1 Review of Initial VISSIM modelling of Local Highway Network

1.1 Introduction

1.1.1 This note sets out a review of the local VISSIM model created in order to demonstrate the effect of differing crossing points on the local highway network. The note analyses the difference in journey times between two points based on the impact of different scenarios.

1.2 Review

1.2.1 The table below summarises the journey times for general traffic and Bus routes (419 and 209 only) for 6 different scenarios. The table also provides average and max queue lengths measured from the northbound approach at Mortlake roundabout for AM peak period (0800 – 0900hrs) for each scenario. The modelling has so far focussed on the AM peak since this provides the worst case in terms of the overall net impact of proposed development at the Stag due to the school impacts at that time.

Scenario	Flared approach to Mortlake rbt (approx 60m)	Pedestrian Crossing Location	Chalkers Corner - Sheen Ln (General Traffic in secs)	Sheen Ln Chalkers Corner (General Traffic in secs)	Chalkers Corner - White hart rbt (General Traffic in secs)	White Hart rbt - Chalkers Corner (General Traffic in secs)	Chalkers Corner - Priests Bridge (General Traffic in secs)	Priests Bridge - Chalkers Corner (General Traffic in secs)	Chalkers Corner - Mortlake rbt (General Traffic in secs)	Mortlake rbt - Sheen Ln/S Circular (General Traffic in secs)	Bus route 419_SB (in secs)	Bus route 419_NB (in secs)	Bus route 209_WB (in secs)	Bus route 209_EB (in secs)		Queue length in m (measured from just south of 2 lane flared approach at Mortlake rbt) - Average Q	Queue length in m (measured from just south of 2 lane flared approach at Mortlake rbt) - Max Q
1	No	Existing	249.4	302.7	170.3	155.2	369.9	308.7	72.7	176.7	223.4	217.5	158.1	173.2		70.3	288.7
2	Yes	Existing	248.6	301.1	168.1	154.1	362.1	309	67.4	181.2	221.3	213.6	157.8	171.2		46	270.2
3	Yes	Between Ship and Lane and Mortlake rbt	249.1	300.1	166.8	151.8	368.4	304.2	66.8	182.4	209.2	214.4	149.8	172.1		36	273.6
4	Yes	On the Corner near Mortlake rbt	272.5	363.9	180	166	368	311.1	72.1	200.5	233.2	224.7	164.6	184.7		94.5	355.4
5	Yes	Existing and on the corner (2 signalised ped xings)	276.8	368.6	186.9	170.5	382.1	325.8	79.9	196.9	239.7	234.9	172.4	190.3		122	347.9
6	Yes	Existing and on the corner (2 signalised ped xings) + 8min level crossing delay	308.8	423.3	190.5	180.7	436.2	367.6	83.3	225.6	247.9	229.5	174.5	198.6		123	475.2
Time period: 0800 - 0900 hrs																	

Table 1.1 Summary of results based on local VISSIM model

1.2.2 Table 1.1 indicates relative journey times through the local network and comparative queueing over the level crossing on Sheen Lane.

1.2.3 A few points explaining the modelling output:

- Please note that the modelling should be regarded as indicative since it is **not** TfL MAP compliant. It assumes that the Chalkers Corner improvement scheme has been implemented and so traffic does not queue back into the development frontage from that junction. All the scenarios run and reported below include development traffic. The previous strategic modelling reflected the base situation.

- Scenarios (1-3): As you can see from the table, the journey times are fairly similar for the first 3 scenarios i.e. extending the flare and moving the existing pedestrian crossing further east (by approx. 45m in the model) doesn't really have any significant impact on the internal network.

- Scenario 4 (pedestrian crossing on the corner of Mortlake roundabout). This is fairly straightforward, there is an increase in EB and WB journey times and this is due to the increased crossing width resulting in a larger inter green value from pedestrian phase back to traffic. The WB JT increase is slightly marginal however there is a 1minute increase in journey time from Sheen Lane to Chalkers corner due to the new proposed crossing in this scenario. The average and max queues on Sheen Lane (NB) have also increased.

- Scenario 5: (Existing pedestrian crossings plus the proposed crossing on the corner of Mortlake roundabout): Again in comparison with scenarios 1-3 the journey times for general traffic have gone up considerably but there is only a marginal difference between scenarios 4 and 5. This is probably because scenario 4 already takes into account the impact of the proposed crossing (larger inter green value) and there isn't any additional impact of having both on the network when they are demanded simultaneously. The demand is random in the model and there are cycles when the 2 pedestrian crossings are demanded together and cycles when they are not. The average queue on Sheen Lane (NB) has increased.

- Scenario 6: (Extended level crossing time): As this is not a dynamic network, if the queues on the entry links (specifically Sheen Lane and The Terrace) extend up to the link length traffic will not enter the network and Vissim will deem this traffic as latent demand (demand not active in the network). This occurs when a single cycle of greater than 8min level crossing down time is introduced in the model at Sheen Lane and White Hart Lane. The queue on Sheen Lane NB approach extends beyond the link length subsequently causing latent demand in the network. As the turning counts cannot be changed in the model (to have a consistent approach between scenarios) it is not feasible to undertake a realistic test of any extended level crossing down time of more than 8mins.

- For each scenario the pedestrian stages are demanded approx. every 60 seconds; in this respect the model is showing a worst case, although in the morning peak it is quite likely that the crossings will be called most/all times.

- Please note that pedestrian inter greens at the moment in the model are 8secs for existing crossing and 14secs for proposed crossing on the corner of Mortlake roundabout. Generally, on site a blackout extension is configured and this kicks in when a pedestrian enters the crossing during the inter green period in order to allow the pedestrian to cross safely. The model does not take this into account as pedestrians don't enter the crossing once the pedestrian signal turns red. So our output can be considered as slightly optimistic.

1.3 Conclusion

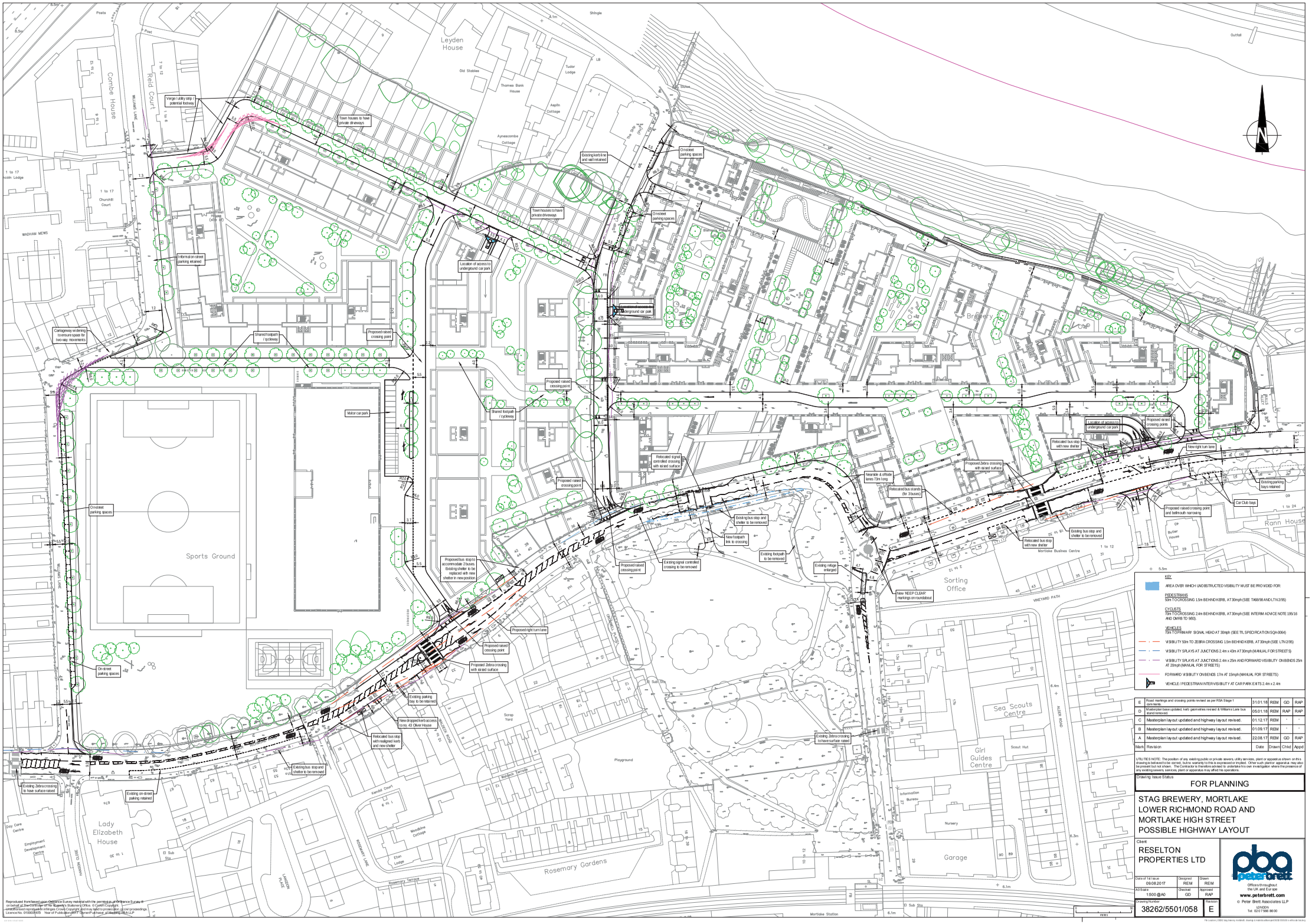
1.3.1 The modelling suggests that a corner crossing will have some impact on the operation of the local highway network with a small, but noticeable increase in journey times along the corridor.

