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Reading West Railway Station Upgrade Full Business Case

Economic Appraisal Report

On behalf of **Reading Borough Council**



Project Ref: 45835/001 | Rev: AA | Date: July 2019

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1 Introduction

1.1 Introduction

- 1.1.1 Reading West Station is a busy commuter station located about 1.6 kilometres to the west of Reading (main) Station. The location of Reading West Railway Station is shown in **Figure 1.1**.
- 1.1.2 Local commuter stations, such as this, are critical in providing access to major employment and commercial centres in Reading and beyond, including London. The most recent figures for Reading West Railway Station indicate an annual usage of 434,004 passengers in the year 2017/18¹. This was a very slight fall on numbers for the previous year, which indicated a total of 434,612 passengers.
- 1.1.3 Through improvements in accessibility to such stations, these stations can support sustainable economic growth by helping to accommodate increasing travel demand, particularly when growth in private car use is constrained.
- 1.1.4 Reading West Railway Station suffers from generally poor-quality surroundings, with concealed entrances, limited waiting/ticket facilities, low natural surveillance, which can act as a barrier to accessing the rail network. The proposals will improve the quality of and security at the station, with the aim to attract new users to rail. The scheme provides opportunity to deliver more than transport benefits by activating the Oxford Road station frontage to discourage anti-social behaviour issues in the local area. The opening of Cow Lane has removed a major bottleneck and created opportunities for a more attractive sustainable transport corridor into the town centre through removal of vehicle height restrictions and removal on non-local trips.
- 1.1.5 Funding to the value of £3,100,000 has been allocated through the Growth Deal 3 re-prioritisation bid to assist with improvements at Reading West. With a further £940,000 of other public sector funds from Network Rail (NR) as well as £200,000 from Reading Borough Council (RBC) from committed S106 funds. This gives total funding of £4.24 million to develop passenger facility improvements. The funding breakdown thus comprises 73% Local Growth Funding (LGF), 22% Network Rail and 5% Reading Borough Council/local contribution. The scheme has the support of the Train Operating Company (TOC), Great Western Railway (GWR).
- 1.1.6 An appraisal was carried out for this initial bid, but this has subsequently required review given that the data used to inform the initial bid is not up to date. Network Rail (NR) have also now removed the existing pedestrian bridge as part of electrification works. It is understood that the Department for Transport (DfT) has given NR derogation not to have to replace the footbridge due to the cost of doing so.
- 1.1.7 RBC is now looking to submit a Full Business Case (FBC) for the Reading West Railway Station Upgrade (RWRSU) with construction planned for completion by March 2021.

1.2 Purpose of this Report

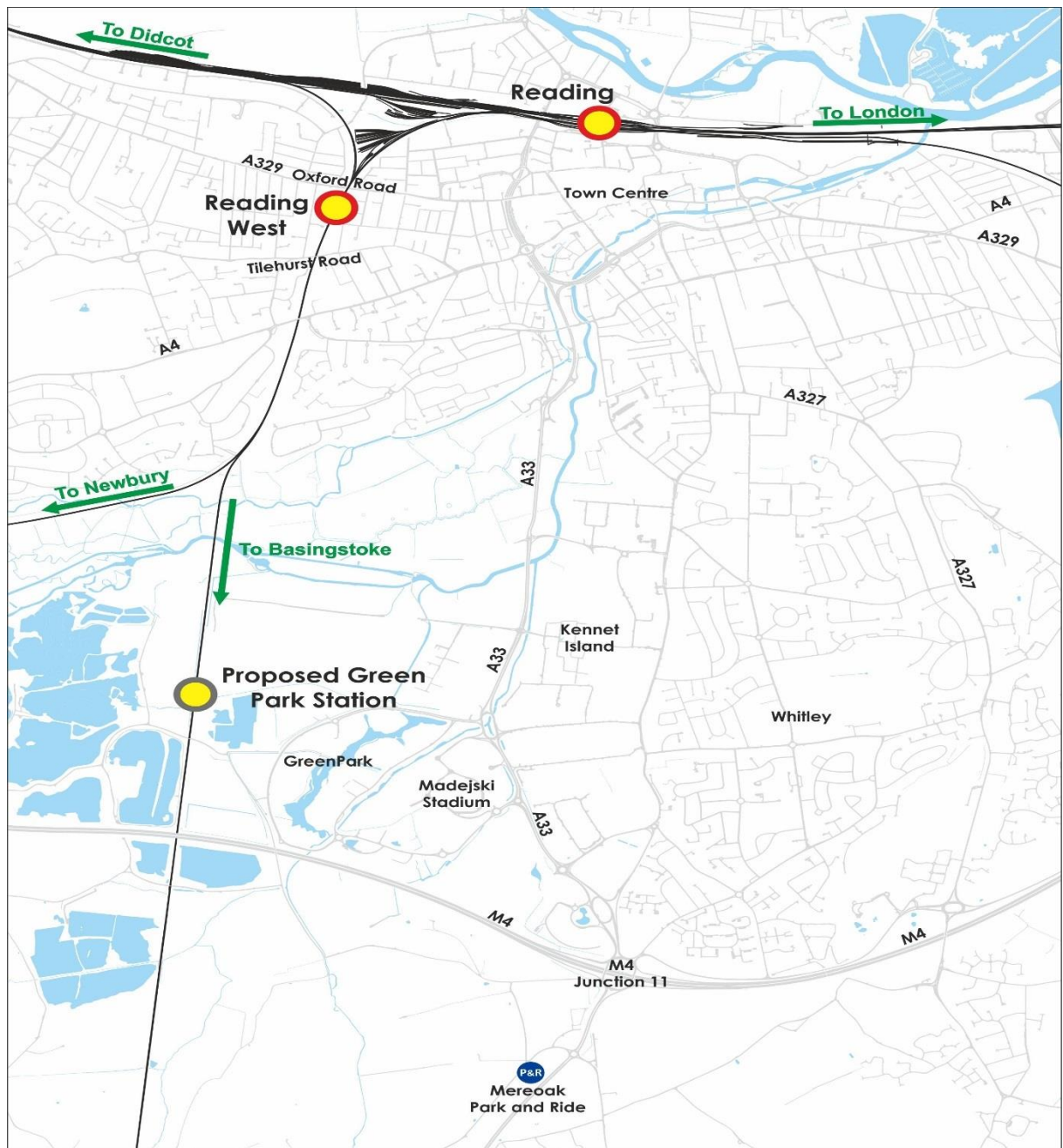
- 1.2.1 This Economic Appraisal Report (EAR) documents how the economic appraisal and hence benefits of the proposed upgrade have been assessed. A proportionate approach has been undertaken, reflecting the overall value of the scheme, which is under £5 million. The scheme costs at about £4.24 million are relatively modest and the proportionate approach to the appraisal reflect the scale of the scheme. The approach was set in the Appraisal Summary

¹ <https://orr.gov.uk/statistics/published-stats/station-usage-estimates>

Report (ASR) which was reviewed by the Independent Transport Evaluator (Hatch Generis). The ITE was agreeable to the overall approach.

- 1.2.2 The approach in this EAR generally reflects the approach taken by similar local schemes in Berkshire such as Newbury Station, Burnham Station and Maidenhead Station. The approach is also consistent with WebTAG guidance (Unit A5-3 Rail Appraisal) and with guidance provide within the Passenger Demand Forecasting Handbook (PDFH, May 2018). It also considers the Department for Transport (DfT) Value for Money Framework (VfM) guidance (2017).

Figure 1.1: Site Location Plan



1.3 Report Structure

- 1.3.1 Following this introduction, this report is structured as follows:

- Section 2 documents the objectives of the scheme;
- Section 3 provides a description of the scheme;
- Section 4 reports on the data collation and collection;
- Section 5 reports on the modelling and appraisal methodology;
- Section 6 reports on the scheme costs;
- Section 7 reports on the scheme benefits; and
- Section 8 reports on sensitivity tests undertaken.

2 Objectives of the Scheme

2.1 Challenges and Issues

- 2.1.1 Reading West has suffered from a lack of investment over a number of years. A pedestrian bridge between the two platforms has been removed, as part of electrification of the line by Network Rail (NR). It was originally the intention to replace the footbridge, but planning permission was not granted by RBC. A sum of £940,000 was provided by Network Rail (NR) on works to provide steps down to Oxford Road in place of the footbridge is already committed.
- 2.1.2 There are still a number of challenges and issues regarding the station in its current form. These include but are not limited to:
- The access to the station is concealed and signage is poor. Therefore, its visibility from the roadside is limited and potential passengers can easily walk/cycle/drive/bus past the station without knowing it is there;(POOR ENVIRON)
 - Natural surveillance and visibility on the ramps and on the platforms is poor; (SECURITY)
 - Passengers can feel isolated when waiting for a train outside of the peak operating times;(SECURITY)
 - The ramp from Oxford Road to the Reading bound platform is steep and has a number of steps, therefore making access to the platforms difficult or impossible for mobility impaired or those with children/buggies/heavy goods; (POOR ACCESS)
 - In order to switch across from one platform to the other platform, is via the two ramps or stepped access to Platform 1 from Oxford Road, with the limitations noted above. (MOBILITY/ACCESS);
 - There is a route to this platform from Tilehurst Road, but again, the route is isolated and natural surveillance is poor (SECURITY);
 - There are currently no ticket barriers at the station, so it is not necessary to purchase a ticket to reach platforms (FARE EVASION);
 - The platforms are narrow and when freight trains pass at speed, it is not comfortable environment (COMFORT); Platform widening is not included in the current scheme
 - Protection from the weather is very limited (COMFORT);
 - The part time station guard only has a small sheltered space; (COMFORT/ENVIRON)
 - The ticket office is small and not fit for purpose; having a visible station building on Oxford Road provides a gateway to the station and for onward journeys within Reading (VISIBILITY/ENVIRON/COMFORT);
 - The A329 Oxford Road suffers with significant congestion, which affects the journey times and reliability of bus services using the route. A total of 17 buses per hour use the Oxford Road corridor, which is significantly affected by the congestion; (LOCAL CONGESTION).
 - The corridor is over capacity and there is limited opportunity to provide additional highway capacity, which is a constraint to development. Therefore, planned development which uses the corridor is reliant on the delivery of public transport improvements such as Reading West. The Oxford Road area also suffers from social deprivation. The general

poor station environment means that house prices around Reading West will continue to lag behind other areas in Reading and land values in the area will continue to be depressed. The station can therefore act as a catalyst for wider development and regeneration, including of the Oxford Road itself and of the Portman Road Employment Area.

- 2.1.3 The primary objective of the proposed RWRSU is to address some of these challenges and issues, which will potentially lead to increases in rail use, thus also meeting the objective of modal shift from the private car.

2.2 Objectives

- 2.2.1 The specific objectives of the scheme have been defined to address the issues and problems identified above. The primary objective of the proposed station upgrades is to address some of these challenges and issues which will potentially lead to increases in rail use. The scheme objectives are listed below:

- (i) Provide a high quality, safe, convenient and reliable alternative to the car and improve public perception of transport in Reading
- (ii) Alleviate congestion on the Oxford Road corridor by encouraging mode shift to rail/public transport
- (iii) Stimulate development, Increase in jobs and resident population in Reading West and the surrounding area;
- (iv) Provide a safe station environment for existing and future users and improve accessibility to the rail network at Reading West

- 2.2.2 At wider level, the scheme supports a number of the objectives in the Thames Valley Berkshire Strategic Economic Plan (SEP).

- 2.2.3 The scheme will support the delivery of development as follows:

- Housing sites, including 211 dwellings on former Battle Hospital site, Portman Road;
- Employment sites in Reading town centre, including:
 - (i) Station Hill (4,000 jobs/80,500 square metres B1);
 - (ii) Land North of Reading Station (3,370 homes/70,000 square metres B1).

3 Scheme Description

3.1 Introduction

- 3.1.1 This section describes in more detail the key improvements that are proposed at Reading West Station. These improvements are also considered in the context in which they are expected to address the challenges and issues identified in Section 2.
- 3.1.2 RWRSU will provide a step change in passenger facilities at the station and wider interchange. This will create a visible presence on Oxford Road. The scheme will improve the perception of safety and security in the local area and act as a catalyst for the economic regeneration of the Oxford Road local centre. In addition, it will deliver decongestion benefits to the local highway network through enhancements to the Oxford Road.

3.2 Scheme Description

- 3.2.1 The main components of the refurbishments at Reading West Station include:
- New building and interchange facilities;
 - Improvements to platform waiting facilities;
 - Improvements at the Tilehurst Road entrance and
 - Better safety and security across the station.
- 3.2.2 It is understood that the RWRSU will not include the installation of lifts at the station as the installation of lifts would require a full rebuild of the station platforms, which is not affordable. However, as part of the initial design work through the project, a design will be developed for 'passive provision' to enable future installation of lifts if funding materialises.
- 3.2.3 The key improvements proposed for Reading West Station are shown in scheme plans in **Appendix A**. The key proposed improvements are also summarised in **Table 3.1**.
- 3.2.4 The scheme will need a Full Business Case (FBC) for consideration by the BLTB board in November 2019. In order to demonstrate that the scheme is viable and offers value for money, the benefits of the scheme will be clearly presented and will include safety and security, air quality (AQ), health, increase in passenger numbers and associated fares revenue generated amongst other benefits. This report details the proposed methodology of assessment for agreement of the approach with the BLTB. The Business Case is based on the LGF scheme.

3.3 Other Station Design Considerations:

- 3.3.1 A suitable design solution will need to be sought for the installation of ticket barriers due to the access requirement from the Tilehurst Road entrance and absence of a footbridge to connect directly across to both platforms.
- 3.3.2 In addition, following negotiations with Rail Unions, there is a requirement for two members of staff to be present when ticket barriers are in use. In order to consider the impact of this, a sensitivity test without the barriers will also be undertaken. This would need to consider the impact on safety and security and potential fare evasion on the value for money, when considered against reduced cost of both the barriers and staff requirements.

3.4 Potential Timetable Changes

- 3.4.1 GWR is currently consulting on their December 2019 timetable and this would see three (3) trains per hour between Reading and Basingstoke in the morning and evenings, up from the current service of two (2) trains per hour. These potential changes have been accounted for as an endogenous uplift up and above the background exogenous growth within the appraisal as a more frequent service would be expected to result in increased passenger numbers using the station. This scenario has formed the Without Scheme scenario upon which further endogenous uplifts in demand as a result of the proposed Reading West Railway Station facility improvements have been estimated to create the With Scheme forecast demands. This approach is consistent with the WebTAG forecasting approach in TAG Unit 4 Section 8.3.

Table 3.1: Proposed Station Improvements

Proposed Improvement Item Measure	Drawing No. in Appendix A
New Shelter	15141-OA-MP-SK11-P-00
New Ticket Office (new building)	15141-OA-MP-SK16-P-00
Retail Space (in new building)	15141-OA-MP-SK16-P-00
New Ticket Barriers (to access platforms)	15141-OA-MP-SK16-P-00
Gate for out of hours access (both platforms)	15141-OA-MP-SK16-P-00
New TVMs (Ticket Vending Machines)	15141-OA-MP-SK16-P-00
New CIS screens and information boards	15141-OA-MP-SK16-P-00
New ramp at 1:15 in place of existing ramp (Platform 1 & 2)(there is currently step free access to the Basingstoke/Newbury platform 1 via the Tilehurst Road Station entrance although feelings of insecurity/poor lighting etc. There is also step free access to platform 2 from the Oxford Road entrance by way of a ramp (approximately 1:9)	15141-OA-MP-SK16-P-00
New permanent steps to/from Platforms 1 (Existing footbridge removed and will no longer be replaced).This is funded by Network Rail and is referred to here as ' Network Rail Electrification works at Reading West ' which saw the removal of the pedestrian bridge across the railway line to enable electrification works.	15141-OA-MP-SK16-P-00
Proposed New Cycle Parking	15141-OA-MP-SK16-P-00
Existing Bus shelter relocated	15141-OA-MP-SK16-P-00
Oxford Road highways works to create space for station building footprint, cycle parking, relocated bus shelter	45835/5504/005 & 45835/5504/004&45835/5504/SK003

4 Data Collation and Collection

4.1 Data Collation and Collection

Existing Data

- 4.1.1 This section discusses the data that has been used to inform the station demand. Available data is relatively limited, and includes station entry and exit counts collected by RBC in 2017. GWR normally has detailed information on station usage and revenue, based on analysis of ticket sales at a particular station. However, in the case of Reading West Station, there is very limited data because many tickets purchased are to or from 'Reading Stations' and do not therefore distinguish between Reading West and Reading (main) stations and it will be difficult to get meaningful data from ticketing information.
- 4.1.2 Other existing data sources include Office for Road and Rail annual passenger numbers and station count data from 2017.

New Data Collection

- 4.1.3 In order to help understand passenger demand and usage at Reading West, passenger interview surveys and station entry and exit counts were scheduled to be undertaken at representative neutral 'week' in May 2019 in the week commencing Monday 13th May 2019. The surveys were used to better understand the current usage of the station and assist in developing a robust case for funding required to improve the station.
- 4.1.4 The following surveys were commissioned:
- (1) A survey of origin – destination of users of Reading West Station. These surveys were undertaken on Platforms 1 and 2. The interview surveys were undertaken on Wednesday 15th May 2019 and took the form of face to face interviews for people waiting to board trains. They were undertaken in the morning on a single mid-week day for the five hour period 0600 to 1100;
 - (2) Station Entry and Exit Counts of users of the station using each of the two accesses to the station, namely Oxford Road (2 entry points) and Tilehurst Road (1 entry point). These counts were undertaken over two mid-weekdays for the period 0500 to 2200 where most of the station demand is concentrated. The surveys were undertaken on Wednesday 15th and Thursday 16th May 2019 with the Wednesday coinciding with the face to face boarding interview surveys. Station and entry counts were also undertaken on Saturday 18th May 2019 also for the period 0500 to 1100. The counts were undertaken using video cameras.

4.2 Face to Face Interviews

Interview Survey Data

- 4.2.1 As noted, survey interviews were undertaken on Wednesday 15th May 2019 in the morning period between 0600 and 1100. They involved face to face interviews of people waiting to board the train on both platforms 1 (westbound platform) and platform 2 (eastbound platform). A specialist survey company (Transport Survey Partners – TSP) was commissioned to undertake the surveys. PBA liaised with GWR to arrange permissions for access to Reading West Station platforms for the surveys to be undertaken. Four surveyors were used to undertake the surveys, with two stationed at each platform throughout the survey period.
- 4.2.2 It was the intention to complement the face to face interviews with pre-paid postcard surveys that respondents could mail back. These postcards were to be handed out to boarders not

willing to partake in the face to face interviews but were willing to provide responses via the postcards.

- 4.2.3 Furthermore, it was intended that the surveyors also hand out pre-paid mail back 'Alighting' postcards to people alighting from trains as part of the surveys. The intention was to only survey alighting passengers using the postcards without any face to face interviews. p

Issues Encountered

- 4.2.4 On the day of the surveys, the survey company reported that there was generally good uptake of face to face to face interviews. However, those declining to partake in the face to face interviews also generally declined to partake in the postcard surveys and consequently efforts were concentrated on maximising the face to face interviews. There was a similar reluctance by those alighting to partake in the postcard interviews. Therefore, the face to face interviews provided was the basis of understanding trip making patterns of users.

4.3 Commentary on Interview Survey Sample Size

- 4.3.1 A combined total of 226 interview responses were achieved over the five hour survey period 0600 to 1100. Of these, 79 interviews were on Platform 1 (the southbound/Basingstoke direction) and 147 were on Platform 2 (the northbound direction towards Reading). These sample sizes were compared to the mid-week day station counts to understand indicative sample sizes. When considering the 79 interviews achieved on Platform 1 against the average of the two mid-week day entry counts over the interview survey period, the sample size is 17% of the entry counts. On Platform 2 the sample size is 27% when similarly compared to the average entry counts of the two mid-week days. When the total 226 interviews are considered against the sum of the entry counts on Platform 1 and Platform 2 for the mid-week days, the interview sample is 22%. It is considered that the sample size is reasonable and robust.

4.4 Key Findings from the face to face interviews

- 4.4.1 This section summarises some of the key findings from the face to face interviews.

Key Origins

- 4.4.2 The top five answers are tabulated in **Table 4.1**. For completeness, the rest of the origins are included under other. The results show that most users originate from the locality of the Reading West area emphasising the importance of the station to the local area.

