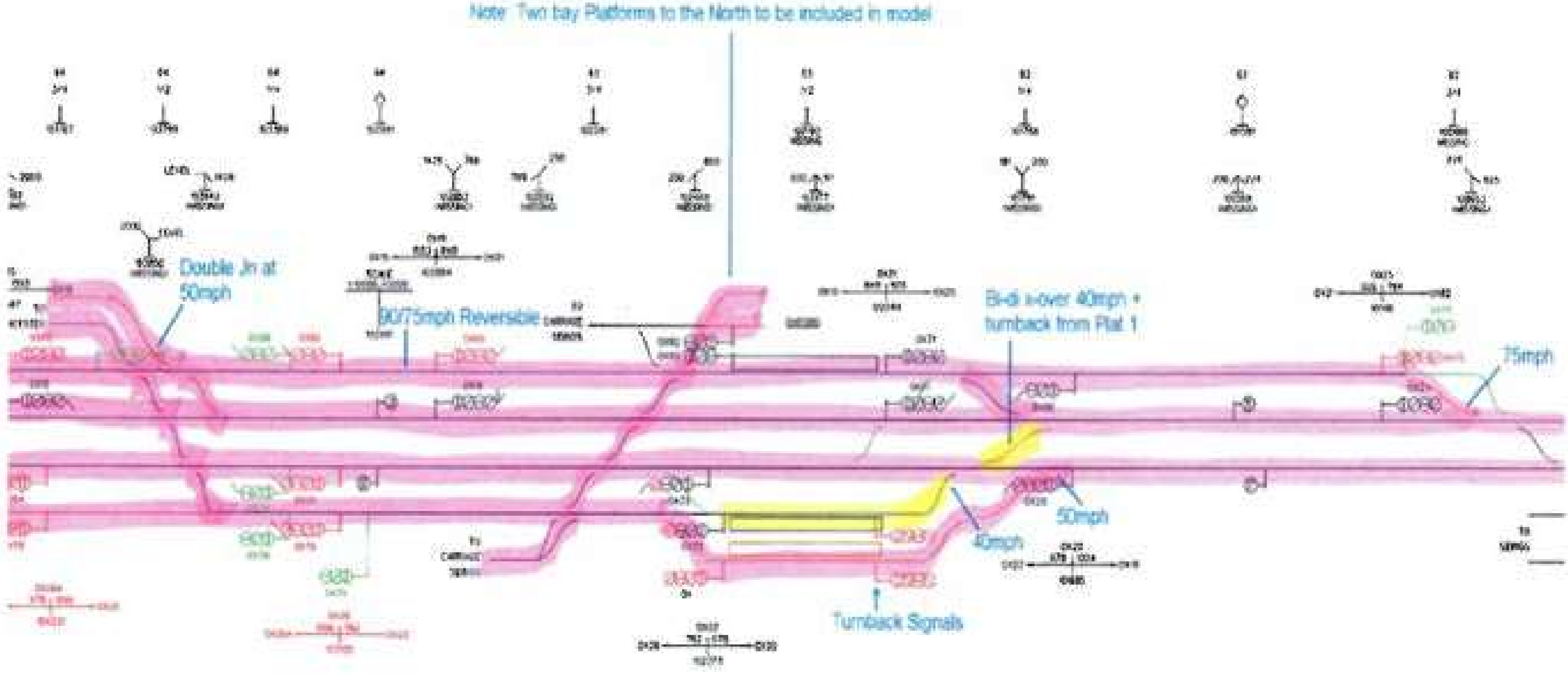

Figure 4 Alternative Platforming: Through EWR services on Option B1/B2 infrastructure – all usage (peak and off peak use)

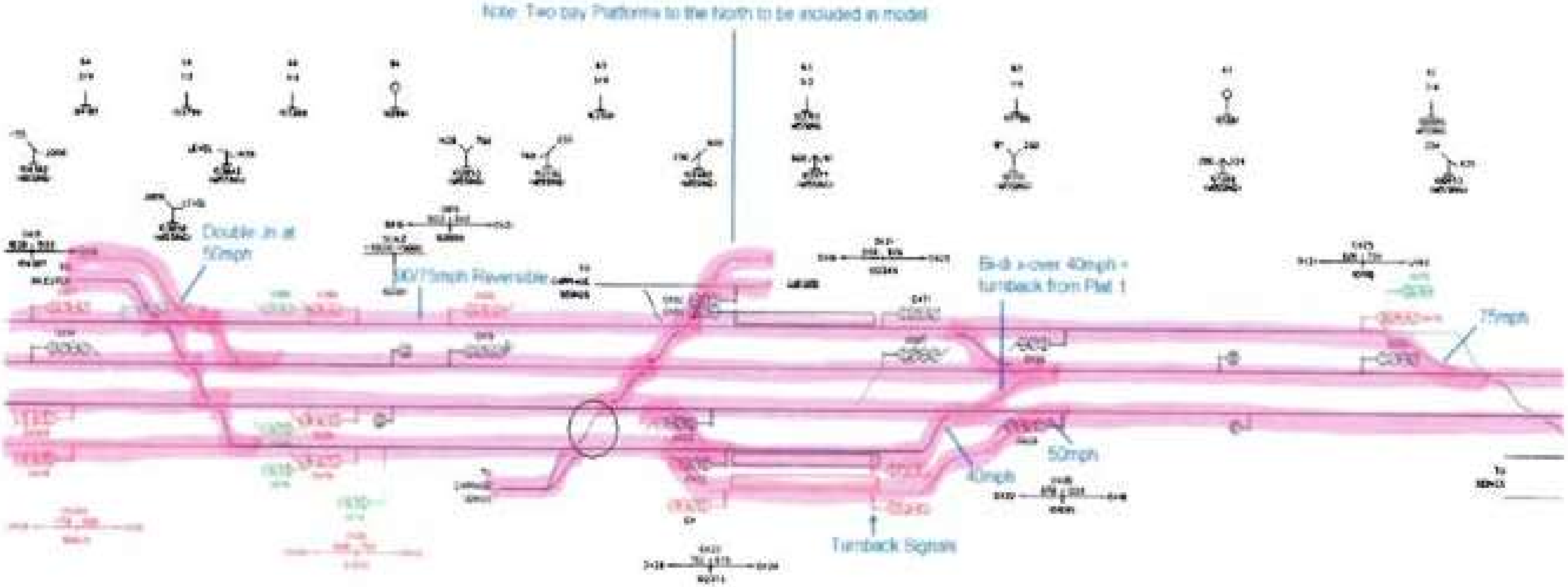

Table 4: Summary

	Scenario 1 – EWR Terminate at Oxford		Scenario 2 – Through EWR services	
	Peak	**Off Peak**	**Peak**	**Off Peak**
Option A	Not possible to achieve specification Limited flexibility for changes to platforming and timings	Not possible to achieve specification Limited flexibility for changes to platforming and timings	Achieves specification Extra North Bay required Higher platform occupation throughout Less capacity for future growth	Achieves specification Extra North Bay required Higher platform occupation throughout Less capacity for future growth
Option B1	Achieves specification Extra North Bay required	Achieves specification Extra North Bay required	Achieves specification Potentially removes requirement for extra North Bay if platform sharing in place More balanced and lower platform occupation	Achieves specification Potentially removes requirement for extra North Bay if platform sharing in place More balanced and lower platform occupation
Option B2	Achieves specification Extra North Bay required	Achieves specification Extra North Bay required	Achieves specification Extra North Bay required More balanced and lower platform occupation	Achieves specification Extra North Bay required More balanced and lower platform occupation

Appendix G

(Business Case)

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Oxford Corridor Capacity Improvement Scheme

Appraisal report

At GRIP Stage 2

Issue No 1

November 2013

1. Introduction and objectives

This section includes an introduction to the appraisal, a summary of scheme objectives and a description of the contents of this report; these are addressed in turn.

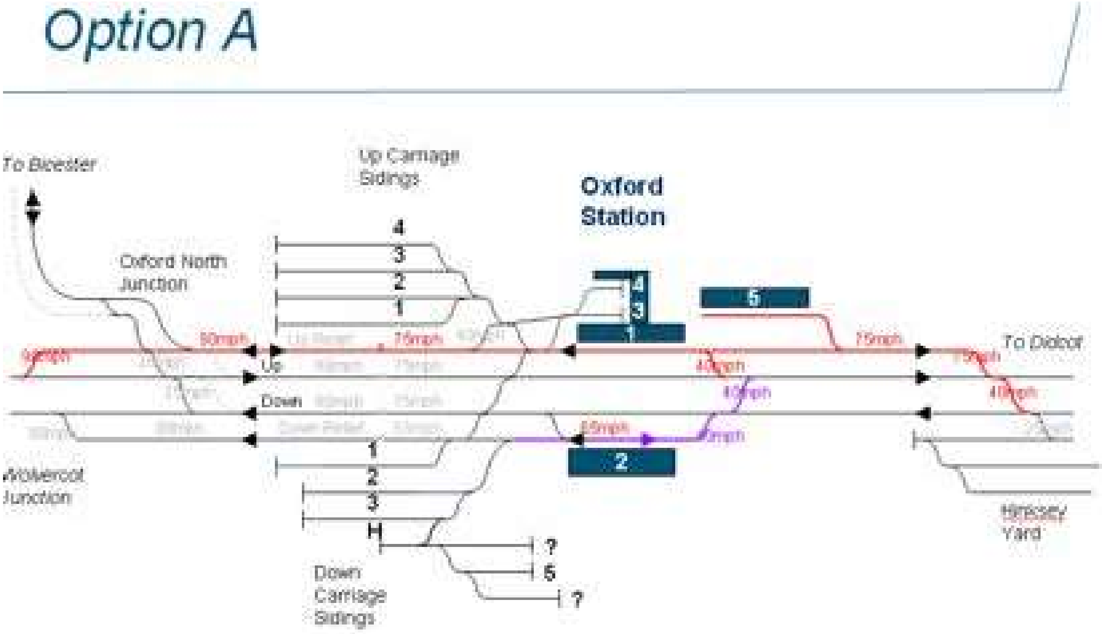
1.1 Introduction

This appraisal has been prepared by Network Rail to identify the costs and benefits of the proposed scheme to improve capacity through Oxford area.

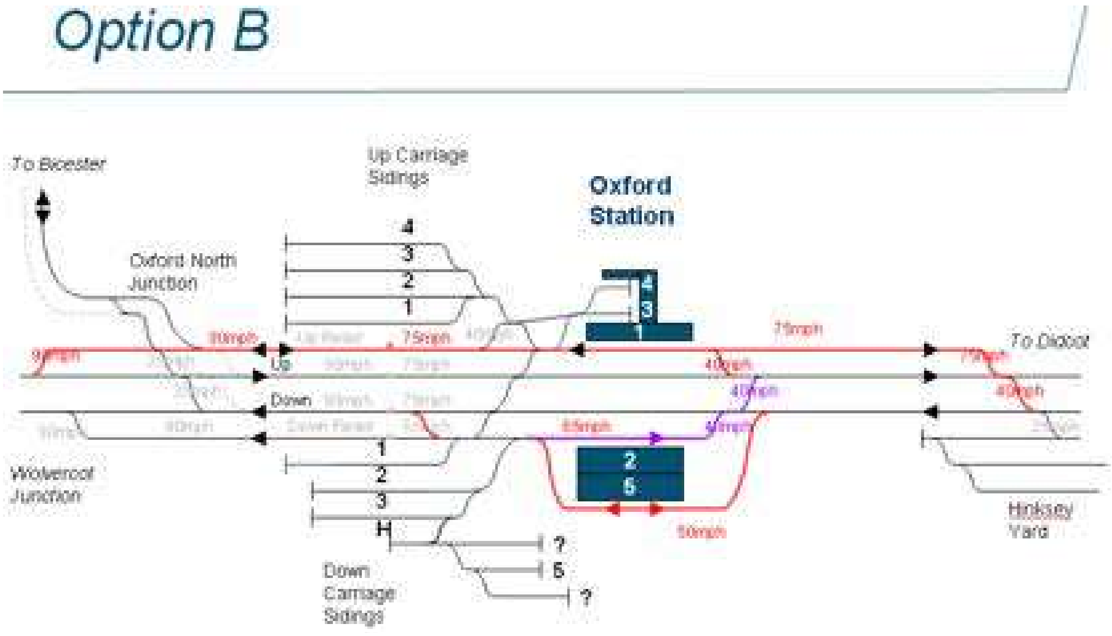
This appraisal was carried out at GRIP stage 2.

The current layout of Oxford station area is not sufficient to accommodate future capacity if IEP, East West Rail and the SFN 40 trains per day between Southampton and West Coast Main Line are all introduced. Enhancements required providing the capacity has been identified. Two options have been considered at the beginning of this GRIP Stage:

- **Option A** provide bi-directional signalling on a crossover at the south end of the station at 40mph and provide turn-back facility on Platform 1, provide a Down Passenger Platform Loop, provide a Up Passenger Platform Loop, provide a new South Bay Platform



- **Option B** provide bi-directional signalling on a crossover at the south end of the station at 40mph and provide turn-back facility on Platform 1, provide a Down Passenger Platform Loop, provide a Up Passenger Platform Loop and provide a new down platform



During the GRIP2 process, analysis has shown that Option A is not sufficient to provide the required capacity in Oxford Corridor and is therefore eliminated. This socio-economis appraisal concentrates on Option B which is the sole option at the end of GRIP2.

The socio-economic appraisal was carried out in accordance with the Department for Transport's (DfT) appraisal guidance, in particular the web-based transport analysis guidance or WebTAG, available at dft.gov.uk.

The appraisal assumptions are discussed in more detail in Sections 3 and 4 and in Table A.2 (see below).

The appraisal compares the costs and benefits of Option B relative to the Base Case (see Section 2), in accordance with WebTAG.

In this report, all years refer to financial years (i.e. 2012 = 2012/13) unless stated.

1.2 Scheme objectives

The main objective of the scheme is to provide more capacity on Oxford Corridor for both passenger and freight users. After Evergreen 3 is introduced, although the current infrastructure layout is capable of providing a portion of the service aspirations below, enhancements are required to provide all of them:

- East West Rail 2tph Reading – Milton Keynes / Bedford
- SFN 40 trains per day between Southampton and West Coast Main Line

1.3 Structure of the report

This report includes the following elements:

- Section 2 described the scheme options and Base Case;
- Section 3 explains how the costs and benefits were estimated;
- Section 4 presents appraisal results and conclusions; and

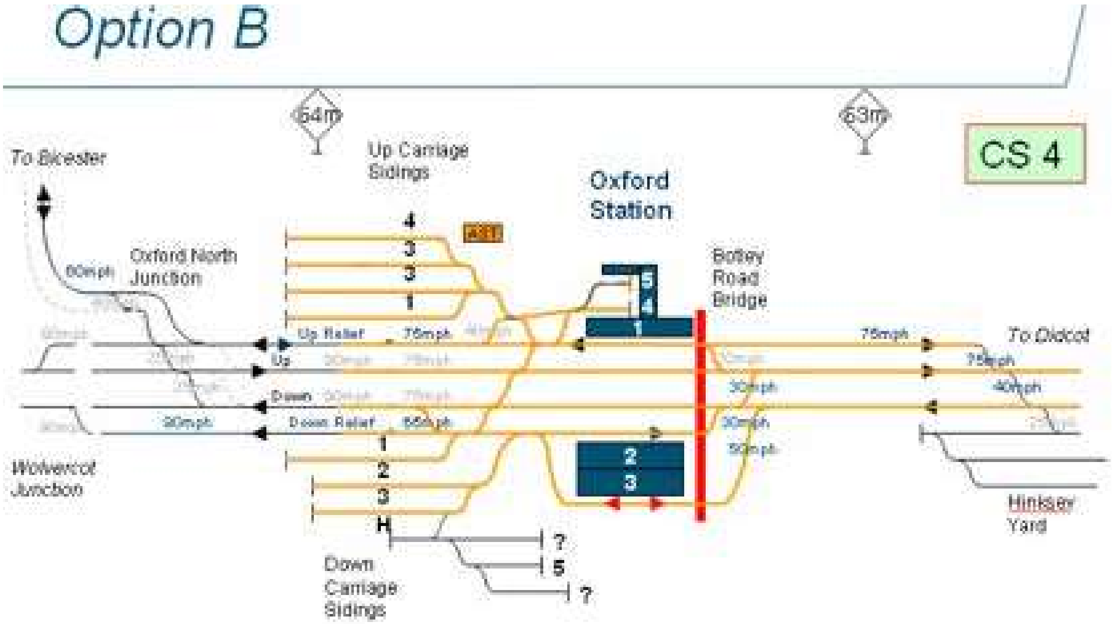
- Further information including version control and further information on assumptions (see Table A.1).

2. Scheme options and Base Case

This section defines the scheme option(s) and the Base Case in turn.

2.1 Option B

The option assessed in this appraisal, Option B is to provide bi-directional signalling on a crossover at the south end of the station at 40mph and provide turn-back facility on Platform 1, provide a Down Passenger Platform Loop, provide an Up Passenger Platform Loop, provide a new South Bay Platform and provide a new down platform



2.2 Base Case – Do Minimum

The Base Case – Do Minimum, includes committed Evergreen 3 project only. May 2012 timetable, passenger and revenue data assumed in the Base Case.

3. Costs and benefits

This section of the report defines how the costs and benefits in the appraisal were estimated. The results of the appraisal are shown in Section 4. The costs and benefits comprise the following elements, which are addressed in turn:

- Capital costs;
- Operating costs;
- Journey time benefits;

- Reliability benefits;
- Capacity benefits;
- Freight benefits;

3.1 Capital costs

Capital costs consist of initial capital costs and renewal costs (assumed to be 20% of initial capital cost in year 30) which are addressed in turn.

Initial capital costs

Initial capital costs are shown in Table 3.1. The initial capital cost is estimated at £68.6 million in 2012 prices including risks and contingencies. For the purpose of this appraisal, the point estimate of £54.3 million in 2012 prices has been used. The table includes the funding sources assumed.

Table 3.1: Capital costs

Option	Proposed funding source	£m
Option B	CP5 Settlement	54.3

Notes

Costs are shown as positive.

The capital cost used for the appraisal, as quoted above, includes the base cost/point estimate but excludes any QRA-based risk allowance and excludes general contingency/generalised risk allowance etc.

Note that the capital costs for appraisal purposes do not include the QRA-based risk allowance even though a QRA has been carried out. The risk allowance (at P80) is 21%, significantly higher/lower than the optimism bias rate of 50%.

The above capital costs include Schedule 4 possession costs: see Table A.2. User and non-user disbenefits associated with possessions are based on these costs: for assumptions see Table A.2; these disbenefits are shown in Table 4.1.

The above costs are in 2012 factor prices, at GRIP stage 2, are undiscounted and exclude optimism bias. Optimism bias and discounting issues are addressed in Section 4.

The above costs exclude RAB finance costs; given the proposed funding source, RAB finance costs are applied for the socio-economic appraisal - see Table 4.1.

20% of the above total costs are assumed to be incurred in 2014, 20% are assumed to be incurred in 2015, 20% are assumed to be incurred in 2016, 20% are assumed to be incurred in 2017and 20% are assumed to be incurred in 2018.

No real terms changes in costs are applied to the above costs during the appraisal period, leaving aside the issue of optimism bias.

Costs are relative to the Base Case. Initial capital costs only (renewal costs are excluded).

Source: Project Team.

Renewal costs and / or cost savings

Renewal costs are shown in Table 3.2. Renewal is assumed to cost 20% of initial infrastructure cost 30 years after development completes.

Table 3.2: Renewal costs/cost savings	
Option	£m
Option B	10.9

Notes

Costs are shown as positive; cost savings as negative.

The above costs are in 2012 factor prices, at GRIP stage 2, are undiscounted and exclude optimism bias. Optimism bias and discounting issues are addressed in Section 4.

The above costs exclude RAB finance costs; RAB finance costs are applied for the socio-economic appraisal - see Table 4.1.

0% of the total costs are assumed to be incurred in 2020, 0% are assumed to be incurred in 2030 and 0% are assumed to be incurred in 2040.

No real terms changes in costs are applied to the above costs during the appraisal period, leaving aside the issue of optimism bias.

Costs (or cost savings) are relative to the Base Case.

Source: Project Team.

The Present Values (PVs) of total capital costs over the appraisal period are shown in Section 4.

3.2 Operating cost savings

Option B allows 10-Car IEP trains to split/join at Oxford so that two trains per day in both directions can run as 5-Car between Oxford and Hereford (assuming 5-Car provides enough capacity, and assuming 30 years operating cost saving).

Option B also allows 8-Car East West Rail trains to split/join at Oxford so that 36 trains per day in both direction can run as 4-Car between Oxford and Bedford and 36 trains per day in both direction can run as 4-Car between Oxford and Milton Keynes (assuming 4-Car provides enough capacity, and assuming 30 years operating cost savings.

The operating cost savings are shown in Table 3.3 The PVs of the operating costs over the appraisal period are shown in Section 4.

Table 3.3: Operating costs/cost savings		
Option	Type of cost/cost saving	£ per annum
Option B	TOC vehicle opex cost	-3,698,000
Option B	Total	**-3,698,000**

Notes

Costs are shown as positive; cost savings as negative.

Costs are in 2012 factor prices, at GRIP stage 1 and refer to the first full year of benefits; they are undiscounted and exclude optimism bias (these issues are addressed in Section 4).

No real terms changes in costs are assumed during the appraisal period (leaving aside the issue of optimism bias).

Costs (or cost savings) are relative to the Base Case.

Source: Project Team.

3.3 Journey time benefits

The line speed increase in Option B brings ½ minute journey time improvement to CrossCountry and Great Western services between Oxford and the North in both directions, and ½ minute journey time improvement to Evergreen 3 services towards Oxford.

This section addresses journey time value of time benefits and other benefits associated with these benefits: specifically revenue benefits and non-user benefits, as well as tax costs. These benefits/costs are addressed in turn.

Journey time value of time benefits

The value of time benefits depend on the following key factors: the benefits per passenger, the number of passengers experiencing these benefits and the characteristics of these passengers.

The benefits per passenger are shown in Table 3.4

Table 3.4: Journey time savings

Option	Passenger set (e.g. TOC)	minutes per passenger
Option B	CrossCountry(between Oxford and the Nortl	0.50
	Great Western(between Oxford and the Nor	0.50
	EverGreen 3 (towards Oxford Only)	0.50

Notes
benefits.
Savings are for Option B relative to the Base Case.
Source:

The number of passengers experiencing these benefits is shown in the following table.

Table 3.5: Number of passengers benefiting from journey time

Option	Passenger set (e.g. TOC)	Passenger journeys per
Option B	CrossCountry(between Oxford and the Nortl	2,899,000
	Great Western(between Oxford and the Nor	1,350,000
	EverGreen 3 (towards Oxford Only)	119,000
Option B	Total	4,368,000

Notes
Passenger numbers are for 2011, are from MOIRA and are rounded. The number of passengers benefiting from the scheme is increased during the appraisal period in line with underlying passenger demand growth assumptions - see Table A.2.

The journey time value of time benefits per annum are shown in Table 3.6. The PV of these benefits over the appraisal period is shown in Section 4.

Table 3.6: Journey time (value of time) benefits (£ per annum)

Option	Passenger set (e.g. TOC)	2020	2040
Option B	CrossCountry(between Oxford and the North)	393,000	802,000
	Great Western(between Oxford and the North)	29,000	59,000
	EverGreen 3 (towards Oxford Only)	16,000	32,000
Total		438,000	893,000
Notes Benefits are shown for first full year of benefits and for selected following years. They are in 2015 market prices and Benefits are based on journey time savings (see above table) and VoTs for business, commuter and other users and Benefits are for Option B relative to Base Case.			

Revenue benefits

Revenue benefits are based on an estimation of the additional passengers generated by the scheme – see Table 3.7.

Table 3.7: Additional passengers resulting from journey time savings (journeys

Option	Passenger set (e.g. TOC)	2020	2040
Option B	CrossCountry(between Oxford and the North)	10,000	14,000
	Great Western(between Oxford and the North)	5,300	7,600
	EverGreen 3 (towards Oxford Only)	1,000	1,000
Total		16,300	22,600
Notes			
Additional passengers are shown for first full year of benefits and selected following years and are rounded. The extra passengers are based on current passenger numbers and change in journey times (see above tables) and underlying passenger demand growth, base GJT and elasticity of demand with respect to GJT (see Table A.2). The extra passengers are for Option B relative to Base Case.			

Revenue benefits are shown in Table 3.8. The PV of these benefits are shown in Sections 5 and 6.

Table 3.8: Revenue benefits associated with journey time savings (£ per year)

Option	Passenger set (e.g. TOC)	2020	2040
Option B	CrossCountry(between Oxford and the North)	£314,000	£548,000
	Great Western(between Oxford and the North)	£94,000	£165,000
	EverGreen 3 (towards Oxford Only)	£3,000	£5,000
Total		£411,000	£718,000
Notes			
Additional passengers are shown for first full year of benefits and for selected following years. They are in 2015 factor prices and are undiscounted (discounting is addressed in Section 4).			
Benefits are based on number of additional passengers (see above table) and average yield and yield growth assumptions (see Table A.2).			
Benefits are for Option B relative to Base Case.			

Non user benefits

The additional rail journeys result in non-user benefits associated with a reduction in the number of cars on the roads. These benefits per car mile are shown in Table 3.9.

Table 3.9: Non user benefits associated with journey time/reliability

	Pence per car mile in 2019
Benefit type	
Congestion	42.0
Infrastructure	0.1
Accident	3.0
Air pollution	0.6
Noise	0.2
Climate change	0.5
Total	**46.3**

Notes

Benefits are shown for first full year of benefits, are in 2010 market prices and are undiscounted (discounting is addressed in Section 4).

Benefits are based on the marginal external costs (MEC) of car use from WebTAG (unit 3.13.2). Benefits are estimated by year up to 2035. After 2035 benefits are increased in line with GDP per capita growth: see Table A1 Extra rail passengers resulting from the scheme are assumed to be diverted from roads in the following areas: 100% in South East England; this is a simplifying and conservative assumption, based on an assessment of the relevant flows .

Total non-user benefits per annum are shown in Table 3.10. The PV of these benefits are shown in Section 4.

Table 3.10: Non-user benefits associated with journey time savings (£ per year)

Option	Passenger set (e.g. TOC)	2020	2040
Option B	CrossCountry(between Oxford and the North)	£127,000	£272,000
	Great Western(between Oxford and the North)	£52,000	£112,000
	EverGreen 3 (towards Oxford Only)	£2,000	£4,000
Total		£181,000	£388,000
Notes			

Benefits are shown for first full year of benefits and selected following years. They are in 2012 market prices and are undiscounted (discounting is addressed in Section 4).