However, the modelling does not suggest that this will cause any substantive blocking of the Sheen Lane roundabout or any major operational problems. It is not clear from the modelling the extent to which the provision of the corner crossing will impact upon the recovery of the network following an extended crossing down time eg 15 minutes plus.

1.3.2 The provision of a crossing mid-section along the frontage between Ship Lane and Sheen Lane operates better than with a corner crossing. There appears to be no material difference compared to a crossing at the current location adjacent to Ship Lane.

1.3.3 In theory, a crossing located between these points ie somewhere between the corner and the mod point would operate somewhere between the two extremes. However, such a location is more likely to fail a safety audit because of the difficulty in meeting the criteria for visibility of the primary signal.

Appendix T Lower Richmond Road, Mortlake High Street Drawing



Mark	Revision	Date	Drawn	Chkd	Appd
E	Road markings and crossing points revised as per RSA Stage 1 comments.	31.01.18	REM	GD	RAP
D	Masterplan base updated, kerb geometries revised & Williams Lane bus stand removed.	05.01.18	REM	RAP	RAP
C	Masterplan layout updated and highway layout revised.	01.12.17	REM	-	-
B	Masterplan layout updated and highway layout revised.	01.09.17	REM	-	-
A	Masterplan layout updated and highway layout revised.	22.08.17	REM	GD	RAP

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 his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR PLANNING

STAG BREWERY, MORTLAKE LOWER RICHMOND ROAD AND MORTLAKE HIGH STREET POSSIBLE HIGHWAY LAYOUT

Client

RESELTON PROPERTIES LTD

Date of 1st Issue	Designed	Drawn
09.08.2017	REM	REM
All Scale	Checked	Approved
1:500 @ A0	GD	RAP
Drawing Number		Revision
38262/5501/058		E

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Stag Brewery, Mortlake

Road Safety Audit Stage 1, Designer's Response for A3003 Lower Richmond Rd - Mortlake High Street

On behalf of Reselton Properties Ltd.

Project Ref: 38262/5501 | Date: January 2018

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Document Control Sheet

Project Name: Stag Brewery, Mortlake

Project Ref: 38262/5501

Report Title: Road Safety Audit Stage 1, Designer's Response for A3003 Lower Richmond Rd-Mortlake High Street

Doc Ref:

Date: 30th January 2018

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For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved

Contents

Figures

Appendices

1 Introduction

1.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Reselton Properties Limited ("the Applicant) to provide transport planning advice in relation to the full planning application in support of the Stag Brewery redevelopment in Mortlake, London Borough of Richmond upon Thames (LBRuT).

1.1.2 The development is the former site of the Stag Brewery, located adjacent to the River Thames. The former brewery was in operation until December 2015 and up to that time was generating significant HGV traffic movements as well as traffic associated with staff and visitors.

1.1.3 The redevelopment proposals for the site will provide a residential led, mixed-use development. The proposed scheme comprises of up to 716 new homes plus an extra care centre providing a nursing home and up to a further 130 retirement flats together with healthcare facilities. Other proposed uses, which are intended to enliven the site and provide local facilities both for the new residents and the existing community, include both food and non-food retail outlets, local restaurants and bars, leisure facilities, a new local cinema, a new hotel and significant community facilities, including a new health care centre.

1.1.4 In addition, the developer is required by LBRuT to make part of the site available for a new secondary school.

1.1.5 The scheme will comprise three separate planning applications:

1. A detailed application to provide a secondary school capable of accommodating up to 1,200 pupils;

2. A hybrid application relating to the remainder of the Stag site which will be a detailed application for the proposed development to the east of Ship Lane and an outline application with all matters reserved for the remaining development located to the west of Ship Lane; and

3. A detailed application to deliver an improvement to the junction of A316 Clifford Avenue/Lower Richmond Road/A205 South Circular Road (Clifford Avenue and Mortlake Road) /A3006 Lower Richmond Road, hereafter referred to as "Chalker's Corner Improvement Scheme",

1.1.6 This report relates to applications 1. and 2. above.

1.2 Site Location and Local Area

1.2.1 The Stag Brewery site is located in Mortlake in south west London within the LBRuT. The site has a frontage onto the River Thames and is approximately 250m to the north of Mortlake Railway Station and immediately north of Mortlake Green.

1.2.2 The site is in two parts, separated by Ship Lane which is a public highway. The eastern section of the Site fronts onto Mortlake High Street and backs onto the River Thames, whilst Lower Richmond Road borders the western section and this part of the site does not have direct access to the River. Williams Lane borders the site to the west, whilst Boat Race House is located to the east of the site. The site location is shown below in Figure 1.1.

1.2.3 The surrounding area is primarily residential but there are also a wide range of local facilities, including primary and nursery schools, local shops and restaurants and the Barnes Hospital, all within easy walking distance of the site.

Figure 1.1 Site Location Plan

1.2.4 The area is subject to some existing traffic congestion. This reflects the fact that there are limited vehicular access points to Mortlake with the capacity of two of them being constrained by level crossings that are heavily used by rail services. In addition, the Chalker's Corner Junction which provides the main highway access to Mortlake with access onto London's Strategic Highway Network, is a very busy and constrained junction and recognised as a traffic hotspot.

1.2.5 This existing traffic congestion has been taken into account in developing the regeneration plans for the site and the impacts of the development upon local traffic conditions have been taken into consideration. This is reflected in the provision of the separate application to deliver an improvement scheme for Chalker's Corner.

1.3 Site Access Arrangements

1.3.1 The brewery site has a number of existing access points as follows:

- Mortlake High Street – the main operational access used by HGV's;
- Lower Richmond Road – access to the sports ground and car park;
- Williams Lane – secondary operational access used by HGV's and other vehicles; and
- Ship Lane – access to the staff car park providing about 130 parking spaces.

1.3.2 There is no additional pedestrian access and it is assumed that any pedestrians would have previously accessed the Site via one of the existing vehicular access points.

1.3.3 Ship Lane is a public highway and has a footway on one side of the carriageway; whilst Lower Richmond Road and Mortlake High Street both have footways on either side of the carriageway, although a part of Lower Richmond Road, adjacent to the Mortlake Green, has no footway on the south side. An alternative pedestrian route to the site is available via the Thames Path which routes east to west along the southern bank of the River Thames.

1.4 Highway Network

1.4.1 Highway access to the Site is affected by a number of constraints. In particular, the presence of the river to the north and the railway line to the south cause severance and limit the number of access points to the area.

1.4.2 Figure 2 shows the wider area around Mortlake and highlights the various strategic roads which provide access to the area. Both the South Circular and the A316 Clifford Avenue/ A316 Lower Richmond Road form part of the Transport for London Road Network (TLRN). The South Circular passes the site approximately 600m to the south of the Stag Brewery Site and then crosses the A316 at the Chalker's Corner junction approximately 300m west of the western part of the site. The A3003 Lower Richmond Road forms a fifth arm to this junction which provides the main highway access to the Site from the strategic network.

1.4.3 The A316 provides a link to the south west towards Richmond and Twickenham, whilst to the north it provides a link towards Chiswick and the A4, also a part of the TLRN. The South Circular/Upper Richmond Road/Mortlake Road provides a link to the north through Kew and towards Brentford as well as to the east towards Barnes and Putney.

1.4.4 This part of the TRLN network is subject to congestion at peak times and this affects access to and from the Site. Significant queuing, mainly during the weekday morning and evening peak periods, is observed on the A3003 approach to Chalker's Corner, although it has been observed that the extent of queuing and delay is very variable depending upon conditions on both the strategic network and on the operation of the local railway level crossings.