Table 4.1: Key Origin

Rank	Origin	No. of Passenger	Proportion
1	Reading West	133	59%
2	RG30	39	17%
3	Oxford Road	8	4%
4	Aldermaston	2	1%
4	Hungerford	2	1%
-	Others	42	19%
Total	All	226	100%

- 4.4.3 From **Table 4.1**, it is shown that the majority of the passengers using the station have an origin from the local area such as Reading West, RG30 area and along Oxford Road. There are also a smaller number of passengers travelling to RDW from towns in Berkshire such as Aldermaston and Hungerford, which are served direct trains to RDW during 06:00 – 11:00.

Key Destination

- 4.4.4 The top ten destinations are shown in **Table 4.2**. For completeness, the rest of the origins are included under other. It can be seen that London and Basingstoke are the top two standout destinations and between them comprise 40% of the stated destinations.

Table 4.2: Key Destinations

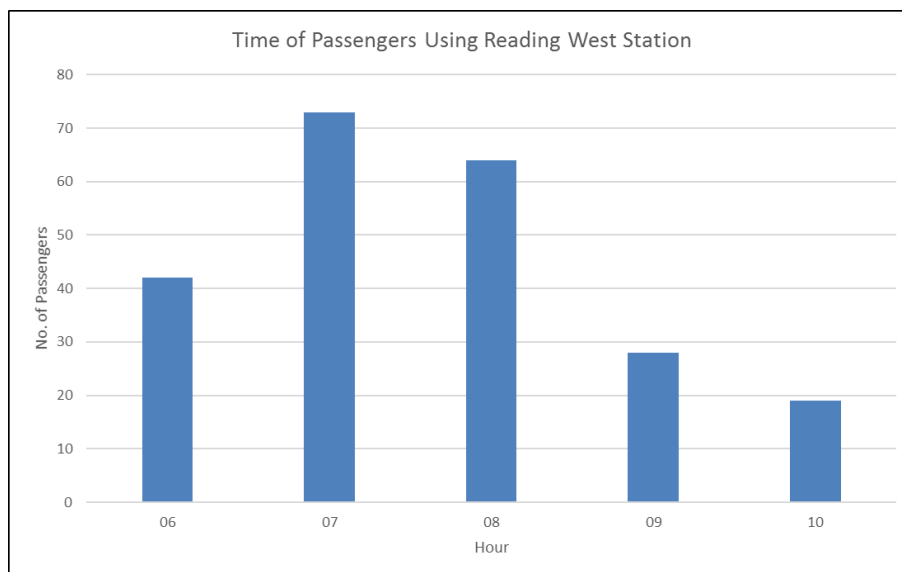
Rank	Destination	No. of Passenger	Proportion
1	London Paddington	59	26%
2	Basingstoke	32	14%
3	Reading	15	7%
4	Theale	13	6%
5	Newbury	10	4%
6	Maidenhead	8	4%
7	Thatcham	7	3%
8	Bracknell	6	3%
8	Wokingham	6	3%
9	Euston	4	2%
9	Winnersh Triangle	4	2%
10	Aldermaston	3	1%
10	Banbury	3	1%
10	Bramley	3	1%
10	Salisbury	3	1%
-	Others	50	22%
Total	All	226	100%

- 4.4.5 London Paddington, Basingstoke, Reading, Theale and Newbury are the top five destinations among the rest in top ten. Apart from London Paddington, all of them are served by direct trains from RDW all day. London Paddington is served by direct train from RDW during peak hours only.
- 4.4.6 For the other stations in **Table 4.2**, passengers are required to change trains at least once at Reading or Basingstoke.

Time using the station

- 4.4.7 The time of passengers using RDW are illustrated in **Figure 4.1**.

Figure 4.1: Time of passengers using Reading West Station



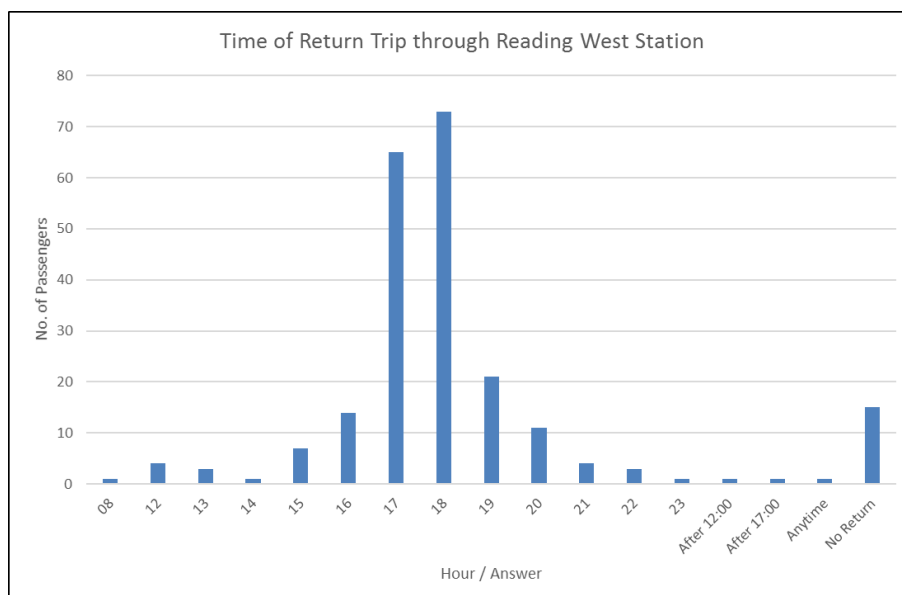
4.4.8 It is illustrated from **Figure 4.1** that the peak hour happens at the 07 hour, with more than 70 passengers visiting the station. There are also more than 60 of them at the 08 hour.

4.4.9 The peak period fades out at the 10 hour, with just less than 20 passengers using RDW.

Return Trip through Reading West Station

4.4.10 The time of return trip going through RDW by the surveyed passengers are shown in **Figure 4.2**.

Figure 4.2: Time of Return Trip through Reading West Station



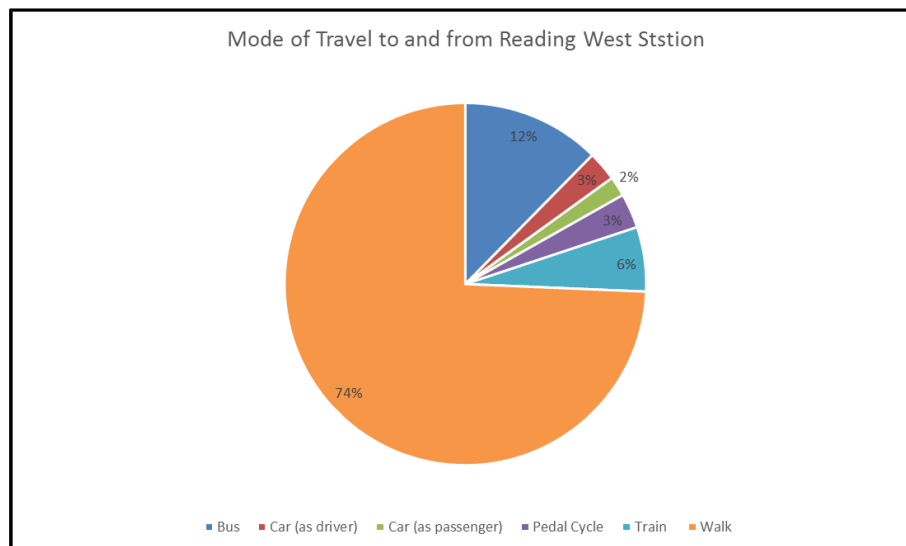
4.4.11 In **Figure 4.2**, it is shown that the peak hour for return trip to be made via RDW is at the 18 hour, with more than 70 of the responded passengers. There are also more than 60 passengers making their return trip through RDW at the 17 hour.

- 4.4.12 Out of the 226 passengers interviewed, 15 of them did not intend to make a return journey via RDW on that day.

Mode of Travel to and from Reading West Station

- 4.4.13 The result is illustrated by a pie chart in **Figure 4.3**

Figure 4.3: Mode of Travel to and from Reading West Station

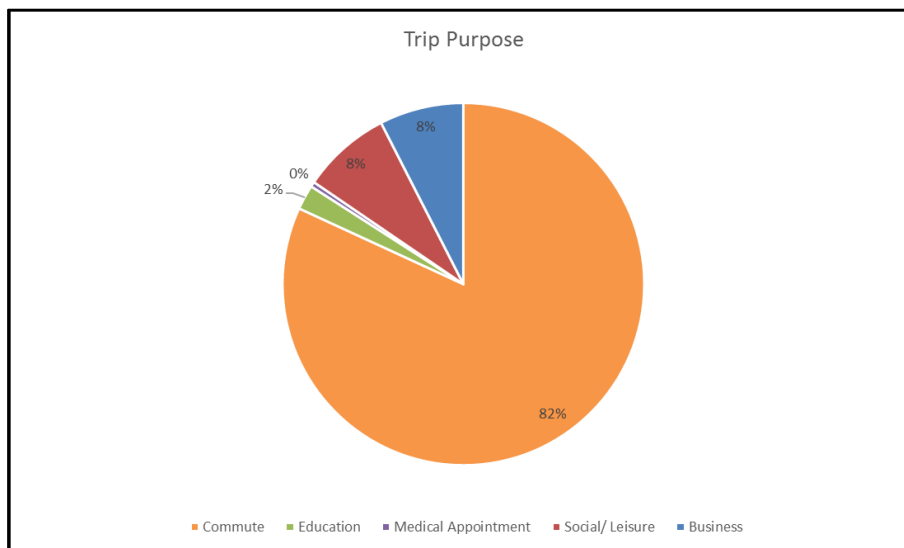


- 4.4.14 Most of the passengers walk between their origin or destination and RDW, with nearly 3 quarters of them doing so. Another 3% use cycle to access the station. This means that the majority of station users (nearly 80%) access/egress the station as Active Mode Users (pedestrians and cyclists), again emphasising the importance of the station to the local area. There results also show that 12% of the surveyed passengers use the bus between the station and their origin or destination. About 3% of the passengers made the trip by car as the driver while 2% accessed the station as a car passenger.

Trip Purpose

- 4.4.15 The result of trip purpose of the passengers is shown in the pie chart in **Figure 4.4**.

Figure 4.4: Trip Purpose

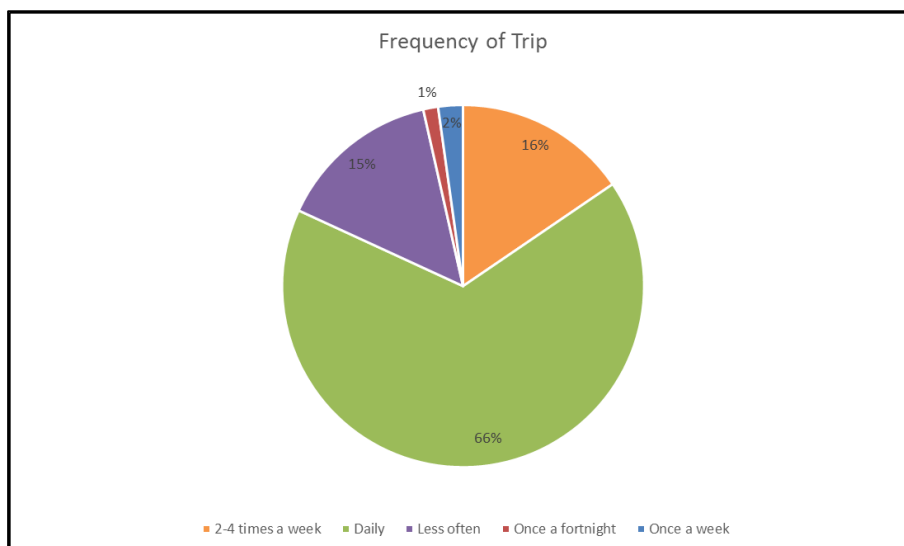


4.4.16 It is illustrated that 82% of the surveyed passengers using this station are commuting, with the remaining 18% business and other purpose trips.

Frequency of Trip

4.4.17 The result of frequency of trip made by the respondents is shown as a pie chart in **Figure 4.5**.

Figure 4.5: Frequency of Trip



4.4.18 From the responses shown in **Figure 4.5**, nearly 70% of the respondents make their trip at Reading West Station daily. Around 15% each make their journey through this railway station 2-4 times a week and less often.

Types of Tickets

4.4.19 Information on types of tickets used by the respondents are tabulated in **Table 4.3**.

Table 4.3: Type of tickets used

Rank	Ticket Type	No. of Passengers	Proportion
1	Weekly/ Monthly	64	28%
2	Anytime Day Single/ Return	62	27%
3	Anytime Single/ Return	37	16%
4	Annual	34	15%
5	Day Travel Card	11	5%
6	Off-Peak/Super Off-Peak Day Single/Return	6	3%
7	Off-Peak/Super Off-Peak Single/Return	5	2%
8	Others	7	3%
-	Total	226	100%

4.4.20 There is 28%% of the respondents using Weekly/ Monthly season ticket for their journey. Anytime Day Single/ Return tickets are used by 27% of the participating passengers, which the return ticket allow them to travel during peak times within the same day. There is 16% of the passengers using Anytime Single/ Return tickets, which the return ticket is valid for 28 days since from the first journey. 15% of the respondents are annual tickets holders.

4.5 Summary of Entry and Exit Counts

New Entry and Exit Count Data

- 4.5.1 This section summarises the Entry and Exit count data that has been used to estimate the base year demand at Reading West station. In conjunction with the results of the interview surveys, the count data has underpinned the demand data used in the appraisal of the scheme benefits. It is noted that RBC undertook a similar count survey in 2017 and this has been used to benchmark the 2019 counts.
- 4.5.2 In **Table 4.4** and **4.5**, passenger count data is presented with the comparison on passenger count dated Tuesday 4th July 2017 at Tilehurst Road and Oxford Road entrances respectively. As stated, the 2017 data was used to benchmark the new 2019 counts. The numbers in brackets where applicable represents the classification of the count into pedestrians and pedal cycles respectively.

Table 4.4: Passenger Count at Tilehurst Road Entrance (Pedestrians/Cyclists)

Tilehurst Rd	Surveyor	Day	In	Out	Total
2017	Streetwise	Tuesday	568(499/69)	663(592/71)	1231(1091/140)
2019	TSP Count (Access 1)	Weekday Average	545(502/43)	587(543/44)	1132(1045/87)
		Wednesday	544(500/44)	603(554/49)	1147(1054/93)
		Thursday	545 (503/42)	571(532/39)	1116(1035/81)
		Saturday	323(305/18)	388(368/20)	711(673/38)

Table 4.5: Passenger Count at Oxford Road Entrance (Pedestrians/Cyclists)

Oxford Rd	Surveyor	Day	In	Out	Total
2017	Streetwise	Tuesday	915(873/42)	802(758/44)	1717(1631/86)
2019	TSP Count (Access 2&3)	Weekday Average	1295(1255/40)	1350(1303/47)	2645(2558/87)
		Wednesday	1306(1264/42)	1181(1133/48)	2487(2397/90)
		Thursday	1284(1247/37)	1518(1472/46)	2802(2719/83)
		Saturday	743(716/27)	747(716/31)	1490(1432/58)

- 4.5.3 There is a significant increase of number of passengers passing through Oxford Road entrances in 2019 when compared to 2017, despite being a 0.1% fall in passenger use at the station between 2016-2017 and 2017-2018 from the estimation of Office of Rail and Road (ORR).
- 4.5.4 One of the possible reasons for the increase is considered to be due to the removal of the footbridge crossing between Platform 1 and 2 when the line was electrified in 2018.
- 4.5.5 Before the electrification, Platform 1 was accessed through Tilehurst Road entrance, and Platform 2 was accessed through the Oxford Road entrance. Passengers could then cross the railway tracks to the other platform using the footbridge when necessary.
- 4.5.6 After the electrification in 2018, the footbridge was removed and a new entrance to Platform 1 on Oxford Road opened for access. Passengers who are going to the opposite platform exit the station onto Oxford Road and then enter the station again at the other entrance of the opposite platform on Oxford Road. Hence, it was considered that there was an element of double counting at the Oxford Road accesses. The counts at the Tilehurst Road were considered not to be impacted as much in relation to potential double counting.
- 4.5.7 It was considered necessary to adjust the counts at the Oxford Road entrances as a result. The number of passengers passing through Oxford Road entrances was adjusted according

to the change of number of passengers going through Tilehurst Road entrance. It was assumed that the number of passengers using Tilehurst Road entrance was not affected by the removal of the footbridge.

- 4.5.8 In **Table 4.6**, the difference in number of passengers using Tilehurst Road entrance is presented for 2017 and 2019

Table 4.6: Number of Passengers Using Tilehurst Road Entrance in 2017 and 2019

Tilehurst Rd	Surveyor	Day	In	Out	Total
2017	Streetwise	Tuesday	568(507/69)	663(605/71)	1231(1103/128)
2019	TSP Count (Access 1)	Weekday Average	545(502/43)	587(543/44)	1132(1045/87)
		Difference	-24	-76	-100
		% Difference	-4%	-11%	-8%

- 4.5.9 Assuming the percentage differences of Ins and Outs are constant at entrances on both Tilehurst Road and Oxford Road, the number of passengers using Oxford Road entrances were adjusted and are presented in **Table 4.7**. These are the Oxford Road counts that were used to inform the base year 2019 demands.

Table 4.7: Number of Passengers Using Oxford Road Entrance in 2017 and 2019 (Adjusted)

Oxford Rd	Surveyor	Day	In	Out	Total
2017	Streetwise	Tuesday	915(873/42)	802(758/44)	1717(1631/86)
2019	Adjusted Count (Access 2 &3)	Weekday Average	877(837/40)	710(663/47)	1578(1491/87)
		% Difference	-4%	-11%	-8%

- 4.5.10 In **Figure 4.6** and **4.7**, the comparison of the usage of the station by passenger counts from Tilehurst Road and Oxford Road are illustrated respectively. The numbers are further categorised into Pedestrian (Ped) and Pedal Cyclists (Pcy). The cycle counts generally comprise 3% to 6% of entry/exit counts with the majority being pedestrians as expected. This is generally the case at both Tilehurst Road and Oxford Road entrances.