Non-user benefits per annum (by benefit type) are estimated by multiplying benefits per car mile including growth (see above table) by the reduction in the number of car miles. The latter is estimated by converting the estimated increase in rail passenger miles into a reduction in car miles by applying the diversion rate - see Table A1. The increase in rail passenger miles is based on the increase in passenger journeys (see above table) multiplied by average trip length (see Table A.2).

Benefits are for Option B relative to Base Case.

Tax costs

The additional rail journeys result in tax costs associated with a reduction in the number of cars on the roads. These tax costs, both fuel duty and VAT, were estimated in accordance with WebTAG. The PV of the costs is shown in Section 4. Following a change to WebTAG in April 2011, the tax costs are treated as a negative benefit in the numerator of the BCR.

3.4 Reliability benefits

Option B is expected to provide reliability benefits, however it is not possible to quantify the performance benefits robustly in the GRIP2 business case. A detailed performance analysis is recommended in later GRIP stages to understand the reliability benefits Option B would provide. Reliability is not included in this GRIP2 business case.

3.5 Capacity benefits

East West Rail

As Advised by the Project Team, Oxford Corridor Capacity Improvement Scheme is required to accommodate the proposed 2tph Reading – Milton Keynes / Bedford service if SFN 40 train per day Southampton – WCML and Evergreen3 are also delivered. However this capacity benefit is not included in the Option B core business case to avoid double counting of benefits.

Network Rail has been asked to produce a portfolio business case to include East West Rail, SNF freight 40 trains per day, and Oxford Capacity Scheme. Atkins completed a business case analysis for East West Rail in 2010; the infrastructure cost has changed since the business case and the new cost is not yet confirmed. Therefore East West Rail costs and benefits are not included in the portfolio business case at GRIP Stage 2.

9-Car Evergreen 3 services

As advised by the Project Team, Option B would enable Evergreen 3 services to run as 9-Car to/from Oxford, which will provide potential crowding relief benefit to Chiltern Mainline. However this benefit has been monetised and considered in other scheme, therefore is not included in the Option B business case to avoid double counting of benefits.

Additional CrossCountry service between Basingstoke and Manchester

There is an aspiration to provide an additional train per hour between Basingstoke and Manchester via the East West Rail route. The new train is expected to reduce the total journey time by 30-40 minutes.

As advised by the Project Team, Option B is able to accommodate the path on Oxford corridor; however other enhancements required on the route have not yet been identified. It has been agreed with DfT and ORR that the costs and benefits of this additional service should be considered in a separate work steam and is not included in this GRIP2 business case.

3.6 Freight benefits

The Strategic Freight Network has an aspiration to provide 40 freight paths per day between Southampton and West Coast Mainline by 2030 to meet future freight demand, this freight demand is forecasted based on 640m freight trains. There is a separate freight lengthening scheme looking to lengthen freight trains to 775m on the route, and has part of the funding committed.

A number of enhancements on the route estimated at £117.3 million are required together with Option B to deliver the freight benefit. If all freight trains to run as 775m, additional freight paths will be needed from 2023 and 8 additional freight paths will be needed by 2030; if only 60% of the freight trains can run as 775m due to depots / sidings constraints, additional freight paths will be needed from 2023 and 10 additional freight paths will be needed by 2030.

SLM benefits have been calculated assuming all freight paths are from Southampton to West Midlands; this is a conservative assumption as some of the freight paths will travel further to the North.

Network Rail has been asked to produce a portfolio business case to include East West Rail, SNF freight 40 trains per day, and Oxford Capacity Scheme. The above two freight length scenarios have been included in the portfolio business case.

The freight scheme's cost is estimated at high level and benefits were calculated using high level assumptions, it is recommended to update the portfolio business case once a detailed business case for this SFN scheme is completed.

4. Appraisal results and conclusions

4.1 Socio-economic appraisal results and conclusions for Oxford Corridor Capacity Improvement Scheme – Option B

The socio-economic appraisal for Option B includes the following costs and benefits:

- Capital costs (see Section 3.1);
- Operating cost savings (Section 3.2);
- Journey time benefits, comprising value of time benefits and associated revenue and non-user benefits and tax costs (Section 3.3);

The results are shown in Table 4.1.

Table 4.1: Results of socio-economic appraisal	OptionB
	£m PV
Net benefits to consumers and private sector (plus tax impacts)	
Rail user reliability benefits	0.00
Rail user journey time benefits	19.46
Rail user station enhancement and walk time benefits	0.00
Non user benefits - road decongestion	5.86
Non user benefits - noise, air quality, greenhouse gases, accident benefits and others	0.52
Rail user and non user disruption disbenefits during possessions	-3.13
Current TOC revenue benefits*	0.00
Current TOC/ NR operating costs**	0.00
Indirect taxation impact on government	-2.40
sub-total (a)	**20.31**
Costs to government (broad transport budget)	
Grant (capital) costs	90.91
Non user benefits - road infrastructure cost changes	-0.01
Revenue transfer*	-13.45
Operating costs transfer**	-63.40
sub-total (b)	**14.06**
Net Present Value (NPV) (a-b)	**6.25**
Benefit Cost Ratio to Government (BCR) (a/b)	**1.44**
Notes:	
*Total revenue benefits = revenue benefits to private sector + revenue transfer to government	13.45
**Total change in operating costs = change in operating costs to private sector sector + change in operating cost transfer to government.	-63.40
Capital and operating costs include optimism bias at relevant GRIP stage (see Table A.2). Capital costs include RAB finance costs, if applicable - see Table 3.1. If applicable the RAB rate is shown in Table A.2. Capital and operating cost transfer assumptions are shown in Table A.2. For net benefits, benefits are shown as positive; for costs to government, costs are shown as positive.	
Present Values (PVs) are in 2010 market prices and are discounted to 2010 using Social Time Preference Rates: see Table A.2. The appraisal is in accordance with the DfT's WebTAG appraisal guidance. Results are for Option S1 relative to the Base Case.	
This is a summary version of the TEE table, which is shown below.	

The Appraisal Summary Table is shown in the appendix.

In summary, Option B has a capital cost of £68.6m (including risks and contingencies) in 2012 prices. A socio-economic appraisal was carried out in accordance with the Department for Transport's appraisal guidance. The appraisal assumes the scheme would be funded by the CP5 Settlement. The main benefits are the journey time benefits and TOC operating cost savings. Option B has a Benefit Cost Ratio to Government (BCR) of 1.44 and a Net Present Value (NPV) of £6.25m. The BCR represents low value for money in accordance with the DfT's Value for Money Assessments guidance.

4.2 Socio-economic appraisal results and conclusions for Western Portfolio Business Case

As Oxford corridor capacity improvement is required if all committed schemes and service aspirations in the area are to be implemented, Network Rail has been asked to produce a portfolio business case to include East West Rail, SNF freight 40 trains per day, and Oxford Capacity Scheme.

East West Rail's cost has been revised but not yet confirmed since the last business case analysis, and therefore is not included in this portfolio business case. It is recommended to update the portfolio business case in later GRIP Stages when updated East West Rail business case is available.

SFN freight benefits has been included in this portfolio (see Section 3.6 for further details)

The results are shown in Table 4.2.

In summary, the portfolio business case for Oxford Corridor Capacity Improvement scheme and SFN 40 trains per day scheme has BCR of 4.05 and NPV of £470.7m under the most conservative scenario. The BCR represents very high value for money in accordance with the DfT's Value for Money Assessments guidance.

Table 4.2: Results of socio-economic appraisal	Oxford Capacity Improvement business case (with JT and splitting/joining cost saving)	SFN business case (if all freight trains run as 775m)	SFN business case (if only 60% freight trains run as 775m)	Portfolio Buiness Case (Oxford Capacity scheme +SFN all 775m scenario)	Portfolio Buiness Case (Oxford Capacity scheme +SFN 60% 775m scenario)
	£m PV	**£m PV**	**£m PV**	**£m PV**	**£m PV**
Net benefits to consumers and private sector (plus tax impacts)					
Rail user reliability benefits	0.00	0.00	0.00	0.00	0.00
Rail user journey time benefits	19.46	0.00	0.00	19.46	19.46
Rail user station enhancement and walk time benefits	0.00	0.00	0.00	0.00	0.00
Non user benefits - road decongestion	5.86	615.77	685.19	621.63	691.05
Non user benefits - noise, air quality, greenhouse gases, accident benefits and others	0.52	151.24	168.94	151.76	169.46
Rail user and non user disruption disbenefits during possessions	-3.13	-6.41	-6.41	-9.54	-9.54
Current TOC revenue benefits*	0.00	0.00	0.00	0.00	0.00
Current TOC/ NR operating costs**	0.00	0.00	0.00	0.00	0.00
Indirect taxation impact on government	-2.40	-155.97	-175.34	-158.37	-177.74
sub-total (a)	**20.31**	**604.63**	**672.39**	**624.94**	**692.69**
Costs to government (broad transport budget)					
Grant (capital) costs	90.91	194.17	194.17	285.08	285.08
Non user benefits - road infrastructure cost changes	-0.01	-54.00	-60.70	-54.01	-60.71
Revenue transfer*	-13.45	0.00	0.00	-13.45	-13.45
Operating costs transfer**	-63.40	0.00	0.00	-63.40	-63.40
sub-total (b)	**14.06**	**140.17**	**133.47**	**154.23**	**147.53**
Net Present Value (NPV) (a-b)	**6.25**	**464.46**	**538.92**	**470.70**	**545.17**
Benefit Cost Ratio to Government (BCR) (a/b)	**1.44**	**4.31**	**5.04**	**4.05**	**4.70**

Notes:All figures are presented in 2010 market prices

Further information

This section includes the following further information:

- Table A.1, version control
- Table A.2, further information on appraisal assumptions
- Transport Economic Efficiency (TEE) tables; and
- Appraisal Summary Table.
- Option B benefit output summary table

Table A.1: Version control

Version	File names	Issue date	Analyst
GRIP2 draft version 1	DCF Oxford Corridor Capacity master model.xls Western portfolio business case.xls	08/11/2013	Chen Wang(Economic Analysis Team, Group Strategy)

Table A.2: Further appraisal assumptions

These assumptions apply to the socio-economic appraisal, unless stated. They apply to the financial appraisal only where stated.
Assumptions apply to central scenarios (not sensitivity tests) unless stated. Further assumptions are in tables in main text.
All years refer to financial years e.g. 2012 refers to 2012/13 F/Y.

Assumption	Value	Source	Comment
Current year	2012	WebTAG	
Model base year	2015	WebTAG	
First year of benefits	2019	Project Team	100% of benefits realised from this year
Benefits profile by year	% of total		
2019	100%	Project Team	
2078	100%	Project Team	
Appraisal period (years)	60	Project Team	The maximum is 60 years under WebTAG.
Price base year and base year for discounting	2010	WebTAG	
Discount rate (Social Time Preference Rate)	3.5% per annum for 30 years from current year; 3% per annum therafter (in real terms)	WebTAG / HM Treasury Green Book	
Financial discount rate *for financial appraisal only*	4.75% per annum (in real terms).	Network Rail	
Unit of account	Market prices	WebTAG	19% applied to convert factor prices to market prices
Optimism bias for:			
Capital costs	50% at GRIP stage 2.	WebTAG	Optimism bias is not applied to cost savings
Operating costs	2% at GRIP stage 0.	WebTAG	Optimism bias is not applied to cost savings
RAB finance costs	4.75% per annum (in real terms).	Network Rail	
Passenger demand growth			
Passenger set or all services	0.0% p.a.from 2010 to 2018, 1.9% p.a.from 2019 to 2039, 0.0% p.a. from 2040 to 2040, and 0% thereafter.	Growth is capped 20 years after the current year, in accordance with WebTAG.	Applies to financial & socio-economic appraisals
Type/area of journey:	Proportion of total journeys		
Outside South East to/from London (<100 miles)	50%	High level assumption based on MOIRA journey numbers	
Outside South East <20 miles (excl within within PTE areas)	25%		
Outside South East 20-100 miles	25%		
Proportion of work time journeys:	12%	Based on above journey types and January 2011 PDFH assumptions relating ticket splits (from MOIRA) and above journey types to user type.	Remaining passengers are all non-work time (commuters or leisure - see below).

Table A.2: Appraisal assumptions (continued)

Average Base Generalised Journey Time (GJT) (minutes) First Great Western Oxford - Banbury line	80	Derived from MOIRA	
Average Base Generalised Journey Time (GJT) (minutes) First Great Western Oxford - North of Cotswold	126	Derived from MOIRA	
Average Base Generalised Journey Time (GJT) (minutes) Chiltern Oxford - Bicester line	85	Derived from MOIRA	
Average Base Generalised Journey Time (GJT) (minutes) CrossCountry Oxford - North	143	Derived from MOIRA	
Average yield (£) First Great Western Oxford - Banbury line	6.0	Derived from MOIRA	
Average yield (£) First Great Western Oxford - North of Cotswold	15.9	Derived from MOIRA	
Average yield (£) Chiltern Oxford - Bicester line	3.5	Derived from MOIRA	
Average yield (£) CrossCountry Oxford - North	26.9	Derived from MOIRA	
Average journey length (miles) First Great Western Oxford - Banbury line	27.5	Derived from MOIRA	
Average journey length (miles) First Great Western Oxford - North of Cotswold	76.8	Derived from MOIRA	
Average journey length (miles) Chiltern Oxford - Bicester line	22.4	Derived from MOIRA	
Average journey length (miles) CrossCountry Oxford - North	94.6	Derived from MOIRA	
Values of time (VoT) by user type:			
Business (work) users	£47.18 per hour in 2010 prices		
Commuters	£6.46 per hour in 2010 prices	WebTAG	
Others	£5.71 per hour in 2010 prices	WebTAG	
"Rule of the half"	50%	WebTAG	Time savings applied to new users at half the rate applied to existing users
VoT growth by user type:			Work & non work growth rates reduced when discount rate reduced, after 30 years, in accordance with WebTAG.
Business (work) users	GDP per capita per annum	WebTAG	
Non-work	GDP per capita per annum multiplied by 80%	WebTAG	

Table A.2: Appraisal assumptions (continued)

Yield growth	RPI + 1% per annum throughout appraisal period	WebTAG	Applies to financial & socio-economic appraisals. 1% is used throughout the appraisal period as a simplifying assumption.
Elasticity of demand with respect to Generalised Journey Time (GJT)	-0.9	PDFH	Applies to financial & socio-economic appraisals
Reduction in car kms for 100% increase in rail passenger kms (diversion rate), for external costs of car use	26%	WebTAG	Same rate applied across GB
SLM growth (values and quantities):			
Accidents	Values at GDP growth, quantities at no growth	DfT	
Noise	Values at GDP growth, quantities at no growth	DfT	
Pollution	Values at GDP growth, quantities at -5.8% p.a. to 2025	DfT	
Climate change	Values at £1 p.a. from £70 in 2000, quantities at -1% until 2010	DfT	
Infrastructure costs	No growth	DfT	
Road congestion	Values at 90% of GDP growth, quantities at 2.2% p.a. until 2025	DfT	
Unquantified	No growth	DfT	
Indirect taxation	Values at no growth, quantities at -1% p.a. until 2010)	DfT	
Rail costs	No growth	DfT	
SLM congestion benefits			
Proportion allocated to work time	50%	DfT	
Proportion allocated to non-work time	50%	DfT	
Revenue transfer :			
During current franchise	50% of revenue is transferred to government and 50% is retained by the TOC.	WebTAG	If the TOC is publicly-owned all revenue is transferred to government during the current franchise
After current franchise expires	100% of revenue is transferred to government	WebTAG	

Table A.2: Appraisal assumptions (continued)

TOC operating cost transfer :			Overall operating cost transfer assumptions are shwn in the TEE tables.
During current franchise	100% of operating cost is incurred by the TOC (100% of cost saving is retained by TOC).	WebTAG	If the TOC is publicly-owned all operating cost (cost saving) is transferered to government during the current franchise
After current franchise expires	100% of operating cost (or cost saving) is transferred to government	WebTAG	
Network Rail operating cost transfer :			Overall revenue transfer assumptions are shwn in the TEE tables.
During current Control Period	100% of operating cost is incurred by Network Rail (100% of cost saving is retained by TOC).	WebTAG	
After current Control Period expires	100% of operating cost (or cost saving) is transferred to government	WebTAG	
Disruption during construction:			
Schedule 4 costs as a proportion of investment cost	5%	Project Team	
User disbenefits as a proportion of revenue disbenefits (i.e. Schedule 4)	100%	Economic Analysis Team assumption	User & non-user benefits are increased to allow for factor to market price adjustment.
Non user benefits as a proportion of revenue disbenefits	25%	Economic Analysis Team assumption	
% of user and non user disbenefits experienced by business users	50%	Economic Analysis Team assumption	

TEE table - Oxford Corridor Capacity Improvement
OptionB

Table 1: Economic Efficiency of Transport System (All costs & disbenefits are negative, all benefits & savings are positive)

	Total in 2010 price base £	Cars, LGVs & goods vehicles	Bus & Coach	Rail Total	Rail infra-structure - Network Rail	Rail passengers, TOCs
Consumers user benefits						
Travel time saving	13,667,048	5,859,656		7,807,392		7,807,392
Vehicle opcost	0			0		
User charges	0			0		
During construction & maintenance	-1,563,446	-312,689		-1,250,757		-1,250,757
Net (1)	**12,103,602**	5,546,967	0	6,556,635	0	6,556,635
Business						
User benefits						
Travel time saving	11,652,430	0		11,652,430		11,652,430
Vehicle opcost	0			0		
User charges	0			0		
During construction & maintenance	-1,563,446	-312,689		-1,250,757		-1,250,757
Net (2)	**10,088,984**	-312,689	0	10,401,673	0	10,401,673
Private sector provider impact						
Revenue	13,452,145			13,452,145		13,452,145
Opcost	63,397,028			63,397,028	0	63,397,028
Investment cost	-90,914,910			-90,914,910	-90,914,910	
Grant/subsidy: CP5 Settlement	90,914,910			90,914,910	90,914,910	
Grant/subsidy: Network Rail private funding	0			0	0	
Grant/subsidy: Public funds - local government	0			0	0	
Revenue transfer (100% to government)	-13,448,950			-13,448,950		-13,448,950
Opcost transfer (100% to government)	-63,397,028			-63,397,028	0	-63,397,028
Sub total (3)	**3,195**	0	0	3,195	0	3,195
Other impacts						
Developer contribution (4)	**0**			0		
Net business impact (5 = 2+3+4)	**10,092,179**	-312,689	0	10,404,868		
Total, PV of transport econ eff. benefits (6 = 1+5)	**22,195,780**	(1) and (5) flow into the AMCB table, not (6)				

Table 2 Public Accounts (costs should be recorded as a positive number, surpluses as a negative one)

	All Modes Total	Road Infrastructure	& Coach	Rail
Local Government funding				
Direct revenue	0			
Opex costs	0			
Investment costs*	0			
Grant/subsidy: Public funds - local government	0			0
Revenue transfer	0			
Net (7)	**0**	0	0	0
General Government funding: transport				
Direct revenue	0			
Opex costs	0			
Investment costs*	0			
Grant/subsidy: CP5 Settlement	90,914,910			90,914,910
Revenue transfer (100% to government)	-13,448,950			-13,448,950
Opcost transfer (100% to government)	-63,397,028			-63,397,028
Infrastructure cost savings	-9,582	-9,582		
Net (8)	**14,059,350**	-9,582	0	14,068,932
General Government funding: non-transport				
Indirect Tax Revenues (9)	**2,404,684**	2,404,684		
Totals				
Broad transport budget (10=7+8)	**14,059,350**	* These costs exclude developer contributions		
Wider public finances (11=9)	**2,404,684**			

Table 3: Analysis of Monetised Costs and Benefits (AMCB)

Noise	28,855	
Local air quality	52,743	
Greenhouse gases	53,135	
Rail costs	0	This applies to SLM values only
Unquantified	0	This applies to SLM values only
Journey ambience (incl. rolling stock quality & in vehicle crowding)	0	
Accidents (incl. safety)	380,864	
Consumer users (sub-total 1, Table 1)	12,103,602	
Business users and providers (sub-total 5, Table 1)	10,092,179	
Reliability (incl. performance & reliability)	0	
Interchange (station facilities and walk time)	0	
Option values	0	
Wider public finances (indirect taxation revenues) (sub-total 11)	-2,404,684	Sign changed from Table 2
PV of Benefits (a = sum of all benefits)	**20,306,693**	
Broad transport budget (sub-total 10)	14,059,350	From Table 2
PV of Costs (b = 10)	**14,059,350**	
Overall impact, total		
NPV (a-b)	**6,247,343**	
BCR (a/b)	**1.44**	

Appraisal Summary Table - Oxford Corridor Capacity Improvement Option B, is to: - provide bi-directional signalling on a crossover at the south end of the station at 40mph and provide turn-back facilityon Platform 1 - provide a Down Passenger Platform Loop - provide a Up Passenger Platform Loop - provide a new Down Platform Only JT benefits included			**Problems**	**Present Value of Costs/Benefits £m**
OBJECTIVE	**SUB-OBJECTIVE**	**QUALITATIVE IMPACTS**	**QUANTITATIVE ASSESSMENT**	**ASSESSMENT**
ENVIRONMENT	Noise	The modal shift from road to rail will contribute to reducing noise emissions.	N/A	PVB £0.029 million.
	Local Air Quality	The modal shift from road to rail will contribute to reducing air borne emissions.	N/A	PVB £0.053 million.
	Greenhouse Gases	The modal shift from road to rail will contribute to the reduction of greenhouse gas emissions.	N/A	PVB £0.053 million.
	Landscape	No significant change	N/A	N/A
	Townscape	No significant change	N/A	N/A
	Heritage of Historic Resources	No significant change	N/A	N/A
	Biodiversity	No significant change	N/A	N/A
	Water Environment	No significant change	N/A	N/A
	Physical Fitness	No significant change	N/A	N/A
	Journey Ambience	No significant change	N/A	N/A
	Rail environmental costs	The modal transfer from road to rail will contribute to increased rail environmental costs.	N/A	N/A
	Unquantified	The modal transfer from road to rail will contribute to other benefits including reduced driver stress and reduced fear of accidents.	N/A	N/A
SAFETY	Accidents	The modal shift from road to rail will contribute to reducing accidents.	N/A	PVB £0.381 million.
	Security	No significant change	N/A	N/A
ECONOMY	Public Accounts - cost to broad transport budget	The net position reflects capital grant costs to government, revenue transferred to government, operating costs transferred to government and road infrastructure cost savings to government (associated with modal transfer from road to rail).	N/A	PVC £14.059 million.
	Public Accounts - indirect tax impacts	There is a cost to government associated with reduced road traffic and hence reduced indirect tax duties. This is treated as a negative benefit.	N/A	PVC £2.405 million.
	Transport Economic Efficiency: Business Users & Transport Providers	The scheme provides journey time benefits to work-time rail users. Road de-congestion benefits to work time road users are included in consumer benefits, see below. Transport providers benefit from new user revenue, after allowing for revenue transfer to government.	N/A	PVB £12.104 million.
	Transport Economic Efficiency: Consumers	The scheme provides journey time benefits to non-work time users. The limited abstraction of passenger journeys from road to rail will provide road de-congestion benefits; these benefits, to work-time and non-work-time road users, are shown here.	N/A	PVB £10.089 million.
	Reliability	The scheme provides reliabilty (value of time) benefits.	N/A	PVB £0 million.
	Station Enhancement and Walk time	The scheme provides station amenity benenefits and/or walk time benefits.	N/A	PVB £0 million.
	Wider Economic Impacts	No significant change	N/A	N/A
ACCESSIBILITY	Option values	No significant change	N/A	N/A
	Severance	No significant change	N/A	N/A
	Access to the Transport System	No significant change	N/A	N/A
INTEGRATION	Transport Interchange	No significant change	N/A	N/A
	Land-Use Policy	No significant change	N/A	N/A
	Other Government Policies	No significant change	N/A	N/A

Output Category	Outputs	Option B	Note
Journey time saving	0.5 minute JT saving for passenger services between Oxford and North (both directions, CrossCountry and Great Western)	✓	Option B BCR = 0.26 with journey time benefits only
	0.5 minute JT saving for Evergreen 3 services to Oxford (not reverse)	✓	
Splitting and joining mileage cost saving	IEP services: two 5-Car units vehicle operating cost saving per day between Hereford and Oxford	✓	Option B BCR = 1.44 with journey time benefits and mileage related cost savings
	EWR services: two 4-car units vehicle operating cost saving per day between Milton Keynes and Oxford two 4-car units vehicle operating cost saving per day between Bedford and Oxford	✓	
Performance benefit	Performance improvement could be achieved	✓	performance benefits yet to be monetised
Freight Benefit	Together with other enhancements between Southampton and WCML, 8 additional freight paths by 2030 if all freight trains run as 775m, or 10 additional freight paths by 2030 if only 60% freight trains run as 775m due to depot and siding constraints	✓	Benefits dependent on realisation of other aspirations between Southampton and WCML Portfolio business case completed including SFN freight benefits and journey time and operting cost saving of Oxford Corridor Capacity Improvement scheme. The portofolio has a high value for money business case.
Capacity	Capacity to run 9-car EG3 service	✓	Potential crowding relief benefit to Chiltern mainline (this has been monetised and considered in other scheme)
	East West Rail	✓	This scheme is required to accommodate the East West Rail services if SFN and Evergreen3 are also delivered. East West Rail costs and benefits will be included in the portfolio business case in later GRIP stages when its updated business case information is available
	Additional CrossCountry hourly Basingstoke - Manchester service	✓	30-40 minute journey time reduction Benefits dependent on path availability before and beyond Oxford It has been agreed that this element will not be included in Oxford Corridor Capacity Improvement GRIP2 business case

✓	Can be included in Option B Business Case and is included in GRIP2 calculation
✓	Can be included in Option B Business Case but further analysis is needed in later GRIP stages
✓	Can not be included in Option B core business case but can be included in Western portfolio business case
✓	Cannot be included in Option B business case to avoid double counting of benefits

Appendix H

(Construction Assessment)