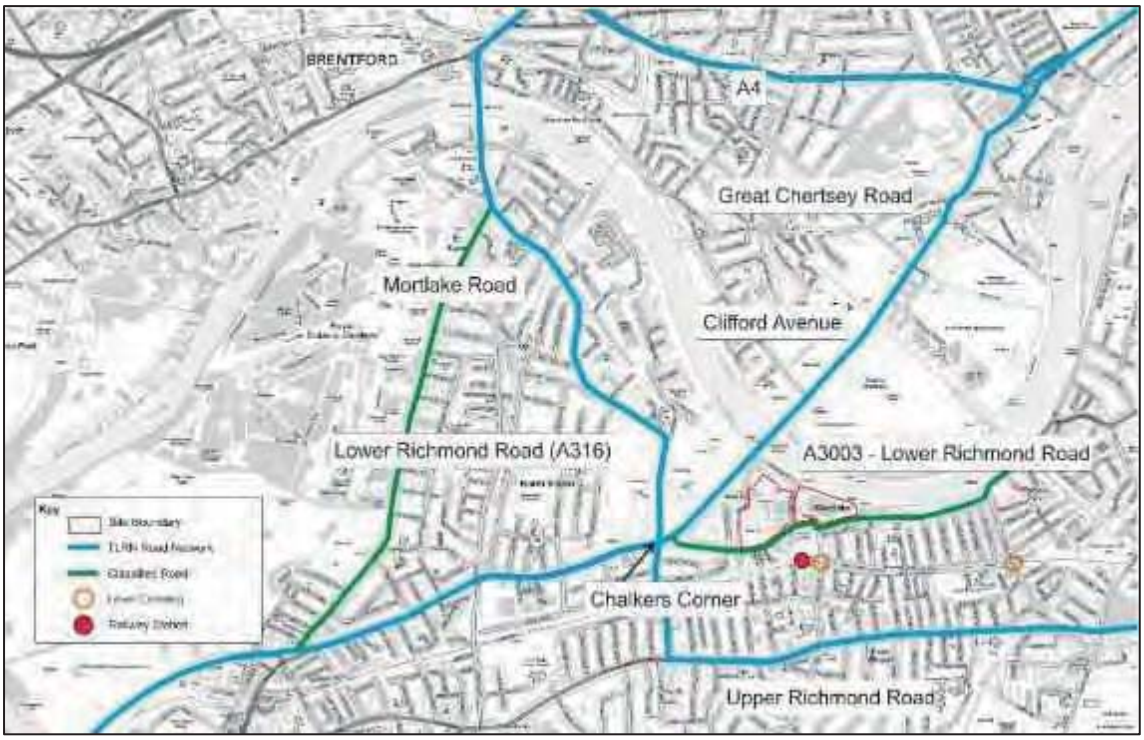


Figure 2.1 Plan of key Strategic Roads

1.4.5 Figure 2.2 shows the location of the more local roads.

Figure 2.2 Plan of Local Road Network

1.4.6 All local roads within Mortlake are currently subject to a 30 mph speed limit. There are effectively only four highway access points to Mortlake as follows:

- Chalkers Corner – subject to periodic congestion;
- Sheen Lane – capacity constrained by the presence of the railway level crossing at Mortlake Station;
- White Hart Lane – capacity constrained by the presence of the railway level crossing; and
- The Terrace – the combination of bus stops to the west of the bridge and a slight narrowing of the road under the bridge plus a slight curve in the road alignment, serve to slow traffic on this section. Capacity is also somewhat constrained by the narrowness of the road under the railway bridge.

1.4.7 The area can also be accessed from the South Circular via Shalston Road and Kingsway. However, this access is subject to existing traffic management measures that effectively limit the use of this route to very local traffic only.

1.4.8 The A3003 Lower Richmond Road – Mortlake High Street – The Terrace, runs east west through Mortlake linking Chalkers Corner in the west with Barnes Bridge and provides a frontage to the Site. The road is mainly a single carriageway road of varying width providing a clear running lane in either direction. To the west of Sheen Lane there is a short length of dual two lane carriageway. Where practical, on street parking is allowed, where this does not prevent provision of a free running lane in either direction.

1.4.9 Sheen Lane is a single carriageway road which links the A3003 with the South Circular. It has an active frontage including many local shops and restaurants as well as access to the railway station. To the north of the level crossing it is particularly narrow (approximately 4.5 metres) and is subject to no waiting controls at all times. Thomson House infants school is located just

to the north of the level crossing. To the south of the railway line the road is wider in parts and this allows some on-street parking and loading facilities.

1.4.10 Sheen Lane connects with the A3003 at a three arm mini roundabout which provides limited pedestrian crossing facilities. At its southern end it connects to the South Circular via a four arm traffic light controlled junction.

1.4.11 White Hart Lane provides a connection between the A3003 towards the South Circular. It is a single carriageway road with a mainly residential frontage but some local shops and with some on-street parking. At its norther end it connects with the A3003 at a 3 arm mini roundabout. At its southern end it connects with Priests Bridge via a priority junction. Priests Bridge is a one-way crescent that links with the South Circular via two separate priority junctions.

2 Road Safety Audit

2.1 Road Safety Audit B rief

2.1.1 The Road Safety Audit Team was requested to undertake a Stage 1 RSA based upon the drawings in Appendix B and supporting information contained in Appendix C.

2.1.2 The Audit Team undertook the Audit in accordance with Terms of Reference as described in TfL Procedure SQA-0170 dated May 2014.

2.1.3 A report has been provided by the Audit Team for Lower Richmond Road and Mortlake High Street – comprising the following sections of public highway:

- Lower Richmond Road from Watney Road to Sheen Lane,
- Sheen Lane southwards to the level crossing,
- Mortlake High Street from Sheen Lane to a point approximately 60m east of Bulls Alley/ Boatrace Court
- Williams Lane from Lower Richmond Road to Reid Court
- Ship Lane from Lower Richmond Road to Thames Bank

2.1.4 A copy of the RSA report has already been to be supplied to Transport for London for their comments.

2.2 Documents reviewed by the Audit Team

2.2.1 The Stage 1 Road Safety Audit was undertaken by Alpha Consultants in December 2017. The visit to the site of the proposed scheme was made on 15 December 2017.

2.2.2 The audit team undertook a desktop examination of the following documents:

- PBA Technical Note Road Safety Audit Stage 1 – Background Information & Survey Brief (14/12/2017).
- Drawing No. 38262/5501/058 C - Lower Richmond Road and Mortlake High Street Possible Highway Layout.
- Drawing No. 38262/5501/062 - Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 10m Rigid Lorry
- Drawing No. 38262/5501/063 D - Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Fire Tender (Pump Appliance)
- Drawing No. 38262/5501/064 D - Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Refuse Truck
- Drawing No. 38262/5501/065 D - Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Single Decker Bus
- Drawing No. 38262/5501/066 C - Possible Highway Layout – Phases 1/2 Vehicle Swept Path Analysis for a Large Car
- Drawing No. 38262/5501/067 D - Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Pantechnicon (Removals Truck)
- Drawing No. 38262/5501/068 D - Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Single Decker Bus

- Drawing No. 38262/5501/069 C - Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 12m School Coach

3 Response to Items raised in the Stage 1 Road Safety Audit

3.1 Scope of this report

3.1.1 This report responds to the Stage 1 Road Safety Audit prepared for the proposed scheme. A copy of which can be found in Appendix A of this report. For ease of reference, the original items and designer responses identified within the Stage 1 Road Safety Audit are also included.

3.1.2 The Road Safety Audit was received by the design team and recommendations made in the Road Safety Audit report have been reviewed accordingly.

3.1.3 This chapter describes the road safety problems identified by the audit team, with each problem reproduced here from the audit team's report. A response from the project design team is then given below each statement.

Junctions

3.2 Problem (ref. 3.1.1)

3.2.1 Location: A – Proposed Bus Stands adjacent to Williams Lane

3.2.2 Summary: Turning movements and potential risk to other users

3.2.3 Based on the swept path drawing provided, it appears that buses entering the Bus Stand area are likely to encroach onto the opposite side of the carriageway. If there is inadequate inter-visibility between bus drivers and other road users, this could lead to a risk of collision between the two. Also, whilst it appears that buses can undertake turning movements without encroaching onto adjacent footways, there appears to be little room for driver error and, therefore, footway users may also be at risk.

3.2.4 RECOMMENDATION

3.2.5 It is recommended that the Bus Stand arrangement/layout are reviewed and adjustments made if necessary, in order to ensure that buses can comfortably enter/leave this area, without undue risk to other road users.