Figure 4.6: Comparison between Number of Passengers in 2017 and 2019 using Tilehurst Road Entrance

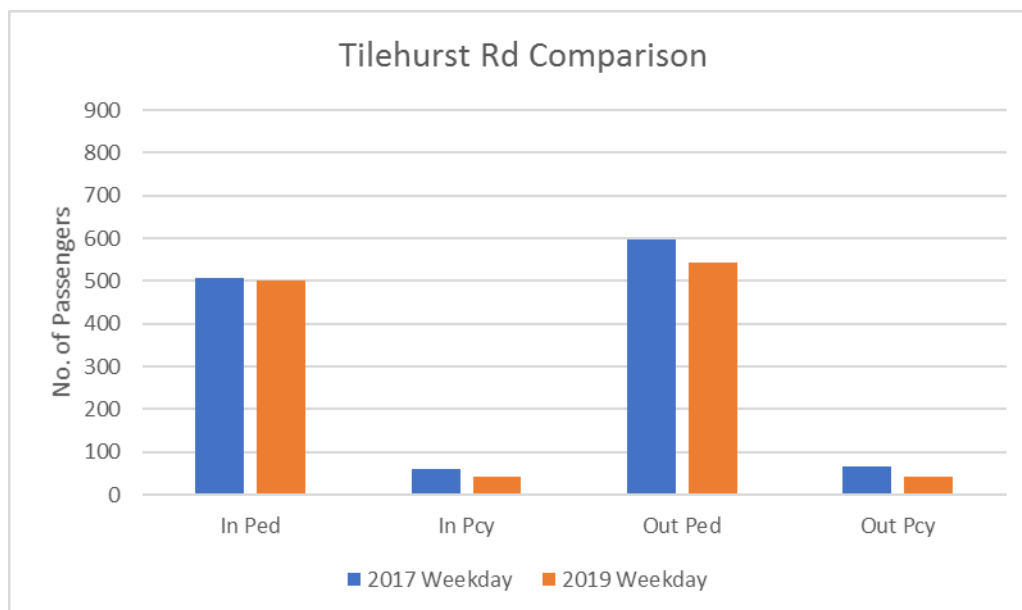
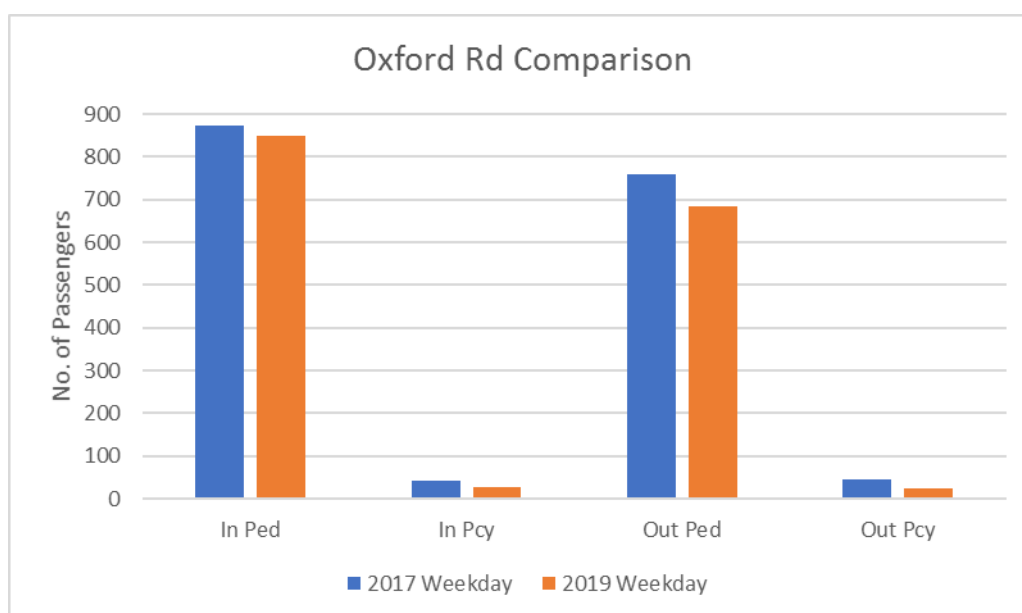


Figure 4.7: Comparison between Number of Passengers in 2017 and 2019 using Oxford Road Entrances



4.5.11 The number of passengers in 2019 are also illustrated by different time period for an average weekday and for the Saturday weekend counts at Tilehurst Road and Oxford Road entrances as shown in **Figures 4.8 to 4.11**. The numbers are also categorised into Pedestrians and Pedal Cyclists to reflect the classification of the count data.

Figure 4.8: Number of Passengers using Tilehurst Road Entrance on a Weekday

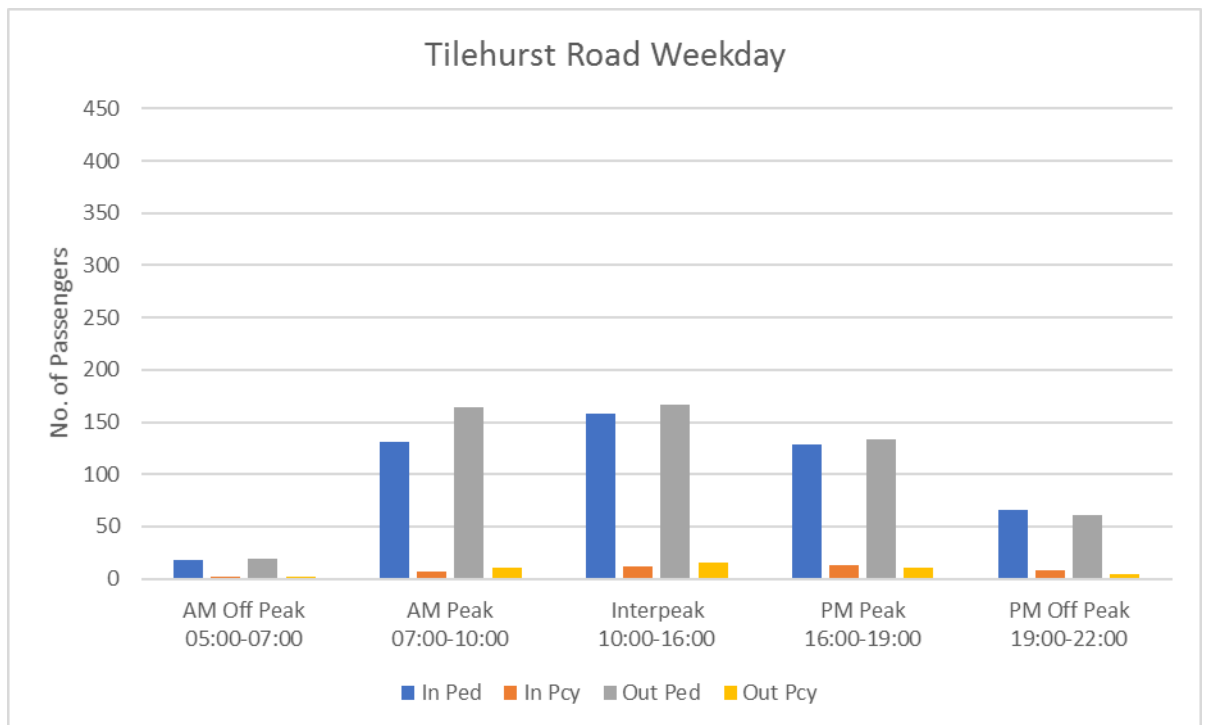


Figure 4.9: Number of Passengers using Tilehurst Road Entrance on a Weekend

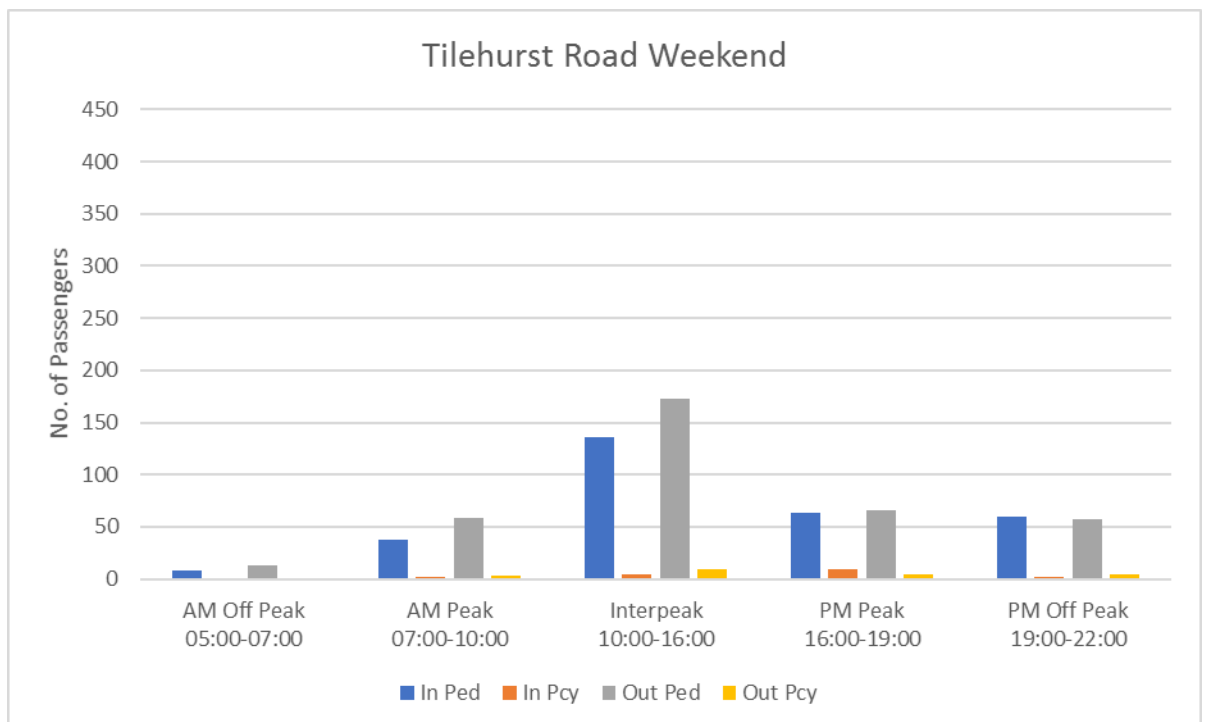


Figure 4.10: Number of Passengers using Oxford Road Entrances on a Weekday

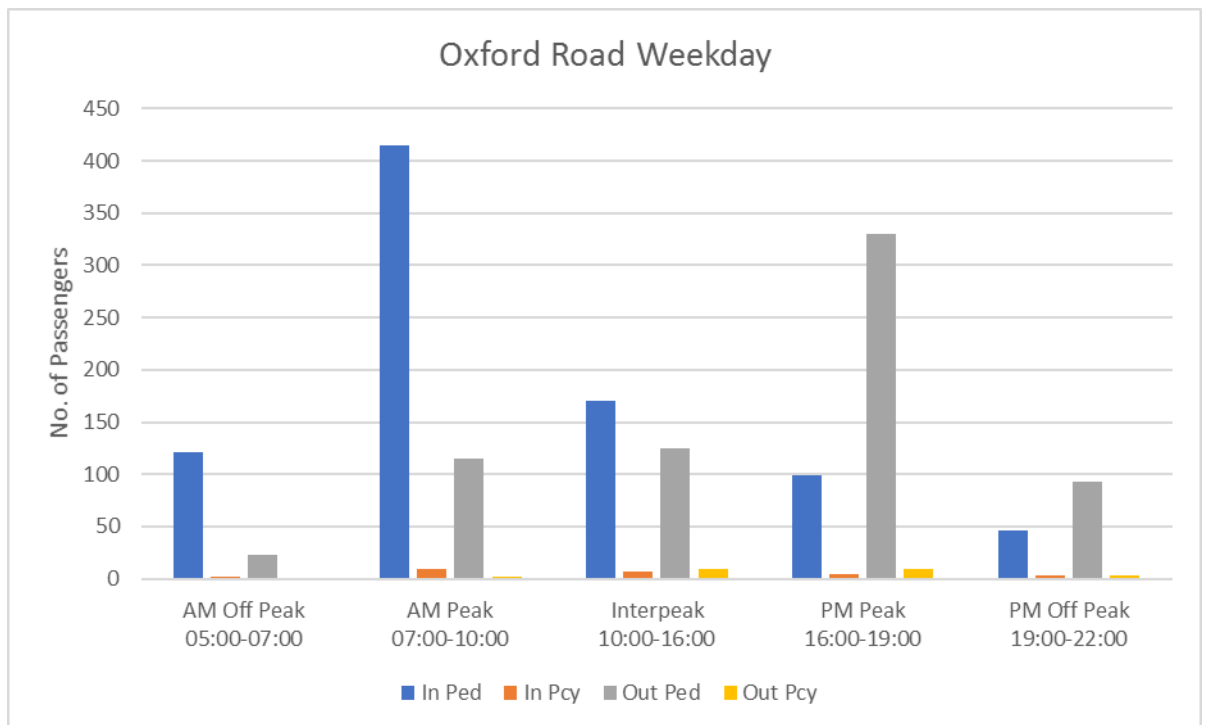
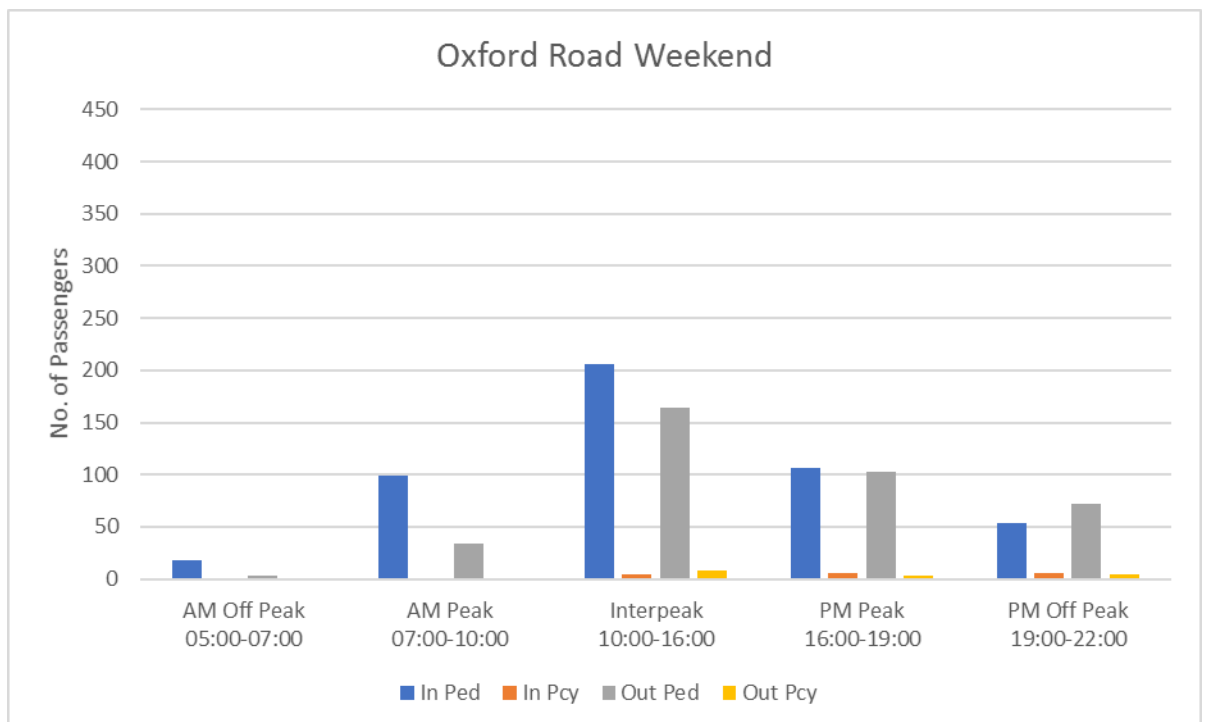


Figure 4.11: Number of Passengers using Oxford Road Entrances on a Weekend



- 4.5.12 The observed demand is now summarised in **Table 4.12**. The table provides a summary of the observed counts by time period and effectively gives a summary of the average daily passenger demands by time period for Reading West split into Tilehurst Road, Oxford Road (combined) and plus the Combined demand for these accesses in the Base year 2019. **Table 4.13** shows the same information for Saturday (weekend). This information provides the Base Year 2019 demands that have been used in the scheme appraisal to provide future forecasts. It has been assumed that the demands between 22:00 and 00:00 are small and have not been included in the appraisal.
- 4.5.13 **Table 4.12** shows that the average weekday passenger demands at Reading West were estimated as 1422 entries and 1297 exits, giving a combined entry and exit figure of 2,719 users. Of these, 1132 entries and exits were recorded at Tilehurst Road and 1587 users were recorded at the Oxford Road accesses.
- 4.5.14 **Table 4.13** shows that the Saturday (weekend) passenger demands were estimated at 826 entries and 781 exits, giving a combined entry and exit figure of 1607 users. Of these, 711 entries and exits were recorded at Tilehurst Road and 896 users were recorded at the Oxford Road accesses.

Figure 4.12: Summary of Average Weekday demands (Base Year 2019) by access road and time period

Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Tilehurst Road										
AM Off Peak	05:00	07:00	18	2	19	2	20	21	41	4%
AM Peak	07:00	10:00	131	8	164	10	139	174	313	28%
Interpeak	10:00	16:00	159	12	166	16	171	182	353	31%
PM Peak	16:00	19:00	129	13	133	11	142	144	286	25%
PM Off Peak	19:00	22:00	66	9	61	5	75	66	141	12%
All Periods	05:00	22:00	502	43	543	44	545	587	1132	100%
As % of Total	05:00	22:00	44%	4%	48%	4%	48%	52%	100%	
Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Oxford Road										
AM Off Peak	05:00	07:00	121	2	22	1	123	23	146	9%
AM Peak	07:00	10:00	414	10	115	2	424	118	542	34%
Interpeak	10:00	16:00	170	7	124	9	176	133	310	20%
PM Peak	16:00	19:00	99	4	330	9	103	339	442	28%

Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
PM Off Peak	19:00	22:00	47	4	93	4	50	97	148	9%
All Periods	05:00	22:00	850	27	685	25	877	710	1587	100%
As % of Total	05:00	22:00	54%	2%	43%	2%	55%	45%	100%	
Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Combined (Tilehurst Road and Oxford Road)										
AM Off Peak	05:00	07:00	138	4	41	3	142	44	187	7%
AM Peak	07:00	10:00	545	17	279	12	563	292	854	31%
Interpeak	10:00	16:00	328	19	290	25	347	315	662	24%
PM Peak	16:00	19:00	228	17	463	20	245	483	727	27%
PM Off Peak	19:00	22:00	113	12	154	9	125	163	288	11%
All Periods	05:00	22:00	1352	70	1228	69	1422	1297	2719	100%
As % of Total	05:00	22:00	50%	3%	45%	3%	52%	48%	100%	

Figure 4.13: Summary of Average Weekend Saturday demands (Base Year 2019) by access road and time period

Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Tilehurst Road										
AM Off Peak	05:00	07:00	8	0	13	0	8	13	21	3%
AM Peak	07:00	10:00	38	2	59	3	40	62	102	14%
Interpeak	10:00	16:00	136	5	173	9	141	182	323	45%
PM Peak	16:00	19:00	63	9	66	4	72	70	142	20%
PM Off Peak	19:00	22:00	60	2	57	4	62	61	123	17%
All Periods	05:00	22:00	305	18	368	20	323	388	711	100%
As % of Total	05:00	22:00	43%	3%	52%	3%	45%	55%	100%	

Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Oxford Road										
AM Off Peak	05:00	07:00	18	1	3	0	20	3	23	3%
AM Peak	07:00	10:00	100	1	34	1	101	35	136	15%
Interpeak	10:00	16:00	206	5	165	8	211	173	383	43%
PM Peak	16:00	19:00	107	5	103	3	112	105	218	24%
PM Off Peak	19:00	22:00	54	5	73	5	60	77	137	15%
All Periods	05:00	22:00	485	18	377	16	503	393	896	100%
As % of Total	05:00	22:00	54%	2%	42%	2%	56%	44%	100%	
Period	Start Time	End Time	In Ped	In Pcy	Out Ped	Out Pcy	Total In	Total Out	Total	As % of Total
Combined (Tilehurst Road and Oxford Road)										
AM Off Peak	05:00	07:00	26	1	16	0	28	16	44	3%
AM Peak	07:00	10:00	138	3	93	4	141	97	238	15%
Interpeak	10:00	16:00	342	10	338	17	352	355	706	44%
PM Peak	16:00	19:00	170	14	169	7	184	175	360	22%
PM Off Peak	19:00	22:00	114	7	130	9	122	138	260	16%
All Periods	05:00	22:00	790	36	745	36	826	781	1607	100%
As % of Total	05:00	22:00	49%	2%	46%	2%	51%	49%	100%	

5 Modelling and Appraisal Methodology

5.1 General Approach to the Economic Assessment

5.1.1 The general approach to the economic appraisal has followed DfT WebTAG guidance particularly from the following documents:

- TAG Unit A5.3 – Rail Appraisal;
- TAG Unit A1.1 – Cost Benefit Analysis;
- TAG Unit A1.2 – Scheme Costs;
- TAG Unit A5.4 – Marginal External Costs;
- TAG Unit A5.1 – Active Mode Appraisal
- TAG Unit A4.1 – Social Impact Appraisal
- TAG Unit A4.2 – Distributional Impact Appraisal
- TAG Unit M4 – Forecasting and Uncertainty
- Value for Money Framework, DfT 2017.

5.1.2 A purpose-built spreadsheet modelling tool has been used to undertake the economic appraisal following WebTAG guidance and standard industry practice.

5.2 Economic Assessment Parameters

5.2.1 The economic appraisal will follow the standard practice of assuming a 60-year appraisal period from the Opening Year, assumed to be 2021. This means that the horizon year of the appraisal will be 2021 + 59 years or 2080.

5.2.2 A discount rate of 3.5% will be assumed for the first 30 years of appraisal beginning 2019, which is assumed as the year of appraisal. The discount rate of 3.5% will therefore apply for the period 2019 to 2049. Thereafter, a discount rate of 3% will be assumed.

5.2.3 Assumptions on inflation impact, including retail price index (RPI), Gross Domestic Product (GDP) deflator and growth in earnings were assumed from the latest TAG databook, currently May 2019 v1.12. **Table 5.1** summarises the key economic assumptions that will be used in the economic appraisal.