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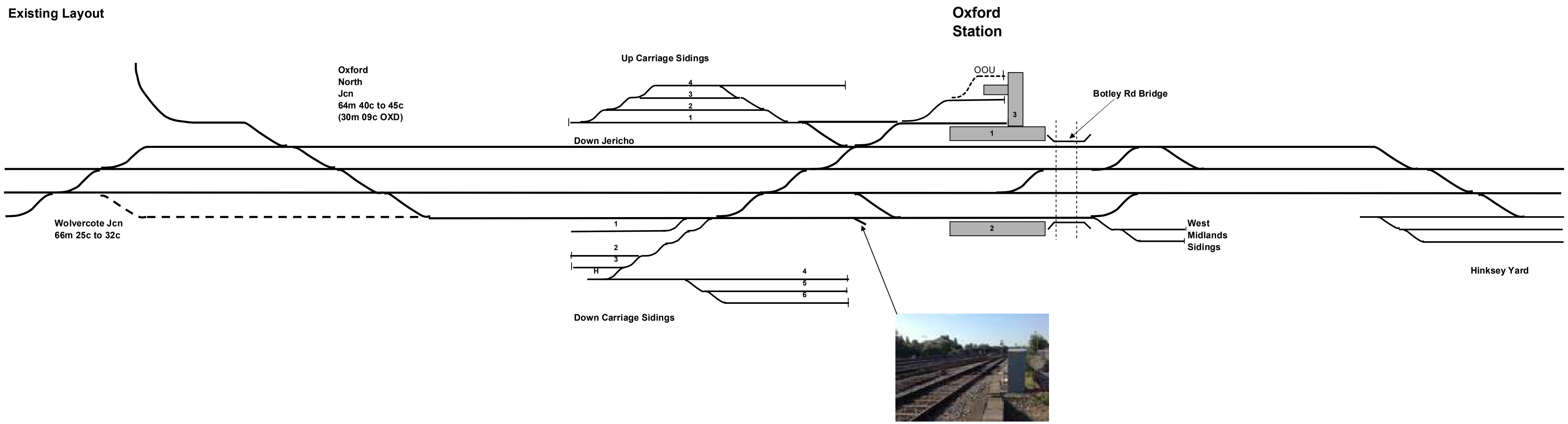
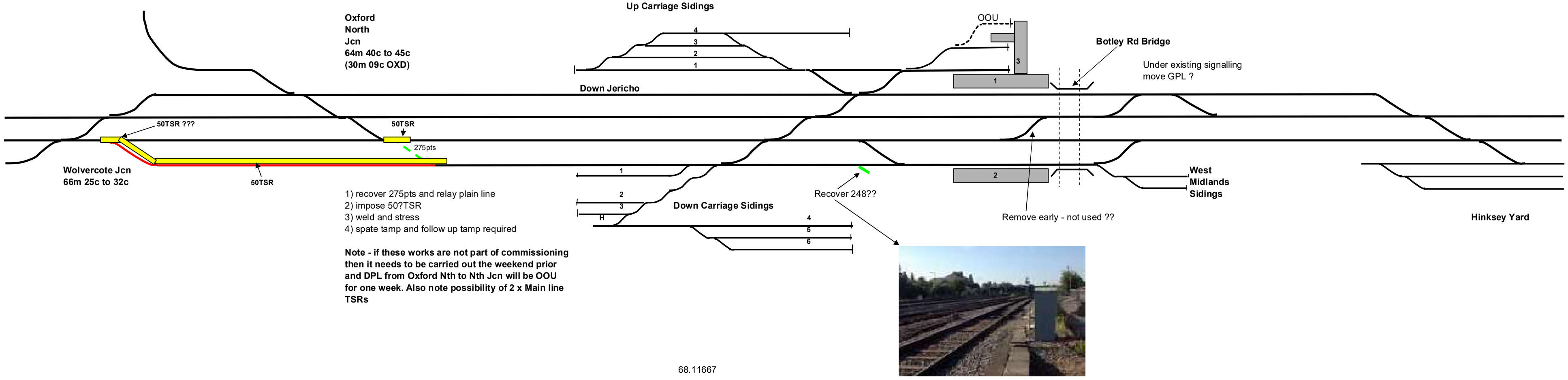
Existing Layout



Week 9 - May 2015

Oxford Station

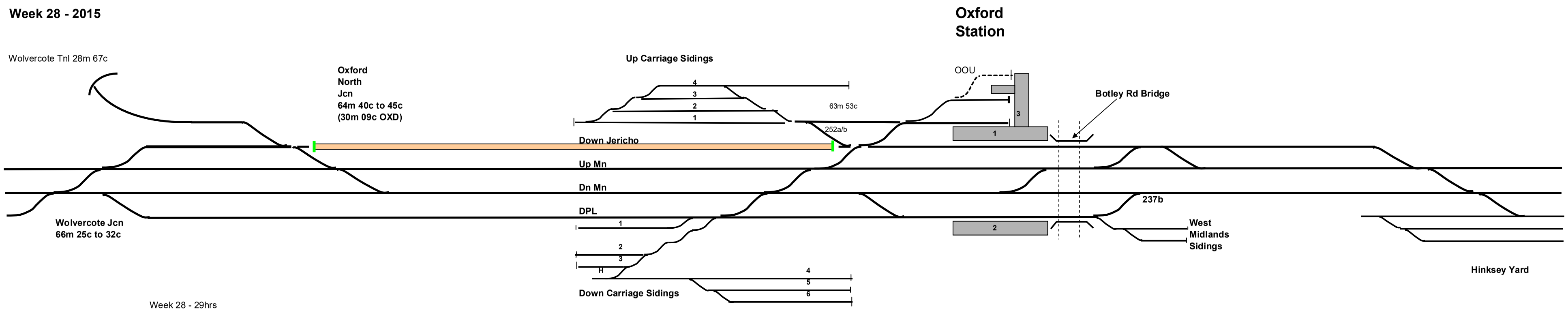


1) recover 275pts and relay plain line
2) impose 50?TSR
3) weld and stress
4) spate tamp and follow up tamp required

Note - if these works are not part of commissioning then it needs to be carried out the weekend prior and DPL from Oxford Nth to Nth Jcn will be OOU for one week. Also note possibility of 2 x Main line TSRs

68.11667

Week 28 - 2015



Week 28 - 29hrs
Recover track and remove spoil approx 70c

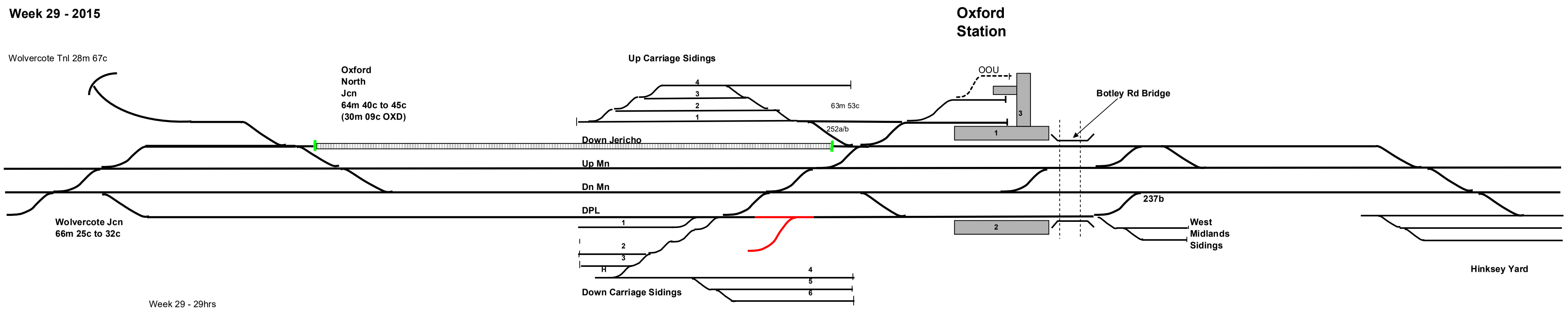
77 lengths = 26 ospreys	2 trains
5692t spoil = 95 mt falcons	4 trains

Down Jericho OOU

Notes
1) Plat 1 will be used on the Sunday to enable Didcot - Oxford services
2) Need to understand protection arrangements on approach to 252pts. Will need to book Sat/Sun NBS to cover Oxford Stn
3) Protection on UM to OX21 & DM OX20 clr 237b
4) From 02.00 Sun protection must be shortened back to Oxford Nth to enable workings from the Carriage sidings

Opportunities
1) Down services via Plat and DPL
2) SLW/Pilot working Tackley to Plat 2 for shuttle service to Oxford

Week 29 - 2015

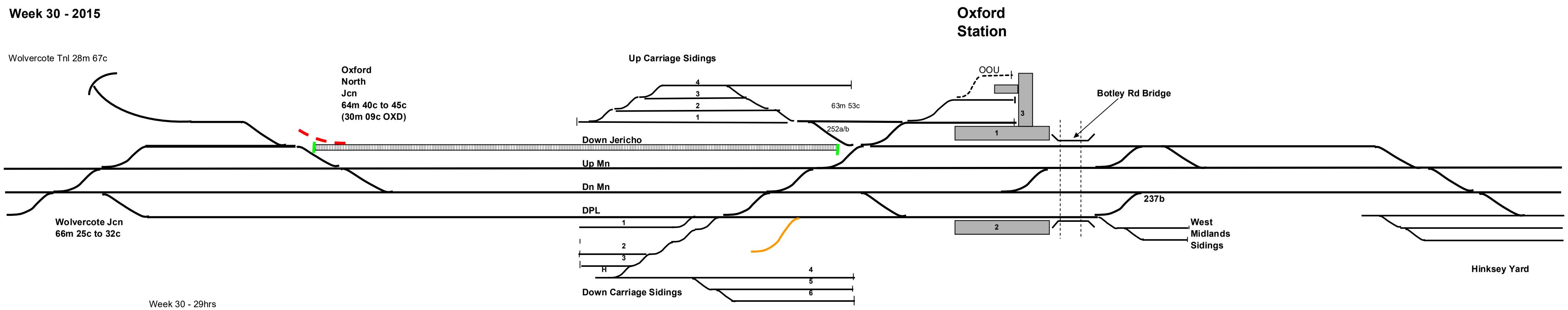


Week 29 - 29hrs
Install bottom ballast and sleepers 70c
3559t ballast = 60 ld sidetippers 3 trains
2156 G44 sleepers = 13 salmons 2 trains
Down Jericho OOU
Install new lead to Dn Sidings

Install new sidings lead (clipped OOU)
Modular - PEM/LEMs build up in sidings
Spoil 418t = 7mt falcons
BB 265t = 5ld falcons
TB 146t = 3 ld falcons
Scrap out to sidings

Notes
1) Plat 1 will be used on the Sunday to enable Didcot - Oxford services
2) Need to understand protection arrangements on approach to 252pts. Will need to book Sat/Sun NBS to cover Oxford Stn
3) Protection on UM to OX21 & DM OX20 clr 237b
4) From 02.00 Sun protection must be shortened back to Oxford Nth to enable workings from the Carriage sidings
5) Sleepers may have to be suitable for CEN56 if existing rail is re-used
6) New lead to Dn Sidings clipped OOU until Easter Commissioning
Opportunities
1) Down services via Plat and DPL
2) SLW/Pilot working Tackley to Plat 2 for shuttle service to Oxford

Week 30 - 2015

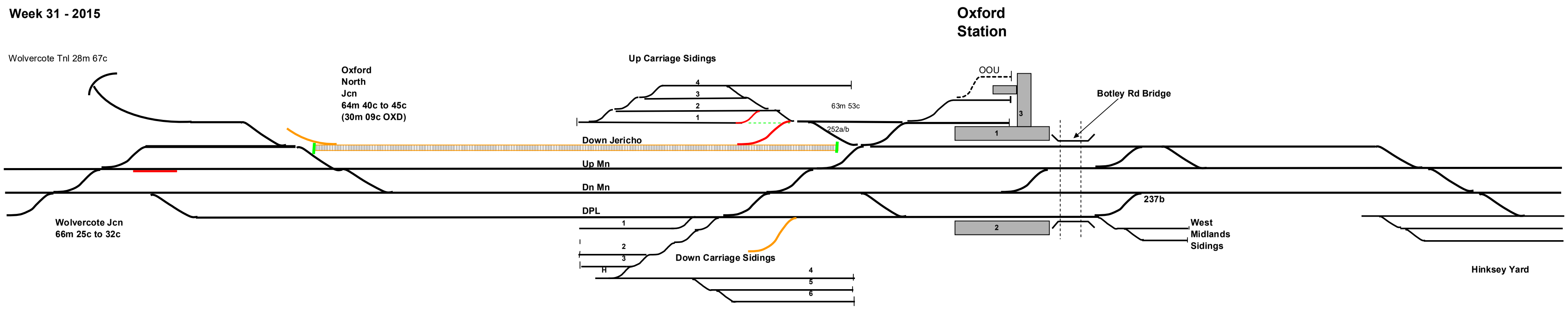


Week 30 - 29hrs
Rerail, install top ballast and tamp
2043t ballast = 35 ld autohoppers 2 trains
Tamper
Down Jericho OOU

Install 60mph lead at Oxford Nth Jcn (F switch - modular?)
4 tilting wagons etc, KIROW 1200
Ballast 10 ld falcons
Tamper

Notes
1) Plat 1 will be used on the Sunday to enable Didcot - Oxford services
2) Need to understand protection arrangements on approach to 252pts. Will need to book Sat/Sun NBS to cover Oxford Stn
3) Protection on UM to OX21 & DM OX20 clr 237b
4) From 02.00 Sun protection must be shortened back to Oxford Nth to enable workings from the Carriage sidings
5) New CEN60
6) TSR on DR
Opportunities
1) Down services via Plat and DPL
2) SLW/Pilot working Tackley to Plat 2 for shuttle service to Oxford

Week 31 - 2015



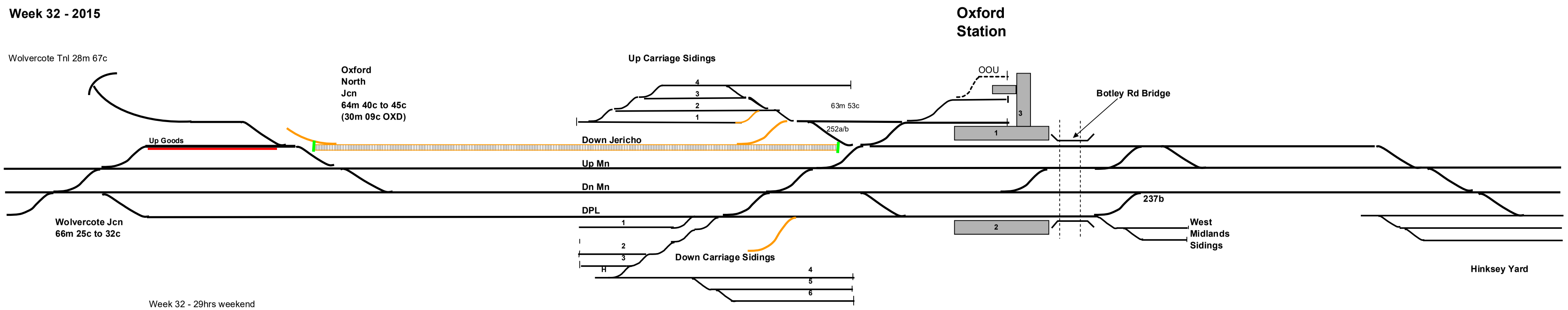
Week 31 - 29hrs
Relay and reballast footprint for S&C

Tamper

Opportunities
1) High output may have reballasted

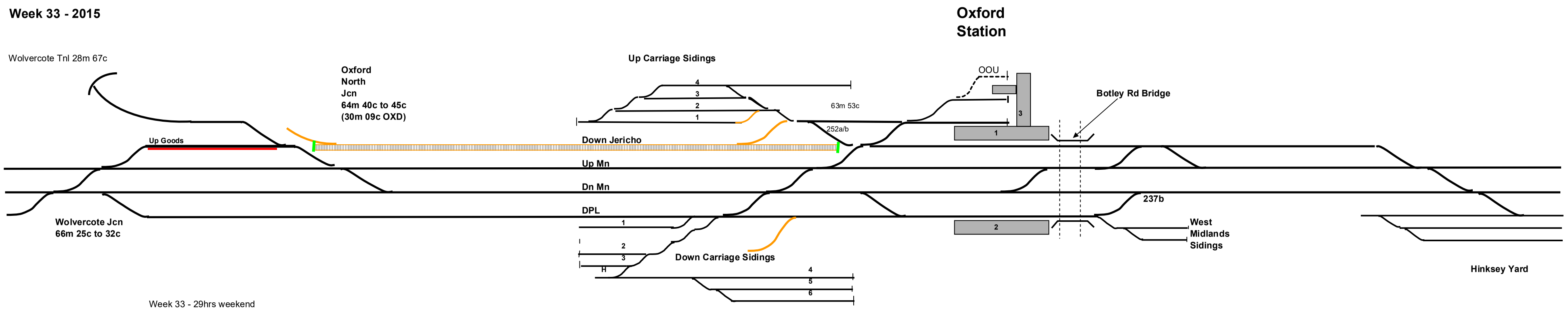
Week 31 - 29hrs
Install lead in Sdg 2 from Sdg 1 and recover plain line
Install lead from Jericho
Attempt to do with no trains - S&C built up in the Yard
PEM/LEMs for crossover from the Jericho
Tamper
Down Jericho OOU
Notes
1) If Up Carr Sdgs can be taken Sat do these works without any interference to Oxford per se
2) Use Sun possession to install new crossover from Jericho
3) Consider doing without trains using stockpiled ballast and S&C built up prior
4) Plat 1 will be used on the Sunday to enable Didcot - Oxford services
5) Need to understand protection arrangements on approach to 252pts. Will need to book Sat/Sun NBS to cover Oxford Stn
6) Protection on UM to OX21 & DM OX20 clr 237b
7) From 02.00 Sun protection must be shortened back to Oxford Nth to enable workings from the Carriage sidings
Opportunities
1) Down services via Plat and DPL

Week 32 - 2015



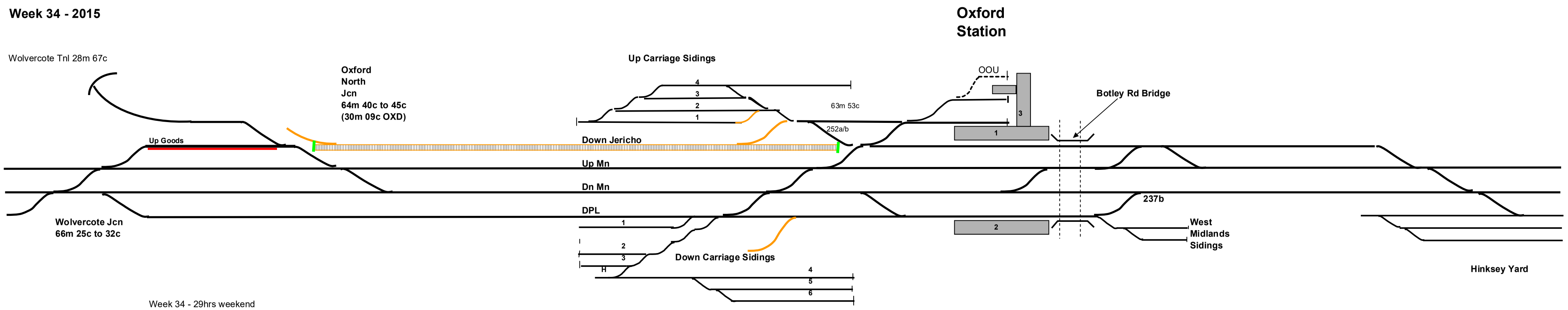
Week 32 - 29hrs weekend
Relay Up Goods (28c/616y) - relay from South to North
Train 1 Loco, 11 ospreys, 10mt falcons, Loco
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Reverse haul to Oxford Stn North cross to the UM then to Westbury and stable
Note - CE loco to detach and stand London side of Wolvercote jcn to top Train 2
Train 2 Loco, 15mt falcons
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Loco ex Train 1 attach haul to Oxford Stn North cross to the UM then to Westbury and stable

Week 33 - 2015



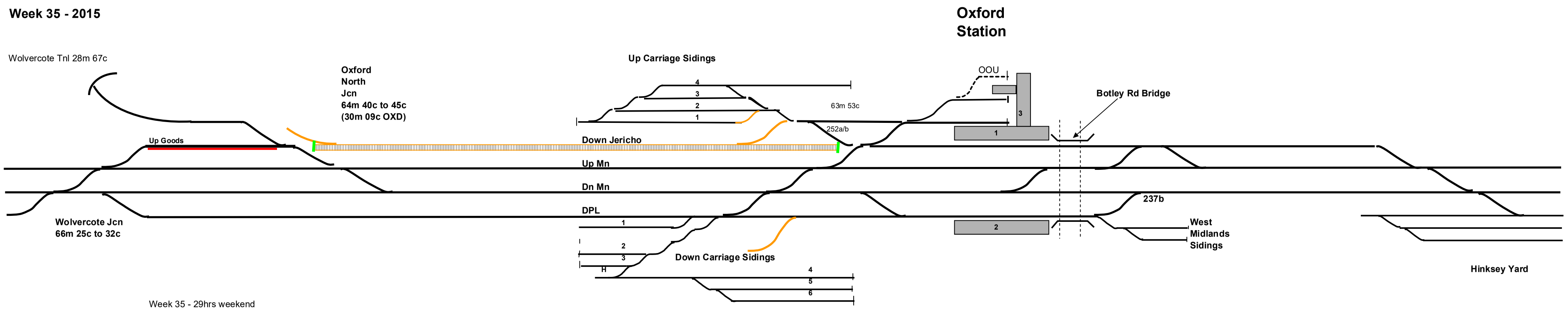
Week 33 - 29hrs weekend
Relay Up Goods (28c/616y) - relay from South to North
Train 1 Loco, 11 ospreys, 10mt falcons, Loco
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Reverse haul to Oxford Stn North cross to the UM then to Westbury and stable
Note - CE loco to detach and stand London side of Wolvercote jcn to top Train 2
Train 2 Loco, 15mt falcons
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Loco ex Train 1 attach haul to Oxford Stn North cross to the UM then to Westbury and stable

Week 34 - 2015



Week 34 - 29hrs weekend
Relay Up Goods (28c/616y) - relay from South to North
Train 1 Loco, 11 ospreys, 10mt falcons, Loco
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Reverse haul to Oxford Stn North cross to the UM then to Westbury and stable
Note - CE loco to detach and stand London side of Wolvercote jcn to top Train 2
Train 2 Loco, 15mt falcons
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Loco ex Train 1 attach haul to Oxford Stn North cross to the UM then to Westbury and stable

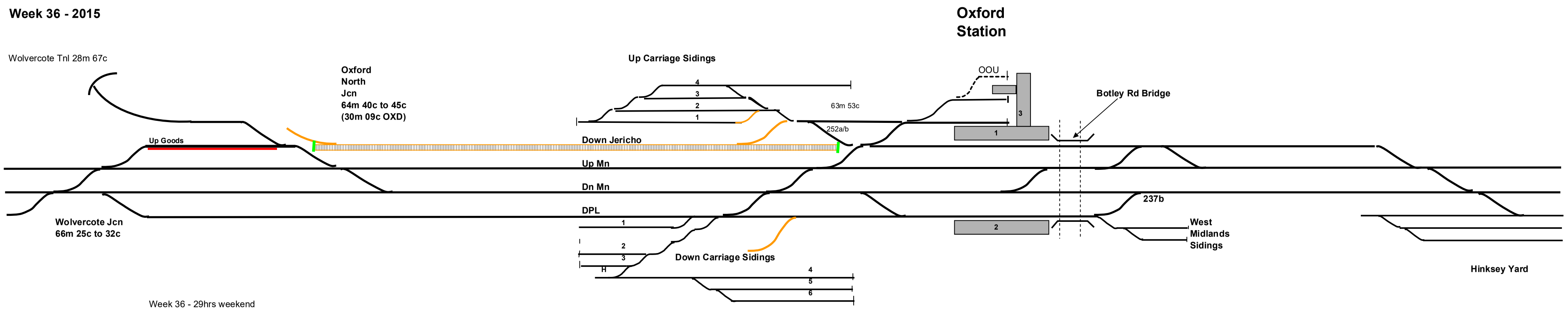
Week 35 - 2015



Week 35 - 29hrs weekend
Relay Up Goods (28c/616y) - relay from South to North

Train 1	Loco, 11 ospreys, 10mt falcons, Loco Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn and cross to the DM. Reverse haul to Oxford Stn North cross to the UM then to Westbury and stable Note - CE loco to detach and stand London side of Wolvercote jcn to top Train 2
Train 2	Loco, 15mt falcons Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn and cross to the DM. Loco ex Train 1 attach haul to Oxford Stn North cross to the UM then to Westbury and stable

Week 36 - 2015

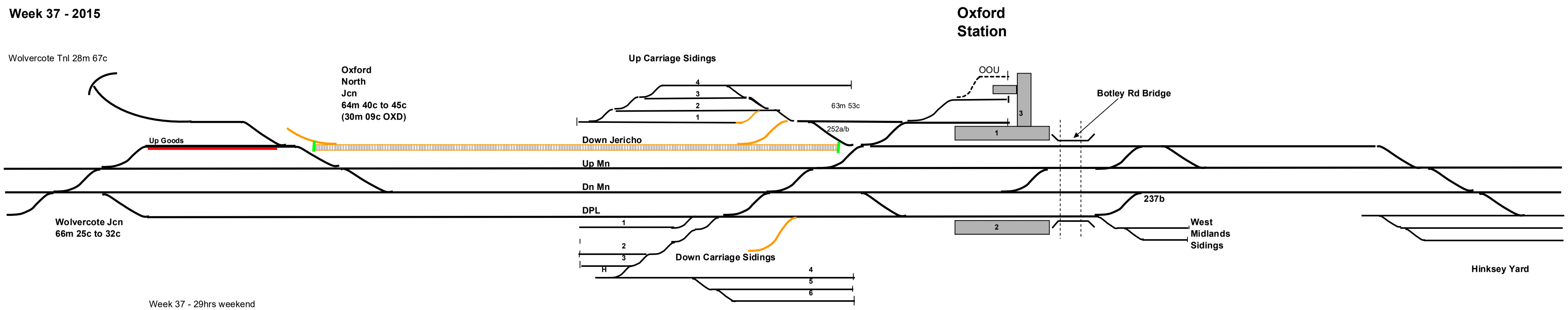


Week 36 - 29hrs weekend
Relay Up Goods (28c/616y) - relay from South to North

Train 1 Loco, 11 ospreys, 10mt falcons, Loco
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Reverse haul to Oxford Stn North cross to the UM then to Westbury and stable
Note - CE loco to detach and stand London side of Wolvercote jcn to top Train 2

Train 2 Loco, 15mt falcons
Ex Westbury to Oxford Nth Jcn and cross to site on UM & WAR on completion haul to Wolvercote Jcn
and cross to the DM. Loco ex Train 1 attach haul to Oxford Stn North cross to the UM then to Westbury and stable