Designers response
Recommendation accepted. **Revised design options have been prepared and now incorporate a wider junction layout to separate the turning movements in the junction.** **It should be noted that the planning application only includes for a safeguarded area to accommodate a bus terminus with the final design dependent on TfL's future requirements at this location.**

3.3 Problem (ref. 3.1.2)

3.3.1 Location: General

3.3.2 Summary: Vehicle swept paths at junctions and potential collision between opposing vehicles

3.3.3 It appears from the swept path drawings provided that larger vehicles may encroach onto the opposite side of the carriageway at a number of junctions when turning. If there is inadequate inter-visibility between drivers of such vehicles and opposing motorists, this could lead to a risk of collision between the two.

3.3.4 RECOMMENDATION

3.3.5 It is recommended that adequate inter-visibility is provided at all junctions where large vehicles may need to encroach the opposite side of the carriageway when undertaking turning movements.

Designers response
Recommendation rejected. **Visibility splays have been assessed and junctions modified to ensure no major inter-visibility splays exist in the proposed design. They will be revisited as part of the detail design process.**

Non-motorised user provision

3.4 Problem (ref. 3.2.1)

3.4.1 Location: B – Mortlake High Street (junction with Lower Richmond Rd)

3.4.2 Summary: Lack of inter-visibility at crossing point and potential pedestrian/vehicle collisions

3.4.3 It appears from the drawings that an informal crossing point may be proposed on Mortlake High Street, immediately east of the mini roundabout. However, inter-visibility between southbound/left turning motorists and pedestrians on the north side appears very restricted, due to the adjacent building façade. This lack of inter-visibility is likely to put pedestrians at risk of collision with a turning vehicle when crossing at this point.

3.4.4 RECOMMENDATION

3.4.5 Whilst it is recommended that likely pedestrian desire lines are considered, it should also be ensured that adequate inter-visibility is available at any crossing facility provided.

Designers response
Recommendation accepted. **Restricted visibility on the north-east corner of the roundabout as a result of existing buildings and which are being retained by the development proposals results in a lack of options to mitigate this existing risk. As such the Design Team have decided to remove the informal crossing from the final scheme.**

3.5 Problem (ref 3.2.2)

3.5.1 Location: C – Proposed Zebra Crossing adjacent to 33 Lower Richmond Rd

3.5.2 Summary: Inter-visibility potentially restricted by vehicles in right turn lane, leading to risk of pedestrian/vehicle collisions

3.5.3 It appears that any vehicles queuing in the right turn lane immediately east of the Zebra Crossing may restrict inter-visibility between westbound motorists and pedestrians crossing north to south at the Zebra. If inter-visibility is inadequate, this could lead to an increased risk of pedestrian/vehicle collisions at the crossing.

3.5.4 RECOMMENDATION

3.5.5 It is recommended that the likely impact of queuing vehicles on inter-visibility is reviewed. If this will be inadequate, based on likely vehicle speeds, adjustments should be made in order to provide adequate inter-visibility.

Designers response
Recommendation accepted. **The layout of the crossing refuge has been updated to improve the the inter-visibility splay between pedestrians and drivers. The residual risks will be discussed with the London Borough of Richmond upon Thames as highway authority and if deemed necessary a signal controlled crossing will be considered.**

General

3.6 Problem (ref. 3.3.1)

3.6.1 Location: D – Proposed central splitter islands between Williams Lane and Rosemary Lane

3.6.2 Summary: Potential impact of displaced on-street parking, including obstruction of visibility splays and risk of associated collisions.

3.6.3 It was noted during the site visit that demand for on-street parking is high along Lower Richmond Road. The installation of the proposed central splitter islands is therefore likely to result in a degree of displaced parking. This may lead to inappropriate/hazardous parking behaviour if a suitable alternative is not available. For example, visibility splays at nearby junctions may be affected by inappropriate parking, leading to an increased risk of collisions involving failure to give way.

3.6.4 RECOMMENDATION

3.6.5 It is recommended that the likely level of displaced parking is identified and a suitable alternative provided.

Designers response
Recommendation accepted. **The pedestrian refuge west of Romany Lane has been removed and the Design Team (as part of the detailed design) will continue to consult the Highway Authority on the management of on-street parking.**

Local alignment

3.7 Problem (ref. 3.4.1)

3.7.1 Location: E – Proposed central splitter islands on Lower Richmond Road

3.7.2 Summary: Proposed lane widths past islands may lead to motorists attempting to overtake cyclists and risk collision between the two.

3.7.3 The proposed lane widths past the central islands on Lower Richmond Road may mean that some motorists will attempt to overtake any cyclists at these points, which could lead to conflict and collisions between the two.

3.7.4 RECOMMENDATION

3.7.5 It is recommended that the proposed lane widths are reviewed, and reduced if appropriate, in order to ensure that the risk of motorists attempting to overtake cyclists alongside the islands is minimised.

Designers response
Recommendation accepted. **The proposed lane widths along Lower Richmond Road have been reviewed by the Design Team and as a result narrowed to 3.2m to discourage overtaking and reduce traffic speeds.**

Issues identified during the Stage 1 Road Safety Audit that are outside the Terms of Reference.

3.7.6 Safety issues identified during the audit and site inspection that were considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section.

3.8 Issue (ref 4.1)

3.8.1 Location: General – new junctions

3.8.2 Reason considered to be outside the Terms of Reference: Detailed design issue

3.8.3 It is noted that the drawings indicate visibility splays at the proposed new junctions within the scheme/development. It is possible that on-street parking may cause an obstruction and measures should therefore be incorporated at the detailed design stage to ensure all visibility splays are kept clear.

Designers response
Recommendation accepted. **It is the Design Team's intention that on-street parking will not be permitted within the development (including Ship Lane and part of Williams Lane) except within designated inset bays.** **As part of this, the Design Team will consult with the Highway Authority about managing on-street parking as part of the detailed design process.**

4 Summary and Conclusion

4.1.1 Peter Brett Associates LLP (PBA) has been commissioned by Reselton Properties (the Applicant) to provide transport planning advice in relation to the full planning application for the re-development of the Stag Brewery site, situated in Mortlake, London Borough of Richmond-upon-Thames (LBRuT).

4.1.2 This report responds to the Stage 1 Road Safety Audit prepared for the proposed scheme. The Road Safety Audit was received by the design team and recommendations made in the Road Safety Audit report have been reviewed accordingly.

4.1.3 The Road Safety Audit identified six areas of potential concern. Problem (Ref 3.1.1) relates to the proposed bus stands adjacent to Williams Lane, where buses enter the stand area. There is a concern about the risk to pedestrians and to other road users from turning buses. Revised design options have now been prepared incorporating a wider junction layout to separate the turning movements in the junction. However, it is not intended for the bus terminus to be included within the planning application at this stage and the layout is likely to change, as it will be subject to further discussions with TfL buses about their future requirements.

4.1.4 Problem (Ref 3.1.2) refers to inter-visibility splays between turning vehicles at junctions. The Design Team have assessed these and consider them to satisfactory. However, these will be revisited through consultation with the local highway authority as part of the detailed design process.

4.1.5 Problem (Ref 3.2.1) refers to the lack of inter-visibility at the proposed crossing point and potential pedestrian/vehicle collisions on Mortlake High Street, immediately to the east of its junction with Lower Richmond Road. Because of the restricted visibility on the North-east corner of the roundabout and the lack of feasible mitigation measures, the Design Team have decided to remove the informal crossing from the final scheme.

4.1.6 Problem (Ref 3.2.2) refers to the possibility of inter-visibility at the proposed zebra Crossing adjacent to 33 Lower Richmond Road being restricted by vehicles in the right turn lane, leading to the risk of pedestrian/vehicle collisions. The layout of the crossing refuge has been updated to reduce the impact on the inter-visibility splay by right turning vehicles. However, the Design Team will consider an alternative option of a signal controlled straight-through crossing. This will mean that pedestrians will not have cause to wait in the centre of the carriageway and when the crossing is in the Green Man phase, right turning vehicles can clear the junction quickly.

4.1.7 Problem (Ref 3.3.1) refers to the proposed central splitter island between Williams Lane and Rosemary Lane. The concern is about the potential impact of displaced on-street parking, including obstruction of visibility splays and risk of associated collisions. The Design Team have decided to remove the pedestrian refuge as this is no longer required. However, The Design Team recognise the issues highlighted by the Audit Team and will consult with the Highway Authority about managing on-street parking as part of the detailed design process.

4.1.8 Problem (Ref 3.4.1) refers to the proposed central splitter islands on Lower Richmond Road. The concern is that the proposed lane widths past the islands may lead to motorists attempting to overtake cyclists and risk collision between the two. The proposed lane widths along Lower Richmond Road have been reviewed by the Design Team and have been now narrowed to 3.2m to discourage overtaking and reduce traffic speeds.