Table 5.1: Summary of Economic Appraisal Assumptions

Parameter	Assumption	Information Source
Discount Rate	3.5% for 30 year period 2019 to 2049 and 3.0% thereafter	HMT's Green Book
Price Base Year	2010	DfT Price Base Year, all prices will be in 2010 values
Opening Year	2021	Scheme Programme
Horizon Year	2080	DfT 60 year Appraisal Period guidance
Rail Demand Cap	20 years for rail users	WebTAG A5.3
Rail Revenue growth	RPI + 1% post 2021	WebTAG
Values of Time by Trip Purpose (Business, Commute, Other)	To be informed by WebTAG Databook	Databook May 2019 v1.12
Inflation Assumptions, GDP Deflator etc	To be informed by WebTAG Databook	Databook May 2019 v1.12
Optimism Bias (OB)	9%	Project Programme (Table 3 in TAG A5.3) at Level 4 and 18% sensitivity test at Level 3) OB also on basis that detailed design will be complete, topographical survey undertaken and trial pits carried out to understand location and depth of utilities
Rail user (passenger growth) assumptions	taken from Newbury BC assumptions) 7.1% - 2019 to 2020 8.0% - 2020 to 2021 2% p.a. thereafter for 20 years	GWR's forecast growth (using MOIRA) for station usage resulting from Great Western electrification, wider improvements to the rail network (including Crossrail from Reading and Western Rail Access to Heathrow) and housing growth in Reading. (growth from the proposed Green Park Station has not been explicitly included, hence growth assumptions are conservative)

5.3 Estimation of Base Year Demand

- 5.3.1 The base year has been assumed to be 2019, the year in which the appraisal has been undertaken and data collection undertaken. As previously noted, while ORR data is available for Reading West Station, the latest being 2017/2018 data, it was considered that the data was not as robust as it might be given that ticket sales do not distinguish between Reading (Main) and Reading West Station. This data has nevertheless been used to sense check the demands estimated from entry and exit counts surveys.

- 5.3.2 Entry and Exit counts collected in May 2019 have provided a more robust estimation of base demands. This coupled with the survey interview data provided a more robust estimation of weekday demands, while the entry and exit counts undertaken on Saturday 18th May 2019, provided an estimate of base year demands for the weekend. The base year daily demands were summarised in Tables 4.12 and 4.13 for an average weekday and Saturday weekend respectively. These base year demands have formed the basis upon which Opening Year 2021 forecasts demands have been based.
- 5.3.3 In order to convert from daily demand to annual demand, the weekday daily demands were factored by 253 days while the Saturday demands were factored by 60 days.

5.4 Estimation of 2021 Opening Year Reference Case Forecast Demand

- 5.4.1 2021 Opening year Reference demand was obtained by applying an 7.1% uplift to the observed 2019 base year demand to 2020 and then applying a further 8% uplift to the 2020 demand to create the 2021 reference case demands. The same growth factors were applied to weekday and weekend demands. These growth factors are as per **Table 5.1**.

5.5 Do Minimum/Committed Scheme Assumptions

- 5.5.1 The Do Minimum scenario assumes timetabling changes are in place which increase train services as follows. The effect of the timetable changes is represented by an uplift in future year demands from 2021. No other committed schemes have been assumed in the Do Minimum and the station facilities mirror the existing ones or the Do Nothing. The estimation of the timetable uplift is discussed in the following section. It should be noted that the proposed new Green Park station will likely increase demand at Reading West as will the improvements at Theale. These have not been explicitly included in the without scheme demands hence the Do Minimum scenario is considered conservative. The above schemes also underline the importance of rail travel in the Reading area.

5.6 Potential Timetable Changes and 2021 Do Minimum Scenario

- 5.6.1 GWR is currently consulting on their December 2019 timetable and this would see three (3) trains per hour between Reading and Basingstoke in the morning and evenings, up from the current service of two (2) trains per hour. These potential changes have been accounted for as an endogenous uplift up and above the background exogenous growth within the appraisal as a more frequent service between Reading West and Basingstoke would be expected to result in increased passenger numbers using the station for the route. This scenario has formed the 2021 Without Scheme or Do Minimum scenario upon which further endogenous uplifts in demand as a result of the proposed Reading West Railway Station facility improvements have been estimated to create the With Scheme forecast demands.
- 5.6.2 This approach is consistent with the WebTAG forecasting approach in TAG Unit M4 Section 8.3. Uplifts for this timetable change have been estimated using PDFH Tables B4.10 and B4.5 from Chapter B4 (Journey Time, Frequency and Interchange). The station to station journey time between Reading West and Basingstoke has been derived from the timetable as 24 minutes. This has been assumed to remain unchanged with and without the timetable changes. The service frequency will improve from 2 trains per hour (a service every 30 minutes) to 3 trains per hour or a service every 20 minutes. From Table B4.10, this gives a reduction of service frequency penalty from 26 minutes to 19 minutes assuming 'Full and Seasonal' tickets with no fare reduction. No interchanges have been assumed. The change in Generalised Journey Time (GJT) before and after the timetable change is shown in **Table 5.2**.

Table 5.2: Timetable changes in Generalised Journey Time (GJT) (minutes)

Parameter	2021Reference Case		2021DM (with Timetable change)	
	Service	GJT Units	Service	GJT Units
Journey Time (minutes)	24	24	24	24
Headway (minutes)	30	26	20	19
Interchange	0	0	0	0
Total GJT		50		43

- 5.6.3 Applying a generalised journey time elasticity of -1.10 from PDFH Table B4.5 (Non-London), resulted in a demand uplift of 18% as a result of the timetable improvements. This is based on Basingstoke being with 20 miles of Reading West. The passenger surveys indicated that Basingstoke constitutes 14% of demand at Reading West. For simplicity, a 2.5% uplift (18%*14%) uplift was applied to the total demand before timetable changes, to create the 2021DM scenario with timetable changes. Following this, further uplifts due to the station facilities have been applied as explained in Section 5.7.

5.7 Application of Station Facility Upgrade Demand Uplift – With Scheme Scenario

- 5.7.1 Paragraphs 8.3.34 to 8.3.37 of WebTAG Unit M4 provides guidance on the application of demand uplifts for station facilities in light of PDFH approach. The guidance notes that PDFH recommends direct demand uplifts from improvements to a range of station facilities but advises that care should be taken when determining the appropriate base demand to which uplifts should be applied.
- 5.7.2 In the case of the station uplift at Reading West, the improvements will open to the public in 2021 having taken into account the uplift from timetable changes. Therefore the station facility demand uplifts have been applied to the 2021 Do Minimum future years. (Beyond 2021 the uplifts have been capped at 2%.
- 5.7.3 **Table 5.3** shows the uplift assumptions from PDFH Table B8.1 that have been applied for Reading West Station. It has been assumed that uplift values for Urban London & South East' are more appropriate for Reading West Railway Station and have therefore been adopted for the demand uplift calculations. An uplift of combined 11.5% was estimated for Business/Leisure trips while an uplift of 8% was estimated for commute trips. This gave an overall demand uplift of 8.88%.
- 5.7.4 **Table 5.4** provides a summary of the estimated annual demands from Base Year 2019 to Opening Year 2021DM and With scheme or 2021DS scenario demands following the station facilities uplift.

Table 5.3: Assumed Demand Uplift (%) for proposed Reading West station facilities (PDFH Table B8.1)

Station quality attributes	Station Facility	Business/Leisure	Commute	Comment
Retail facilities	Kiosk (No shop or vending machine >to> Small shop)	1.50%	0.50%	
Waiting facilities	Poor condition seats >to> Good condition seat provided, but no waiting room	1.70%	1.00%	Conservative - There will be a waiting area within the new station entrance and screens allowing passengers to walk up to the platforms when before their train arrives
Cleanliness	Some litter >to> no litter	0.90%	0.50%	
Ticket purchase	On trains only >to> On trains & TVMs	2.1	2.4	Conservative values of 'On train only to On train & TVMs based on Urban Regional & Intercity
CCTV (Security)	CCTV in station only >to> in station and surrounding area	2.80	1.90	Conservative, as barriers will prevent the station being used as a 'through' route, particularly for illegal activities.
Ticket barriers	No ticket barriers/staff >to> operating ticket barriers with staff	2.5%	1.7%	Station known to be used for ticket avoidance.
Info screens	No information screens >to> Information screens	Not claimed	Not claimed	Conservative, as more screens will be provided in the new entrance facility
Platform staff (Security)	No rail staff on platform >to> Rail staff on platform	Not claimed	Not claimed	Conservative as staff will be on the barriers in the new entrance facility.
Help points (Security)	No Help point on platform >to> Help point on platform	Not claimed	Not claimed	Conservative, as although there is a help point on the platform there will be an additional help point within the entrance facility
	Total uplift	11.50%	8.00%	

Table 5.4: Summary of Reference Year 2021 Opening Year 2021 Forecast Demands (Annual)

Scenario	Entries	Exits	Total	Uplift (%)
2019 Base	423,726	396,241	819,967	n/a
2021 Reference (no timetable changes)	490,115	458,324	948,439	+15.6%
2021DM (with timetable changes)	499,918	467,491	967,408	+2.00%
2021DS (with station facilities uplift	544,285	508,980	1,053,266	+8.88%
Total 2021DS uplift from 2019 Base Year	n/a	n/a	n/a	+28.5%

- 5.7.5 It is considered that the station improvements will have the most significant impact on passenger demand uplift in the early years of the scheme being implemented or opened. For simplicity, it has been assumed that the full uplift of 11.5% for business/leisure trips and the 8.5% for commuters will be realised in the Opening year. Therefore, the uplift growth will be realised in the short term and is a one-off application. Thereafter, our assumption is 2% growth per annum. This ongoing growth is expected to be realised regardless of the station improvements to the extent that over the long term, growth will be of this lower order of magnitude.
- 5.7.6 PDFH has been applied using an additive/ cumulative approach to the uplifts, which follows the PDFH Example 1 in 'PDFH Chapter B8 Station Facilities'.
- 5.7.7 As for the magnitude of the total uplifts of 11.5% and 8% respectively, we consider these to be on the conservative side given the current conditions at Reading West Station. The station currently has very limited facilities, poor security (no barriers), poor natural surveillance, poor access arrangements and poor prominence. It is our view that there is a case to argue that the uplifts might be higher than those that have been assumed.
- 5.7.8 'PDFH Chapter C8: Station Facilities: Evidence' covers the evidence that forms the basis of the station quality recommendations contained in 'Chapter B8: Station Facilities'. Some studies contributing to this PDFH evidence indicate that at smaller stations, station enhancements could uplift origin traffic by 7%, while for larger stations an enhancement of around 8% for both origin and destination traffic was recorded. It is further stated that recall information collected at refurbished stations (rather than the construction of new facilities) indicate an average increase in demand of around 8%, but with 20 – 30% of this demand abstracted from other stations. Our current assumptions of an overall uplift of 8.88% is consistent with this order of uplift in PDFH and appears reasonable if not somewhat understated given the current conditions at Reading West station and the plans to construct a new station entrance and waiting facility.

6 Scheme Costs

6.1 Introduction

6.1.1 This section reports on the scheme costs. The costs considered comprise the following:

- Capital Costs
- Station Operating Costs (for day to day operation)
- Renewal/maintenance costs (renewal of assets)

6.2 Capital Costs

6.2.1 The scheme costs have been considered in accordance with TAG Unit A1.2 and include the application of appropriate risk and optimism bias factors consistent with the recommended values for rail in WebTAG Unit A5.3 (and TAG Unit A1.2.). Costs have considered inflation or real price increases to time of spend. The station upgrade scheme cost breakdown is shown in the table below. The scheme costs were estimated by a professional estimator and are in 2016 prices. The costs are summarised in **Table 6.1** and are split into highway and Station facilities improvement costs. **Appendix B** provides more details on the composition of the Scheme Costs. It is considered that the levels of preparation and supervision costs are consistent with the scale of the scheme and it is of relatively short construction duration.

Table 6.1: Summary of Scheme Costs (£) in 2016 prices.

Cost Element	Amount in £	Amount in £	Amount in £
	Highways	Station Facilities	Total
Preliminaries	39,123	165,881	205,004
Scheme Costs (excluding contingency & optimism bias)	130,410	1,173,874	1,304,284
Contingency (25% of Scheme costs + Preliminaries)	42,383	195,290	237,674
Utilities Costs (Based on C3 estimates)	500,000		500,000
Construction Works- Electrification Works		940,000	940,000
Total Construction Costs	712,875	2,475,045	3,186,962
Land	n/a	n/a	n/a
Preparation Costs	27,800	153,505	181,305
Supervision Costs	20,850	153,505	174,355
Sub Total excluding real cost increases	761,525	2,782,055	3,543,580
Add Inflation from 2016 to point of expenditure	78,303	252,142	330,445
Add Risk (Quantified)	37,183	349,733	386,915
Sub Total with Inflation and Risk (Outturn)	877,011	3,383,930	4,260,940
Total Cost including Optimism Bias of 9%	955,942	3,688,483	4,644,425

- 6.2.2 A major risk was the requirements for utility diversions. Trial holes have already been undertaken to identify utilities and their depth. Engagement with the relevant statutory undertakers has also already been undertaken and therefore the extent of the costs of utility diversions are accurate. It is therefore considered that the level of quantified risk contingency is reasonable at about £386,915 in total. A further contingency of £237,674 is also provided, giving a total sum of £624,589 or about 18% of the Scheme costs of £3,543,580 exclusive of real cost increases or about 15% of the Total outturn costs of about £4,260,940. It is considered that this is proportionate to the scale of the scheme.
- 6.2.3 There is confidence that the scheme costs are robust. The highway costs have been reviewed and further detailed. Trial holes, topographical surveys and utility enquiries and diversion costs have informed the scheme costs, and this has contributed to a better understanding of risks. The station facilities costs have been prepared by an experienced and specialist cost consultant, with oversight from GWR, hence there is also confidence that the costs are robust. Furthermore, contingency has been built into the scheme costs.

6.3 Understanding of Key Risks

- 6.3.1 In order to better inform the quantified risk in relation to utility diversion, trial holes were undertaken on the Oxford Road. The results of the trial holes showed that there are a large number of utility services in the highway and also that these are quite shallow, so will require diversion. There is no scope to amend or re-engineer the scheme to divert away and approximate costs were sought from the utility companies for diversion. The largest cost estimated is by Vodafone. However, Thames Water have confirmed there is no requirement to move any of their services. This informed knowledge of risks and stage of the scheme have confirmed that an Optimism Bias of 9% is appropriate. **Table 6.2** shows the estimated quantified costs of utility diversion. The topographical surveys have also been undertaken and have informed the highway detailed design.

Table 6.2: Utility Diversion estimated costs (£).

Statutory Undertaker	Amount in £
SSE	7,098.30
City Fibre	3,159.00
Century Link	27,144.99
Vodafone	228,513.00
BT	96,679.92
Virgin Media	71,957.36
Thames Water	n/a
Total	434,552.57

6.4 Operation Costs

- 6.4.1 In addition to capital costs, the appraisal has considered annual Operating Costs of the station as well renewal costs of assets. Table 6.3 shows estimates provided by GWR or obtained from similar past business cases. These estimates have been assumed in the appraisal. In informing the value for money appraisal over the 60 year appraisal period, inflation has been taken into account and deflation and discounting to 2010 prices applied in line with WebTAG guidance.

Table 6.3: Operation Costs (£) in 2019 prices.

Cost Element	Annual Costs in £
Annual Staff Costs	
Station maintenance costs	
Network Rail costs associated with station improvements: This will be determined once TOC have a Basic Asset Protection Agreement (BAPA) in place. However, based on comparable projects and the scale of work (isolation for Overhead Line Equipment and potential bridge related works) TOC estimate a range between [REDACTED]	
Ticket vending machines, Customer Information Screen operation costs for day to day use (TOC charged just circa [REDACTED] per year for the operation of the CIS at each station by Worldline)	
Renewal Costs	
Renewal/maintenance programme and costs for barriers and other equipment such as ticket vending machines, CIS screens and information boards - (Station Information and Security Systems will transfer to NR, and the TOC would pay an annual charge per annum to cover the cost of replacement of hardware (10 year period assumption).	
There will also be an uplift to the maintenance contract to maintain the SISS assets.	
Ticket gateline maintenance costs would be dependent on the number of gates, but an assumed figure would be [REDACTED] per annum	
Total equivalent Annual Costs	

6.5 Risk Register/Quantified Risk Assessment

- 6.5.1 A quantified Risk proportionate to the scale of the scheme and costs has been used to inform the scheme costs.

6.6 Optimism Bias

- 6.6.1 An optimism bias of 9% which is consistent with the stage of the scheme and an understanding of the quantified risk has been assumed.

7 Scheme Benefits

7.1 Introduction

7.1.1 The following scheme benefits have been estimated for the Reading West Station upgrade:

- (i) Rail Fare Revenue increase as a result of demand increase from station facilities upgrade;
- (ii) Retail Revenue from kiosk;
- (iii) Active Mode Appraisal Impacts/Health Benefits – these arise from increase in number of cyclists accessing the station as a result of cycle parking improvements and other station facilities plus an increase in pedestrians from the demand uplift due to station facilities improvements;
- (iv) Station environment improvement- Journey quality benefits accruing to existing and new users who now enjoy an improved station environment. These are based on willingness to pay (WTP) approach;
- (v) Marginal External Cost (MEC) benefits accrued by non-users as a result of some car drivers shifting mode to rail leading to decongestion and other related benefits estimated through the MEC approach in TAG Unit 5.4.

7.1.2 These benefits are now considered in the sections that follow. Benefits have been estimated over a 60 year appraisal period and are reported in 2010 prices discounted to 2010.

7.2 Rail Fare Revenue

Demand Uplift Estimation

7.2.1 Improvements to the station facilities at Reading West station are expected to result in increased demand at the station leading to an increase in rail fare revenue. The number of new users due to improvements of the station facilities, was determined using demand uplift values from PDFH (Chapter B8 Station Facilities, May 2018). Table B8.1² in PDFH, tabulates the recommended demand uplift values for a given facility improvement by whether the trip is a Business/Leisure trip or a Commute trip. The interview surveys undertaken at Reading West Station indicated that the proportion of Commute trips is 82% and that of business/leisure trips as 18%. The PDFH recommended demand uplifts also differentiate according to the following regions:

- Urban London & South East;
- Urban Regional & Intercity;
- Rural Region

It is considered that uplift values for 'Urban London & South East' are more appropriate for Reading West Railway Station and were used in the appraisal.

7.2.2 Rail fare income has been derived from the demand forecasting for peak, off-peak and weekend trips and converted to revenue by using June 2019 fares with a yield application applied. The yield factor is based on ticket types used at Reading West Station and is applied to the full return fare, which takes account of the different ticket types available such as

² Table B8.1 Recommended Demand Uplifts for Station Quality Improvements (PDFH May 2018)

season, weekly, concessionary, advance, etc. In estimating fare revenues, it has been assumed that commute trips are made during the peak periods and hence incur peak fares, while business/leisure trips have been assumed to travel off peak.

- 7.2.3 Income comprises three sources; users new to the rail network, users who have switched from a nearby station or abstracted trips, and users who no longer travel. The net generated revenue, i.e. new users' income less lost users' income is used for the appraisal. A brief overview of the process to derive the demand was provided in Section 5.
- 7.2.4 Real fare increases over time have been applied based on the assumption that fares would increase at RPI plus 1%. RPI figures have been obtained from the WebTAG May 2019 Databook V1.12 Table A5.3.1. Fare increases have been adjusted using the GDP Deflator. These fare increases have only been applied for the first 20 years of the scheme, as per the guidance for Rail Appraisal.
- 7.2.5 In rail appraisal, the increased revenue from new passengers is offset against the operation costs to provide private sector business benefits as shown in the TEE table. The rail fare revenue over the appraisal period is shown in **Table 7.1** and is in 2010 prices discounted to 2010.

Table 7.1: Rail Fare Revenue over appraisal period (2010) prices

Rail Fare Revenue	Amount in £000's
Fare Revenue Accrued	21,297

Fares Evasion assumptions

- 7.2.6 The station upgrade is expected to reduce fare evasion due to the installation of barriers. For the purposes of this appraisal, it is assumed that the full fare revenues generated will be captured with none lost to fare evasion; - a benefit attributed to the barriers. A sensitivity test has been run which assumes no barriers and a consequent loss in fare revenue of 5%.