Week 37 - 2015

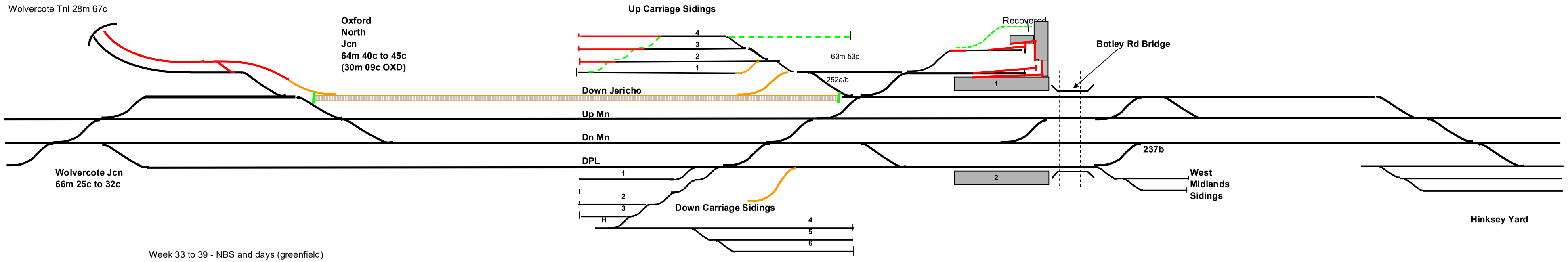


Week 37 - 29hrs weekend
Tamp, weld and stress
Tamper

Down Jericho OOU
Notes

Weeks 33 to 39 - 2015

Oxford Station

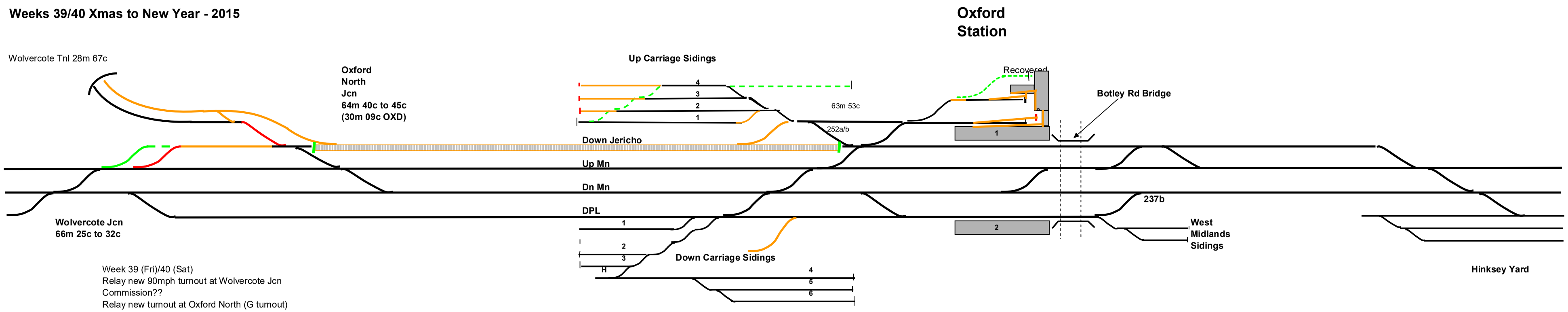


Week 33 to 39 - NBS and days (greenfield)
Tamp weld and stress
Tamper

Down Jericho OOU
Notes

Weeks 33 to 39
Remodel Up carriage Sidings
Extend bay Plat (s)
Relay Bicester Branch
No trains
Tamper
Notes
1) TOC agreement for layout change
2) Assume that if 1) is agreed then becomes greenfield
3) Works can start earlier

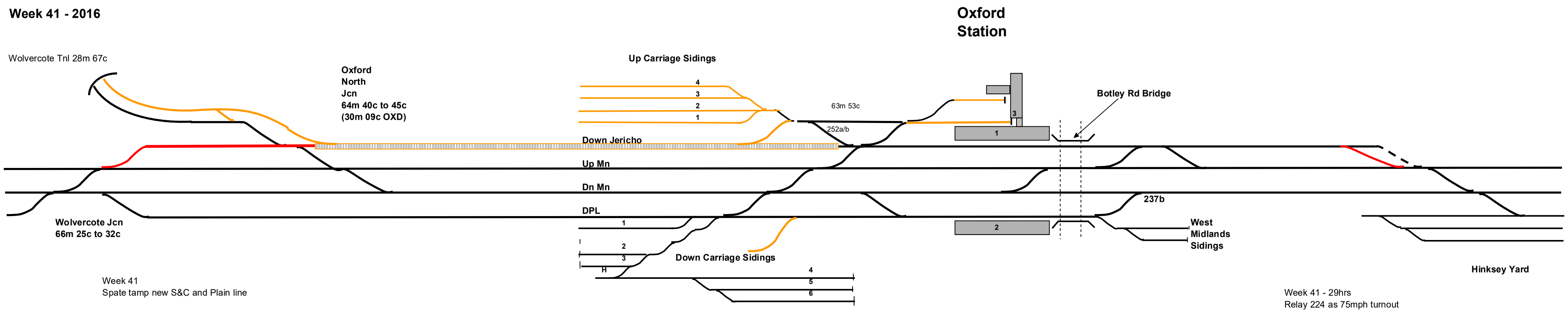
Weeks 39/40 Xmas to New Year - 2015



Week 39 (Fri)/40 (Sat)
Relay new 90mph turnout at Wolvercote Jcn
Commission??
Relay new turnout at Oxford North (G turnout)

Proposed possession under cover of Banbury
Xmas day and Boxing Day - all lines
Relay Wolvercote Jcn
27th Dec 2015 to 1st Jan
Relay turnout at Oxford Nth Jcn
Weld and stress both layouts
Note - consider Pilot/SLW Wolvercote Jcn to Oxford Stn North via DM and "new" DPL for FGW Cotswold services
Possible ALO issues for Wolvercote Jcn, but activities should just be tamping, welding and stressing

Week 41 - 2016



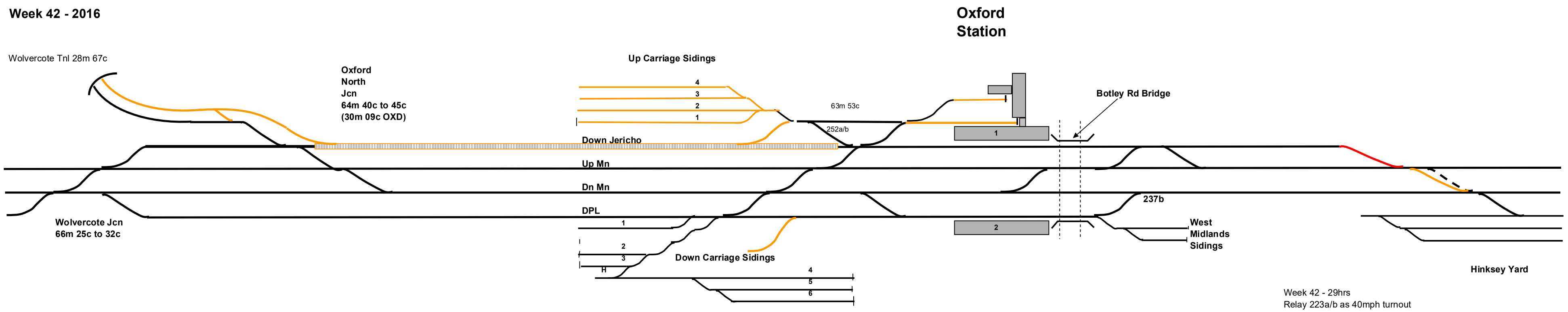
Week 41
Spate tamp new S&C and Plain line

1 x S&C & 1 x P/L Tamper

Note -
1) staggered possession - NBS for S&C, but UPL to inlude NBS, but to be taken prior to or post that opportunity.

Week 41 - 29hrs
Relay 224 as 75mph turnout
PEM/LEMs
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Scrap = 5mt bass & 2mt salmons
Tamper
Down Jericho OOU
Notes
1) DPL to Oxford South (OX71)
2) D&UMns to Oxford Nth excl.
3) Probably G switches therefore NOT modular
4) Build up area required and deliveries prior
5) 50 TSR on Up Main
Opportunities

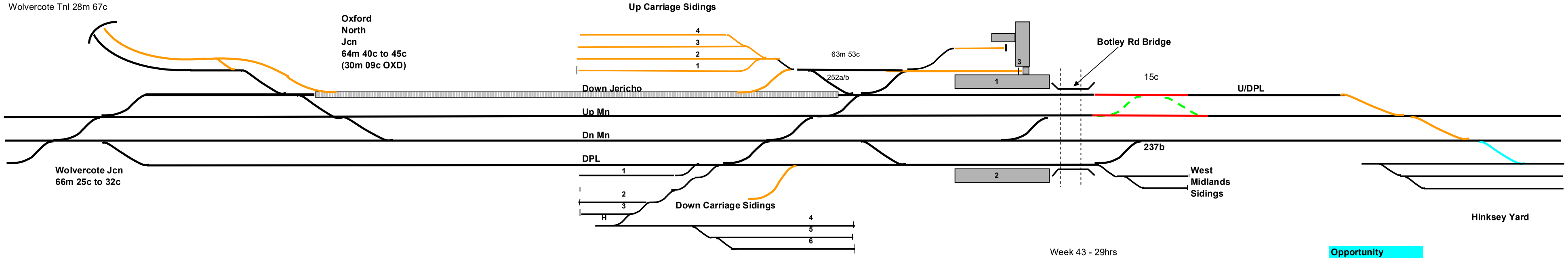
Week 42 - 2016



Week 42 - 29hrs
Relay 223a/b as 40mph turnout
Modular
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Scrap = 5mt bass & 2mt salmons
New S&C = 8 tilting wagons & KIROW 810
Tamper
Down Jericho OOU
Notes
1) DPL to Oxford South (OX71)
2) D&UMns to Oxford Nth excl.
3) High speed connections remain at 25mph pending commissioning
4) 50 TSRs on D & Umns
Opportunities

Week 43 - 2016

Oxford Station



Week 43 - 29hrs
Recover 233a/b & 235a/b
G44/CEN60
Design lift on U/DPL
Scrap = 5mt bass & 2 mt salmons
Spoil = 1254t = 21mt falcons
BB 795t = 14ld falcons
TB 438t + lift = 15ld autohoppers
New sleepers = 17l = 476 G44 = 3 salmons
Tamper

Down Jericho OOU

Notes

1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) 233/235 OOU - all Up trains ex Plat 1 via 224pts at Hinksey
4) Assume Isis River Bridge fit for additional loading
5) 50 TSRs on D & Umns

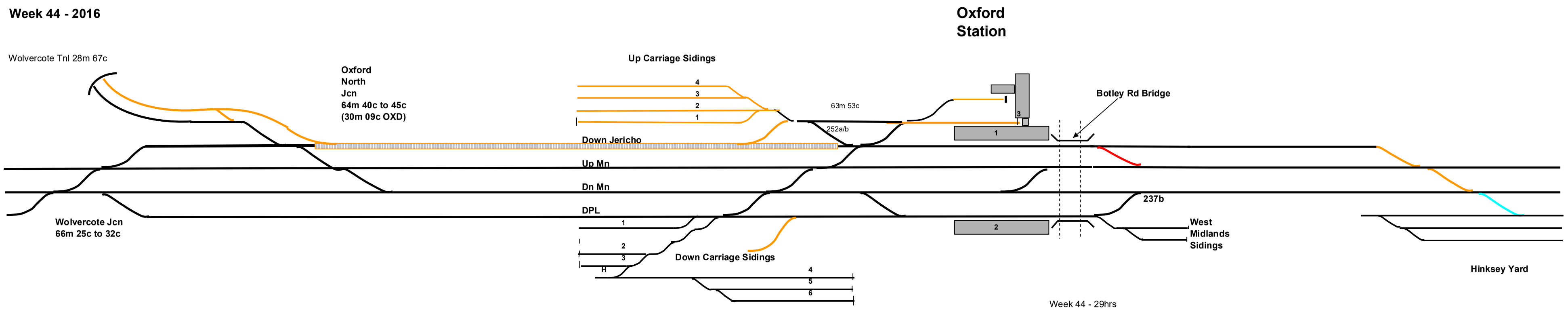
Opportunities

DPL was relayed by IMT and therefore ballast installed - fit for purpose
Design lift will provide ballast depth and avoid renewal
Relay 222a/b depending on resources required for plain lining

Opportunity

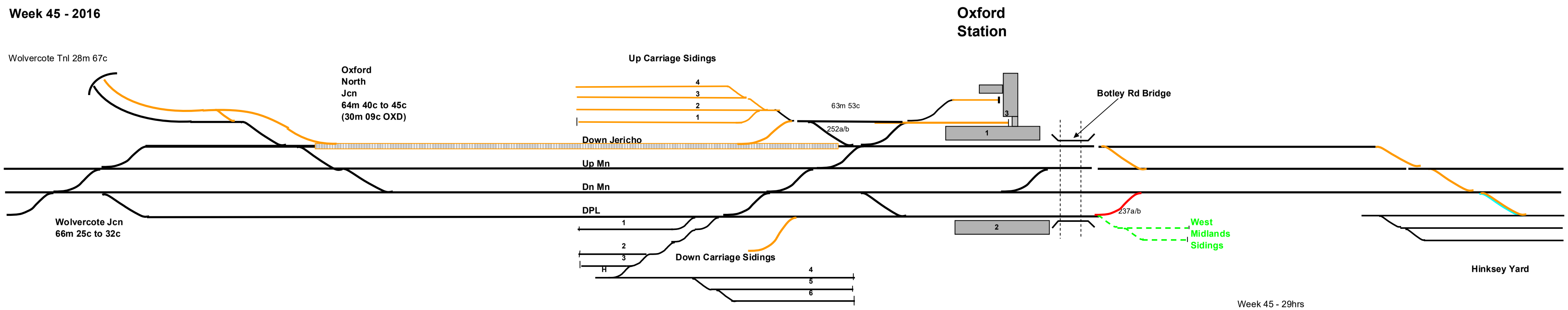
Relay 222a/b
Modular
Spoil 836t = 14mt falcons
BB 530t = 7ld falcons
TB 292t = 5 falcons
Scrap = 5mt bass & 2mt salmons
New S&C = 8 tilting wagons & KIROW 810
Tamper

Week 44 - 2016



Week 44 - 29hrs
Relay new crossover (40mph??) and "commission"
Modular
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper
Down Jericho OOU
Notes
1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) 233/235 OOU - all Up trains ex Plat 1 via 224pts at Hinksey - unless commissioned
4) may need to move GPL
5) Is this a TVSC alteration - Delta Rail !!!!!
6) 50mph TSR on UM
Opportunities
DPL was relayed by IMT and therefore ballast installed - fit for purpose

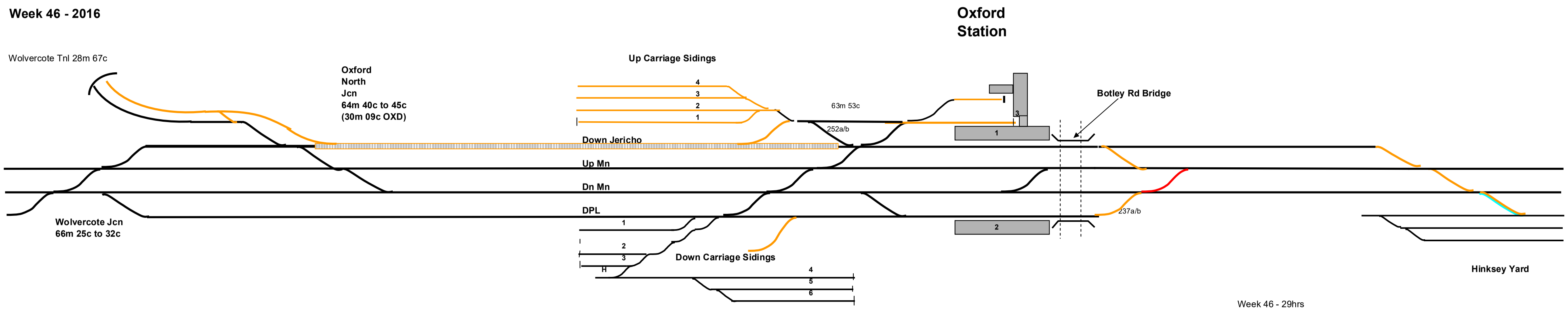
Week 45 - 2016



Week 45 - 29hrs
Relay 237a/b as 30mph crossover
Modular
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Scrap = 5mt bass & 2mt salmons
New S&C = 8 tilting wagons & KIROW 810
Down Jericho OOU
Notes
1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) 50mph TSR on DM
4) West Midland Sdgs recover by road?

Opportunities

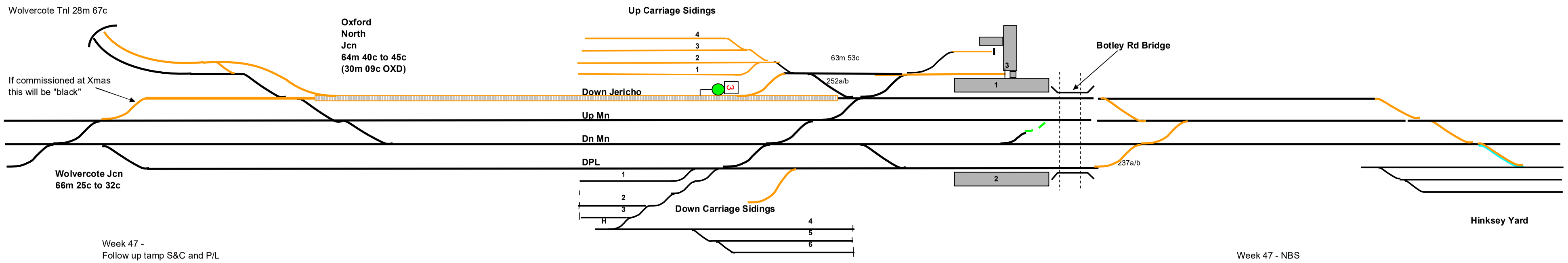
Week 46 - 2016



Week 46 - 29hrs
Relay new 40mph crossover (clipped OOU)
Modular
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Scrap = 5mt bass & 2mt salmons
New S&C = 8 tilting wagons & KIROW 810
Tamper
Down Jericho OOU
Notes
1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) Footprint will have been dug on Weeks 43a & 45a
4) Clipped OOU until commissioning
5) 50mph TSRs on D & Umns
Opportunities

Week 47 - 2016

Oxford Station



Week 47 -
Follow up tamp S&C and P/L

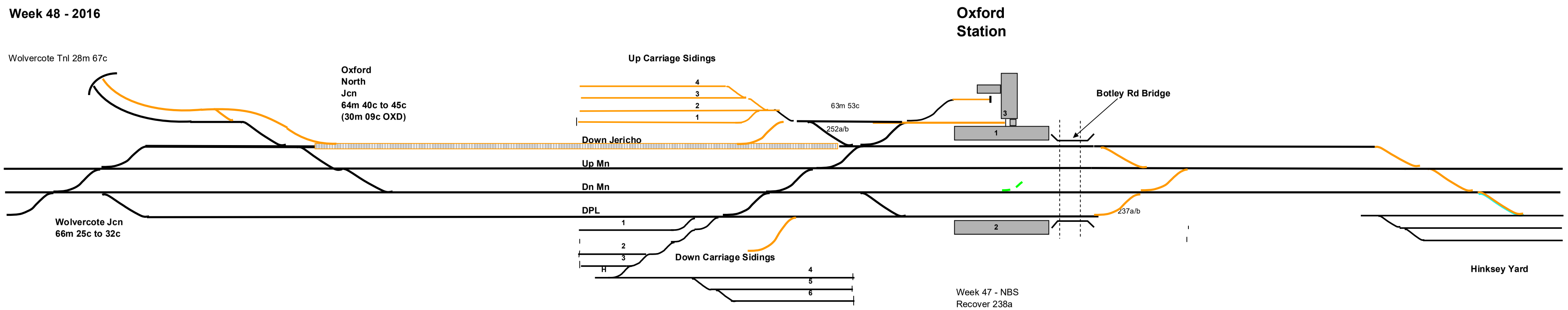
1 x S&C & 1 x P/L tamper

Notes -
1) staggered possession as per Week 41

Week 47 - NBS
Recover 238b
Weld and stress
Scrap = 1mt salmon, 4mt bass
TB = 2ld falcons
Tamper
Down Jericho OOU
Notes
1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) Skim dig
4) 50mph TSR on UMn

Opportunities

Week 48 - 2016



Week 47 - NBS
Recover 238a
Scrap = 1mt salmon, 4mt bass
TB = 2ld falcons
Weld and stress
Tamper

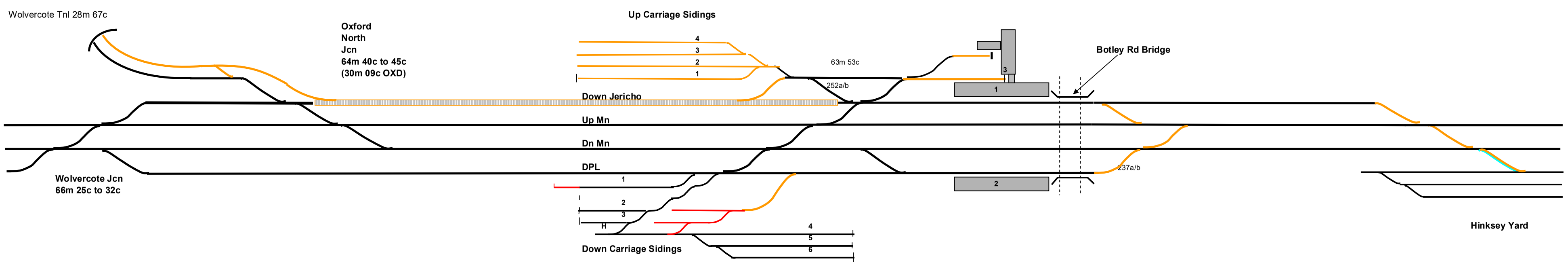
Down Jericho OOU

Notes

1) DPL to Oxford South (OX82) - no access to Plat 1
2) D&UMns to Oxford Nth excl.
3) Skim dig
4) 50mph TSR on DMn

Opportunities

Weeks 48 to 53 - 2016



Weeks 48 to 53 - "greenfield"?
Remodel Dn Carriage Sdgs
Weld and stress
No trains
Tamper
Down Jericho OOU

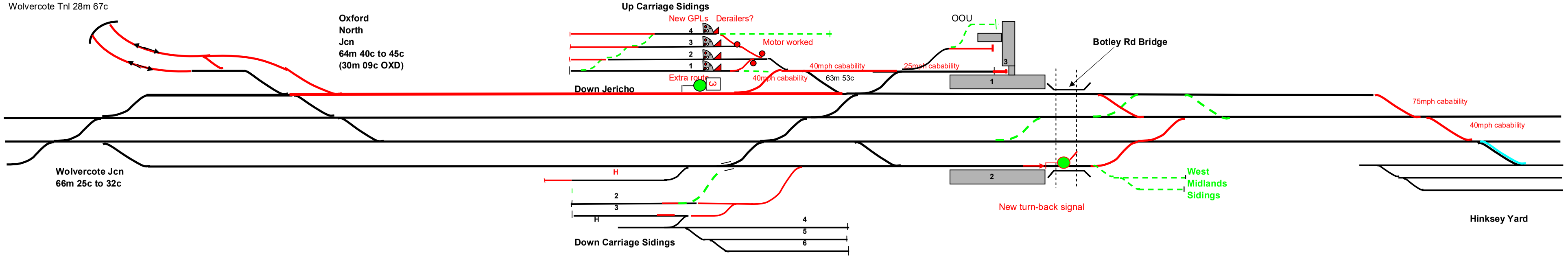
Notes
1) Assumes work can be carried out with existing layout operational
2) 4, 5 & 6 can be taken out of use to enable connection between headshunt and No 4

Opportunities

Week 53 - Easter 2016

Carriage siding remodel subject to Electric Trains requirements and agreement with FGW for alterations

Oxford Station



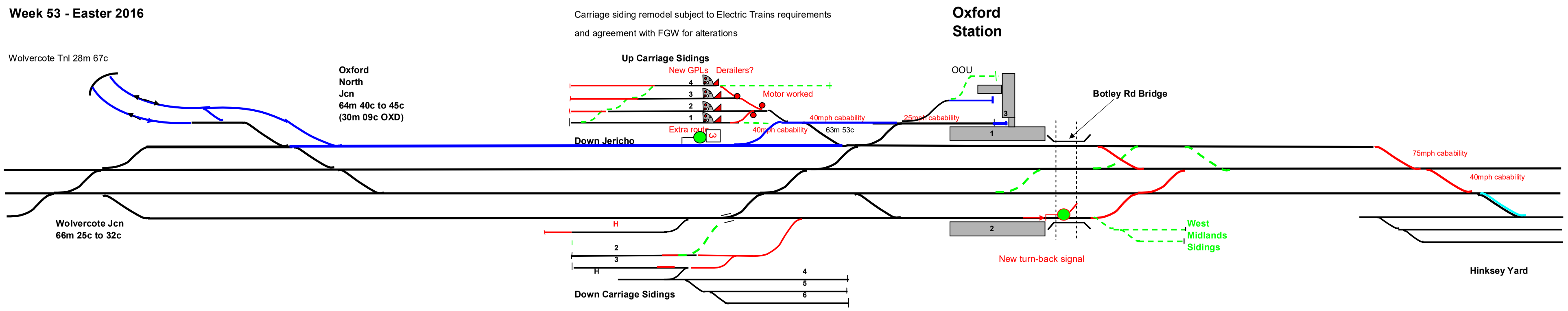
Note - double slip arrangement will have to remain until Oxford Stn North ladder is relayed

	NOTES	Funding
1	Revised Down sidings require commissioned Up route from Plat 2	Corridor
2	40 mph capability required on sidings link road	Chiltern
3	Assumed motor-worked derailers on Up sidings	Chiltern
4	Up sidings remodelled and motor-worked with new GPLs	ET
5	Recover trap on sidings link road	Chiltern
6	Extend Plat 3 and create 4	Chiltern
7	Extra route on Down Jericho "Home"	Chiltern
8	**Are there any power upgrades for these works**	
9	**Re-numbering of Plats 1 to 4 ??!!**	