4.1.9 The remaining Problem (Ref 4.1) raised by the Audit Team relates to visibility splays at the proposed new junctions within the scheme/development, which is outside the Terms of Reference. The concern is that on-street parking may cause an obstruction to junction visibility splays. It is the Design Team's intention that on-street parking will not be permitted within the development (including Ship Lane and part of Williams Lane) except within designated inset

bays, subject to agreement with the Highway Authority about managing on-street parking. The Design Team will consider measures at the detailed design stage to ensure all visibility splays are kept clear.

4.1.10 Given the outcomes of and responses to the Stage 1 Road Safety Audit for the proposed junction at Chalkers Corner, it is considered that the current proposals together with mitigation measures to be developed further at the detailed design stage would not cause any road safety issues. Further Road Safety Audits will be undertaken following detailed design of the development to ensure no road safety issues will be created by the implementation of the proposed scheme.

Appendix A Road Safety Audit Report

A3003 Lower Richmond Road/Mortlake High Street, London

Stag Brewery Redevelopment Proposed Highway Works

Stage 1 Road Safety Audit

Ref: AC/PBA/181217b

Prepared for:

Reselton Properties Ltd

By:

Alpha Consultants

Prepared by: Jason Bown, Audit Team Leader

Checked by: Kevin Seymour, Audit Team Member

Version	Status	Date
A	Final	19/12/17

1.0 INTRODUCTION

1.1 Commission

1.1.1 This report results from a Stage 1 Road Safety Audit carried out in relation to proposed highway works in the vicinity of the A3003 Lower Richmond Road/Mortlake High Street, London.

1.1.2 The Audit was undertaken by Alpha Consultants in accordance with the Audit Brief issued by the Client Organisation on 14 December 2017. It took place at the offices of Alpha Consultants and comprised an examination of the documents provided as listed in Appendix A, plus a visit to the site of the proposed scheme.

1.1.3 The visit to the site of the proposed scheme was made on 15 December 2017. During the site visit the weather was partly cloudy and the surfaces were damp.

1.2 Terms of Reference

1.2.1 The Terms of Reference of this Audit are as described in TfL Procedure SQA-0170 dated May 2014. The Audit Team has examined and reported only on the road safety implications of the scheme as presented and how it impacts on all road users and has not examined or verified the compliance of the designs to any other criteria. However, to clearly explain a safety problem or the recommendation to resolve a problem the Audit Team may, on occasion, have referred to a design standard without touching on technical audit. An absence of comment relating to specific road users / modes in Section 3 of this report does not imply that they have not been considered; instead the Audit Team feels they are not adversely affected by the proposed changes.

1.2.2 This Safety Audit is not intended to identify pre-existing hazards which remain unchanged due to the proposals; hence they will not be raised in Section 3 of this report as they fall outside the remit of Road Safety Audit in general as specified in the procedure SQA-0170 dated May 2014. Safety issues identified during the Audit and site visit that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in Section 4 of this report.

1.2.3 Nothing in this Audit should be regarded as a direct instruction to include or remove a measure from within the scheme. Responsibility for designing the scheme lies with the Designer and as such the Audit Team accepts no design responsibility for any changes made to the scheme as a result of this Audit.

1.2.4 In accordance with TfL Procedure SQA-0170 dated May 2014, this Audit has a maximum shelf life of 2 years. If the scheme does not progress to the next stage in its development within this period, then the scheme should be re-audited.

1.2.5 Unless general to the scheme, all comments and recommendations are referenced to the detailed design drawings and the locations have been indicated on the plan located in Appendix B.

1.2.6 It is the responsibility of the Design Organisation to complete the Designer's response section of this Audit report. Where applicable and necessary it is the responsibility of the Client Organisation to complete the Client comment section of this Audit report. Signatures from both the Design Organisation and Client Organisation must be added within Section 5 of this Audit report. A copy of which must be returned to the Audit Team.

1.3 Main Parties to the Audit

1.3.1 Client Organisation

Client contact details: Reselton Properties Ltd

1.3.2 Design Organisation

Design contact details: Peter Brett Associates LLP

1.3.3 Audit Team

Audit Team Leader: Jason Bown – Alpha Consultants

Audit Team Member: Kevin Seymour – Alpha Consultants

Audit Team Observer: N/A

1.3.4 Other Specialist Advisors

Specialist Advisor Details: N/A

1.4 Purpose of the Scheme

1.4.1 The scheme relates to the proposed redevelopment of the nearby Stag Brewery site. It is understood from the Audit Brief that the development will comprise of up to 716 new homes plus an extra care centre providing a nursing home and up to a further 130 retirement flats together with healthcare facilities. Other proposed uses, which are intended to enliven the site and provide local facilities both for the new residents and the existing community, include both food and non-food retail outlets, local restaurants and bars, leisure facilities, a new local cinema, a new hotel and significant community facilities, including a new health care centre and provision within the site for a new school.

1.4.2 The extents of the scheme audited are as follows:

- Lower Richmond Road from Watney Road to Sheen Lane,
- Sheen Lane southwards to the level crossing,
- Mortlake High Street from Sheen Lane to a point approximately 60m east of Bulls Alley/ Boatrace Court,
- Williams Lane from Lower Richmond Road to Reid Court,
- Ship Lane from Lower Richmond Road to Thames Bank.

1.5 Special Considerations

1.5.1 The Audit Team has no special considerations to raise.

2.0 ITEMS RAISED IN PREVIOUS ROAD SAFETY AUDITS

The Audit Team is not aware of any other Audits having been carried out on the proposals.

3.0 ITEMS RAISED AT THIS STAGE 1 ROAD SAFETY AUDIT

This section should be read in conjunction with Paragraphs 1.2.1, 1.2.2 and 1.2.3 of this report.

3.1 JUNCTIONS

3.1.1 PROBLEM

Location: A – Proposed Bus Stands adjacent to Williams Lane

Summary: **Turning movements and potential risk to other users**

Based on the swept path drawing provided, it appears that buses entering the Bus Stand area are likely to encroach onto the opposite side of the carriageway. If there is inadequate inter-visibility between bus drivers and other road users, this could lead to a risk of collision between the two. Also, whilst it appears that buses can undertake turning movements without encroaching onto adjacent footways, there appears to be little room for driver error and, therefore, footway users may also be at risk.

RECOMMENDATION
It is recommended that the Bus Stand arrangement/layout are reviewed and adjustments made if necessary, in order to ensure that buses can comfortably enter/leave this area, without undue risk to other road users.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.1.2 PROBLEM

Location: General

Summary: **Vehicle swept paths at junctions and potential collision between opposing vehicles**

It appears from the swept path drawings provided that larger vehicles may encroach onto the opposite side of the carriageway at a number of junctions when turning. If there is inadequate inter-visibility between drivers of such vehicles and opposing motorists, this could lead to a risk of collision between the two.

RECOMMENDATION
It is recommended that adequate inter-visibility is provided at all junctions where large vehicles may need to encroach the opposite side of the carriageway when undertaking turning movements.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.2 NON MOTORISED USER PROVISION

3.2.1 PROBLEM

Location: B - Mortlake High Street (junction with Lower Richmond Rd)

Summary: **Lack of inter-visibility at crossing point and potential pedestrian/vehicle collisions**

It appears from the drawings that an informal crossing point may be proposed on Mortlake High Street, immediately east of the mini roundabout. However, inter-visibility between southbound/left turning motorists and pedestrians on the north side appears very restricted, due to the adjacent building façade. This lack of inter-visibility is likely to put pedestrians at risk of collision with a turning vehicle when crossing at this point.

RECOMMENDATION
Whilst it is recommended that likely pedestrian desire lines are considered, it should also be ensured that adequate inter-visibility is available at any crossing facility provided.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.2.2 PROBLEM

Location: C – Proposed Zebra Crossing adjacent to 33 Lower Richmond Rd

Summary: **Inter-visibility potentially restricted by vehicles in right turn lane, leading to risk of pedestrian/vehicle collisions**

It appears that any vehicles queuing in the right turn lane immediately east of the Zebra Crossing may restrict inter-visibility between westbound motorists and pedestrians crossing north to south at the Zebra. If inter-visibility is inadequate, this could lead to an increased risk of pedestrian/vehicle collisions at the crossing.

RECOMMENDATION
It is recommended that the likely impact of queuing vehicles on inter-visibility is reviewed. If this will be inadequate, based on likely vehicle speeds, adjustments should be made in order to provide adequate inter-visibility.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.3 GENERAL

3.3.1 PROBLEM

Location: D – Proposed central splitter islands between Williams Lane and Rosemary Lane

Summary: **Potential impact of displaced on-street parking, including obstruction of visibility splays and risk of associated collisions**

It was noted during the site visit that demand for on-street parking is high along Lower Richmond Road. The installation of the proposed central splitter islands is therefore likely to result in a degree of displaced parking. This may lead to inappropriate/hazardous parking behaviour if a suitable alternative is not available. For example, visibility splays at nearby junctions may be affected by inappropriate parking, leading to an increased risk of collisions involving failure to give way.