7.3 Franchising and Treatment of Revenue

Revenue Transfer

- 7.3.1 It is currently anticipated that the next Great Western franchise could commence from March 2022 after a franchise competition. Therefore, given the scheme timescales, as a percentage of total forecast incremental revenue in the appraisal period, over 95% is accrued after March 2022 and the reletting of the new franchise. It has therefore been assumed that 95% of the fare revenue will transfer to central government with 5% treated as a benefit to the TOC. The results are reported in Table 7.9 under the economic appraisal summary.

7.4 Consideration of Crowding

Rail capacity

- 7.4.1 The already planned and committed improvements will deliver sufficient future rail capacity to accommodate the demand generated from the Reading West area which the station improvements plan to cater for.
- 7.4.2 Additional passengers will not induce any additional rail operating costs: No additional rail operating costs are anticipated in connection with the project. Any additional demand generated through the project will be met by enhanced rail services introduced between London to the West of England in 2019 and are already fully committed.

- 7.4.3 Additional passengers will not require additional rail capacity: As part of the Great Western modernisation programme, the line between Reading and Newbury has been electrified. As a result, GWR will be able to operate new electric trains as far as Newbury (Electrostar).

Kiosk Income

- 7.4.4 The TOC will earn an annual income by leasing out the retail floor space. This income has been estimated from comparable stations and is modest in magnitude and equates to [REDACTED] over the appraisal period in 2010 prices as shown in **Table 7.2**.

Table 7.2: Kiosk income over appraisal period (£ in 2010 prices).

Kiosk Income	Amount in £000's
Kiosk Income	[REDACTED]

7.5 Active Mode Appraisal Impacts/Health Benefits

Active Mode Appraisal Impacts/Health Benefits

- 7.5.1 It is anticipated that health benefits will accrue as a result of some people walking and cycling to access the station. The station improvements includes provision for cycle parking currently estimated to be 24 to 48 spaces.
- 7.5.2 WebTAG guidance in TAG Unit A5.1 pertaining to Active Mode Appraisal was used to estimate these benefits. These benefits will comprise:
- Physical Activity Impacts – these are based on monetising the change in mortality resulting from a change in cyclists i.e. the benefits from gaining life years following the principles of the Health Economic Assessment Tool (HEAT) by the World Health Organisation (WHO);
 - Absenteeism Impacts in relation to commuting trips- these arise from improved health due to physical activity such as from cycling leading to reductions in short term absence from work.
- 7.5.3 The station passenger interview surveys showed that 59% of the respondents stated that they originated from areas around Reading West, with a further 17% and 4% originating from the relatively local postcode of RG30 and from the vicinity of Oxford Road respectively. This means that 80% of the respondents originated from the Reading West station locality indicating the importance of the station to the local area. Fundamentally, this means that the station is within walking and cycling distance as is also indicated by the mode share results of access/egress to the station from the passenger interview surveys.
- 7.5.4 The exit and exit count surveys indicated that in general, 3-6% of the passengers used cycle as the access mode, generally equating to 174 users (entries and exits combined) on an average weekday and 96 users on a Saturday in 2019. This is generally consistent with the passenger survey interviews which indicated that the mode share of cycle was 6% albeit only undertaken in the morning period 0600 to 1100. The interview survey also indicated that pedestrians comprised 72% of the mode share.
- 7.5.5 Assuming that these observations are maintained into the future, it can be seen that a significant proportion of the new demand using the station as a result of the station facility improvements will access and egress the station as pedestrians or as cyclists leading to health benefits associated with active mode use.

- 7.5.6 The DfT Active Mode Toolkit (May 2019) was used to estimate the pedestrian and cycle user benefits. This takes as inputs, the number of daily pedestrians and cyclists plus the distance travelled. The tool kit was designed to estimate benefits of improvements to cycle and pedestrian facilities but equally can be used to estimate benefits from increased active mode use. For this appraisal no changes to facilities (ped or cycle) has been assumed, just the increase in numbers of users as a result of station improvements. It was estimated that in the opening year with the scheme in place, an uplift of 205 new pedestrians and 17 new cyclists per average weekday would use the station from a total 285 new users per day predicted in the opening year 2021.
- 7.5.7 The toolkit assumes an average cycling distance of 5.6 km and walking distance of 1.18 km. The walking distance assumption was retained for this appraisal. For cyclists, the appraisal assumed a cycling distance of 3 km given the local nature of the demand composition suggested by the passenger interview surveys. The 3km value was assumed from Section 3 of the cycle-rail tool kit³ publication which noted that surveys elsewhere have indicated average cycling distance of 3km to rail stations. The study noted that while a small number of cyclists may regularly travel greater distances, anything greater than 5km maybe unrepresentative of the primary objective for cycle-rail. For this reason, a 3km cycle distance was assumed. A 20 year appraisal period was assumed as per the DfT toolkit which considers that the active mode benefits are expected to decay with time. The resultant active mode benefits are shown in **Table 7.3**.

Table 7.3: MEC over 60 year appraisal period (£m in 2010 prices).

Parameter	Benefits in £000's 3 km cycle length
Physical Activity Impacts Benefits/Reduced risk of premature death	618
Absenteeism Impacts Benefits	196
Total Benefits (Active Mode)	814

7.6 Non User Benefits (Marginal External Costs)

- 7.6.1 The improved station facilities will result in some car drivers changing mode to use the train. In doing so, this transfer from car to rail will result in fewer car trips and a consequent reduction in car vehicle kilometres travelled leading to secondary non-user benefits for those who continue to drive. These benefits are calculated under the banner of marginal external costs (MEC) as per guidance in WebTAG Unit 5.4. The MEC are discussed below.

Marginal External Costs

- 7.6.2 Marginal external costs are benefits accruing to non-users as a result of modal shift from car to rail as a result of station improvements. These comprise the following benefits as per guidance in TAG Unit A5.4:
- Congestion (decongestion benefits);
 - Infrastructure benefits;
 - Accident benefits;

³ Cycle-Rail Toolkit 2, April 2016, Rail Delivery Group, Cycle Rail Working Group

- Local Air Quality benefits;
- Noise benefits;
- Greenhouse Gases (GHG);
- Indirect Taxation.

7.6.3 Guidance from TAG Unit A5.4 together with that from TAG Unit A5.3 was used to estimate these benefits. Values of external costs will be taken from TAG Databook Tables A5.4.2 and A5.4.4. A weighted value for congestion is proposed taken from the proportion of car kilometres in the South East. The databook provides monetary values of marginal costs for the years 2015, 2020, 2025, 2030, and 2035. Therefore estimates of marginal external cost benefits were calculated for each of these years and then interpolated between them. The results are summarised in **Table 7.4**.

7.6.4 It can be seen that the scheme by reducing car travel and hence car vehicle kilometres results in a loss of revenue to the chancellor as shown by the negative indirect taxation value of -£114,600. This can be considered an additional cost of the scheme to Central government with net MEC benefits of -£34,800. The rest of the MEC benefits are positive at £80,000 indicating that the scheme has a positive impact on congestion (reduces congestion), infrastructure, accidents, noise and greenhouse gases.

Table 7.4: MEC over appraisal period 2010 prices).

Parameter	Benefits in £000's
Congestion (decongestion benefits)	16.2
Infrastructure benefits	2.0
Accident benefits	38.9
Local Air Quality benefits	1.3
Noise benefits;	2.2
Greenhouse Gases (GHG)	19.2
Indirect Taxation	-114.6
Total MEC benefits	-34.8
Total MEC benefits (exc Indirect taxation)	80

7.7 Valuation of Station Environment Improvement Benefits

7.7.1 The enhanced station environment will result in benefits being experienced by station users who will benefit from the improved station environment. In the case of Reading West Station, a key objective of the scheme is to improve the station environment and security in particular. As previously noted, access to the station is concealed, signage is poor and the station's visibility from the roadside is limited. Natural surveillance at the station is also poor and passengers can feel isolated when waiting for a train especially outside the peak periods. The station is also known to suffer from incidents of anti-social behaviour. **Appendix C** includes correspondence from the British Transport Police (BTP) highlighting some of these issues. The station improvements will greatly provide for a much more pleasant and secure environment that will be enjoyed by both existing and new users.

- 7.7.2 In order to estimate these benefits, an approach based on (Transport for London) TfL's BCDM (Business Case Demand Manual) values, has been used to capture the benefits from an enhanced station environment, safety, and security for existing and new users. As noted in PDFH6 May 2018 Chapter C8 (Station Facilities: Evidence), the supporting evidence for TfL BCDM approach was based on a study objective to estimate willingness to pay (WTP) for a large number of service and infrastructure attributes for Underground, bus rail, tram, walking and cycling using a computer based Stated Preference (SP) questionnaire.
- 7.7.3 The WTP BCDM values are tabulated in PDFH Chapter C8. PDFH Table C8.4 shows the WTP values in pence/journey for a range of rail packages such as ticket hall, platform facilities, station environment, security, train security and information and train environment improvements. Table C8.5 further shows the individual valuations of each attribute from the study and has been used to select attributes relevant in this appraisal. The attributes used for the Reading West appraisal are shown in **Table 7.5**. These benefits have been estimated at £2.731m over the 60 year appraisal period as also shown in **Table 7.5**.

Table 7.5: Station improvement willingness to pay assumptions and benefits over appraisal period (2010 prices)

Package	Attribute	WTP(p/journey)	Benefits £000's (60 years)
Station environment	Condition of station exterior: Poor State of repair to good/reasonable state of repair	4.2	814
Station Security	Station surveillance: No surveillance to cameras in station and monitored some time	9.6	1,862
Total claimed	Station environment and security	13.8	2,676

7.8 Consideration of Environmental and Other Impacts

- 7.8.1 Given the scale of the scheme, it is not considered that the scheme will have significant impacts on the following Environmental and Social elements. A proportionate approach has been adopted either qualitatively or quantitatively as appropriate. It is considered that a qualitative approach in line with relevant WebTAG guidance will be adequate although a quantitative approach will be adopted wherever possible:

Environmental Impacts

- Noise - This has been estimated quantitatively using the MEC approach as already reported. The scheme will have slight beneficial impacts on Noise arising from a reduction in car trips due to mode change to rail.
- Air Quality - This has been estimated quantitatively using the MEC approach as already reported. The scheme will have slight beneficial impacts on Air Quality arising from a reduction in car trips due to mode change to rail.
- Greenhouse Gases – This has been estimated using the MEC approach and the scheme will have Slight beneficial impacts arising from some car drivers changing mode to rail with consequent reduction in greenhouse gases.
- Landscape – The scheme is expected to have a Neutral impact on the Landscape

- Townscape – The scheme will improve the station environment providing a presence to Reading West Station. The scheme will be Slightly beneficial to the Townscape
- Heritage and Historic resources – The scheme is considered neutral on this aspect
- Biodiversity – The scheme is not expected to have an impact on biodiversity and is considered neutral
- Water Environment - The scheme is considered neutral on the water environment

Social Impacts

- Physical Activity -has been proportionately considered under active mode appraisal. Surveys indicated that Reading West Railway Station is predominantly accessed by active modes – walking and cycling and hence health benefits will accrue as a result of physical activity.
- Journey Quality- The scheme will improve the station environment for existing and new passengers resulting in a positive environment experience for users.
- Accidents – The MEC approach has been used to estimate accident benefits.
- Security – The scheme will improve security at the station for passengers and also discourage anti-social behaviour. Access to Services- The scheme is expected to encourage more people in the local area to travel by train and will a beneficial impact on access to services.
- Affordability- The scheme has been considered neutral on affordability
- Severance – The scheme has been considered neutral on severance
- Option Values – These have not been assessed and it is considered that the scheme will have a neutral impact.

7.9 Summary of Economic Appraisal

- 7.9.1 **Table 7.6** summarise the results of the Value for Money assessment for the appraised scheme based on the 'Core' or Central scenario. All figures are in £000's Present Value for the full 60-year appraisal period. The indirect taxation is shown in the tables, and was derived from the total MEC non-user benefits calculations.

Table 7.6: Core Scenario Value for Money results (2010 prices)

Core Demand - Economic Appraisal Summary Table	£000's PV
Costs	
Station Capital Costs (Inc. 9% OB and contingency)	4,524
Station Operating Costs	14,819
Developer Contributions	n/a
Total Rail Revenue	21,927
Rail Revenue transferred to Central government (95%)	-20,830
Total Costs (PVC)	-1,487
Benefits	
Rail Revenue accrued by TOC (5%)	1,096
Kiosk Income	
Total TOC Revenue	1,737
User Benefits	
BCDM Station environment quality/Amenity/security benefits (WTP)	2,676
Active Mode Benefits	814
Non-user Benefits	
Congestion	16.2
Infrastructure	2.0
Accident	38.9
Local Air Quality	1.3
Noise	2.2
Greenhouse Gases	19.2
Indirect Taxation (MEC)	-114.6
Total Benefits (PVB)	5,193
Net Present Public Value (NPPV)	6,880
Benefit Cost Ratio (BCR)	n/a

- 7.9.2 The results show that the rail fare revenue outweighs capital and operating costs and the scheme is Financially Positive in VfM terms. This means that revenue or costs savings to the Broad Transport Budget exceed any cost outlays when compared to the case without the proposed scheme as per the guidance in paragraph 5.9 of the DfT Value for Money Framework, 2017. As noted previously, 95% of the rail revenue has been assumed to appear as a cost reduction to the scheme costs as under the franchising terms, this revenue transfers to Central government. The other 5% which is assumed to be earned in the two years prior to the end of the current franchise accrues as benefits to the TOC. The results show that the total cost or Present Value of Costs (PVC) of the scheme is negative. This is because the rail fare revenues transferred to Central Government outweigh the scheme capital and operating costs. The scheme is seen to have a positive Present Value of Benefits comprising of user

and non-user benefits as well as revenues (kiosk income + the 5% of rail fare revenues) accrued to the TOC. The scheme also has a positive Net Present Public Value (NPPV) which means that the scheme benefits exceed the scheme costs.

- 7.9.3 Given that the scheme costs are negative, the Benefit to Cost Ratio (BCR) calculated as the ratio of the PVB to the PVC is negative and has no meaningful interpretation towards the Value for Money (VfM) category of the scheme. Instead the scheme has been demonstrated to be Financially Positive in VfM terms. This means that revenue or costs savings to the Broad Transport Budget exceed any cost outlays when compared to the case without the proposed scheme as per guidance in paragraph 5.9 of the DfT Value for Money Framework, 2017.

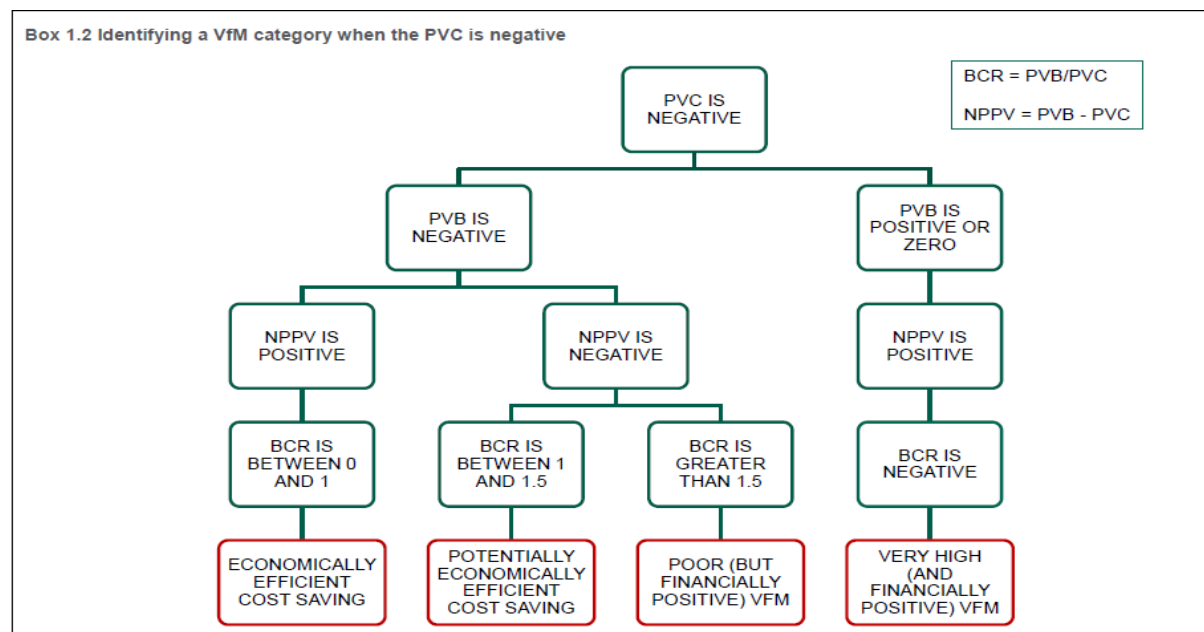
7.10 Value for Money Category of the scheme

- 7.10.1 Box 1.2 of the DfT Value for Money Supplementary Guidance on Categories (Moving Britain Ahead) has been used to determine the scheme's VfM category. This is the scenario which applies when the PVC is negative as has already been noted in Table 7.9 above for Reading West. Box 1.2 is reproduced here as Figure 7.1. As can be seen, the appraisal for the Core Scenario for Reading West Railway Station Upgrade is characterised by the following:

- PVB is Positive
- NPPV is Positive
- BCR is Negative

- 7.10.2 From the guidance, this means that the scheme has a Very High (and Financially Positive) VfM which makes investing in the Reading West Station Upgrade viable and in the Very High VfM category.

Figure 7.1: Identifying the Value for Money Category



7.10.3 To complete the scheme appraisal reporting, the standard DfT appraisal reporting worksheets are provided as Appendices as follows :

- Transport Economic Efficiency table (TEE) – Appendix E;
- Public Accounts table (PA) Appendix F;
- Analysis of Monetised Costs and Benefits table (AMCB) – Appendix G;
- Appraisal Summary Table (AST) – Appendix H.

7.11 Distributional Analysis

7.11.1 The distributional analysis looks at impact of different social groups. A proportionate qualitative approach has been adopted and would indicate that the scheme will generally be beneficial across different social groups. Surveys undertaken to inform this appraisal indicated that most users of the station are local to the area. The area suffers from anti-social behaviour and the station upgrade will improve the station and surrounding environment, and will provide for a more secure and pleasant station environment that will benefit all users.

8 Sensitivity Tests

8.1 Introduction

8.1.1 This section reports on the following sensitivity tests that have been undertaken to test the robustness of the scheme's VfM to a number of uncertainties. Three (3) sensitivity tests have been undertaken as follows:

- (i) Sensitivity Test 1 – A test without the proposed station barriers;
- (ii) Sensitivity Test 2 – 25% abstracted demand assumed compared to the assumed value of 20% in the Core scenario;
- (iii) Sensitivity Test 3 – Low growth demand assumptions;
- (iv) Sensitivity Test 4 – High growth demand assumptions;
- (v) Sensitivity Test 5 – As Core scenario but with 18% optimism bias applied to the scheme costs;
- (vi) Sensitivity Test 6 – As Core scenario, but with a much lower 6.5% demand uplift and 20% abstraction applied equally to business/leisure trips and commute trips;
- (vii) Sensitivity Test 7 – 7% demand uplift applied equally to business/leisure trips and commute trips and assuming a more pessimistic assumption of 30% abstraction.

8.2 Non-Installation of Ticket Barriers Sensitivity Test 1

8.2.1 It is noted that that due to the limited space available, it is possible that GWR will not want to install ticket barriers at Reading West Station. [REDACTED]

[REDACTED] In order to consider the impact of this, a sensitivity test without the barriers has been undertaken. The following key changes have been made in this test:

- The demand uplift attributed to ticket barriers in the Core scenario (Table 5.3) has been removed 2.5% for Business/Leisure and 1.7% for Commute;
- The capital cost of the barriers has been excluded – based on estimated number of gatelines and contingency, this would equate to [REDACTED] in 2016 prices;

[REDACTED]

- The cost of maintaining/renewal of the barriers has been removed- assumed as [REDACTED] per year;
- It has been assumed following advice from GWR, that 13% of rail fares would be lost to fare evasion without the barriers; this is based current information on 'ticketless' travel at Reading West.
- Discounting has been applied at 3.5% per annum for the 30 year period 2019 to 2049 and 3.00% thereafter as per WebTAG guidance. The appraisal monetary values for

benefits, costs and operational costs are all discounted and presented in 2010 prices in reporting the Value for Money results.