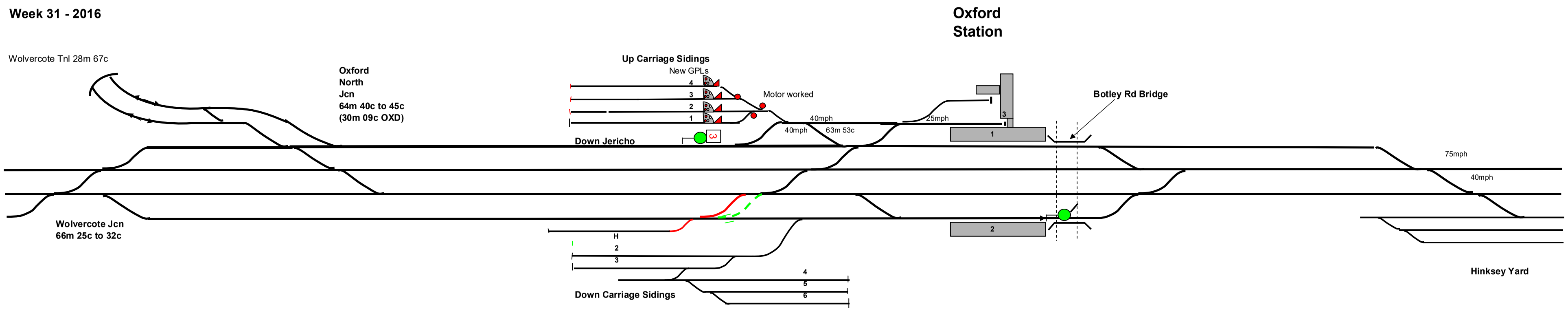
Week 53 - Easter 2016

Carriage siding remodel subject to Electric Trains requirements

and agreement with FGW for alterations



Week 31 - 2016



Week 31 29hrs
Relay 260a/b and 263a and recover double slip
Modular
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper

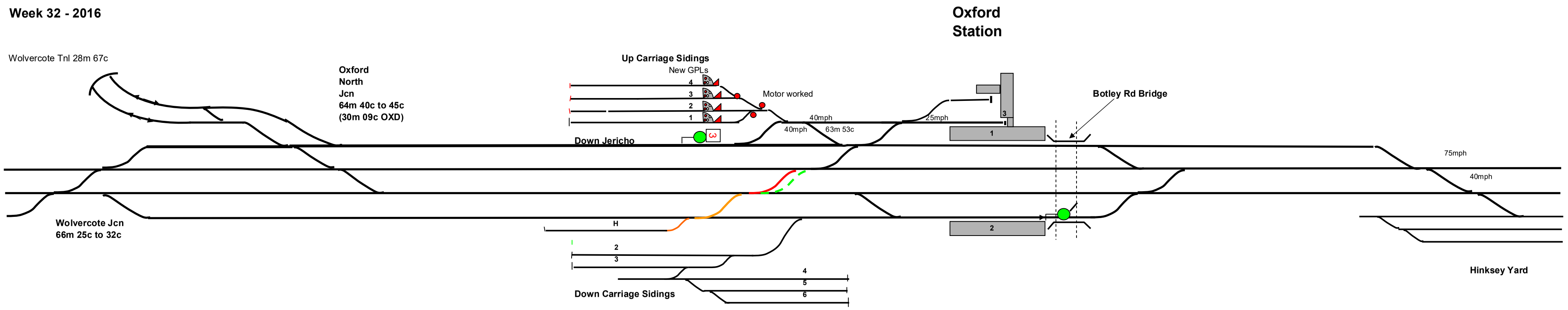
Notes

1) Jericho can be open to traffic
2) D&UMns to Oxford Sth excl.
3) Plat 1 available
4) Welding and stressing this layout may be a major issue
5) 50mph TSRs on DR & DMn

Opportunities

1) Look at protection limits/worksite limits to see if Plat 2 would be available

Week 32 - 2016



Week 32 29hrs
Relay 255a/b
Modular
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper

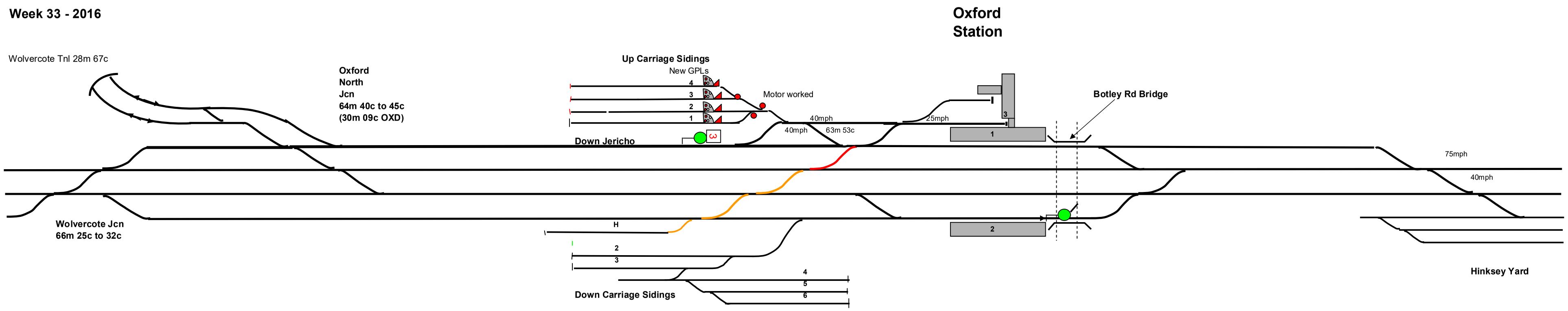
Notes

1) All lines - Jericho must go via "new" connection and not to use 245a/b
2) D&UMns to Oxford Sth excl.
3) Plat 1 available
4) Welding and stressing this layout may be a major issue
5) 50mph TSRs on D & Umns (& DR?)

Opportunities

1) Look at protection limits/worksite limits to see of Plat 2 would be available

Week 33 - 2016



Week 33 29hrs
Relay 251a/b
Modular
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper
Weld and stress 260a/b

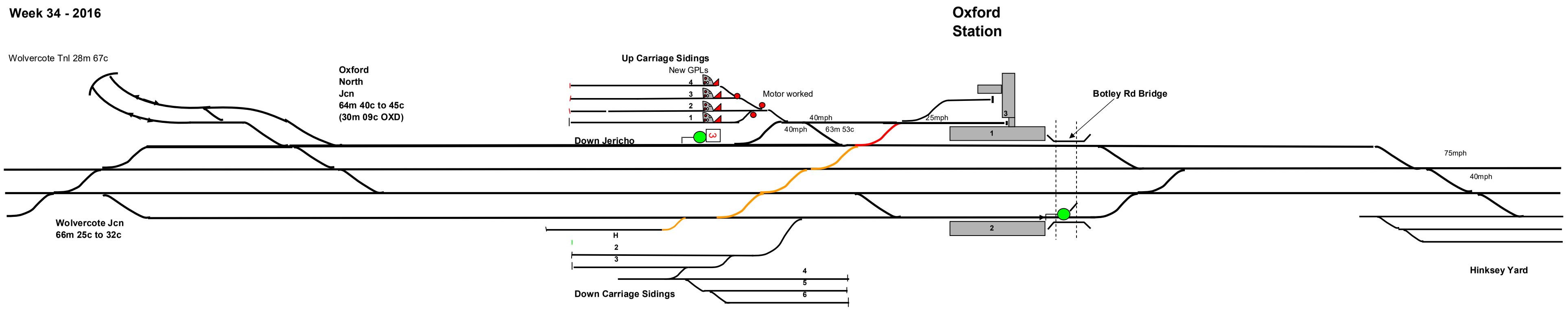
Notes

1) All lines - Jericho NOT available
2) D&UMns to Oxford Sth excl.
3) Plat 2 available
4) Welding and stressing this layout may be a major issue
5) 50mph TSRs on D & Umns & UR

Opportunities

1) Look at protection limits/worksite limits to see of Plat 1 would be available

Week 34 - 2016



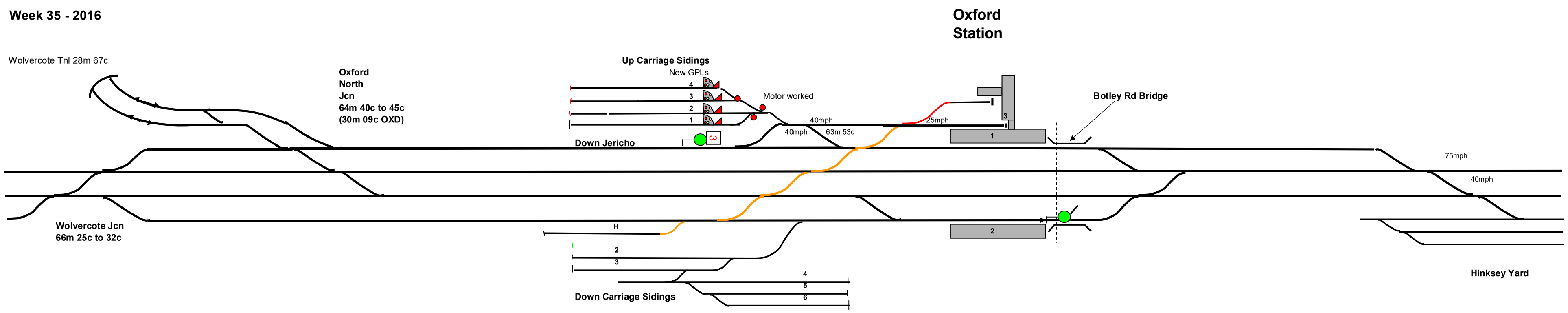
Week 34 29hrs
Relay 245a/b
Modular
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper
Weld and stress 255a/b

Notes

1) All lines - Jericho & Plat 1 NOT available
2) D&UMns to Oxford Sth excl.
3) Plat 2 available
4) Welding and stressing this layout may be a major issue
5) 50mph TSRs on DMn & DR

Opportunities

Week 35 - 2016



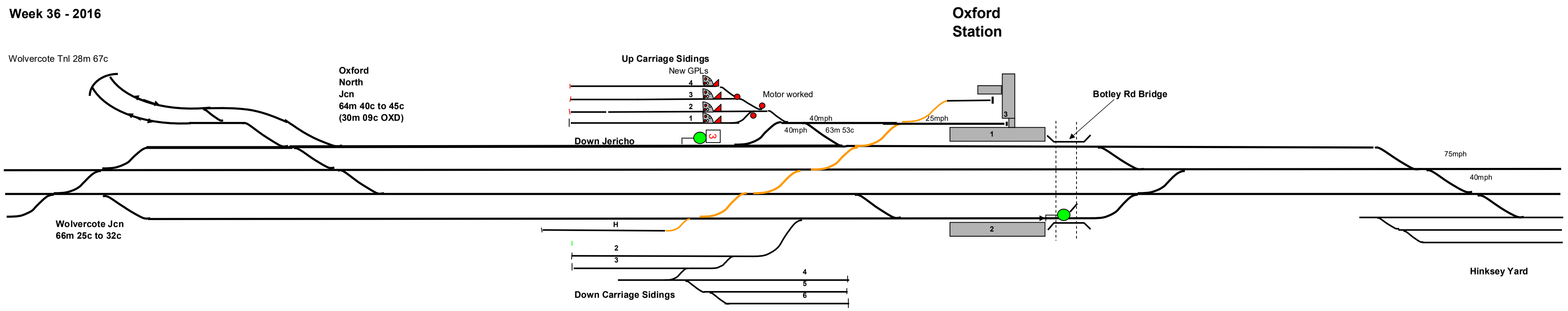
Week 35 29hrs
Relay 244a/b
Modular??
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamp, weld and stress ladder

Notes

1) All lines - Jericho & Plat 1 NOT available
2) D&UMns to Oxford Sth excl.
3) Plat 2 available
4) Welding and stressing this layout may be a major issue

Opportunities

Week 36 - 2016

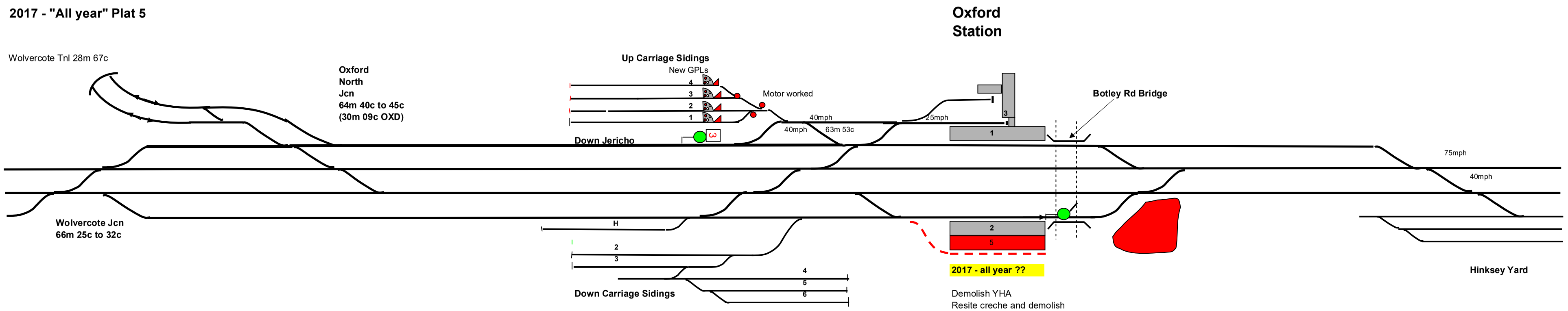


Week 36 29hrs
Tamp, weld and stress complete ladder

Notes
1) All lines - Jericho & Plat 1 NOT available
2) D&UMns to Oxford Sth excl.
3) Plat 2 available
4) Welding and stressing this layout may be a major issue
5) Spate tamps and follow up tamps may require "rolling" possessions depending on toe to toe dimensions

Opportunities

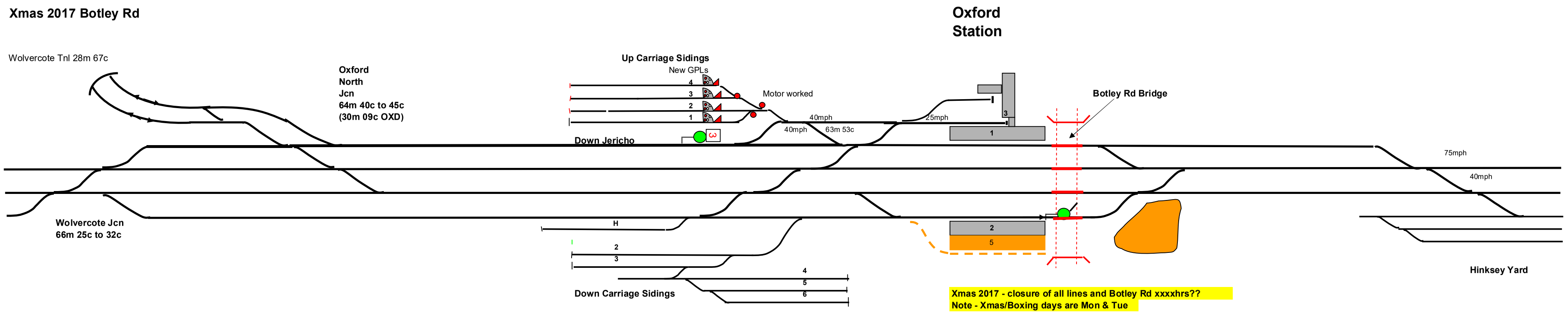
2017 - "All year" Plat 5



2017 - all year ??

Demolish YHA
Resite creche and demolish
Compulsory purchase houses and demolish
New road bridge deck over canal
Resite p'way cabins etc
Service diversions etc etc
Build new Plat 5
Relay new track - not connnected - deliveries by rail?
Prep for Botley Rd re-construction
Prep old Midland Sidings area incl demolish buildings
Construct OLE

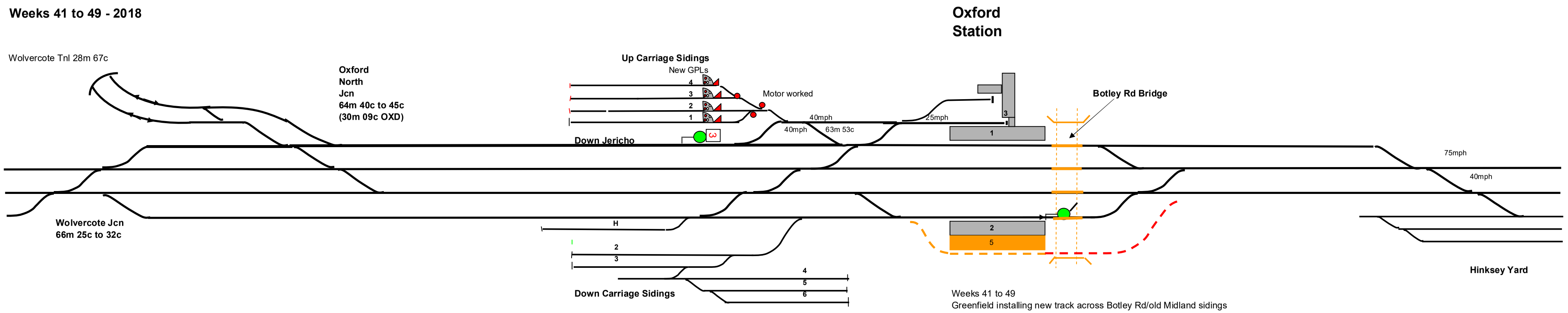
Xmas 2017 Botley Rd



Xmas 2017 - closure of all lines and Botley Rd xxxxhrs??
Note - Xmas/Boxing days are Mon & Tue
Remove track
Install new bridge
Re-instate track (direct fastened?) - tamp, weld and stress overlaps

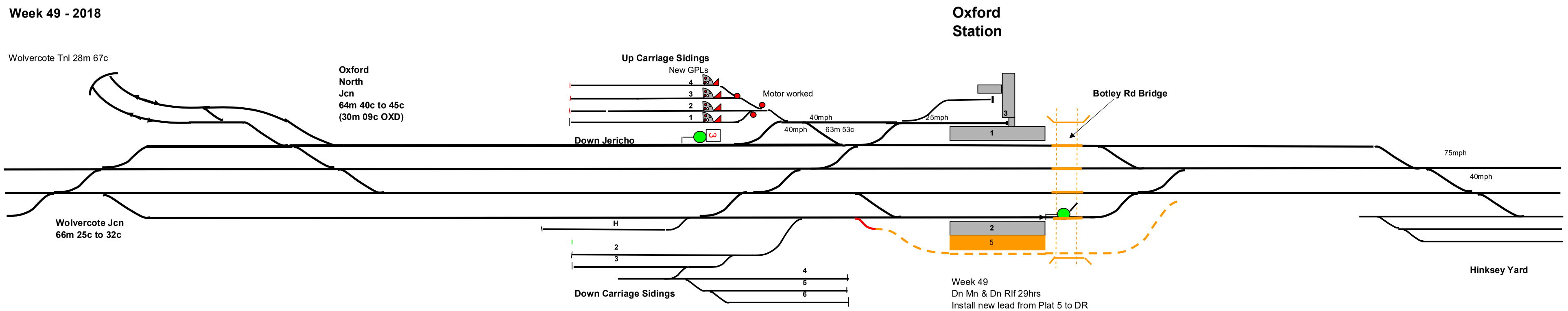
Opportunities
1) Mill Stream reconstruction

Weeks 41 to 49 - 2018



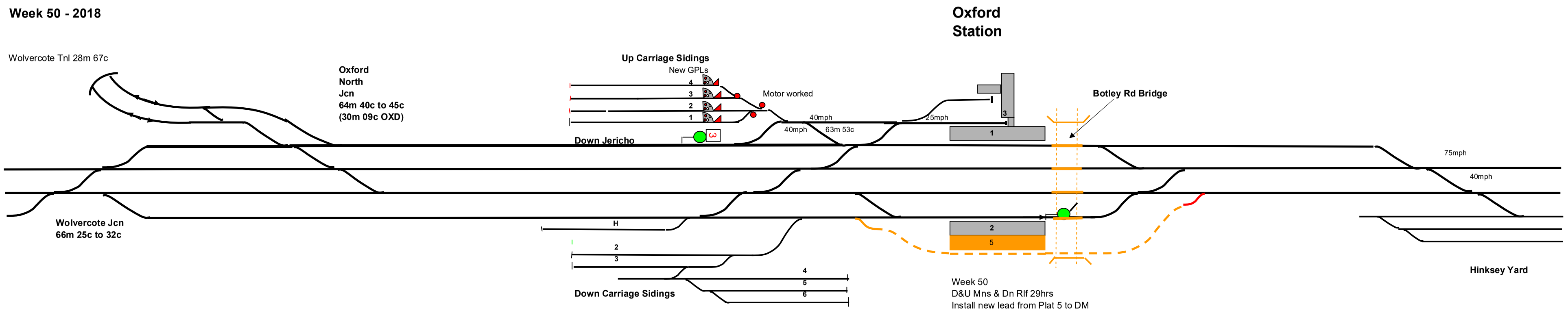
Weeks 41 to 49
Greenfield installing new track across Botley Rd/old Midland sidings
Track materials delivered by rail?
Install signalling etc etc
Install OLE equipment

Week 49 - 2018



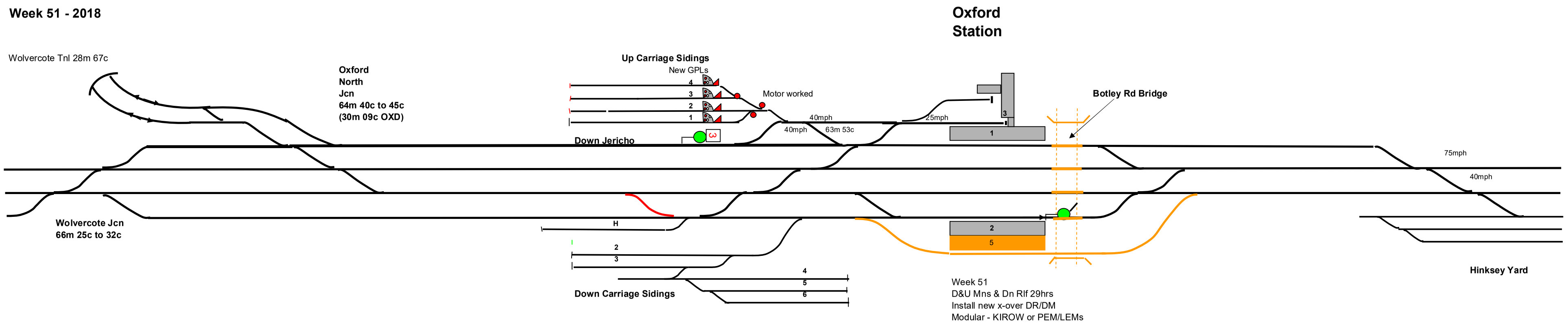
Week 49
Dn Mn & Dn Rlf 29hrs
Install new lead from Plat 5 to DR
Modular - KIROW or PEM/LEMs
Scrap = 1mt salmons, 3mt bass
New S&C = 4 tilting wagons & KIROW 810
Spoil 418t = 7mt falcons
BB 265t = 5ld falcons
TB 146t = 3 falcons
Tamper
Notes
1) Up side open to traffic
2) Working under the wires?
3) 50mph TSR on DR
Opportunities
1) Introduce tamper mid-week

Week 50 - 2018



Week 50
D&U Mns & Dn Rlf 29hrs
Install new lead from Plat 5 to DM
Modular - KIROW or PEM/LEMs
Scrap = 1mt salmons, 3mt bass
New S&C = 4 tilting wagons & KIROW 810
Spoil 418t = 7mt falcons
BB 265t = 5ld falcons
TB 146t = 3 falcons
Tamper
Notes
1) Up Relief open to traffic
2) Working under the wires?
3) 50mph TSR on DMn
Opportunities
1) Introduce tamper mid-week

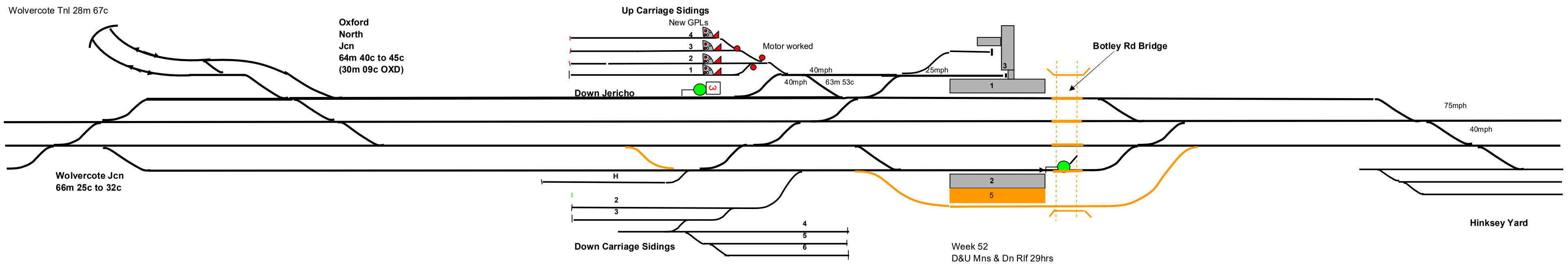
Week 51 - 2018



Week 51
D&U Mns & Dn Rlf 29hrs
Install new x-over DR/DM
Modular - KIROW or PEM/LEMs
Scrap = 2mt salmons, 6mt bass
New S&C = 8 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamp weld and stress
2) Working under the wires?
Notes
1) Up Relief open to traffic
5) 50mph TSR on DMn & DR
Opportunities
1) Introduce tamper mid-week

Week 52 - 2018

Oxford Station

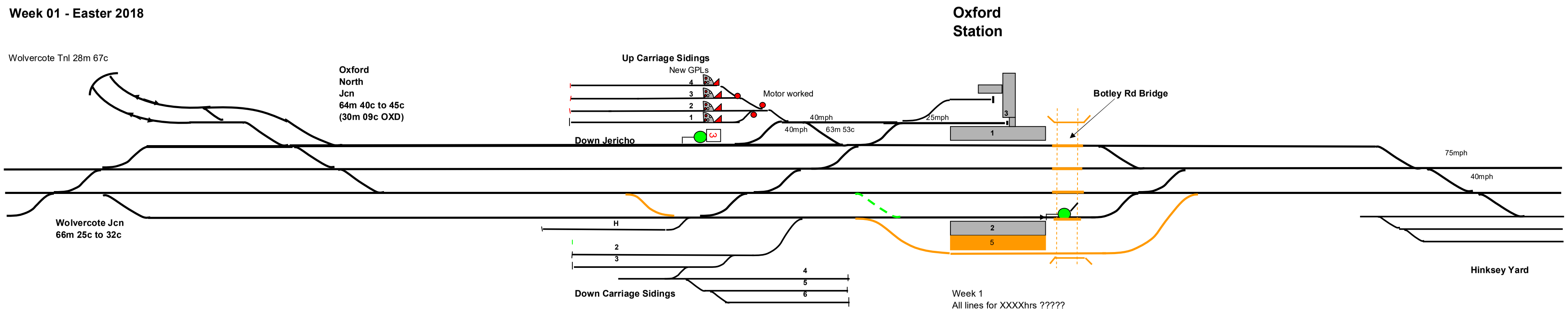


Week 52
D&U Mns & Dn Rlf 29hrs
Tamp weld and stress

Notes
1) Up Relief open to traffic

Opportunities

Week 01 - Easter 2018



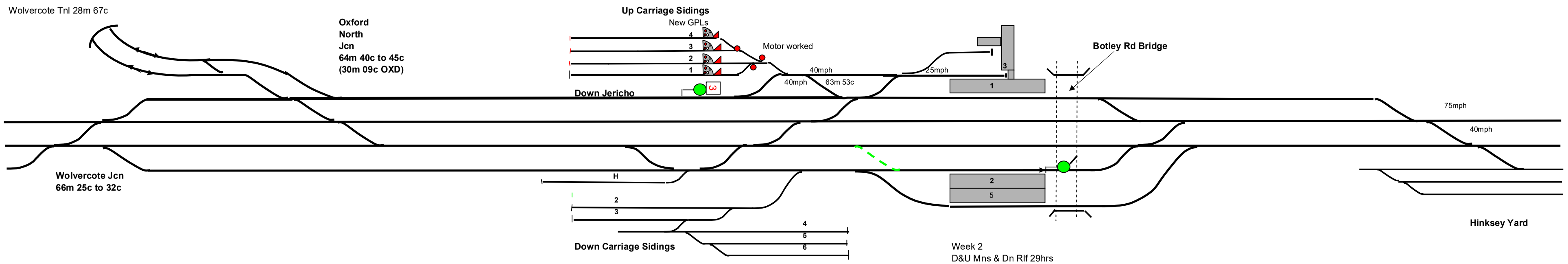
Week 1
All lines for XXXXhrs ?????
Commission new Plat 5