RECOMMENDATION
It is recommended that the likely level of displaced parking is identified and a suitable alternative provided.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

3.4 LOCAL ALIGNMENT

3.4.1 PROBLEM

Location: E – Proposed central splitter islands on Lower Richmond Rd
Summary: **Proposed lane widths past islands may lead to motorists attempting to overtake cyclists and risk collision between the two**

The proposed lane widths past the central islands on Lower Richmond Road may mean that some motorists will attempt to overtake any cyclists at these points, which could lead to conflict and collisions between the two.

RECOMMENDATION
It is recommended that the proposed lane widths are reviewed, and reduced if appropriate, in order to ensure that the risk of motorists attempting to overtake cyclists alongside the islands is minimised.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

End of list of problems identified and recommendations offered in this Stage 1 Road Safety Audit

4.0 ISSUES IDENTIFIED DURING THE STAGE 1 ROAD SAFETY AUDIT THAT ARE OUTSIDE THE TERMS OF REFERENCE

Safety issues identified during the audit and site inspection that are considered to be outside the Terms of Reference, but which the Audit Team wishes to draw to the attention of the Client Organisation, are set out in this section. It is to be understood that, in raising these issues, the Audit Team in no way warrants that a full review of the highway environment has been undertaken beyond that necessary to undertake the Audit as commissioned.

4.1 ISSUE

Location: General – new junctions

Reason considered to be outside the Terms of Reference: Detailed design issue

It is noted that the drawings indicate visibility splays at the proposed new junctions within the scheme/development. It is possible that on-street parking may cause an obstruction and measures should therefore be incorporated at the detailed design stage to ensure all visibility splays are kept clear.

Design Organisation Response	Accepted / Part Accepted / Rejected

Client Organisation Comments

5.0 SIGNATURES AND SIGN-OFF

5.1 AUDIT TEAM STATEMENT

We certify that we have examined the drawings and documents listed in Appendix A. to this Safety Audit report. The Road Safety Audit has been carried out in accordance with TfL Procedure SQA-0170 dated May 2014, with the sole purpose of identifying any feature that could be removed or modified in order to improve the safety of the measures. The problems identified have been noted in this report together with associated suggestions for safety improvements that we recommend should be studied for implementation.

No one on the Audit Team has been involved with the design of the measures.

AUDIT TEAM LEADER:

Name:	Jason Bown MBA PGDipMS IEng FIHE MICE MSoRSA	Signed:	
Position:	Consultant	Date: 19 December 2017	
Organisation:	Alpha Consultants		
Address:	18-20 Groveland Way, Stotfold, Bedfordshire SG5 4PH		

AUDIT TEAM MEMBER:

Name:	Kevin Seymour BSc PGDipTS MCHIT MSoRSA HECoC	Signed:	
Position:	Consultant	Date: 19 December 2017	
Organisation:	Alpha Consultants		
Address:	18-20 Groveland Way, Stotfold, Bedfordshire SG5 4PH		

5.2 DESIGN TEAM STATEMENT

In accordance with SQA-0170 dated May 2014, I certify that I have reviewed the items raised in this Stage 1 Safety Audit report. I have given due consideration to each issue raised and have stated my proposed course of action for each in this report. I seek the Client Organisations endorsement of my proposals.

Name:

Position:

Organisation:

Signed: **Dated:**

5.3 CLIENT ORGANISATION STATEMENT

I accept these proposals by the Design Organisation.

Name:

Position:

Organisation:

Signed: **Dated:**

5.4 SECONDARY CLIENT ORGANISATION STATEMENT (where appropriate)

I accept these proposals by the Design Organisation.

Name:

Position:

Organisation:

Signed: **Dated:**

APPENDIX A

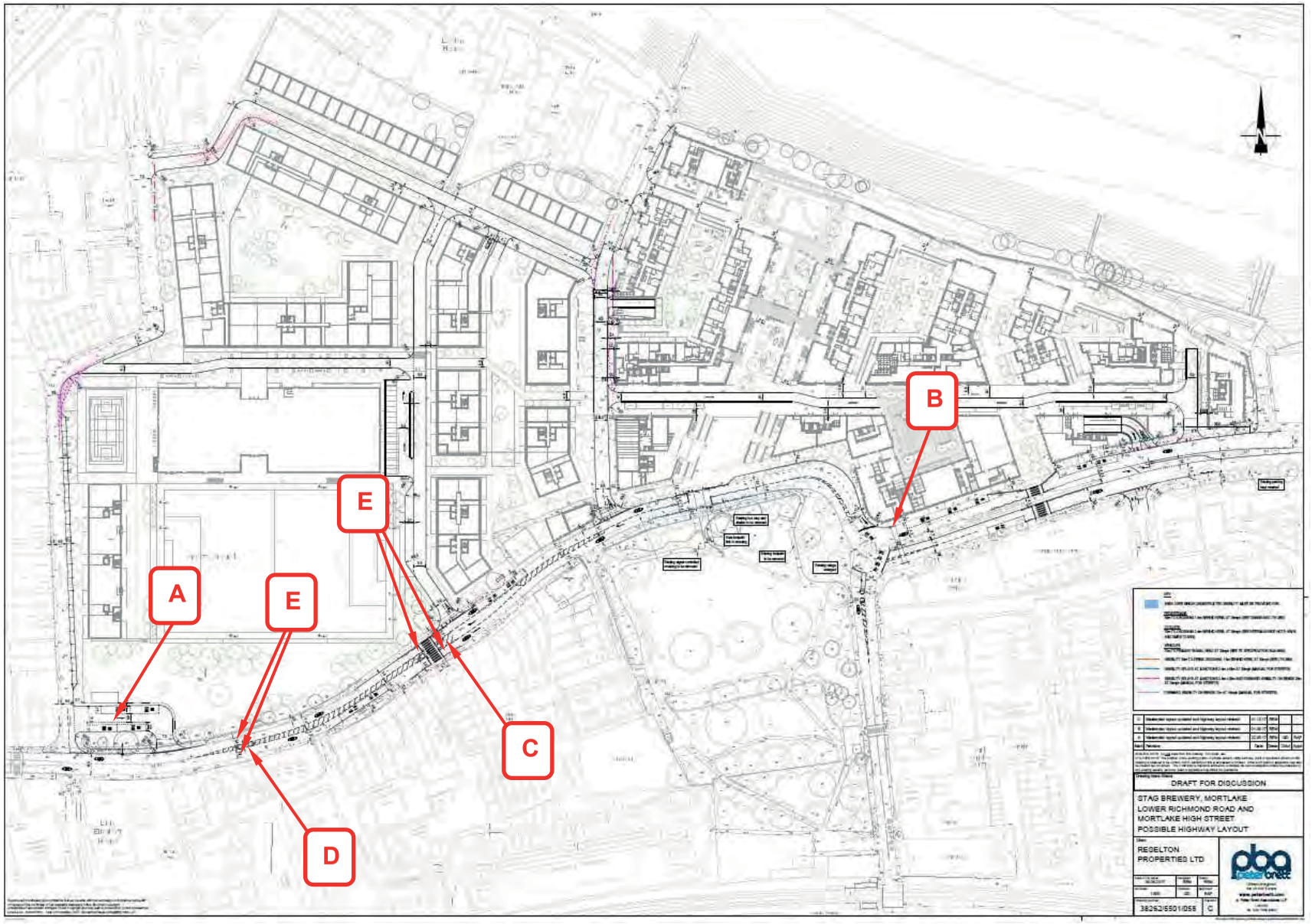
Documents Forming the Audit Brief

DRAWING NUMBER	DRAWING TITLE
38262/5501/058 C	Lower Richmond Road and Mortlake High Street Possible Highway Layout
38262/5501/062 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 10m Rigid Lorry
38262/5501/063 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Fire Tender (Pump Appliance)
38262/5501/064 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Refuse Truck
38262/5501/065 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Single Decker Bus
38262/5501/066 C	Possible Highway Layout – Phases 1/2 Vehicle Swept Path Analysis for a Large Car
38262/5501/067 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Pantechnicon (Removals Truck)
38262/5501/068 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Single Decker Bus
38262/5501/069 C	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 12m School Coach

DOCUMENTS	DETAILS (where appropriate)
■ Safety Audit Brief	
■ Site Location Plan	
☐ Traffic signal details	
☐ TfL signal safety checklist	
☐ Departures from standard	
☐ Previous Road Safety Audits	
☐ Previous Designer Responses	
■ Collision data	
■ Collision plot	
■ Traffic flow / modelling data	
☐ Pedestrian flow / modelling data	
☐ Speed survey data	
☐ Other documents	

APPENDIX B

Problem Locations


A
E
E
B
C
D
DRAFT FOR DISCUSSION
STAG BREWERY, MORTLAKE
LOWER RICHMOND ROAD AND
MORTLAKE HIGH STREET
POSSIBLE HIGHWAY LAYOUT
REGELTON
PROPERTIES LTD
38262/5501/058
C

Appendix B Background Information & Survey Brief

TECHNICAL NOTE

Job Name: Stag Brewery, Mortlake

Job No: 38262

Date: 14th December 2017

Prepared by: Matt Bolshaw and Richard Mallett

Subject: **Road Safety Audit Stage 1 – Background Information & Survey Brief**

DOCUMENT ISSUE RECORD

Technical Note No	Rev	Date	Prepared	Checked	Reviewed (Discipline Lead)	Approved (Project Director)
38262	-	14/12/2017	MB / REM	RAP	RAP	RAP

Peter Brett Associates LLP 33 Bowling Green Lane London EC1R 0BJ
T: +44 (0)20 3824 6600 E: london@peterbrett.com

1 Scheme Information

1.0 Introd uction

1.0.1 Peter Brett Associates LLP (PBA) has been commissioned by Dartmouth Capital on behalf of Reselton Properties to produce a Transport Assessment (TA) in support of the Stag Brewery redevelopment in Mortlake, London Borough of Richmond upon Thames (LBRuT).