8.3 Sensitivity Test 2 around level of Abstracted Trips

- 8.3.1 PDFH notes that studies have indicated that station facilities upgrade can result in demand uplifts leading to rail fare revenue increases. The guidance notes that 20% of the demand uplift is estimated to be due to abstracted trips and this revenue is therefore not considered new revenue and is excluded from the rail fare revenue estimates. For robustness, and in the absence of local levels of abstracted trips at Reading West Station, the Core Scenario appraisal has assumed a value of 30% as abstracted trips. This sensitivity further makes the pessimistic scenario assuming 50% abstraction.

8.4 Low and High Growth Sensitivity Tests 3 and 4 and other Sensitivity Tests

- 8.4.1 The forecast assumptions of a high and low growth scenario were based on WebTAG guidance, where a proportion of base year demand is subtracted or added from the core or main scenario base demand. The base year demand from which the future year years pivot from is 2019. In accordance with WebTAG guidance, the parameter p has been stated to be 2.5% of base year demand. From 1 and 36 years after the base year, the proportion of base year demand should rise from p to $6 \times p$ in proportion of the square route of the years. The proportion of the base year to be subtracted/added from the core scenarios year is shown in **Table 8.1** for Opening Year 2021.

Table 8.1: Proportion of Base Year Demand subtracted (Low Growth) or added (High Growth) in 2021 Opening Year

Future Year	% of Base Demand
2021	± 3.5

- 8.4.2 Sensitivity Tests 5 to 7 have also been undertaken to check the robustness of the scheme to a variety of assumptions as follows:
- Sensitivity Test 5 - as Core scenario, but with 18% optimism bias applied to the scheme costs;
 - Sensitivity Test 6 - as Core scenario, but with a much lower 6.5% demand uplift applied equally to business/leisure trips and commute trips and 20% abstraction assumed.
 - Sensitivity Test 7 - 7% demand uplift applied equally to business/leisure trips and commute trips and assuming a more pessimistic assumption of 30% abstraction. The sensitivity with 7% uplift and 30% abstraction was requested by the ITE and is discussed further.

8.5 Sensitivity Test Results

- 8.5.1 **Table 8.2** summarises the results of the sensitivity tests. The results indicate that the VfM case is robust across the various sensitivity tests and demonstrates that the scheme is Financially Positive in all but three of the sensitivity tests, namely the barrier sensitivity test 1, and the lower demand uplift sensitivity tests 6 and 7.
- 8.5.2 It is worth noting that the overall 8.88% uplift in the core scenario is the resultant uplift of applying 11.5% demand uplift to Business/Leisure trips and 8% to Commute trips as per **Table 5.3**. Within the modelling, the 11.5% and 8% uplifts are applied separately to Business/Leisure trips and Commute trips respectively. The modelling assumes that commute

trips are made during the peak period with peak fares therefore applied, whereas business/leisure trips are assumed to be made off-peak.

Table 8.2: Summary of Appraisal Results with Sensitivity Tests (2010 prices in £000's)

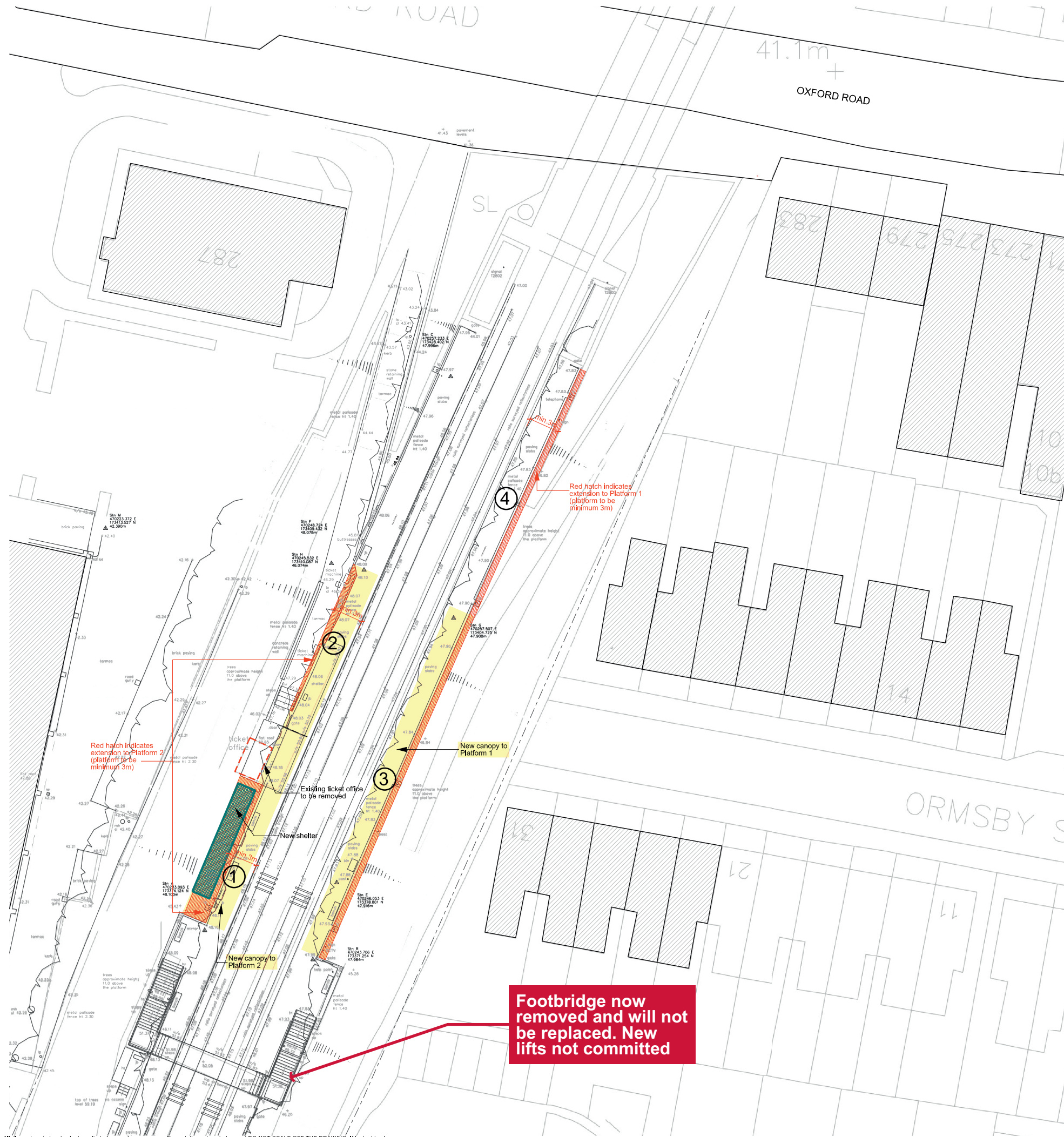
Parameter	Core	Sens Test1 (No barriers-13% evasion)	Sens Test2 (25% Abstraction)	Sens Test3 (Low growth)	Sens Test 4 (High growth)	Sens Test 5 (18% OB)	Sens Test 6 (6.5% demand uplift-20% Abstraction)	Sens Test 7 (7% demand uplift-30% Abstraction)
Costs								
Station Capital Costs (Inc. 9% OB and contingency)	4,524	4,124	4,524	4,524	4,524	4,898	4,524	4,524
Station Operating Costs	14,819	12,836	14,819	14,819	14,819	14,819	14,819	14,819
Developer Contributions	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Total Rail Revenue	21,927	17,855	20,729	21,347	22,506	21,927	18,334	17,435
Rail Revenue transferred to Central government (95%)	-20,830	-14,757	-19,693	-20,279	-21,381	-20,830	-17,417	-16,564
Total Costs (PVC)	-1,487	2,203	-350	-936	-2,038	-1,113	1,926	2,779
Benefits								
Rail Revenue accrued by TOC (5%)	1,096	777	1,036	1,067	1,125	1,096	917	872
Kiosk Income								
Total TOC Revenue	1,737	1,418	1,677	1,708	1,766	1,737	1,558	1,513
User Benefits								
BCDM Station environment quality/Amenity/security benefits (WTP)	2,676	2,629	2,676	2,595	2,757	2,676	2,618	2,630
Active Mode Benefits	814	640	814	789	839	814	596	641
Non-user Benefits								
Congestion	16.2	12.7	16.2	15.7	16.7	16.2	11.9	12.8
Infrastructure	2.0	1.6	2.0	2.0	2.1	2.0	1.5	1.6
Accident	38.9	30.6	38.9	37.8	40.1	38.9	28.5	30.7
Local Air Quality	1.3	1.1	1.3	1.3	1.4	1.3	1.0	1.1
Noise	2.2	1.8	2.2	2.2	2.3	2.2	1.6	1.8
Greenhouse Gases	19.2	15.1	19.2	18.6	19.7	19.2	14.0	15.1
Indirect Taxation (MEC)	-114.6	-90.6	-114.6	-111.1	-118.0	-114.6	-83.9	-90.3
Total Benefits (PVB)	5,193	4,660	5,133	5,059	5,509	5,193	4,746	4,758
Net Present Public Value (NPPV)	6,880	2,457	5,483	5,995	7,547	6,306	2,820	1,979
Benefit Cost Ratio (BCR)	n/a	2.12	n/a	n/a	n/a	n/a	2.46	1.71

8.5.3 In the sensitivity test 6 for example, the 6.5% demand uplift (and 20% abstraction), has been applied equally to Business/Leisure trips and Commute trips, without any differential in demand uplift. Therefore, the revenues accrued do not necessarily follow a linear relationship,

with peak fares from commute trips contributing proportionately higher revenues than off peak fares from business/leisure trips.

- 8.5.4 As expected from the results in **Table 4.18**, the High growth scenario shows the highest rail fare revenues. Sensitivity test 1 with no barriers and sensitivity test 7 with high abstraction level and low demand uplift are seen to accrue the least rail fare revenues. This is due to reduced demand uplift in the absence of the barriers and loss of fare revenue to fare evasion. Sensitivity 7 has pessimistic assumptions in terms of demand uplift and high levels of abstraction which explains its low revenues. The VfM category is, however, retained across the sensitivity tests at a Very High (and Financially Positive) category or High Value for Money category except for sensitivity test 7. Sensitivity tests 1 and 6 showing High Value for money at BCR values of 2.12 and 2.46 respectively. It is therefore concluded that the VfM case for the Reading West Railway Station facilities upgrade is in the main, robust and viable.
- 8.5.5 The results of sensitivity test 7 show a BCR of 1.71. Therefore, this sensitivity test suggests that based on these pessimistic assumptions, the Value for Money category would fall into the Medium value for money category. It is considered that this is a very pessimistic sensitivity test given the current poor condition of Reading West Railway Station. Although falling in the Medium VfM category in this sensitivity test, it goes without saying that a sustainable Public Transport scheme such as this one, would be preferable to say highway improvements, which although likely to give High Value for money from a Cost Benefit Analysis perspective, would not be in keeping with promoting sustainable means of travel.
- 8.5.6 It is considered that the need for the scheme as made in the Strategic Case is proven beyond the benefits that have been possible to monetise, and aligns extremely well to the draft Transport Strategy for South East which relies on growth in rail and bus use alongside demand management to reduce car use – to enable economic growth at the same time, as protecting the environment and dealing with the climate change emergency. The future commitment to demand management has not been considered in this business case, which would help to encourage the use of this station, if the conditions are improved. Societal benefits that would accrue such as station users feeling safe and not isolated (e.g. at night or early morning hours) are vital but difficult to quantify, although such improvements would go a long way into making the station an attractive one to use.
- 8.5.7 The Switching Ratio required to move this sensitivity test from Medium to High Value for money is relatively small at about £800,000 as can also be noted from the BCR which is at the higher end of the Medium Value for money category. These additional benefits may emanate from development that could be unlocked by upgrades to the station. Improvements to public transport facilities and making them more attractive to users will assist in providing an overall transport system with the ability to move more people through mode shift. Unlocking this development would be associated with Planning Gain that may be expected to provide the additional benefits to switch from Medium to High Value for Money.
- 8.5.8 It is therefore concluded that the VfM case for the Reading West Railway Station facilities upgrade is robust and viable across various assumptions.

Appendix A Scheme Plans



B 03.02.16 Existing ticket office building removed, canopy to Platform 2 extended, new shelter on Platform 2 added.

A 28.11.15 Platform 1 extend revised.

Rev	Date	Revision
Partner	Drawn	Date
CW	AW	SEP 2015

Scale
1:200 @ A1 & 1:400 @ A3

Project
Reading West
Master Plan

Title Proposed site plan-
NORTH
Platform extension +
canopies

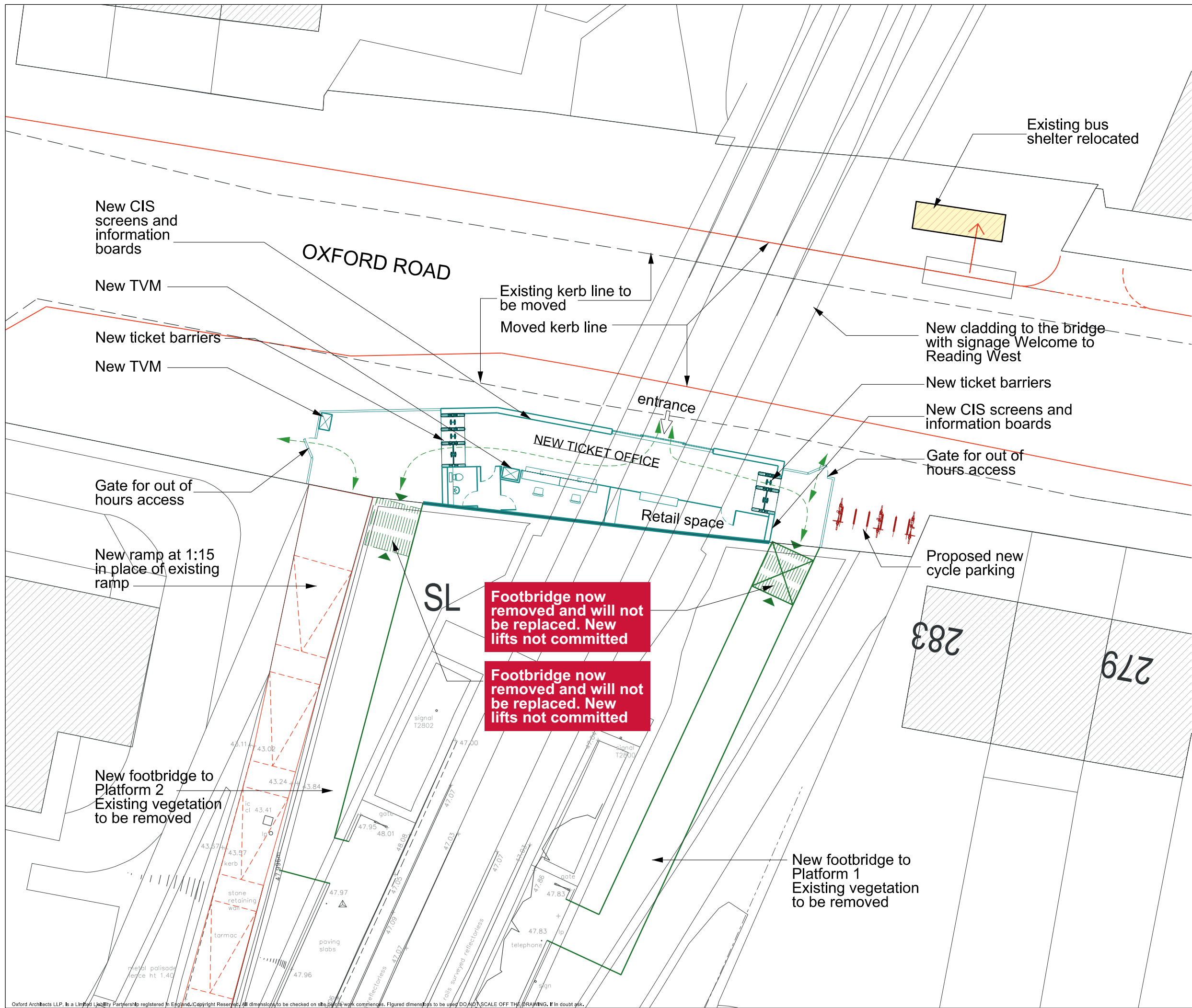
Drawing No
15141-OA-MP-SK11-P-00

Status	Revision
FEASIBILITY	B



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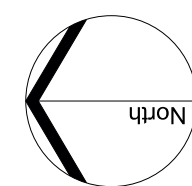
Rev	Date	Revision
Partner	Drawn	Date
CW	AW	NOV 2015

Project
Reading West
Master Plan

Drawing No
15141-OA-MP-SK16-P-0



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REFER TO DWG. NO.
1541-OA-MP-SK16-P-00 FOR DETAILS

REFER TO DWG. NO.
1541-OA-MP-SK11-P-00 FOR DETAILS

Footbridge now
removed and will not
be replaced. New
lifts not committed

REFER TO DWG. NO.
1541-OA-MP-SK12-P-00 FOR DETAILS

Rev	Date	Revision	Partner	Drawn	Date
CW		AW			FEB 2016

Scale
1:500 @ A0

Project
Redaing West
Master Plan

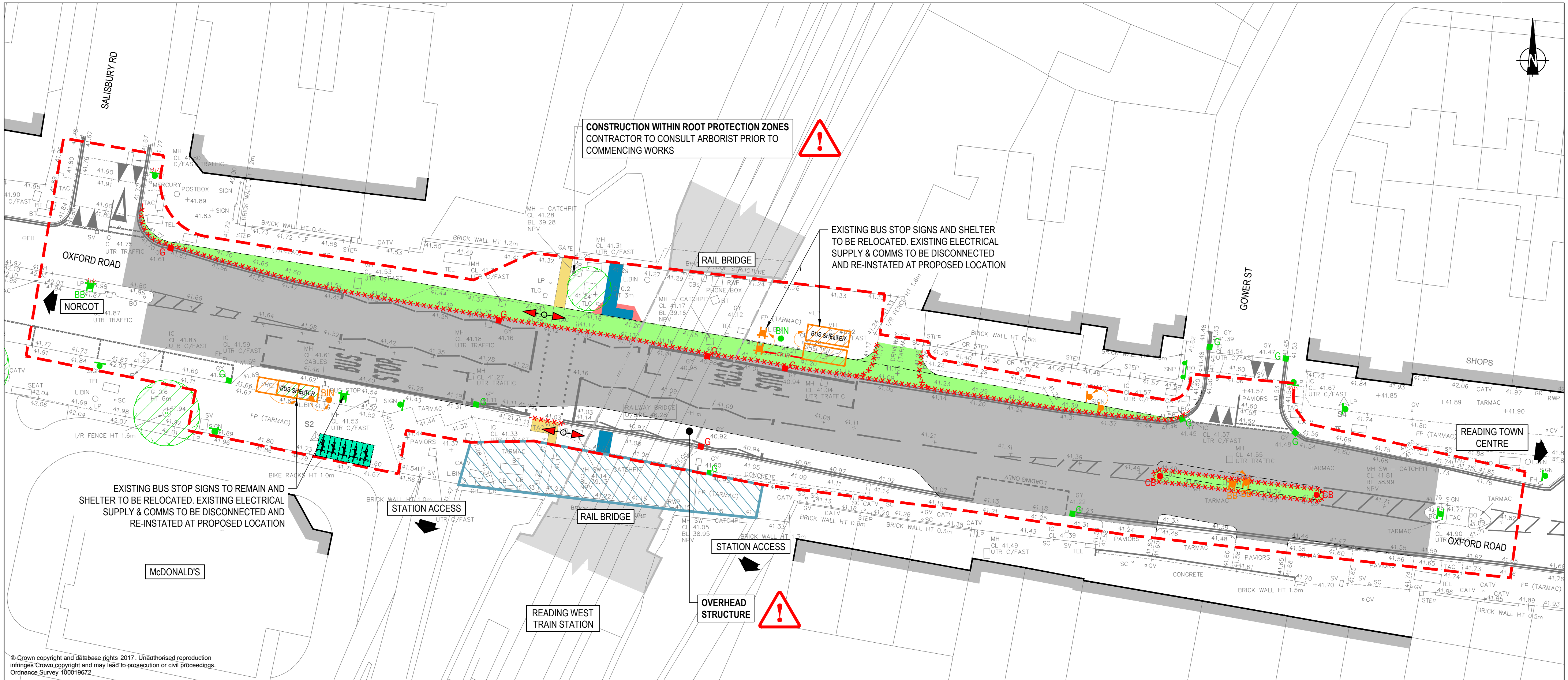
Title
Proposed site plan
- combined

Drawing No
1541-OA-MP-SK26-P-00

Status	Revision
PRELIMINARY	



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KEY

GENERAL

- SITE BOUNDARY
- PROPOSED STATION BUILDING FOOTPRINT
- EXISTING BUILDING TO REMAIN
- PROPOSED SCHEME ALIGNMENT




SITE CLEARANCE

- EXISTING FOOTWAY TO BE BROKEN OUT (INCLUDING TYPE 1 GRANULAR MATERIAL) AND EXCAVATED TO ACCOMMODATE PROPOSED FULL DEPTH CARRIAGEWAY CONSTRUCTION
- PLANE OUT **ALL** OF THE EXISTING CARRIAGEWAY SURFACING (TYPICALLY 45mm) THROUGHOUT THE EXTENTS OF THE SURFACING WORK AND REMOVED OFF-SITE TO CONTRACTOR'S TIP
- EXISTING FOOTWAY TO BE EXCAVATED TO ACCOMMODATE PROPOSED DROPPED KERB AT PEDESTRIAN CROSSING
- EXISTING FOOTWAY TO BE EXCAVATED TO ACCOMMODATE PROPOSED TACTILE PAVING AT PEDESTRIAN CROSSING (100mm APPROX.)
- EXISTING TACTILE PAVING TO BE REMOVED OFF-SITE TO CONTRACTOR'S TIP
- EXISTING BIKE STANDS TO REMAIN