Notes
1) 247a/b clipped OOU

Opportunities
1) Recover 247a/b in blockade

Week 02 - 2018

Oxford
Station



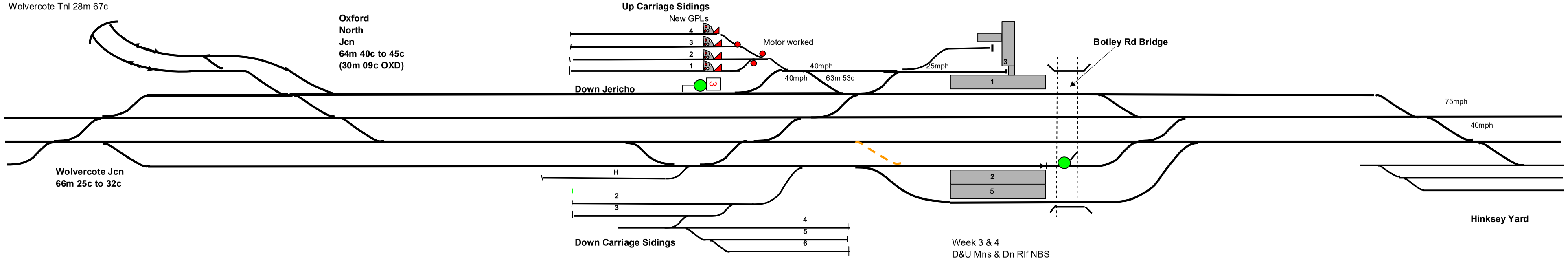
Week 2
D&U Mns & Dn Rlf 29hrs
Recover 247a/b
Scrap = 2mt salmons, 6mt bass
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper

Notes
1) 50mph TSRs on DMn & DR

Opportunities

Weeks 03 & 04 - 2018

Oxford Station

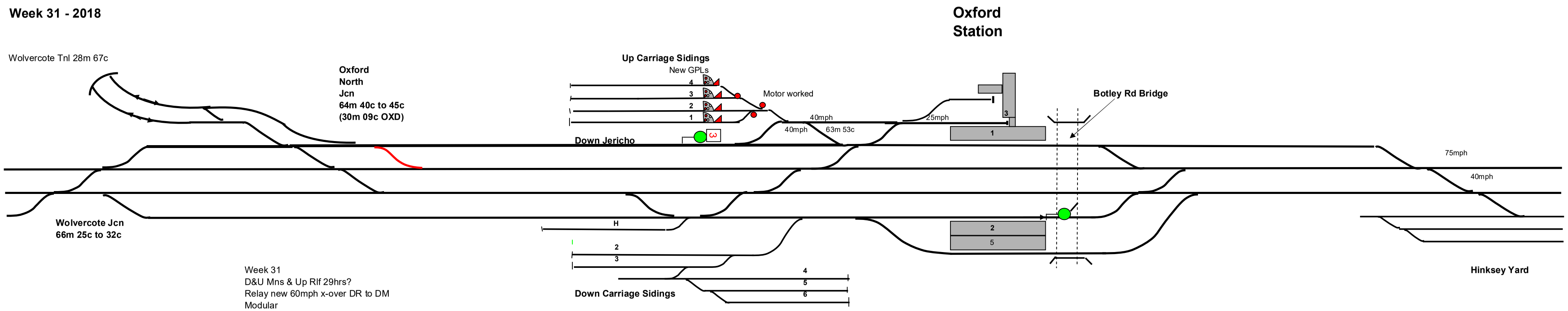


Week 3 & 4
D&U Mns & Dn Rlf NBS
Tamp, weld and stress

Notes

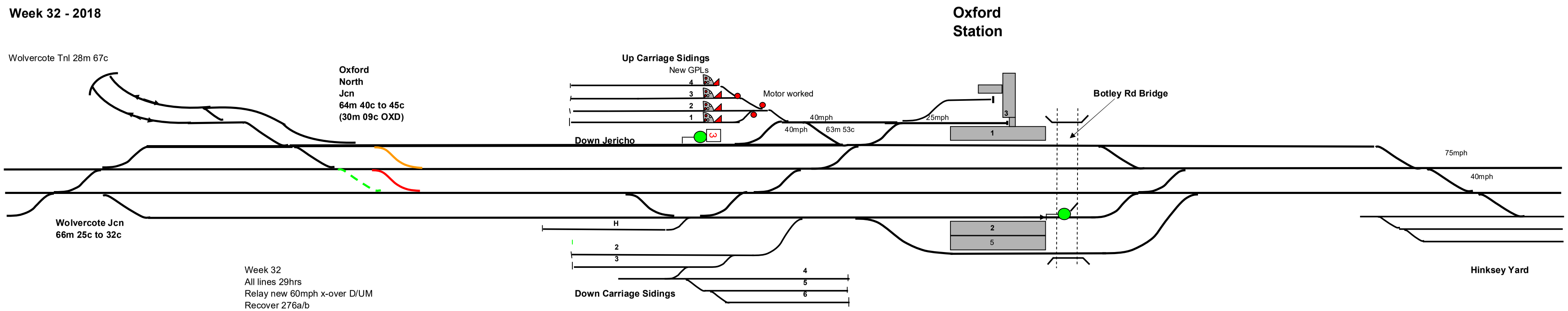
Opportunities

Week 31 - 2018



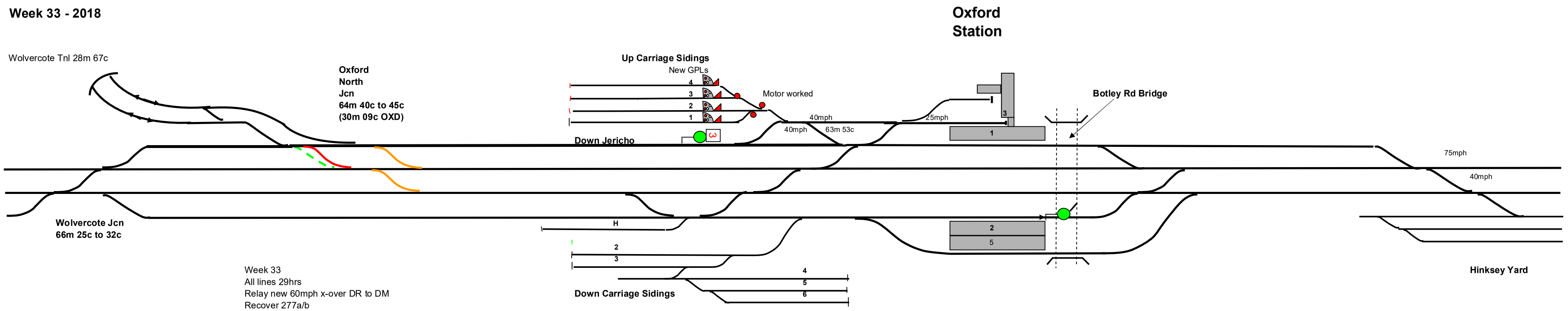
Week 31
D&U Mns & Up Rlf 29hrs?
Relay new 60mph x-over DR to DM
Modular
Scrap = 2mt salmons, 6mt bass
12 tilting wagons, KIROW 1200
TB 438t = 5 falcons
Tamper
Notes
1) Clipped OOU
2) DR (Jericho) footprint will have been reballasted in 2016
3) HO reballasted DM??
4) 50mph TSRs on UR & Umn
Opportunities
1) Realise Item 3) above

Week 32 - 2018



Week 32
All lines 29hrs
Relay new 60mph x-over D/UM
Recover 276a/b
Modular
12 tilting wagons, KIROW 1200
TB 438t = 10 falcons
Tamper
Notes
1) Assumes new x-over will function on existing signalling for 276 albeit at lower speed
2) HO reballasted D UM footprint??
3) 50mph TSRs on D& Umns & UR
Opportunities
1) Realise Item 2) above
2) Cascade modular unit

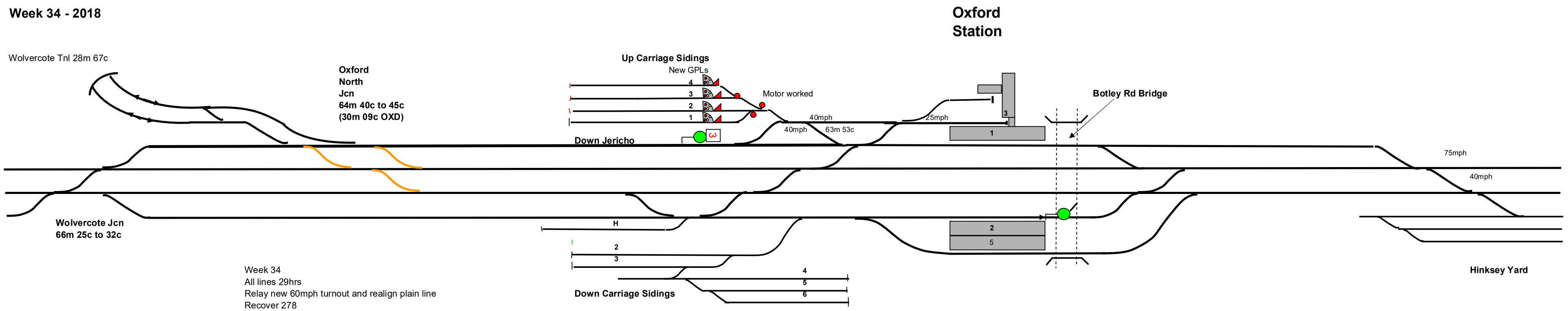
Week 33 - 2018



Week 33
All lines 29hrs
Relay new 60mph x-over DR to DM
Recover 277a/b
New S&C = 12 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper
Notes
1) Assumes new x-over will function on existing signalling for 277 albeit at lower speed
2) 50mph TSRs on U & DMns & UR

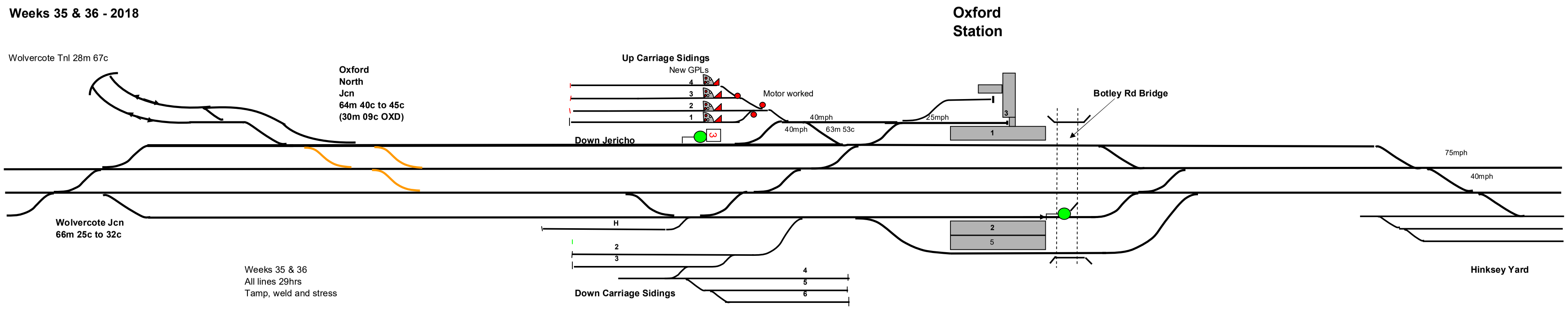
Opportunities
1) Cascade modular unit

Week 34 - 2018



Week 34
All lines 29hrs
Relay new 60mph turnout and realign plain line
Recover 278
New S&C = 6 tilting wagons & KIROW 810
Spoil 836t = 14mt falcons
BB 530t = 9ld falcons
TB 292t = 5 falcons
Tamper
Notes
1) Assumes new lead will function on existing signalling for 278 albeit at lower speed
2) 50mph TSRs on D & UMns & UR
Opportunities
1) Cascade modular unit

Weeks 35 & 36 - 2018

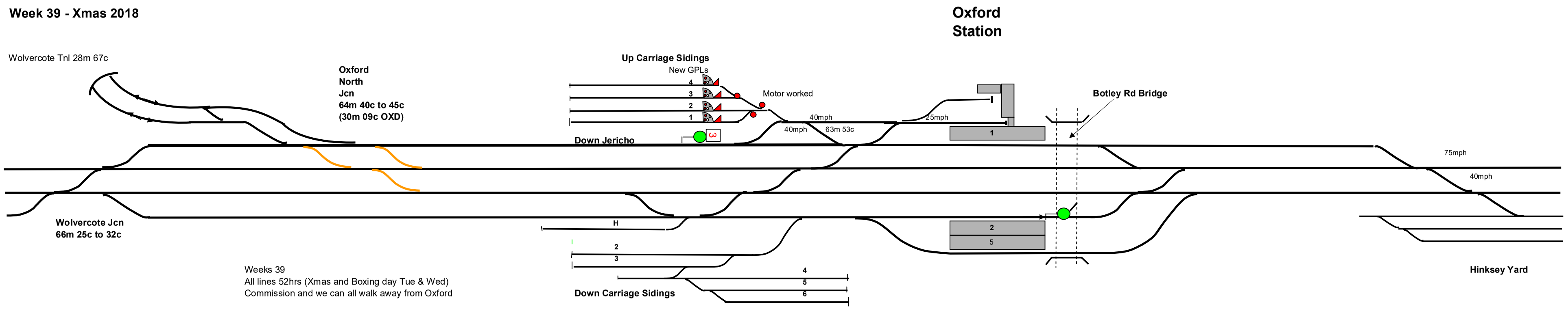


Weeks 35 & 36
All lines 29hrs
Tamp, weld and stress

Notes

Opportunities

Week 39 - Xmas 2018

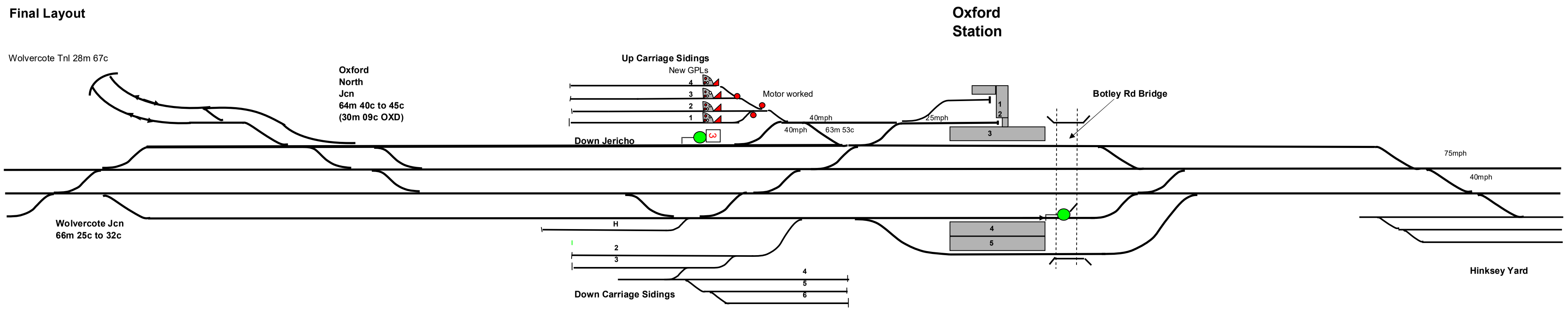


Weeks 39
All lines 52hrs (Xmas and Boxing day Tue & Wed)
Commission and we can all walk away from Oxford

Notes
1) I will have retired

Opportunities
2) Find another strategic planner

Final Layout



Appendix I

(Interdisciplinary Design Reviews)

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Page 1 of 5	Certificate of Interdisciplinary Check					
	Form Ref	NR/L2/INI/02009/F0046	Issue Date	04/06/2011	Issue	01

INTERDISCIPLINARY CHECK (IDC) CERTIFICATE		Page 1
Project No: B90505/122151	Stage: GRIP 2	Certificate No: B90505-IDC-PEN0005
Project Name: CP5 Oxford Corridor		

Description of Design Being Reviewed:

Down Island Platform.

Design review between Track, Civils, Highways, Bridges, M&E. The design has also been reviewed against proposals for the Western Mainline signalling renewal project.

No requirement for other disciplines to input at this GRIP stage

	Discipline Checked Against							
Discipline Checked	Track	Signals	Telecoms	Civils (Platforms)	Civils (Bridges)	Fixed Plant/M&E	OLE	Highways
Track	■	✓	✗	✓	✓	✓	✗	✗
Signals	✓	■	✗	✓	✗	✗	✗	✗
Telecoms	✗	✗	■	✗	✗	✗	✗	✗
Civils (Platforms)	✓	✓	✗	■	✓	✗	✗	✓
Civils (Bridges)	✓	✗	✗	✓	■	✗	✗	✓
Fixed Plant/M&E	✗	✗	✗	✓	✗	■	✗	✗
OLE	✗	✗	✗	✗	✗	✗	■	✗
Highways	✗	✗	✗	✓	✓	✗	✗	■

Page 2 of 8	**Certificate of Interdisciplinary Check**					
	Form Ref	NR/L2/INI/02009/F0046	Issue Date	04/06/2011	Issue	01

IDC Statement:

We the undersigned certify that the drawings listed on the attached schedule(s) in respect of the above project have been the subject of an Interdisciplinary Check, undertaken to eliminate areas of discrepancy between disciplines. This check assumes normal design checks, in accordance with the relevant British, European, Railway Group and Network Rail Company Standards have been carried out by the relevant design organisation(s).

[illegible]

Track	**Tata**	**Mike Cunningham**	**CRE**		4.10.2013
Signalling	**SDG**	**Derek Wilson**	**CRE/RDE**		09 OCT 2013
Telecomms	**Not Required**	-	-	-	-
Civils (Platforms)	**Tata**	**Mike Gill**	**CRE**	M.A. Gill	8.10.13
Civils (Bridges)	**Tata**	**Andrew Wilkinson**	**CRE**		4/10/2013
Fixed Plant/M&E	**Tata**	**Ian Cracknell**	**CRE**		04/10/2013
OLE	**Not Required**	**Not Required**	-	-	-
Highways	**Tata**	**Covered by Mike Gill as part of above**	-	-	-

I certify that all reasonable professional skill and care have been used in the IDC described above.

I certify that the staff that have carried out the IDC described above are suitably qualified and competent to carry out these duties. (To be completed by the Contractor's Engineering Manager)

Name: **David Brown**	Signature:	**Date:** 15/10/2013

I confirm that all the relevant disciplines HAVE / ~~HAVE NOT~~* satisfactorily completed The IDC Process on the above documents and the Process IS / ~~IS NOT~~* complete (To be completed by the Contractor's Engineering Manager)

Comments Attached YES / NO*

Name: **David Brown**	Signature:	**Date:** 15/10/2013

This sheet to be attached to Office Copy of Design Drawing.

SCHEDULE OF DRAWINGS - The inter-disciplinary check was carried out with reference to the following design drawings

Category

1	Accepted – Proceed to GRIP 3 AiP.
2	Accepted – Subject to the design being updated to the attached comments before issuing for construction. Details of the amendments and response schedule, if appropriate, to be forwarded to supplier who raised the comment(s). Author of the document to decide if amendments and response schedule to be forwarded to other suppliers. Proceed to GRIP 3 AiP once updated.
3	Rejected – Document to be amended and reissued to all relevant disciplines.

No.	Document No.	Revision	Document Title	Cat
1	B90505-DRG-PWY2601	P01	Permanent Way, Proposed General Arrangement, Platform 5 Oxford Station, Option 1	2
2	B90505-DRG-PWY2602	P01	Permanent Way, Proposed General Arrangement, Platform 5 Oxford Station, Option 2	2
3	B90505-DRG-CIV0011	P01	Proposed Additional Down Platform Face, General Arrangement, Option 1	2
4	B90505-DRG-CIV0012	P01	Proposed Additional Down Platform Face, General Arrangement, Option 2	2
5	11-GW-040/03	A	Western Mainline Signalling Renewal, Oxford Station, Scheme Plan 3 of 5	1

This sheet to be attached to Office Copy of Design Drawing

SCHEDULE OF INTERFACE ISSUES

Category

1	Accepted – Proceed to GRIP 3 AiP.
2	Accepted – Subject to the design being updated to the attached comments before issuing for construction. Details of the amendments and response schedule, if appropriate, to be forwarded to supplier who raised the comment(s). Author of the document to decide if amendments and response schedule to be forwarded to other suppliers. Proceed to GRIP 3 AiP once updated.
3	Rejected – Document to be amended and reissued to all relevant disciplines.

Document No.	Issue	Category	Raised by	Response by	Date Due
	All comments captured in meeting minutes B90505-IDC-PEN0011 (date 2/10/2013)				

Page 5 of 5	Certificate of Interdisciplinary Check					
	Form Ref	NR/L2/INI/02009/F0046	Issue Date	04/06/2011	Issue	01

ATTENDANCE AT INTER-DISCIPLINARY CHECK MEETING HELD

AT (location): Meeting Room 302, Meridian House, York

ON (date): 2/10/2013 (& by correspondence)

NAME	COMPANY	PROJECT ROLE
David Brown	Tata	CEM
Mike Gill	Tata	CRE (Civils)
Michael Cunningham	Tata	CRE (Track)
Ian Cracknell	Tata	CRE (M&E)
Andrew Wilkinson	Tata	CRE (Bridges)
Andy Willson	Network Rail	DPE
Derek Wilson	SDG	CRE/RDE (Signalling)
John Avery	Tata	Track

INTERDISCIPLINARY CHECK (IDC) CERTIFICATE		Page 1
Project No: B90505/122151	Stage: GRIP 2	Certificate No: B90505-IDC-PEN0006
Project Name: CP5 Oxford Corridor		

Description of Design Being Reviewed:

Botley Road Bridge

Design review between Bridges, Highways and Track

No requirement for other disciplines to input at this GRIP stage

	Discipline Checked Against							
Discipline Checked	Track	Signals	Telecoms	Civils (Platforms)	Civils (Bridges)	Fixed Plant/M&E	OLE	Highways
Track	■	×	×	×	✓	×	×	✓
Signals	×	■	×	×	×	×	×	×
Telecoms	×	×	■	×	×	×	×	×
Civils (Platforms)	×	×	×	■	×	×	×	×
Civils (Bridges)	✓	×	×	×	■	×	×	✓
Fixed Plant/M&E	×	×	×	×	×	■	×	×
OLE	×	×	×	×	×	×	■	×
Highways	×	×	×	×	✓	×	×	■

IDC Statement:

We the undersigned certify that the drawings listed on the attached schedule(s) in respect of the above project have been the subject of an Interdisciplinary Check, undertaken to eliminate areas of discrepancy between disciplines. This check assumes normal design checks, in accordance with the relevant British, European, Railway Group and Network Rail Company Standards have been carried out by the relevant design organisation(s).

Contractor's Engineer Responsible for Interdisciplinary Check

Function	Contractor	Name	Title	Signature	Date
Track	**Tata**	**Mike Cunningham**	**CRE**		2/10/13
Signalling	**SDG**	**Not Required**	-	-	-
Telecomms	**Not Required**	**Not Required**	-	-	-
Civils (Platforms)	**Tata**	**Not Required**	-	-	-
Civils (Bridges)	**Tata**	**Andrew Wilkinson**	**CRE**		7/10/13
Fixed Plant/M&E	**Tata**	**Not Required**	-	-	-
OLE	**Not Required**	**Not Required**	-		-
Highways	**Tata**	**Andrew Pitter**	**Lead Engineer**	A. Pitter	7/10/13

I certify that all reasonable professional skill and care have been used in the IDC described above.

I certify that the staff that have carried out the IDC described above are suitably qualified and competent to carry out these duties. (To be completed by the Contractor's Engineering Manager).

Name: David Brown	Signature:	Date: 7/10/13

I confirm that all the relevant disciplines HAVE / ~~HAVE NOT~~* satisfactorily completed The IDC Process on the above documents and the Process IS / ~~IS NOT~~* complete (To be completed by the Contractor's Engineering Manager).

Comments Attached YES / ~~NO~~*

Name: David Brown	Signature:	Date: 7/10/13

This sheet to be attached to Office Copy of Design Drawing.

SCHEDULE OF DRAWINGS - The inter-disciplinary check was carried out with reference to the following design drawings

Category

1	Accepted – Proceed to GRIP 3 AiP.
2	Accepted – Subject to the design being updated to the attached comments before issuing for construction. Details of the amendments and response schedule, if appropriate, to be forwarded to supplier who raised the comment(s). Author of the document to decide if amendments and response schedule to be forwarded to other suppliers. Proceed to GRIP 3 AiP once updated.
3	Rejected – Document to be amended and reissued to all relevant disciplines.

No.	Document No.	Revision	Document Title	Cat
1	B90505-DRG-INF1001	P01	Botley Road Bridge, Existing General Arrangement	1
2	B90505-DRG-INF1002	P01	Botley Road Bridge, Proposed General Arrangement	2
3	B90505-DRG-CIV0021	P01	Botley Road Bridge Reconstruction, Proposed General Arrangement, Joist in Concrete Deck	2
4	B90505-DRG-CIV0022	P01	Botley Road Bridge Reconstruction, Proposed General Arrangement, Orthotropic Steel Deck	2

This sheet to be attached to Office Copy of Design Drawing

SCHEDULE OF INTERFACE ISSUES

Category	
1	Accepted – Proceed to GRIP 3 AiP.
2	Accepted – Subject to the design being updated to the attached comments before issuing for construction. Details of the amendments and response schedule, if appropriate, to be forwarded to supplier who raised the comment(s). Author of the document to decide if amendments and response schedule to be forwarded to other suppliers. Proceed to GRIP 3 AiP once updated.
3	Rejected – Document to be amended and reissued to all relevant disciplines.