1.0.2 The development site is the former site of the Stag Brewery, located adjacent to the River Thames. The former brewery was in operation until December 2015 and up to that time was generating significant HGV traffic movements as well as traffic associated with staff and visitors. The buildings are still retained and so could still be re-used as a brewery or for other uses under the same Use Class order without recourse to a planning application.

1.0.3 The development proposals have been guided by the Council's Planning Brief for the site which was adopted as Supplementary Planning Guidance in July 2011, following an extensive public consultation exercise. The Brief states that the Council's vision is to '*provide a new village heart for Mortlake'* and should "*provide a new recreational and living quarter with a mix of uses, creating vibrant links between the River and the town*". This includes a new green link through the site linking the riverside with Mortlake Green and Mortlake Station via a new pedestrian crossing over Lower Richmond Road; and with traffic calming along both the Lower Richmond Road and High Street frontages to the development as well as along Sheen High Street.

1.0.4 In accordance with the Brief, the redevelopment proposals for the site will provide a residential led, mixed-use development. The proposed scheme comprises of up to 716 new homes plus an extra care centre providing a nursing home and up to a further 130 retirement flats together with healthcare facilities. Other proposed uses, which are intended to enliven the site and provide local facilities both for the new residents and the existing community, include both food and non-food retail outlets, local restaurants and bars, leisure facilities, a new local cinema, a new hotel and significant community facilities, including a new health care centre.

1.0.5 In addition, the developer is required by LBRuT to make part of the site available for a new secondary school, although this differs from the original Brief, which had instead promoted a new primary school.

1.0.6 The scheme will comprise three separate planning applications:

- A detailed application to provide a secondary school capable of accommodating up to 1,200 pupils;
- A hybrid application relating to the remainder of the Stag site which will be a detailed application for the proposed development to the east of Ship Lane and an outline application with all matters reserved for the remaining development located to the west of Ship Lane; and
- A detailed application to deliver an improvement to the junction of A316 Clifford Avenue/Lower Richmond Road/A205 South Circular Road (Clifford Avenue and Mortlake Road) /A3006 Lower Richmond Road, hereafter referred to as "Chalker's Corner Improvement Scheme",

1.1 Site Location and Local Area

1.1.1 The Stag Brewery site is located in Mortlake in south west London within the LBRuT. The site has a frontage onto the River Thames and is approximately 250m to the north of Mortlake Railway Station and immediately north of Mortlake Green.

1.1.2 The site is in two parts, separated by Ship Lane which is a public highway. The eastern section of the Site fronts onto Mortlake High Street and backs onto the River Thames, whilst Lower Richmond Road borders the western section and this part of the site does not have direct access to the River. Williams Lane borders the site to the west, whilst Boat Race House is located to the east of the site. The site location is shown below in Figure 1.1.

1.1.3 The surrounding area is primarily residential but there are also a wide range of local facilities, including primary and nursery schools, local shops and restaurants and the Barnes Hospital, all within easy walking distance of the site.

Figure 1.1 Site Location Plan

1.1.4 The combination of the range of public transport services that are available together with the wide range of local facilities provide a good basis for the creation of a development that is sustainable in transport terms and which does not need to be reliant upon the use of a car.

1.1.5 The area is subject to some existing traffic congestion, as identified in the Brief. This reflects the fact that there are limited vehicular access points to Mortlake with the capacity of two of them being constrained by level crossings that are heavily used by rail services. In addition, the Chalker's Corner Junction which provides the main highway access to Mortlake with access onto London's Strategic Highway Network, is a very busy and constrained junction and recognised as a traffic hotspot.

1.1.6 In accordance with the Brief this existing traffic congestion has been taken into account in developing the regeneration plans for the site and the impacts of the development upon local

traffic conditions are looked at closely in this TA. This is reflected in the provision of the separate application to deliver an improvement scheme for Chalker's Corner.

1.2 Site Access Arrangements

1.2.1 The brewery site has a number of existing access points as follows:

- Mortlake High Street – the main operational access used by HGV's;
- Lower Richmond Road – access to the sports ground and car park;
- Williams Lane – secondary operational access used by HGV's and other vehicles; and
- Ship Lane – access to the staff car park providing about 130 parking spaces.

1.2.2 There is no additional pedestrian access and it is assumed that any pedestrians would have previously accessed the Site via one of the existing vehicular access points.

1.2.3 Ship Lane is a public highway and has a footway on one side of the carriageway; whilst Lower Richmond Road and Mortlake High Street both have footways on either side of the carriageway, although a part of Lower Richmond Road, adjacent to the Mortlake Green, has no footway on the south side. An alternative pedestrian route to the site is available via the Thames Path which routes east to west along the southern bank of the River Thames.

2 Highway Network

2.0.1 Highway access to the Site is affected by a number of constraints. In particular, the presence of the river to the north and the railway line to the south cause severance and limit the number of access points to the area.

2.0.2 Figure 2 shows the wider area around Mortlake and highlights the various strategic roads which provide access to the area. Both the South Circular and the A316 Clifford Avenue/ A316 Lower Richmond Road form part of the Transport for London Road Network (TLRN). The South Circular passes the site approximately 600m to the south of the Stag Brewery Site and then crosses the A316 at the Chalkers Corner junction approximately 300m west of the western part of the site. The A3003 Lower Richmond Road forms a fifth arm to this junction which provides the main highway access to the Site from the strategic network.

2.0.3 The A316 provides a link to the south west towards Richmond and Twickenham, whilst to the north it provides a link towards Chiswick and the A4, also a part of the TLRN. The South Circular/Upper Richmond Road/Mortlake Road provides a link to the north through Kew and towards Brentford as well as to the east towards Barnes and Putney.

2.0.4 This part of the TRLN network is subject to congestion at peak times and this affects access to and from the Site. Significant queuing, mainly during the weekday morning and evening peak periods, is observed on the A3003 approach to Chalkers Corner, although it has been observed that the extent of queuing and delay is very variable depending upon conditions on both the strategic network and on the operation of the local railway level crossings.