- EXISTING TREE TO BE PROTECTED DURING WORKS
- EXISTING GULLY TO REMAIN
- EXISTING GULLY TO BE REMOVED
- EXISTING BUS SHELTER AND ASSOCIATED FEEDER PILLARS TO BE RELOCATED
- EXISTING SIGN TO REMAIN
- EXISTING SIGN (ILLUMINATED) TO REMAIN
- EXISTING SIGN TO BE RELOCATED
- EXISTING BELISHA BEACON TO REMAIN
- EXISTING BELISHA BEACON TO BE RELOCATED
- EXISTING TRAFFIC SIGNAL TO BE REMOVED
- EXISTING COLLAPSIBLE BOLLARD TO BE REMOVED
- EXISTING BIN TO REMAIN
- EXISTING BIN TO BE RELOCATED
- EXISTING KERB TO BE REMOVED OFF SITE TO CONTRACTOR'S TIP

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.
- ALL WORK TO BE IN ACCORDANCE WITH THE HIGHWAY AGENCY SPECIFICATION FOR HIGHWAY WORKS VOLUME 1
- TOPOGRAPHICAL SURVEYS UNDERTAKEN BY MK SURVEYS IN 2019. CONTRACTOR TO VERIFY SURVEYS PRIOR TO COMMENCING WORKS
- CONTRACTOR TO OBTAIN SURFACE WATER DRAINAGE CCTV SURVEY TO CHECK CONDITION AND LOCATIONS
- REFER TO DRAWING NUMBER 45835/5504/005 FOR PROPOSED CONSTRUCTION
- REFER TO DRAWING NUMBER 45835/5504/002 FOR EXISTING UTILITIES

Mark	Revision		Date	Drawn	Chkd
SCALING NOTE: Do not scale from this drawing. If in doubt, ask.					
UTILITIES NOTE: The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigation where the presence of any existing sewers, services, plant or apparatus may affect their operations.					
Drawing Issue Status					
FOR COMMENT					
READING WEST STATION IMPROVEMENTS OXFORD ROAD SITE CLEARANCE					
Client					
<div><div><div>Reading</div><div>Borough Council</div><div>Working better with you</div></div></div>					
Date of 1st Issue 26.07.19		Designed SF	Drawn SF		
A2 Scale 1:250		Checked GR	Approved -		
Drawing Number 45835/5504/004		Revision -			
<div><div><div>now part of</div><div>Stantec</div></div><div><div>peterbrett.com</div><div>© Peter Brett Associates LLP</div><div>READING</div><div>Tel: 01189 500 761</div></div></div>					

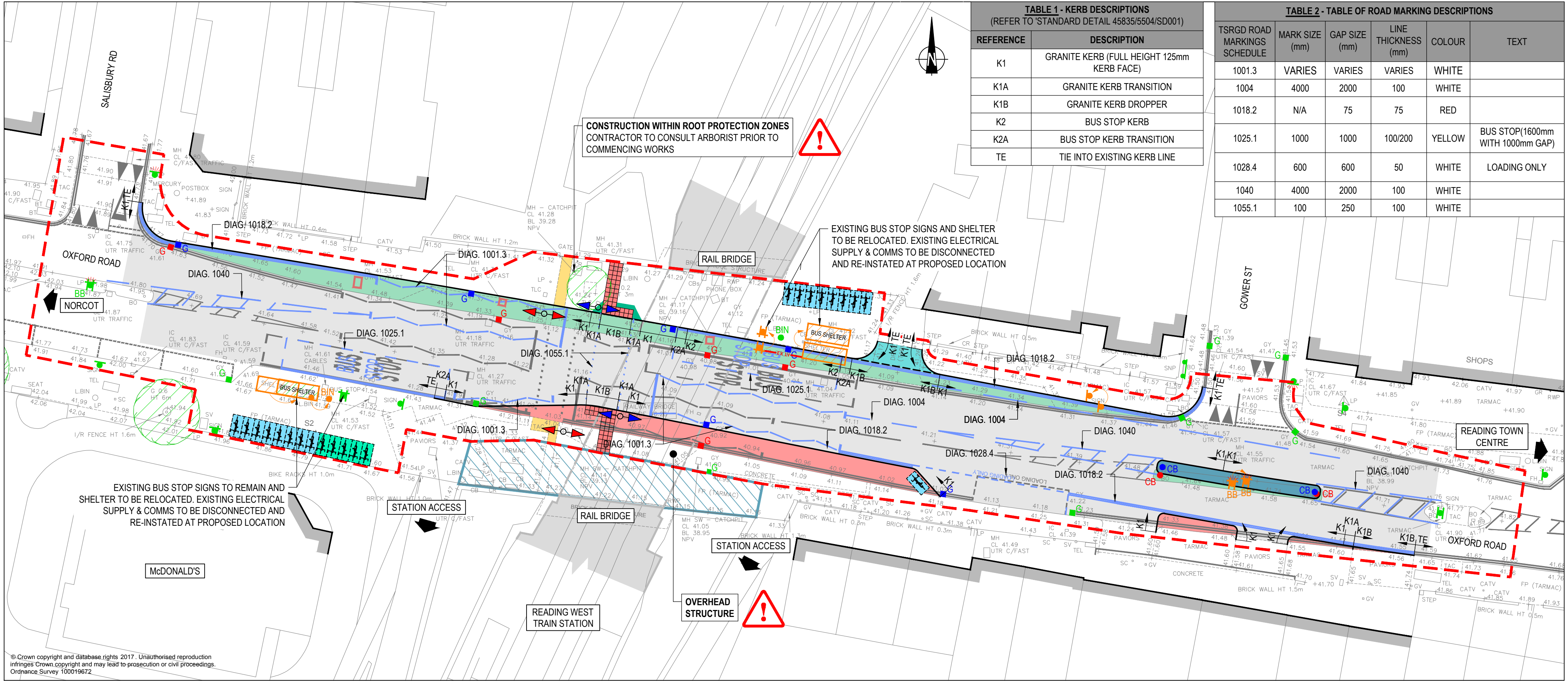


TABLE 1 - KERB DESCRIPTIONS (REFER TO 'STANDARD DETAIL 45835/5504/SD001')	
REFERENCE	DESCRIPTION
K1	GRANITE KERB (FULL HEIGHT 125mm KERB FACE)
K1A	GRANITE KERB TRANSITION
K1B	GRANITE KERB DROPPER
K2	BUS STOP KERB
K2A	BUS STOP KERB TRANSITION
TE	TIE INTO EXISTING KERB LINE

TABLE 2 - TABLE OF ROAD MARKING DESCRIPTIONS					
TSRGD ROAD MARKINGS SCHEDULE	MARK SIZE (mm)	GAP SIZE (mm)	LINE THICKNESS (mm)	COLOUR	TEXT
1001.3	VARIABLES	VARIABLES	VARIABLES	WHITE	
1004	4000	2000	100	WHITE	
1018.2	N/A	75	75	RED	
1025.1	1000	1000	100/200	YELLOW	BUS STOP(1600mm WITH 1000mm GAP)
1028.4	600	600	50	WHITE	LOADING ONLY
1040	4000	2000	100	WHITE	
1055.1	100	250	100	WHITE	

KEY

GENERAL

--- SITE BOUNDARY

PROPOSED STATION BUILDING FOOTPRINT

EXISTING BUILDING TO REMAIN

PROPOSED CONSTRUCTION

PROPOSED CARRIAGEWAY RESURFACING.
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED CARRIAGEWAY FULL DEPTH CONSTRUCTION .
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED FOOTWAY RESURFACING.
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED FOOTWAY OVERLAY ON EXISTING CARRIAGEWAY.
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED DRIVEWAY CONSTRUCTION.
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED TRAFFIC ISLAND.
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

PROPOSED FULL DEPTH FOOTWAY CONSTRUCTION AT
PEDESTRIAN CROSSING.

PROPOSED KERB AND TYPE (SEE TABLE 1)

PROPOSED TACTILE PAVING (RED).
REFER TO STANDARD DETAIL 45835/5504/SD001 FOR DETAILS

EXISTING BIKE STANDS TO REMAIN

PROPOSED BIKE STANDS.
REFER TO STANDARD DETAIL 45835/5504/SD004 FOR DETAILS

PROPOSED ROAD MARKINGS (SEE TABLE 2)

EXISTING TREE TO BE PROTECTED DURING WORKS

EXISTING GULLY TO REMAIN

EXISTING GULLY TO BE REMOVED

PROPOSED GULLY
REFER TO STANDARD DETAIL 45835/5504/SD002 FOR DETAILS

EXISTING BUS SHELTER AND ASSOCIATED FEEDER PILLARS TO
BE RELOCATED

EXISTING SIGN TO REMAIN

EXISTING SIGN (ILLUMINATED) TO REMAIN

EXISTING SIGN TO BE RELOCATED

EXISTING BELISHA BEACON TO REMAIN

EXISTING BELISHA BEACON TO BE RELOCATED

EXISTING TRAFFIC SIGNAL TO BE REMOVED

PROPOSED TRAFFIC SIGNAL

EXISTING COLLAPSIBLE BOLLARD TO BE REMOVED

PROPOSED BOLLARD.
REFER TO STANDARD DETAIL 45835/5504/SD003 FOR DETAILS

EXISTING BIN TO REMAIN

EXISTING BIN TO BE RELOCATED

EXISTING CHAMBER TO BE LOWERED

NOTES

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL OTHER CONTRACT DRAWINGS AND DOCUMENTS.
- ALL WORK TO BE IN ACCORDANCE WITH THE HIGHWAY AGENCY SPECIFICATION FOR HIGHWAY WORKS VOLUME 1
- TOPOGRAPHICAL SURVEYS UNDERTAKEN BY MK SURVEYS IN 2019. CONTRACTOR TO VERIFY SURVEYS PRIOR TO COMMENCING WORKS
- TACTILE PAVING SHOWN ON THIS DRAWING IS INDICATIVE. TACTILE PAVING TO BE LAID IN ACCORDANCE WITH DfT'S GUIDANCE ON TACTILE PAVING
- ROAD MARKINGS AND SIGNS TO BE IN ACCORDANCE WITH TSRGD 2016
- REFER TO DRAWING NUMBER 45835/5504/002 FOR EXISTING UTILITIES
- REFER TO DRAWING NUMBER 45835/5504/004 FOR SITE CLEARANCE

A	LAYOUT AMENDED AT SOUTHERN BUS STOP	10.10.19	SF	GR	-
Mark	Revision	Date	Drawn	Chkd	Appd

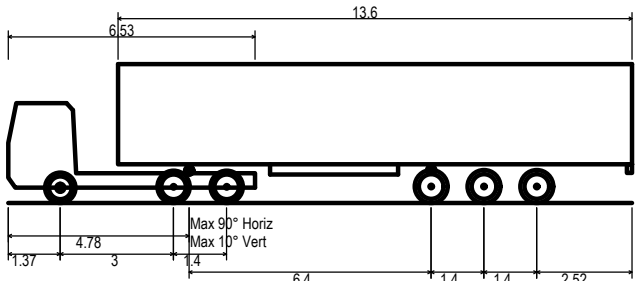
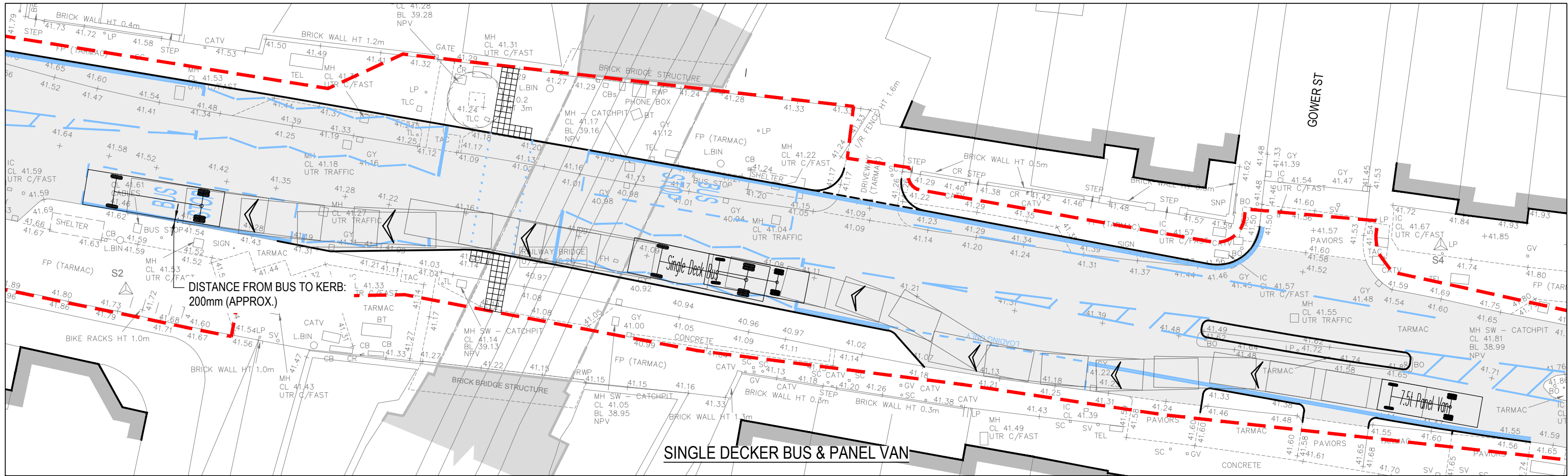
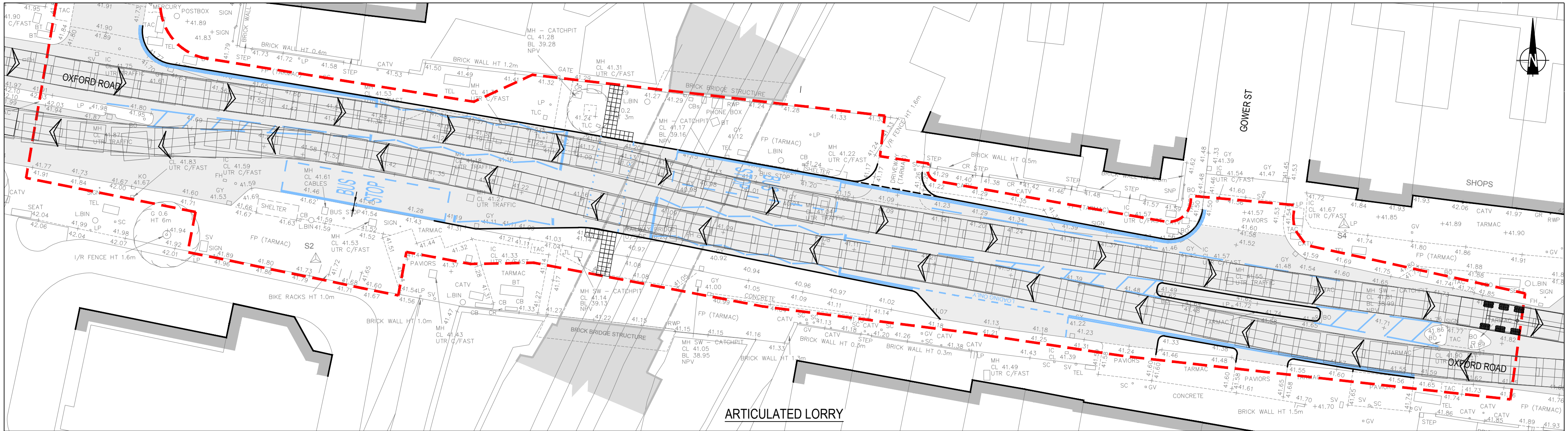
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Drawing Issue Status

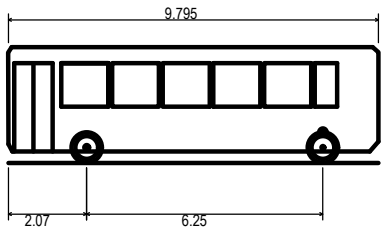
FOR COMMENT

READING WEST STATION IMPROVEMENTS
OXFORD ROAD
PROPOSED CONSTRUCTION

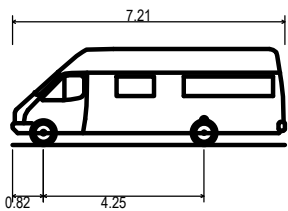
Client		Reading Borough Council		pba peterbrett	
Date of 1st Issue		Designed SF		Drawn SF	
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Drawing Number		Revision		peterbrett.com	
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Max Legal Length (UK) Articulated Vehicle (16.5m)
Overall Length 16.500m
Overall Width 2.550m
Overall Body Height 3.681m
Min Body Ground Clearance 0.411m
Max Track Width 2.500m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 6.530m



Single Deck Bus
Overall Length 9.795m
Overall Width 2.500m
Overall Body Height 3.070m
Min Body Ground Clearance 0.306m
Track Width 2.322m
Lock to lock time 6.00s
Kerb to Kerb Turning Radius 10.111m



7.5t Panel Van
Overall Length 7.210m
Overall Width 2.192m
Overall Body Height 2.544m
Min Body Ground Clearance 0.316m
Track Width 1.865m
Lock to lock time 4.00s
Kerb to Kerb Turning Radius 7.400m

Mark	Revision	Date	Drawn	Chkd	Appd

SCALING NOTE: Do not scale from this drawing. If in doubt, ask.
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Drawing Issue Status

FOR INFORMATION

READING WEST STATION IMPROVEMENTS

OXFORD ROAD

VEHICLE SWEEP PATHS

Client

 **Reading Borough Council**
Working better with you


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Tel: 01189 500 761

Date of 1st Issue	Designed	Drawn
10.10.19	SF	SF
A2 Scale	Checked	Approved
1:250	GR	-
Drawing Number	Revision	
28791/5504/SK003	-	