Document No.	Issue	Category	Raised by	Response by	Date Due
B90505-DRG-CIV0021 & 0022	5.2m headroom created beneath Botley Road main span. Review implications on provision of extra headroom over and above required 4.8m	2	AP	AGW	4/10/2013
B90505-DRG-INF1002	Warning triangle missing for known buried services i.e. water main	2	DIB	AP	4/10/2013
	No further comments				

ATTENDANCE AT INTER-DISCIPLINARY CHECK MEETING HELD

AT (location): Meeting Room 302, Meridian House, York

ON (date): 2/10/2013 (& by correspondence)

NAME	COMPANY	PROJECT ROLE
David Brown	Tata	CEM
Andrew Wilkinson	Tata	CRE (Bridges)
Andrew Pitter	Tata	Lead Engineer (Highways)
Michael Cunningham	Tata	CRE (Track)

Appendix J

(Engineering Compliance Certificate)

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NetworkRail **ENGINEERING COMPLIANCE CERTIFICATE NR/L2/INI/02009/F0048**

Ref No: xxx-xxx-xxx-xxx-xxx-xxx

Issue Date: xx/xx/xxxx Version No: 1.0

SECTION 1 Engineering Compliance

Project Title	CP Oxford Corridor	**Design (GRIP) Stage:**	2
NR Project No:	OP 122151	**Work Package:**	(If Applicable)

1A. Project Requirement Specifications (PRS)

PRS Reference No:	1b	**PRS Version:**	Template Version issue 1.13
Agreed Changes to Requirements:		**Doc Ref:**	
N/A			

1B. Reference Documents – Evidence of Compliance

Description (Title/Reference):	**Date:**	**Version:**
The scope document supplied with the contract has been complied with through the issue and acceptance of the drawings and reports as included within Appendix A of this Certificate		

1C. Exceptions

Details of any non-compliances or partial compliances to the PRS, incomplete or unapproved deliverables, outstanding derrogations / TNC's to Company or Group Standards.

Exception Description:	**Ref No** (If applicable)	**Form** (of Acceptance)	**Date** (of Acceptance)
None at this GRIP stage			

1D. Statement of Compliance - Project Approval & Acceptance

I confirm the information included in this document demonstrates compliance to the engineering requirements detailed in the PRS and to all applicable Standards unless specified otherwise in this document.

Confirmed by Designated Project Engineer	
DPE Name: Andy Willson	Signed:
Comments: None.	
Endorsed by Project Manager*	
Name: GARY OAKES	Signed:
Comments: NONE.	
Accepted by Client Representative*	
Name: BEN STEVENS	Signed:
Comments: NONE	

---

* *In accepting this ECC, the Project Manager and the Client Representative confirm that all partial/non-compliances and outstanding items do not introduce unacceptable project or technical risk and any established recovery plan and timescales have been agreed. The Client Representative should liaise with relevant RAMs or other subject experts to confirm that any technical implications of this certificate are clearly understood.*

ENGINEERING COMPLIANCE CERTIFICATE NR/L2/INI/02009/F0048
Ref No: xxx-xxx-xxx-xxx-xxx-xxx
Issue Date: xx/xx/xxxx Version No: 1.0

SECTION 2. Supplier Compliance to Contract Requirements - Technical

Compliance to be demonstrated by the Supplier, reference should be made to the Guidance Document for completion of the form.

2A. Technical Specification for the Works

CR-T Reference No:	CR-T unavailable at current GRIP stage	**Version:**	N/A
Change Title:		**Doc Ref No:**	
Network Rail Conditions of Contract for Construction & Engineering Services (Contract Specific Conditions, Schedule 1)		Version 3 3	

2B. Statement of Compliance

I certify that all the requirements contained within the Contract Requirements – Technical are completed in accordance with NR/L2/INI/02009. All exceptions to this statement are defined in section 2C.

2C. Exceptions

The following table details all Exceptions to the agreed Contract Requirements – Technical issued for the works and/or deviations from Standards.

Exception Description:	Ref No:	Agreed By
Dynamis/Route Runner exercise. Removed from scope	Page 34 (scope doc)	Gary Oakes/James Xeielleon

2D. Acceptance Details

Contractors Engineering Manager (CEM)	
Name David Brown	Company: Tata Steel Projects
Signed:	Date: 7/5/2014

I **do / do not*** accept the information and declaration detailed by the CEM above. * delete as appropriate

Name:	**Date:** 14/03/14
DPE Andy Willson	Signed:
Comments: None. Good standard of work achieved by Tata.	

Document Review Notice

DRN No:

Project Number:	122151	**Project Name:**	Oxford corridor enhancements
Project Manager:	Gary Oakes	**Principal Contractor:**	
Engineering Deliverable Owner:	Tata Steel UK Rail Consultancy Ltd	**CEM Name:**	David Brown
Submission Discipline:	Multi-Discipline	**CRE Name:**	

Document Number:	**Document Title:**	**Revision**
B90505-DRG-CIV0001	Bi-Ox bay platforms, proposed GA, option 1	P05
B90505-DRG-CIV0002	Bi-Ox bay platforms, proposed GA, option 2	P05
B90505-DRG-CIV0003	Bi-Ox bay platforms, proposed GA,option 3	P05
B90505-DRG-CIV0004	Bi-Ox bay platforms, existing GA	P01
B90505-DRG-CIV0010	Proposed additional Down platform facer, existing GA	P01
B90505-DRG-CIV0011	Proposed additional Down platform face, GA, option 1	P03
B90505-DRG-CIV0012	Proposed additional Down platform face, GA, option 2	P03
B90505-DRG-CIV0031	Down island platform, Sheepwash bridge alterations, option 1	P02
B90505-DRG-CIV0035	Cemetery footbridge modifications, proposed GA, track option 1	P02
B90505-DRG-CIV0036	Cemetery footbridge modifications, proposed GA, track option 2	P02
Various	Report words	

Document Transmittal/Submission No:			
Date Received:	07/03/14	**Date Return Required:**	
REVIEWERS:-	**DRN No:**	**DRN Date:**	10/03/14

Name	**Position**	**Discipline**	**Signature**
Andy Willson	SPE	Multi-Discipline - (Lead)	
Emma Lewis	SPE	Civils	

DISTRIBUTION LIST (of completed review):-

Name	**Position**	**Action Required**
Gary Oakes	NR PM	Information
David Brown	Tata CEM	Action

Document Type under DRN:	**PDF** ☐	**Source Data** ☐	**Two Dimensional** ☐	**Model** ☐
DOCUMENT REVIEW:-			**Risk Review Level:**	Key Features
Overall DRN Category	**Rejected** Non-compliant to contract	**Accepted**	**Accepted** with Amendments	**Not Accepted** Revise & Resubmit
1	**0**	**1**	**2**	**3**

- ➢ The acceptance of these documents by Network Rail shall not be deemed as validation of the submission and nor does it infer their fitness for purpose. Network Rail does not accept any liability for the submission.
- ➢ Any changes to the documents should be undertaken in accordance with your organisation's approved change control procedures. Such variations must be formally recorded and evidence should accompany any resubmission.
- ➢ Without relieving the originating organisation of their contractual responsibilities my comments are as follows:
  - Overall DRN Category 0 rejected and a category 3 non acceptance requires the whole document(s) to be revised and resubmitted to address the comments. Prior to any re-work a way forward shall be agreed between supplier and the Designated Project Engineer
  - Overall DRN Category 2 acceptance with amendments requires the appropriate responses with additional information to be submitted to address the comments
  - Comment types 2A, 2B, 3A and 3B require a written response & Comment type 4 is for information only
- ➢ For comments types 2 or 3 a suffix is added to the comment type: **A**) Quality of Supplier's submission or **B**) Client preference/changes.

****Issued By:**	Andy Willson	**Signature:**		**Date:**	10/03/14

Document Review Notice

DRN No:

DRN ACCEPTANCE AND/OR CLOSED OUT (including Supplier’s responses)**:-**					
****Closed By:**	Andy Willson	**Signature:**		**Date:**	10/03/14

**Only to be signed by the Project Designated Project Engineer or person with such formally recorded delegated authority. Review comments to be returned to Supplier via control process agreed between the Project Manager and Supplier.

Document Review Notice

DRN No:

Network Rail (NR)				Supplier			NR
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *
	Bay platform civils (drawings 0001-0004)						
1	Following stakeholder consultation option 1 (drawing 0001) will be the option taken forward, with work to try and future proof it for a speculative future extension of one of the bay platforms to create an Up island platform.	AW	4	Yes	Noted. Coherent future proofing of all assets could be facilitated by holding an interdisciplinary review of stakeholder aspirations at the next design stage.	MAG	Yes
2	Next GRIP stage to consider maximising car parking in the remaining space, so that the minimum existing spaces are lost.	AW	4	Yes	Noted. The next design stage will investigate reconfiguration of the parking area to optimise the number of spaces to best utilise the available land following demolition of the building.	MAG	Yes
	Down island platform civils (drawings 0010-0012)						
3	Following stakeholder consultation option 2 (drawing 0012) will be the option taken forward.	AW	4	Yes	Noted	MAG	
4	In conjunction with Botley Road bridge design the next stage to consider whether platform 5 at the London end should be higher than platform 4 to give easier bridge road clearance height, with a tapered step at the London end of the island platform.	AW	4	Yes	Noted that there could be a difference in level between Platforms 5 and 4 as a result of Botley Road bridge. This could be a problem with the south end access if developed. Careful detailing will be required at interfaces with platform buildings.	MAG	Yes
	Down island platform, associated bridge civils (drawings 0031, 0035 and 0036)						
5	Following stakeholder consultation option 2 (drawing 0036) will be the option taken forward for Cemetery footbridge).	AW	4	Yes	Noted	AGW	
6	You have not dimensioned the extent that the west steps to the footbridge (drawing 0012) are moving which is a key design issue. I am concerned that these will 'poke' out into the road end and may block access to gates in that corner. This needs to be explored further, and the steps may need to be cranked at 90 degrees, or rearranged.	AW	2A	Yes	Dimension will be added, a plan view showing new step location will be added to clarify exact extent of works required. I assume you meant to say drawings 0035 & 0036?	AGW	Yes
6A	Dimensioned, but the bridge is not considered in its surroundings (eg in plan view) so there is still no clarity on what the relocation of the steps will do to the access road and the entrance to the flats (under	AW	4				

* Click in the last Cell (Column) to add a new row after the selected cell or to delete the selected row

Document Review Notice

DRN No:

Network Rail (NR)				Supplier			NR
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *
	construction) nearby. To be resolved at next GRIP stage where we may in any event need to consider ramped access.						

END

* Click in the last Cell (Column) to add a new row after the selected cell or to delete the selected row

DRN No:

Document Review Notice

Project Number:	122151	**Project Name:**	Oxford corridor enhancements
Project Manager:	Gary Oakes	**Principal Contractor:**	
Engineering Deliverable Owner:	Tata Steel UK Rail Consultancy Ltd	**CEM Name:**	David Brown
Submission Discipline:	Multi-Discipline	**CRE Name:**	Michael Cunningham

Document Number:	**Document Title:**	**Revision**
B90505-DRG-PWY2100	Proposed GA, Oxford North Junction, 60mph option	P02
B90505-DRG-PWY2110	Proposed GA, Oxford North Junction, 70mph option	P02
B90505-DRG-PWY2201	Proposed GA, Oxford bay platforms, option 1	P03
B90505-DRG-PWY2202	Proposed GA, Oxford bay platforms, option 2	P03
B90505-DRG-PWY2203	Proposed GA, Oxford bay platforms, option 3	P03
B90505-DRG-PWY2301	Proposed GA, Oxford station north ladder, option 1	P03
B90505-DRG-PWY2302	Proposed GA, Oxford station north ladder, option 2	P03
B90505-DRG-PWY2303	Proposed GA, Oxford station north ladder, option 3	P03
B90505-DRG-PWY2304	Proposed GA, Oxford station north ladder, option 4	P01
B90505-DRG-PWY2305	Proposed GA, Oxford station north ladder, option 5	P01
B90505-DRG-PWY2306	Proposed GA, Oxford station north ladder, option 6	P01
B90505-DRG-PWY2371	Oxford station north ladder, alternative options sketch	P01
B90505-SCH-PWY2300	Oxford station north ladder, option summary	P01
B90505-DRG-PWY2401	Proposed GA, Oxford Down sidings, option 1	P04
B90505-DRG-PWY2402	Proposed GA, Oxford Down sidings, option 2	P04
B90505-DRG-PWY2403	Proposed GA, Oxford Down sidings, option 3	P03
B90505-DRG-PWY-2501	Proposed GA, Oxford Up sidings, option 1	P03
B90505-DRG-PWY2601	Proposed GA, platform 5, Oxford station, option 1	P02
B90505-DRG-PWY2602	Proposed GA, platform 5, Oxford station, option 2	P02
B90505-DRG-PWY2701	Proposed GA, Up island platform Oxford station, option 1	P01
B90505-SKE-PWY2700	Up island platform options powerpoint	-
Various	Report words	-
B80080-DRG-PWY0001	Proposed GA, Appleford crossover	P01
B80080-DRG-PWY0002	Proposed GA, Hinksey North Junction	P01
B80080-DRG-PWY0003	Proposed GA, Oxford station	P01
B80080-DRG-PWY0004	Proposed GA, Oxford carriage sidings	P01
B80080-DRG-PWY0005	Proposed GA, Oxford North Junction	P01
B80080-DRG-PWY-0006	Proposed GA, Wolvercot Common	P01
B80080-DRG-PWY-0007	Proposed GA, Wolvercot South Junction	P01
B80080-DRG-PWY-0008	Proposed GA, Tackley crossovers	P01

Document Transmittal/Submission No:				
Date Received:	Various	**Date Return Required:**		
REVIEWERS:-	**DRN No:**		**DRN Date:**	19/02/14

Name	**Position**	**Discipline**	**Signature**
Andy Willson	SPE	Multi-Discipline - (Lead)	
Aleks Sienkiewicz	PE	Track	

DISTRIBUTION LIST (of completed review):-

Name	**Position**	**Action Required**
Gary Oakes	NR PM	Information
David Brown	Tata CEM	Action

DRN No:

Document Review Notice

Document Type under DRN:	**PDF** ☒	**Source Data** ☐	**Two Dimensional** ☐	**Model** ☐
DOCUMENT REVIEW:-			**Risk Review Level:**	Key Features
Overall DRN Category	**Rejected** Non-compliant to contract	**Accepted**	**Accepted** with Amendments	**Not Accepted** Revise & Resubmit
1	**0**	**1**	**2**	**3**

- The acceptance of these documents by Network Rail shall not be deemed as validation of the submission and nor does it infer their fitness for purpose. Network Rail does not accept any liability for the submission.
- Any changes to the documents should be undertaken in accordance with your organisation's approved change control procedures. Such variations must be formally recorded and evidence should accompany any resubmission.
- Without relieving the originating organisation of their contractual responsibilities my comments are as follows:
  - Overall DRN Category 0 rejected and a category 3 non acceptance requires the whole document(s) to be revised and resubmitted to address the comments. Prior to any re-work a way forward shall be agreed between supplier and the Designated Project Engineer
  - Overall DRN Category 2 acceptance with amendments requires the appropriate responses with additional information to be submitted to address the comments
  - Comment types 2A, 2B, 3A and 3B require a written response & Comment type 4 is for information only
- For comments types 2 or 3 a suffix is added to the comment type: **A**) Quality of Supplier's submission or **B**) Client preference/changes.

****Issued By:**	Andy Willson	**Signature:**		**Date:**	19/02/14

DRN ACCEPTANCE AND/OR CLOSED OUT (including Supplier's responses)**:-**

****Closed By:**	Andy Willson	**Signature:**		**Date:**	19/02/14

**Only to be signed by the Project Designated Project Engineer or person with such formally recorded delegated authority. Review comments to be returned to Supplier via control process agreed between the Project Manager and Supplier.

Document Review Notice

DRN No:

Network Rail (NR)				Supplier			NR
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *
	Oxford North Junction (drawings 2100 and 2110)						
1	Following stakeholder consultation drawing 2110 should be taken forward, with the exceptional values used to create a 75mph junction (cant must be 30mm). This then allows diverging routes to be arranged with a mainline speed of 85mph and therefore the differential allows 'free' signal aspects for turnout routes.	AW	4	Yes	Noted, design to be developed at GRIP 3 accordingly..	MC	Yes
2	At next GRIP stage I will supply a CAD file for the Down Relief (freight train lengthening) works, which should be added to the drawing, as they will be completed before this work.	AW	4	Yes	Noted. Down Relief alignment to be incorporated.	MC	Yes
3	From a site walk I believe there is in fact no ditch to be culverted by the new lines, though this can be confirmed by GRIP 3 survey and environmental review.	AW	4	Yes	Noted. To be reviewed at GRIP 3 with geo-environmental team input.	MC	Yes
4	It now transpires that there will not be a new REB at Oxford North Junction but instead a group of 4 loc cases. This information can be confirmed and added to the drawings at the next GRIP stage.	AW	4	Yes	Noted. Information to be added at next GRIP stage.	MC	Yes
5	Noted that the cant at crossover 'F' on the Bicester branch is shown as 30mm but the plain line adjacent is shown as 40mm. I believe that if both are canted at 35mm 50mph crossover speed may be achievable.	AS	4	Yes	Agreed, 35mm cant to be applied throughout. 50mph crossover speed would require use of NR60 S&C due to 110mm Cant Deficiency on contra flexure switches (comment 6 noted).	MC	Yes
6	NR need to confirm that crossover 'F' should be NR60 (non preferred but compatible with the rest of the junction) vice an Ev.	AS	4	Yes	Noted. Design to be revised at GRIP 3 following confirmation of use of non-preferred S&C.	MC	Yes
7	75mph should be acceptable on the Bicester line (higher than normal cant/cant transitions).	AS	4	Yes	Noted. Design to progress on the basis of using Maximum curving design values including Cant Deficiency in excess of Applied Cant. It is acknowledged that this has been discussed and agreed in principle with the RAM (Track).	MC	Yes
8	Need to look very carefully at the track alignments through the canal underbridge girders to see that they are feasible, and to confirm that the bridge will accept the extra ballast weight of 135mm cant.	AS	4	Yes	Agreed. Design alignment will be developed based on gauging and topographical survey data to achieve optimum structural clearances. Track designer to liaise with structures engineer to assess	MC	Yes

* Click in the last Cell (Column) to add a new row after the selected cell or to delete the selected row

Network Rail (NR)				Supplier			NR
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *
					impact on structural loading capacity.		
	Oxford bay platforms (drawings 2201 - 2203)						
9	Following stakeholder consultation option 1 (drawing 2201) will be the option taken forward, with work to try and future proof it for a speculative future extension of one of the bay platforms to create an Up island platform.	AW	4	Yes	Noted. See comment 30.	MC	Yes
10	Please note that I do not consider the 'orange' additional car lengths as feasible, for all the reasons listed in your box notes, therefore the ongoing design should be on the basis of the shorter 'blue' train lengths shown.	AW	4	Yes	Noted. Platforms to be designed for “blue” train lengths.	MC	Yes
11	Further to development of the station north ladder confirming toe to toe S&C positions the first activity in the next GRIP stage should be provision of an assessment of existing 244C points and a decision on their retention or (more likely) what suitable S&C can replace them and therefore any implications on the bay platforms track layout/alignment.	AW	4	Yes	During the meeting on 28th Fenruary 2014 with A Willson and D Brown at Tata's office in York it was confirmed that this unit would be renewed. The design will be developed on this basis at the next GRIP stage.	MC	Yes
	Oxford station north ladder (drawings 2301-2306 plus 2371)					MC	
12	Following stakeholder consultation option 5 (drawing 2305) will be the option taken forward, with work to try and 'tweak' it further at the next GRIP stage. This option is considered capable of 'closing up' slightly so that it will just meet the remit standage requirements and with significantly less disruptive construction than option 4. At the next stage further efforts will need to be made to try and develop a design which can be staged for construction, with minimum abnormal possession durations and minimum loss of functionality between each possession stage. It is at present intended to try and achieve the ladder re-modelling in a series of 4 off 52 hour possessions.	AW	4	Yes	Noted. If this option is to be taken forward further work is required to confirm the feasibility of the two – levelling required and the implications for future maintenance.	MC	Yes

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Document Review Notice

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No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *
13	The presently assumed of 40mph then 65mph for the Down Relief was driven by a previous feasibility study decision to speed raise the platform 2 (future platform 4) entrance speed from 25 to 40mph and the maximum speed that is allowable on the through route of a double slip (also 40mph) with 65mph then following on to match the attainable speed of a class 220 train before the 90mph extent of the Down Relief could be reached. As this scheme shows entrance to new platforms 4 and 5 at probably 45 or 50mph and as the constraint of the Down Relief double slip is now removed it may be worth re-looking at speeds to see what is best achieved with the minimum number of changes to drivers, eg 50mph throughout to the new DR-DM crossover and then straight to 90mph???	AW	4	Yes	Agreed, this now needs refining. However, depending on the final layout developed for the ladder it may be necessary to limit the speed on the Down Relief to 40mph until just north of the ladder.	MC	Yes
14	It may be worth considering using CVs10 STR S&C throughout rather than CVs13T, as this will save space and make a single set of spares suitable for the whole layout. As most moves through the crossovers will be empty stock the normal reason for CV13 (passenger comfort) will not normally be an issue.	AS	4	Yes	Noted, see comment 15.	MC	Yes
15	In conjunction with the above point, there would appear to be a number of options available to try and achieve the required 260m standage - By utilising CV10 STR S&C for the main to relief crossover an estimated 5m could be saved - By reducing the toe to toe from this crossing to the siding entrance to the minimum of 6.14m a further 8m could be saved. - Using a CV10 (or CV9.25) for the siding connection a few more metres would be saved. These thing combined should give more than the required extra 13m standage. (although the reduced toe to toe is undesirable) Additionally it is worth considering the use of a CV10STR crossover for this depot connection (with the	AS	4	Yes	Noted. Design to be developed to maximise standage through the use of a crossover arrangement for the turnback siding connection, reduced toe to toe dimensions and non-preferred S&C units. The latter two points will need the buy in of the RAM (Track), although it is noted that the use of non-preferred S&C has already been discussed and agreed in principle with the RAM (Track)).	MC	Yes

Network Rail (NR)				Supplier			NR	
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted**	*
	through route becoming the trap). This would save approx 20m on the current toe to toe. The alignment of the siding would need to be reworked but it would appear that at low speed there is sufficient space to make it fit, there may also be an issue with cant/ two levelling. If 20m is gained then the toe of this new crossover could actually move north by say 5m and still achieve the standage. By doing this it may then be possible to bring the down main to relief crossover further north (using a CV10) and increase the toe to toe on the down main (undesirable at 6.14m) to approx 15m (may also be some gains for toe to toe on up main)							
	Oxford Down sidings (drawings 2401-2403)							
16	Following stakeholder consultation option 1 (drawing 2401)will be the option taken forward.	AW	4	Yes	Noted.	MC		
17	By using a shallower angle switch (CV10 STR rather than 9.25) and sliding the connection to the sidings to the south by approx 15m you would have an extra 13m (approx) between Long bearers to run out the cant and avoid two levelling. This is obviously dependant on being able to fit a new curved element in between the turnout and the trap, and noting that the through alignment in 2305 is different to that shown in orange on this drawing (it may be the case that the S&C will naturally slide to the south to hit the 2305 alignment anyway)	AS	4	Yes	Noted. Design to be developed based on Option 1 drawing with modifications to make this compatible with the final ladder arrangement.	MC	Yes	
18	To achieve the best siding arrangement in conjunction with preferred ladder option (drawing 2305) another iteration would be useful. I suggest this could be done at the start of the next GRIP stage, as a starting point for that design. This raises the potential to make the siding intervals more efficient and therefore potentially get them closer to the existing alignment and possibly circa 20m longer.	AS	4	Yes	Noted, as above.	MC		

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No	Comments	By	Type	Comment Accepted	Responses	By	Response Accepted *
	Oxford Up sidings (drawing 2501)						
19	I am only aware of one option for the Up sidings (so the option 1 title should be removed from drawing 2501).	AW	4	Yes	Agreed.	MC	Yes
20	I have been unable to find evidence of the 'ponds' at site so believe these may not be an issue, subject to full survey and environmental assessment.	AW	4	Yes	Noted. Results of geotechnical GI survey and desk study to inform design at GRIP 3.	MC	Yes
21	I would like to continue with the option of retaining the south end headshunt/siding within the design going forward, if feasible. This would form a useful facility for a crippled 4 or 8 car unit clear of the main portion of the sidings, or to access between sidings without going on to the main line.	AW	4	Yes	Noted. Headshunt to be retained. Further design development will be necessary to provide sufficient space for any necessary cant transitions – dependant on the final ladder layout.	MC	Yes
22	I don't think the FTN mast (near the north end of the sidings) is picked upon the base plan. This needs to be considered at the next stage.	AW	4	Yes	Noted. Topographical survey should address this at GRIP 3. Design to be reviewed once FTN position is confirmed.	MC	Yes
23	To achieve the best siding arrangement in conjunction with preferred ladder option (drawing 2305) another iteration would be useful. I suggest this could be done at the start of the next GRIP stage, as a starting point for that design. In particular whether there is a cant transition coming off the CV9.25 turnout (not currently shown on 2305), which may allow the sidings to be closer to the mainline (dependent on electrification designer response, as above) and the option for retention of a south end headhsunt also becomes more feasible.	AS	4	Yes	Agreed. The presence of a cant transition will be dependent on the final ladder layout. It should be feasible to close up the interval to match that on the Down side. Early engagement with OLE designer required at GRIP 3 to confirm minimum interval to allow independent isolation of sidings and main lines.	MC	Yes
	Oxford Down island platform (drawings 2601 - 2602)						
24	Following stakeholder consultation option 2 (drawing 2602) will be the option taken forward, as this appears to give the best staging for construction. If however the next stage of design challenges this decision it is not set in stone.	AW	4	Yes	Noted. However, further consideration is required if the intention during staging is to install crossover “D” prior to reconstruction of Botley Road underbridge. The alignment may require minor slues through the direct fastenings on the bridge – there may be baseplate solutions to assist with this, or it may be possible to “tweak” the alignment to avoid slues. The	MC	Yes

Network Rail (NR)				Supplier			NR
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					transition from direct fix construction to ballasted track will also need to be carefully managed, particularly in the vicinity of the proposed switch toes. If there is a risk that this interim stage could become the final stage (if reconstruction of Botley Road is not undertaken), this may not be a desirable long term solution.		
25	It is considered that turnout 'A' may be suitable to be 'tweaked' for 50mph, so this should be considered at the next design stage. if the cant is run at 60mm (with 55mm deficiency) turnout 'A' should be fit for 50mph.	AW/AS	4	Yes	Agreed, design to be revised at GRIP3.	MC	Yes
26	The 1500m radius (at chainage 20660) could be run without cant, similar to already applied at the north end, which would be preferable in a platform.	AS	4	Yes	Agreed, design to be amended at GRIP 3.	MC	Yes
	Oxford Up island platform initial speculative feasibility (drawing 2701)						
27	At present this option is unfunded and not clearly remitted, so no further work is required at this time.	AW	4	Yes	Noted.	MC	
28	At the south end of the layout there is a 50mph F turnout but above the footbridge is a note referring to a 40mph F turnout. I am not sure whether this is a typo or related to an earlier version of the Down side arrangement, but I am assuming 50mph is achievable.	AW	4	Yes	This is a typo, it is confirmed that 50mph is achievable for this turnout.	MC	Yes
29	At the north end of the platform there is a short 15mph section on a very sharp radius, which I would expect to be smoothed to achieve a higher speed, such as 50mph, if this part of the scheme is taken forward.	AW	4	Yes	The geometry at the north end will depend upon the final layout adopted for the bay platforms. A wider island platform may help flatten this curve, but the alignment is likely to remain constrained, to an extent, by the proximity of the north end of the platform to Sheepwash underbridge, 50mph may be difficult to achieve.	MC	Yes
30	The option shown assumes correctly that a circa 8m wide platform (with very limited platform buildings)will not be acceptable, therefore takes the future bay platform 1 alignment and extends it. If this part of the scheme is taken forward there would need to be work	AW	4	Yes	Noted. It may be worth investigating the possibility of moving proposed Platform 1 further south to allow proposed Platform 2 to be retained in the event of the Up island scheme being implemented.	MC	Yes

* Click in the last Cell (Column) to add a new row after the selected cell or to delete the selected row

Network Rail (NR)				Supplier			NR
No	Comments	By	Type	Comment Accepted	Responses	By	Response Accepted *
	carried out to see what length of bay platform 2 could be retained and what useable lengths this would give to the two island platform faces, before a decision on the proposed way forward.						
	Previous feasibility study works (drawings 0001 to 0008)						
31	It is confirmed that the proposed additional crossover at Didcot West will not be proceeded with, so drawing 0001 is no longer required. Bi-di running will be achieved fromDidcot Parkway platforms 4/5 (but not platform 3) and from GWML Swindon direction via one line only (and not from the power station) by additional signalled routes over existing S&C.	AW	4	Yes	Noted.	MC	Yes
32	It is confirmed that Appleford crossover is to be speed raised in situ from 15 to 25mph, following survey and 'minor refurbishment'. There is presently no drawing covering this area.	AW	4	Yes	Noted. It is assumed that the RAM (Track) or local maintenance team will undertake a detailed S&C inspection to inform the scope of the minor refurbishment works. If a requirement for a alignment smoothing scheme is identified to allow a design tamp to be implemented this can be undertaken as part of the design works at GRIP 3.	MC	Yes
33	It is confirmed that drawings 0002-0007 will be proceeded with (speed raising the Up Passenger Loop and Down Jericho all renamed as Up Relief to 90 then 75mph). These drawings need to be updated going forward and amalgamated with the Oxford station area/Oxford North Junction designs. Drawings 0004-0007 should be amended to show the Down Relief (freight train lengthening project) completed in advance.	AW	4	Yes	Agreed, drawings to be incorporated into single co-ordinated design. Further work will be required at the next GRIP stage to assess track components and ballast / formation suitability for the proposed line speed.	MC	Yes
34	It is confirmed that Tackley crossovers (drawing 0008) will be relaid and motorised to provide a 40mph double crossover.	AW	4	Yes	Noted, design to be developed based on drawing 0008.	MC	Yes

* Click in the last Cell (Column) to add a new row after the selected cell or to delete the selected row

Document Review Notice

DRN No:

Network Rail (NR)				Supplier			NR
No	**Comments**	**By**	**Type**	**Comment Accepted**	**Responses**	**By**	**Response Accepted** *

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Appendix K

(Land Registry)

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19404/0014

DUPLICATE SUPPLIED

MEMORANDUM OF AGREEMENT made this [illegible] day of February One Thousand Nine Hundred and twenty-one between THE GREAT WESTERN RAILWAY COMPANY (hereinafter called "the Company") by William Herbert Williams of Paddington, their Agent of the one part, and The Oxford Diocesan Branch of the Church of England Temperance Society; by Henry Ferris Pike of 8, New Inn Hall Street, Oxford, their Secretary (hereinafter called "the Licensees" of the other part).

1. IN CONSIDERATION of the yearly sum of FIVE SHILLINGS to be paid in advance by the Licensees to the Company on the twenty-ninth day of September in every year (as from the twenty-ninth day of September, One Thousand Nine Hundred and twenty-one) the Company will permit the Licensees during the continuance of this Agreement to enjoy the access of light and air from and over the Company's adjoining property to six windows as shewn on the elevation (print No. 1 attached hereto) together with the privilege of access over the Company's Property to the serving hatch in a certain Refreshment Room shewn coloured the site plan (print No. 2 attached hereto) ~~belonging to the Licensees~~ which privilege has hitherto been enjoyed by the Oxford Cabmen's Shelter Trustees situate at the bottom of the Company's Down Approach Road to their Oxford Station, in the Parish of Saint Thomas, in the County of Oxford, and the Licensees accept such permission upon the terms and conditions herein contained.

2. THE LICENSEES, their Workmen and Servants and any person exercising the privilege hereby granted shall do so at their own risk in every respect and the Licensees hereby agree to indemnify the Company against all accidents, loss of life, damage or injury, costs, losses, claims or demands whatsoever, and against all liability in any way connected with or arising from the privilege hereby granted.

3. PROVIDED THAT either the Company or the Licensees shall be at liberty to determine this Agreement and the right or privilege hereny granted at any time hereafter, upon giving to the other of them twenty-eight days' previous notice in writing of their or his intention so to do.

The Licensees shall pay the cost of stamping this Agreement 2/6d.

AS WITNESS the hands of the said parties:-

H. Ferris Pike Secretary C.E.T.S.

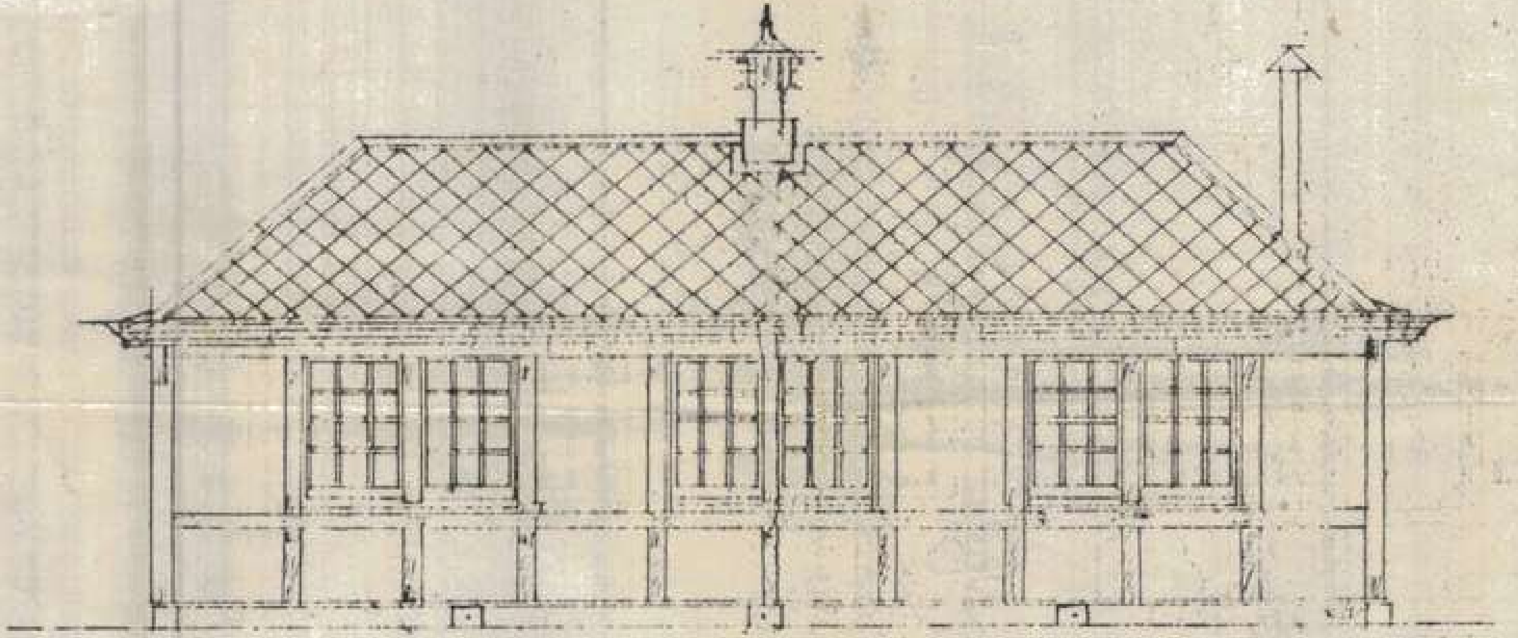
WITNESS:- K. M. Watt

Address:- 8 New Inn Hall St. Oxford

Occupation:- Accountant

Proposed Coffee House. Near G.W.R. Station. Oxford.

No 1.



J.F.P

1780

— Front Elevation —

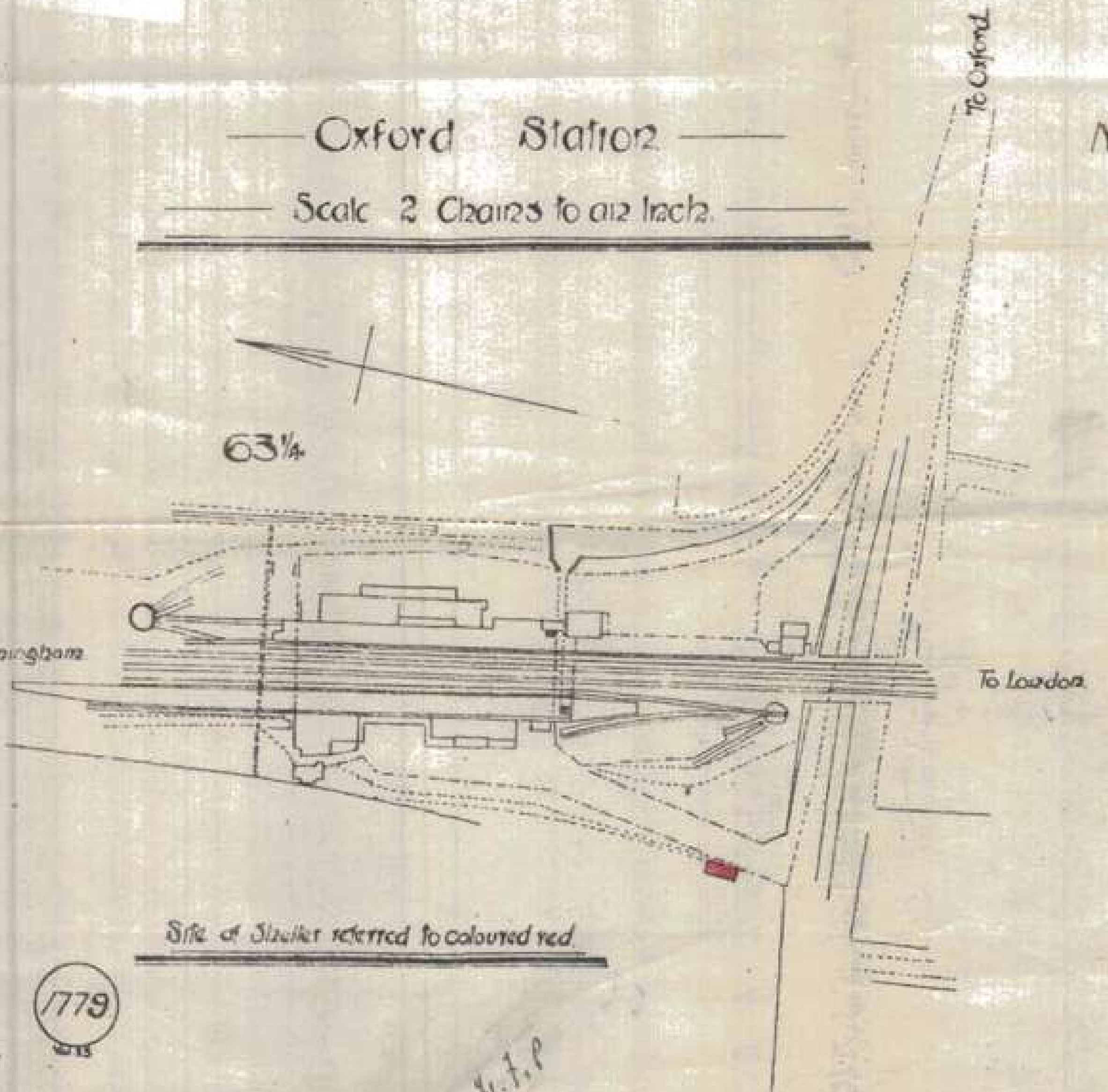
— Scale 4 Feet to an Inch —

PARISH OF St THOMAS

Oxford Station

No. 2.

Scale 2 Chains to an Inch.



Site of Stables referred to coloured red

16/10/01

1779

H.T.P

MISCELLANEOUS
793
No. 40753
G.W.R. DEED DEPT.

19404/0014

19404/0014/000

Dated 26th February 19[illegible]1

The GREAT WESTERN RAILWAY
COMPANY
-and-
The Oxford Diocesan Branch of
The Church of England Temperance Society.

AGREEMENT for [illegible]
[illegible] Easement etc. as [illegible].

Estate Office,
5, Cripley [illegible]
OXFORD.

[illegible] ADVISED [illegible]
[illegible] " do
[illegible] TENANCY CARD do
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[illegible] RATING DEPT. /

Pls file on
OXFORD
19404/0014

Faultstar South East 00-21155
Faultstar South Central 00-72552
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RAILTRACK
PROPERTY

H. M. LAND REGISTRY

NATIONAL GRID PLAN SP 5006 SECTION G
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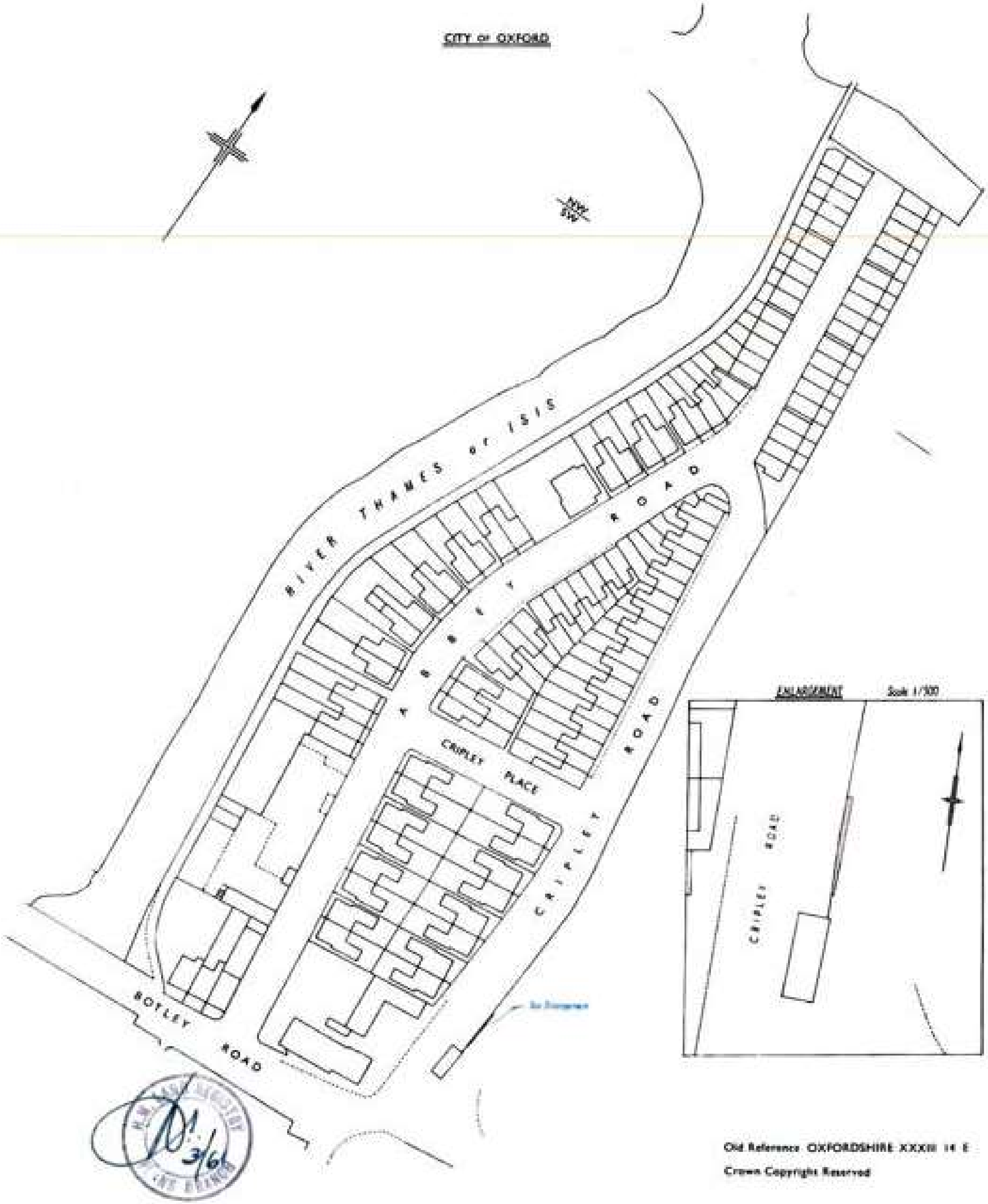
CITY OF OXFORD



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3/61

Filed Plan of Title No. ON6877

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This official copy is issued on 13 May 2013 shows the state of this title plan on 13 May 2013 at 12:36:09. It is admissible in evidence to the same extent as the original (s.67 Land Registration Act 2002). This title plan shows the general position, not the exact line, of the boundaries. It may be subject to distortions in scale. Measurements scaled from this plan may not match measurements between the same points on the ground. See Land Registry Public Guide *19 - Title Plans and Boundaries.*

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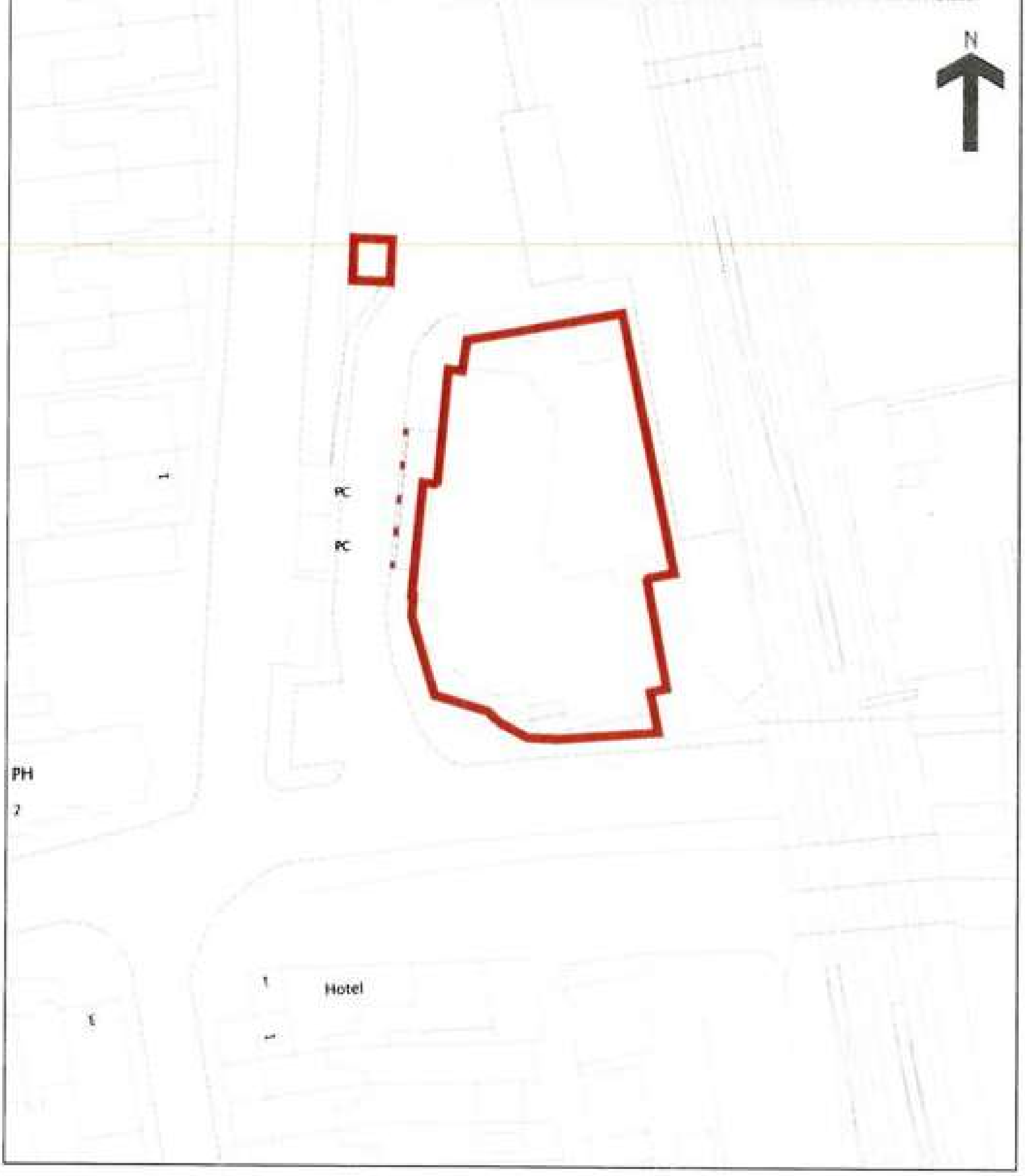
Land Registry
Official copy of title plan

Title number **ON223600**
Ordnance Survey map reference **SP5006SW**
Scale **1:625**
Administrative area **OXFORD**



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Additional references, which are not referred to in the register of title, may appear on the title plan in respect of any pending applications.

This official copy is issued on 04 July 2012 shows the state of this title plan on 04 July 2012 at 15:32:19. It is admissible in evidence to the same extent as the original (s.67 Land Registration Act 2002). This title plan shows the general position, not the exact line, of the boundaries. It may be subject to distortions in scale. Measurements scaled from this plan may not match measurements between the same points on the ground. See Land Registry Public Guide 7 - *Title Plans*.

This title is dealt with by the Land Registry, Gloucester Office .

A: Property Register continued

exceptions and reservations and covenants hereinafter contained."

B: Proprietorship Register

This register specifies the class of title and identifies the owner. It contains any entries that affect the right of disposal.

Title absolute

1 (13.02.1961) PROPRIETOR: THE OXFORD CITY COUNCIL of Oxford Town Hall, St Aldate's, Oxford OX1 1BX and of St Aldate's Chambers, 109-113 St Aldate's, Oxford OX1 1DS and of DX4309, OXFORD 1.

2 (13.02.1961) RESTRICTION:-Except under an Order of the Registrar no disposition by the proprietor of the land is to be registered unless made in accordance with the Local Government Act 1933 or some other Act or authority.

3 (12.04.2013) The proprietor's address for service has been changed.

C: Charges Register

This register contains any charges and other matters that affect the land.

1 A Conveyance dated 23 December 1960 made between (1) The British Transport Commission (Commission) and (2) The Mayor Aldermen and Citizens of Oxford (Corporation) contains the following covenants:-

"For the benefit and protection of such part of the adjoining or neighbouring property of the Commission as is capable of being benefitted or protected and with intent to bind so far as legally may be itself and its successors in title owners for the time being of the property hereby conveyed or any part thereof in whosesoever hands the same may come the Corporation hereby covenants with the Commission as follows:

(a) not at any time

(i) without previously submitting detailed plans and sections thereof to the Commission and obtaining their approval thereto and

(ii) without complying with such reasonable condition as to foundations and otherwise as the Commission shall deem it necessary to impose to erect any building or structures or to execute any works on any part of the property hereby conveyed

(b) to carry out to the satisfaction of the Commission and at the expense of the Corporation all accommodation works considered necessary by the Commission by reason of any building or structures to be erected upon the property hereby conveyed or the execution of any works on any part of the property hereby conveyed as hereinbefore provided.

End of register

Official copy of register of title

Title number ON6877 **Edition date 12.04.2013**

- This official copy shows the entries on the register of title on 13 MAY 2013 at 12:36:09.
- This date must be quoted as the "search from date" in any official search application based on this copy.
- The date at the beginning of an entry is the date on which the entry was made in the register.
- Issued on 13 May 2013.
- Under s.67 of the Land Registration Act 2002, this copy is admissible in evidence to the same extent as the original.
- For information about the register of title see Land Registry website www.landregistry.gov.uk or Land Registry Public Guide 1-*A guide to the information we keep and how you can obtain it.*
- This title is dealt with by Land Registry, Gloucester Office.

A: Property Register

This register describes the land and estate comprised in the title.

OXFORDSHIRE : OXFORD

1 (13.02.1961) The Freehold land shown edged with red on the plan of the above Title filed at the Registry and being Land on the east side of Cripley Road, Oxford.

2 The Conveyance dated 23 December 1960 referred to in the Charges Register contains the following exceptions and reservations and this registration takes effect subject thereto:-

"The Conveyance is subject to the following exceptions and reservations:

(a) any mines or minerals under the property hereby conveyed or any right of support from any mines or minerals whatsoever

(b) any easement or right of light air or support or other easement or right which would restrict or interfere with the free use by the Commission or any person deriving title under them for building or any other purpose of any adjoining or neighbouring land of the Commission (whether intended to be retained or to be sold by them)

(c) the right at any time to erect or suffer to be erected any buildings or other erections and to alter any building or other erection now standing or hereafter to be erected on any part of their adjoining or neighbouring land in such a manner as to obstruct or interfere with the passage of light or air to any building which is or may be erected upon the property hereby conveyed and any access or light and air over the adjoining land of the Commission shall be deemed to be enjoyed by the licence or consent of the Commission and not as of right

(d) the right of support from the property hereby conveyed for the adjoining property of the Commission

SUBJECT to all rights of way whether public or otherwise and to all other rights easements or liabilities affecting the same and to the

The electronic official copy of the register follows this message.

Please note that this is the only official copy we will issue. We will not issue a paper official copy.