Appendix B Scheme Costs

APPENDIX B Scheme Costs -STATION FACILITIES

From Page 3 of Feasibility Estimate -2016Q1 Prices

Section 1 - Headline Costs in £

Element	Option 4.3 (Included in Full Business Case)
FACILITATING WORKS	
Toxic/hazardous material removal	£20,000
Major Demolition Works	£45,000
Sub Total Facilitating Works	£65,000
EXTERNAL WORKS	
Site preparation works	£14,556
Roads, paths and pavings	£197,000
Planting	£20,000
Fencing, railings and walls	£20,000
Site/street furniture and equipment comprising of:	
Automated Gateline Barriers -Wide Aisle - 2 Number	£90,000
Automated Gateline Barriers -Wide Aisle - 3 Number	£105,000
Ticket Vending Machines - 2 Number	£60,000
Customer Information Screens (CIS) - 2 Number	£20,000
CCTV Cameras - 5 Number	£17,500
New cycle parking: cycle hoops only	£3,000
Passenger Lifts (Not included in current scheme) - 2 Number	
Minor building works and ancillary buildings comprising:	
Glazed wall to to create ticket office	£84,600
Ticket office internal including partitions, wall, ceiling and floor finishes	£17,824
Roof over ticket office	£10,694
Ticket windows	£19,000
Glazed barriers	£16,700
Relocate existing bus shelter	£5,000
Sub Total Minor building works and ancillary buildings	£153,818
Sub Total External Works	£700,874
Sub Total Building Works (Facilitating Works + External Works)	£765,874
9 Main contractor's Preliminaries	£165,881
Sub Total : Building Works (including Main contractor's preliminaries	£931,755
10 Main contractor's overhead's and profit (10%)	£127,176
11 Project/Design Fees/Preparation Costs	£153,505
12 Other development /project costs/Supervision Costs	£153,505
Base Cost Estimate	£1,365,940
13 Risk Allowance (25% of Base Cost Estimate)	£349,733
TOTAL CONSTRUCTION COST (excluding inflation)	£1,715,672
14 Inflation (0.75%) previously + 2016 to point of Expenditure	£252,142
TOTAL CONSTRUCTION COST (including inflation)	£1,967,815
ADDITIONAL WORKS - (see Page 3 of 52 of Turner & Townsend Masterplan Costs)	
3.1 New Canopy (Platform 1)	£44,000
3.2 New Canopy (Platform 2)	£136,000
3.3 Platform Extension (Platform 1)	£86,000
3.4 Platform Extension (Platform 2)	£136,000
3.5 Remove existing ticket office, make good (Platform 2)	£6,000
SUB TOTAL ADDITIONAL WORKS	£408,000
Contruction Costs - Electricification works	£940,000
CONTINGENCY	£68,115
Total Excl Risk & Inflation	£2,782,055
Total Inc Inflation and Risk (Outturn Costs)	£3,383,930

APPROXIMATE CONSTRUCTION COST ESTIMATE					Oct-19
Reading West Station Improvements Oxford Road - Carriageway Alterations Drawing Numbers: 45835/5504/004 & 45835/5504/005 Compiled by: G Roseff	Quantity	Unit	Rate	Total	
SUMMARY					
SERIES 200 - SITE CLEARANCE				£24,255	
SERIES 500 - DRAINAGE AND SERVICE DUCTS				£9,300	
SERIES 700 - PAVEMENTS				£31,935	
SERIES 1100 - KERBS, FOOTWAYS AND PAVED AREAS				£12,960	
SERIES 1200 - TRAFFIC SIGNS AND ROAD MARKINGS				£31,960	
SERIES 1400 - ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS				£4,500	
SERIES 2600 - MISCELLANEOUS - STREET FURNITURE				£16,500	
Total (Excluding Contingency and Optimum Bias)			Sub total	£131,410	
Preliminaries (Site accomodation, Traffic Management, Pedestrian Management etc.)	30%			£39,423	
Contingency (25% of total)	25%			£42,708	
			Total	£213,541	
Utilities cost estimate (Based on C3 estimates)				£500,000	
				Construction Cost Total	£715,000
Allowance for trial holes/site investigation				£5,000	
Detailed Design costs				£25,000	
Site Support estimate (excluding contract admin)				£15,000	
				Total Cost	£760,000
ASSUMPTIONS / ADDITIONAL NOTES:					
1. THE DEVELOPMENT OF COSTS FOR INFRASTRUCTURE COMPONENTS HAS BEEN BASED UPON AN ASSESSMENT OF CURRENT TENDERED RATES FOR SIMILAR REGIONAL SCHEMES.					
2. COSTS ARE BASED ON DRAWING NUMBERS 45835/5504/004 & 45835/5504/005 SCHEME LAYOUT.					
3. ASSUME NO ECOLOGY/ENVIRONMENTAL MITIGATION MEASURES (NOISE, ECOLOGY, FLOODING MEASURES, ETC).					
4. ASSUMED THAT ANY PROPOSED DRAINAGE CONNECTIONS CAN BE MADE DIRECTLY INTO THE EXISTING DRAINAGE SYSTEM. COST ASSUMES EXISTING DRAINAGE SYSTEM IS IN GOOD CONDITION					
5. PRELIMS AT 30% DUE TO TM AND PEDESTRIAN MANAGEMENT ARRANGEMENTS REQUIRED TO COMPLETE WORKS BASED ON RECENT TENDER RETURNS					
6. EXISTING PAVEMENT HAS BEEN ASSUMED TO BE FIT FOR PURPOSE					
7. ASSUME NEW PEDESTRIAN CROSSING EQUIPMENT IS REQUIRED (PELICAN) AND EXISTING EQUIPMENT REMOVED TO TIP.					
8. ASSUME CONSTRUCTION WORKS ARE COMPLETED BY RBC's DLO AND NO CONTRACT ADMINISTRATION ROLE IS REQUIRED.					
EXCLUSIONS					
1. EXCLUDES SITE SURVEYS INCLUDING TRIAL HOLES AND TOPOGRAPHICAL SURVEY					
2. NO LAND COSTS / LEGAL FEES ARE INCLUDED.					
3. COSTS EXCLUDE VAT.					
4. NO COST HAS BEEN INCLUDED FOR THE PROPOSED STATION BUILDING (INCLUDING PROVISION OF UTILITIES)					
5. NO ALLOWANCE HAS BEEN MADE FOR THE REMOVAL OF CONTAMINATED MATERIAL.					

APPROXIMATE CONSTRUCTION COST ESTIMATE					Oct-19
Reading West Station Improvements Oxford Road - Carriageway Alterations Drawing Numbers: 45835/5504/004 & 45835/5504/005 Compiled by: G Roseff	Quantity	Unit	Rate	Total	
SERIES 200: SITE CLEARANCE					
Take up or down precast concrete kerbs including foundation below and remove to tip.	110	m	£15.00	£1,650.00	
Plane off 40mm of existing carriageway and remove to tip	940	m²	£10.00	£9,400.00	
Break out existing footway and remove to tip	160	m²	£30.00	£4,800.00	
Excavate for full depth construction and remove to tip	160	m²	£40.00	£6,400.00	
Take up or down to store existing belisha beacon	1	Nr	£60.00	£60.00	
Take up or down to store existing general signage (mounted on other apparatus, no post)	3	Nr	£20.00	£60.00	
Break out existing tactile pavings and remove to tip	15	m²	£30.00	£450.00	
Take up or down and remove to tip gullies	6	Nr	£75.00	£450.00	
Take up and remove to store existing bin	1	Nr	£65.00	£65.00	
Take up and remove to store existing bus shelter	2	Nr	£150.00	£300.00	
Take up and remove to store existing bus stop sign	2	Nr	£100.00	£200.00	
Take up or down and remove to store existing island signage (bollards)	2	Nr	£60.00	£120.00	
Take up and remove to tip existing traffic lights	2	Nr	£150.00	£300.00	
Total Carried to Summary					£24,255.00
SERIES 500: DRAINAGE AND SERVICE DUCTS					
Backfilling of disused gullies with ST4 concrete	6	Nr	£230.00	£1,380.00	
New trapped Precast Concrete gully (assumed)	7	Nr	£450.00	£3,150.00	
Connection of new gully 150mm diameter pipe (to existing drainage network - to be confirmed via a drainage survey)	7	Nr	£630.00	£4,410.00	
Renewal, Raising or Lowering of Access Chambers	4	Nr	£ 90.00	£360.00	
Total Carried to Summary					£9,300.00
SERIES 700: PAVEMENTS					
Bond Coat	1135	m²	£1.00	£1,135.00	
Full depth construction (excluding sc)	140	m²	£100.00	£14,000.00	
HRA 55/14 Surface 40/60 surface course 45mm depth	1100	m²	£15.00	£16,500.00	
_driveway	10	m²	£30.00	£300.00	
Total Carried to Summary					£31,935.00
SERIES 1100: KERBS, FOOTWAYS AND PAVED AREAS					
Granite kerb (K1)	160	m	£25.00	£4,000.00	
Granite dropper kerb (K1a)	5	m	£40.00	£200.00	
Granite transition kerb (K1b)	50	m	£40.00	£2,000.00	
Bus stop kerb (K2)	14	m	£160.00	£2,240.00	
Bus stop transition kerb (K2A)	1	m	£160.00	£160.00	
AC20 Binder Course 100/150 binder course 100mm depth	120	m²	£20.00	£2,400.00	
AC6 Surface Course 100/150 surface course 20mm depth	105	m²	£10.00	£1,050.00	
Tactile paving	13	m²	£70.00	£910.00	
Total Carried to Summary					£12,960.00
SERIES 1200: TRAFFIC SIGNS AND ROAD MARKINGS					
Remove from store and reinstate bus stop signs	2	Nr	£100.00	£200.00	
Remove from store and reinstate general signs	3	Nr	£20.00	£60.00	
Road Markings (1 day)	1	day	£1,400.00	£1,400.00	
Supply and install Bollards	2	Nr	£150.00	£300.00	
Supply and install traffic signals	1	Nr	£30,000.00	£30,000.00	
Total Carried to Summary					£31,960.00
SERIES 1400: ELECTRICAL WORK FOR ROAD LIGHTING AND TRAFFIC SIGNS					

APPROXIMATE CONSTRUCTION COST ESTIMATE					Oct-19
Reading West Station Improvements Oxford Road - Carriageway Alterations Drawing Numbers: 45835/5504/004 & 45835/5504/005 Compiled by: G Roseff	Quantity	Unit	Rate	Total	
SSE Disconnections / Connections	1	Item	£4,000.00	£4,000.00	
Cabling (for traffic signals)	10	m	£50.00	£500.00	
Total Carried to Summary					£4,500.00
SERIES 2600: MISCELLANEOUS - STREET FURNITURE					
Remove from store and reinstate Bus/Taxi shelter (including foundation)	2	No.	£5,500.00	£11,000.00	
RTPI removal and reinstatement (r2p / Nimbus)	2	No.	£1,000.00	£2,000.00	
Remove from store and reinstate bin	1	No.	£100.00	£100.00	
Installation of bike stands	17	No.	£200.00	£3,400.00	
Total Carried to Summary					£16,500.00

Appendix C British Transport Police Correspondence (anti-social behaviour issues)

From: Nicola Scott <Nicola.Scott@GWR.com>

Sent: 27 June 2019 14:03

To: Moyo, Norbert <norbert.moyo@stantec.com>; Matthews, Sarah <sarah.matthews@stantec.com>

Subject: FW: Reading West

Hi Norbert, Sarah,

As discussed yesterday, please see below email correspondence regarding drug usage at Reading West.

Kind regards,
Nicola

Nicola Scott | Assistant Regional Development Manager East | Great Western Railway
Heritage Building | Reading Station | Station Approach | Reading | RG1 1LZ
E: nicola.scott@GWR.com | M: 07976 295504



Sir,

Good morning. Could I introduce myself. I am Scott Hargreave and at present I am the Inspector with the British Transport Police at Reading. I have had sight of the e-mail regarding drug use and abuse between Reading West and Newbury and thought I could give you a bit more of an update around this.

On Tuesday 4th June I met with Sergeant Paul Morgan from Thames Valley Police at Newbury about this very issue and to look at joint ways of working to tackle this issue. It is an issue that affects both the travelling public, rail staff and local communities alike.

Paul and I are developing this information and looking at ways to tackle this problem. I am working closely with Network Rail, GWR and Revenue Teams to address not only this issue but the anti-social behaviour aspect that goes hand in hand with drug use and drug abuse.

We (BTP) have started to do a mixture of hi-visibility and plain clothes patrols on the line between Newbury and Reading West as well as conducting Revenue Operations to start to disrupt and deter this type of behaviour.

Only last week as a result of this increased activity we arrested 2 males at Reading West for a Possession with Intent to supply Class A offence and possession of an offensive weapon. We will continue targeting this area along with Thames Valley Police and partners.

This is work in progress that we will continue and I will advise you of any further action we take in an attempt to reduce or alleviate this problem.

Scott Hargreave
T/Inspector 9120

Reading OIC
British Transport Police, Brunel Arcade, Station Hill, Reading, Berkshire,
RG1 1LT
Office : 01189 064000
Mob : 07443 294 095
Mob : 07557347240

Email: scott.hargreave@btp.pnn.police.uk
www.btp.police.uk

Appendix D TEE Table

Economic Efficiency of the Transport System (TEE) in £000'S		Core Scenario				
Non-business: Commuting	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	16	16				
Vehicle operating costs						
User charges						
During Construction & Maintenance						
NET NON-BUSINESS BENEFITS: COMMUTING	16	(1a)				
Non-business: Other	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER	
User benefits	TOTAL	Private Cars and LGVs	Passengers	Passengers		
Travel time	2	2				
Vehicle operating costs						
User charges						
During Construction & Maintenance						
NET NON-BUSINESS BENEFITS: OTHER	2	(1b)				
Business		Goods Vehicles	Business Cars & LGVs	Passengers	Freight	Passengers
User benefits						
Travel time						
Vehicle operating costs						
User charges						
During Construction & Maintenance						
Subtotal	0	(2)				
Private sector provider impacts					Freight	Passengers
Revenue	1,737					
Operating costs	-14,819					
Investment costs						
Grant/subsidy						
Subtotal	-13,082	(3)				
Other business impacts						
Developer contributions	0	(4)				
NET BUSINESS IMPACT	-13,082	(5) = (2) + (3) + (4)				
TOTAL						
Present Value of Transport Economic Efficiency Benefits (TEE)	-13,064	(6) = (1a) + (1b) + (5)				
Notes: Benefits appear as positive numbers, while costs appear as negative numbers. All entries are discounted present values, in 2010 prices and values						

Appendix E PA Table

Public Accounts (PA) Table in £000's Core Scenario

	ALL MODES	ROAD	BUS and COACH	RAIL	OTHER
	TOTAL	INFRASTRUCTURE			
Local Government Funding					
Revenue					
Operating Costs					
Investment Costs					
Developer and Other Contributions					
Grant/Subsidy Payments					
NET IMPACT	0 (7)				
Central Government Funding: Transport					
Revenue	-20,830				
Operating costs	14,819				
Investment Costs	4,524				
Developer and Other Contributions					
Grant/Subsidy Payments					
NET IMPACT	-1,487 (8)				
Central Government Funding: Non-Transport					
Indirect Tax Revenues	115 (9)				
TOTALS					
Broad Transport Budget	-1487 (10) = (7) + (8)				
Wider Public Finances	115 (11) = (9)				

Notes: Costs appear as positive numbers, while revenues and 'Developer and Other Contributions' appear as negative numbers.
All entries are discounted present values in 2010 prices and values.

Appendix F AMCB Table

Analysis of Monetised Costs and Benefits (£000's) - Core Scenario

Noise	2.2	(12)
Local Air Quality	1.3	(13)
Greenhouse Gases	19.2	(14)
Journey Quality	2,676	(15)
Physical Activity	814	(16)
Accidents	39	(17)
Economic Efficiency: Consumer Users (Commuting)	16	(1a)
Economic Efficiency: Consumer Users (Other)	2	(1b)
Economic Efficiency: Business Users and Providers	1,737	(5)
Wider Public Finances (Indirect Taxation Revenues)	-115	- (11) - sign changed from PA table, as PA table represents costs, not benefits
Present Value of Benefits (see notes) (PVB)	5,193	(PVB) = (12) + (13) + (14) + (15) + (16) + (17) + (1a) + (1b) + (5) - (11)
Broad Transport Budget	-1,487	(10)
Present Value of Costs (see notes) (PVC)	-1,487	(PVC) = (10)
OVERALL IMPACTS		
Net Present Value (NPV)	6,680	NPV=PVB-PVC
Benefit to Cost Ratio (BCR)	N/A	BCR=PVB/PVC

Note : This table includes costs and benefits which are regularly or occasionally presented in monetised form in transport appraisals, together with some where monetisation is in prospect. There may also be other significant costs and benefits, some of which cannot be presented in monetised form. Where this is the case, the analysis presented above does NOT provide a good measure of value for money and should not be used as the sole basis for decisions.

Appendix G AST

Appraisal Summary Table				Date produced:		18/10/2019		Contact:		
Name of scheme:		Reading West Railway Station Upgrade						Name	Chris Maddocks	
Description of scheme:		Proposals to upgrade station facilities at Reading West Railway Station						Organisation	Reading Borough Council	
								Role	Promoter/Official	
Impacts		Summary of key impacts		Assessment						
				Quantitative			Qualitative	Monetary £(NPV)	Distributional 7-pt scale/ vulnerable grp	
Economy	Business users & transport providers	No journey time or Generalised Journey Time (GJT) benefits arise to rail users from the scheme. Slight beneficial decongestion benefits arise to non-users. The TOC accrues 5% of the rail fares revenue under the franchise agreement	Value of journey time changes(£)			n/a		£1,737,312	N/A	Not assessed
			Net journey time changes (£)							
			0 to 2min	2 to 5min	> 5min					
			N/A	N/A	N/A					
	Reliability impact on Business users	Not assessed	Not assessed			Neutral	N/A			
Regeneration	The station upgrades will benefits the local area around Reading West, potentially unlocking housing development in the locality	Not assessed			Slighth beneficial	N/A				
Wider Impacts	The station upgrades will benefits the local area around Reading West, potentially unlocking housing development in the locality	Not assessed			Slight beneficial	N/A				
Environmental	Noise	The scheme will result in some mode change from car to rail with slight beneficial impacts on noise	£2,247			Slight beneficial	2,247	Not assessed		
	Air Quality	The scheme will have slight beneficial impacts on Air Quality arising from a reduction in car trips due to mode change to rail.	£1,342				1,342	Not assessed		
	Greenhouse gases	The scheme will have slight beneficial impacts on greenhouse gases arising from a reduction in car trips due to mode change to rail.	Change in non-traded carbon over 60y (CO2e)			Slight beneficial	19,157			
	Landscape	The scheme is expected to have Neutral impacts on the landscape	Not assessed			Neutral	N/A			
	Townscape	The scheme will improve the station environment in and around the Reading West Station surroundings. The scheme will be Slightly beneficial to the townscape	Not assessed			Slight beneficial	N/A			
	Historic Environment	The scheme is to have a Neutral impact on the historic environment	Not assessed			Neutral	N/A			
	Biodiversity	The scheme is expected to have Neutral impacts on Biodiversity	Not assessed			Neutral	N/A			
	Water Environment	The scheme is expected to have Neutral impacts on Water Environment	Not assessed			Neutral	N/A			
	Social	Commuting and Other users	No journey time or Generalised Journey Time (GJT) benefits arise to rail users from the scheme. Slight beneficial decongestion benefits arise to non-users	Value of journey time changes(£)			Slight beneficial	16,186	Not assessed	
Net journey time changes (£)										
0 to 2min				2 to 5min	> 5min					
n/a				n/a	n/a					
Reliability impact on Commuting and Other users		Not assessed	N/A			N/A	N/A			
Physical activity	Reading West Station is predominantly accessed on foot and cycle and the scheme will result future increases in pedestrians and cyclists who will accrue health benefits/active mode benefits	£1,021,000			Slight beneficial	813,985				
Journey quality	The scheme will result in improvements to the station environment, including security. The benefits have been determined following TfL BCDM approach	£2,731,000			Beneficial	2,676,155				

	Accidents	The scheme will result in some mode change from car to rail with slight beneficial impacts on accidents	£648,000	Slight beneficial	38,935	Not assessed
	Security	The scheme will result in improvements to security of users of the station through various measures including improved CCTV, station barriers, lighting and general improved station environment	Assessed as part of improvements to station environment	Beneficial	N/A	Not assessed
	Access to services	Improvements to the station environment may encourage use of rail and improve access to services	Not assessed	Beneficial	N/A	Not assessed
	Affordability	The scheme is considered neutral on affordability	Not assessed	Slight beneficial	N/A	Not assessed
	Severance	The scheme is considered neutral on severance	Not assessed		N/A	Not assessed
	Option and non-use values	Not assessed	Not assessed	Neutral	N/A	
Public Accounts	Cost to Broad Transport Budget	Investment costs have been estimated at £4,524,000 in 2010 prices discounted to 2010. Operational costs have been estimated at £14,819,000 in 2010 prices over the appraisal period discounted to 2010. Taking into account rail fare revenue of -£20,830,000 transferred to Government under franchising mechanism, results in a broad transport budget of -£1,487,000 and the scheme is High Value for Money and Financially Positive	Broad Transport Budget is -£8,762,000	Large Beneficial	-£1,486,791	
	Indirect Tax Revenues	These have been assessed using the Marginal External Cost (MEC) approach arising from reduction in car trips and car vehicle kilometre reduction due to mode change to rail. Indirect tax revenues of £114,560 were estimated	Indirect Tax Revenue are estimated at £1,686,000	Slight Adverse	-114,560	