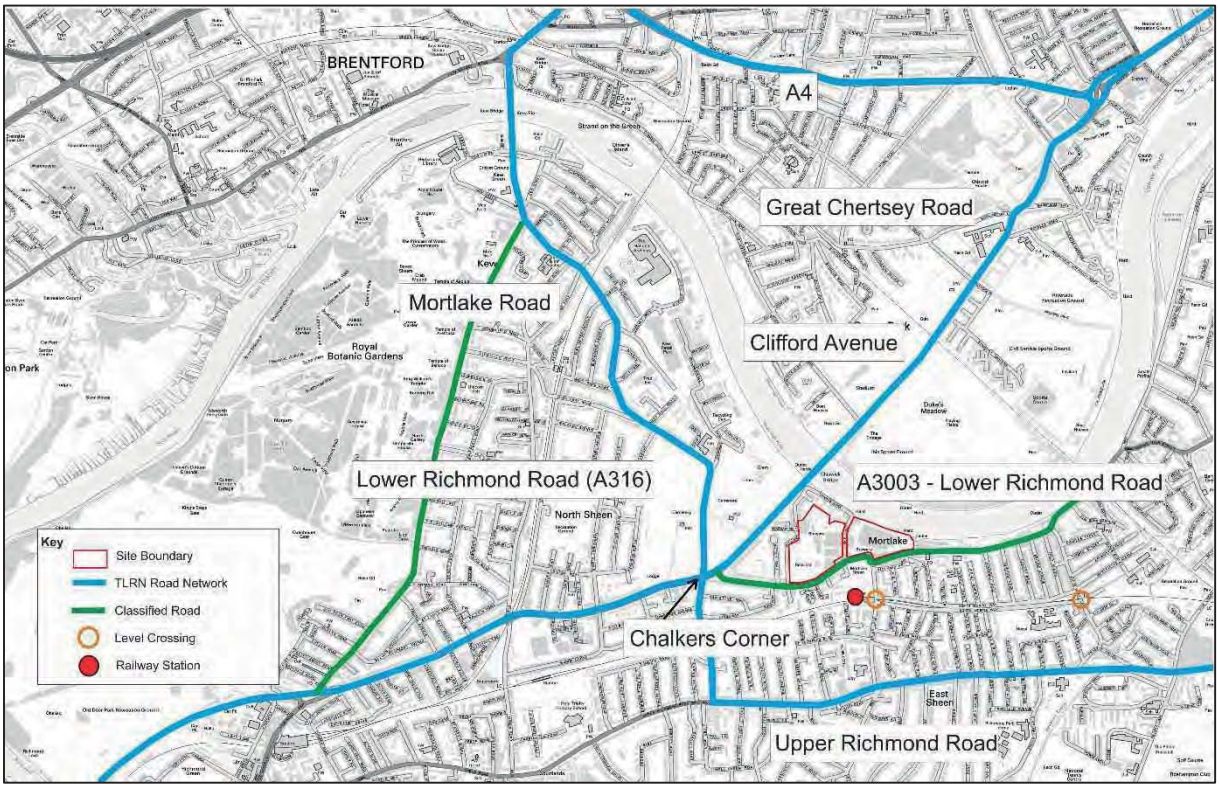


Figure 2.1 Plan of key Strategic Roads

2.0.5 Figure 2.2 shows the location of the more local roads.

Figure 2.2 Plan of Local Road Network

2.0.6 All local roads within Mortlake are currently subject to a 30 mph speed limit. There are effectively only four highway access points to Mortlake as follows:

- Chalkers Corner – subject to periodic congestion;
- Sheen Lane – capacity constrained by the presence of the railway level crossing at Mortlake Station;
- White Hart Lane – capacity constrained by the presence of the railway level crossing; and
- The Terrace – the combination of bus stops to the west of the bridge and a slight narrowing of the road under the bridge plus a slight curve in the road alignment, serve to slow traffic on this section. Capacity is also somewhat constrained by the narrowness of the road under the railway bridge.

2.0.7 The area can also be accessed from the South Circular via Shalston Road and Kingsway. However, this access is subject to existing traffic management measures that effectively limit the use of this route to very local traffic only.

2.0.8 The A3003 Lower Richmond Road – Mortlake High Street – The Terrace, runs east west through Mortlake linking Chalkers Corner in the west with Barnes Bridge and provides a frontage to the Site. The road is mainly a single carriageway road of varying width providing a clear running lane in either direction. To the west of Sheen Lane there is a short length of dual two lane carriageway. Where practical, on street parking is allowed, where this does not prevent provision of a free running lane in either direction. A section of Lower Richmond Road adjacent to the Mortlake Green, has no footway on the south side. Also a section of the Terrace, between White Hart Lane and Barnes Bridge has no footway on the north side, although the river towpath provides an alternative pedestrian facility.

2.0.9 Sheen Lane is a single carriageway road which links the A3003 with the South Circular. It has an active frontage including many local shops and restaurants as well as access to the railway station. To the north of the level crossing it is particularly narrow (approximately 4.5 metres) and is subject to no waiting controls at all times. Thomson House infants school is located just to the north of the level crossing. To the south of the railway line the road is wider in parts and this allows some on-street parking and loading facilities.

2.0.10 Sheen Lane connects with the A3003 at a three arm mini roundabout which provides limited pedestrian crossing facilities. At its southern end it connects to the South Circular via a four arm traffic light controlled junction.

2.0.11 White Hart Lane provides a connection between the A3003 towards the South Circular. It is a single carriageway road with a mainly residential frontage but some local shops and with some on-street parking. At its norther end it connects with the A3003 at a 3 arm mini roundabout. At its southern end it connects with Priests Bridge via a priority junction. Priests Bridge is a one-way crescent that links with the South Circular via two separate priority junctions.

3 Traffic Survey Data

3.0.1 As part of the review of the existing highway network, a number of traffic counts were carried out in order to assess the existing conditions on the network. Nationwide Data Collection (NDC) were commissioned to carry out the traffic surveys on behalf of PBA in June 2016 and further surveys were commissioned to be carried out by Advanced Transport Research (ATR) in June 2017.

3.0.2 Figure 3.1 below shows the location and different types of surveys carried out across the Mortlake area.

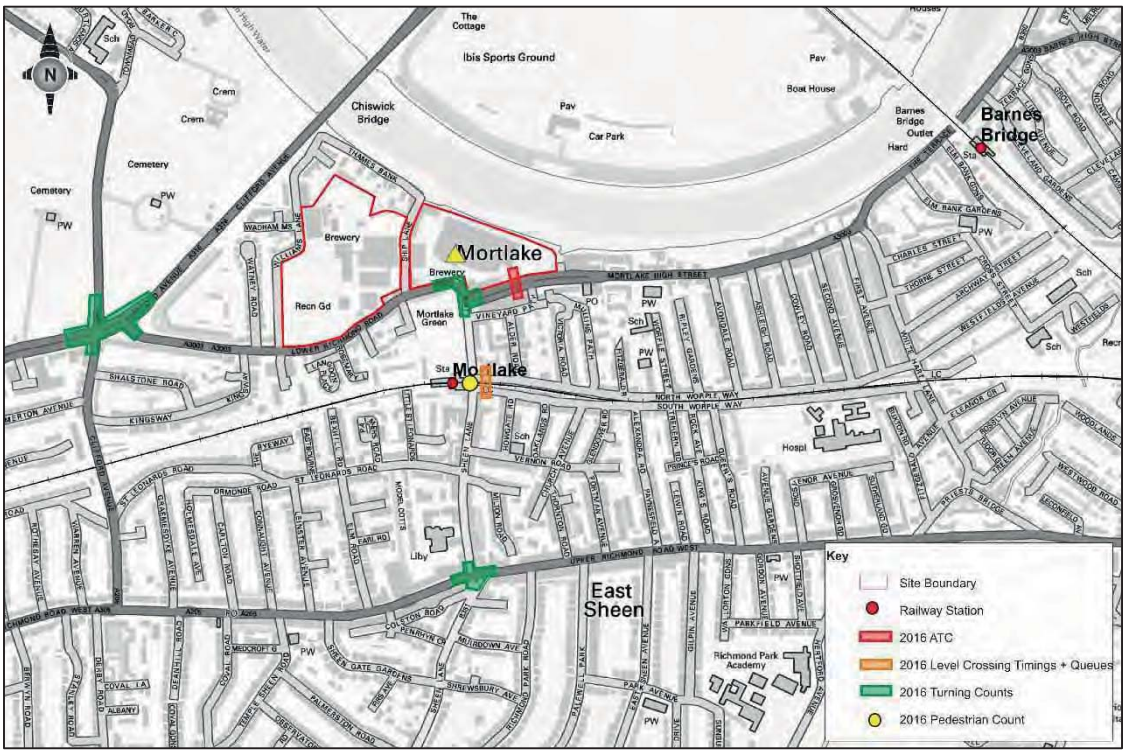


Figure 3.1 Location of Traffic Surveys undertaken in June 2016

3.0.3 The June 2016 surveys included the following:

- Fully Classified Turning Counts and Queue Length Surveys, from 07:00 – 10:00 and 15:00 to 19:00 on Wednesday 15th June 2016;
- Mortlake Station Pedestrian Counts, from 07:00 to 10:00 and 16:00 to 19:00 on Wednesday 15th June 2016;
- Level Crossing Timings and Queues, from 07:00 to 10:00 and 14:30 to 19:00 on Wednesday 15th June 2016; and
- 7 Day Automatic Traffic Counts (ATC) between Sunday 12th and Saturday 18th June. 2016.

3.0.4 The extent and methodology for these surveys was agreed beforehand with LBRuT as providing a suitable basis for the assessment of the highway impacts arising from the development. The survey data used in this assessment are provided within Technical Note 5.

4 Collision Data

4.0.1 Personal injury collision data for a study area surrounding the site was obtained from LBRuT for the most recent five-year period up to 31st January 2016. The extent of the collision data study area is shown in Figure 6 below.

4.0.2 The figure shows the majority of collisions occurring on the South Circular and at the Chalkers Corner junction. This is not unexpected due to the high traffic volumes using the TLRN. Elsewhere there are no apparent collision clusters particularly in close proximity to the Site or associated with either of the railway level crossings.

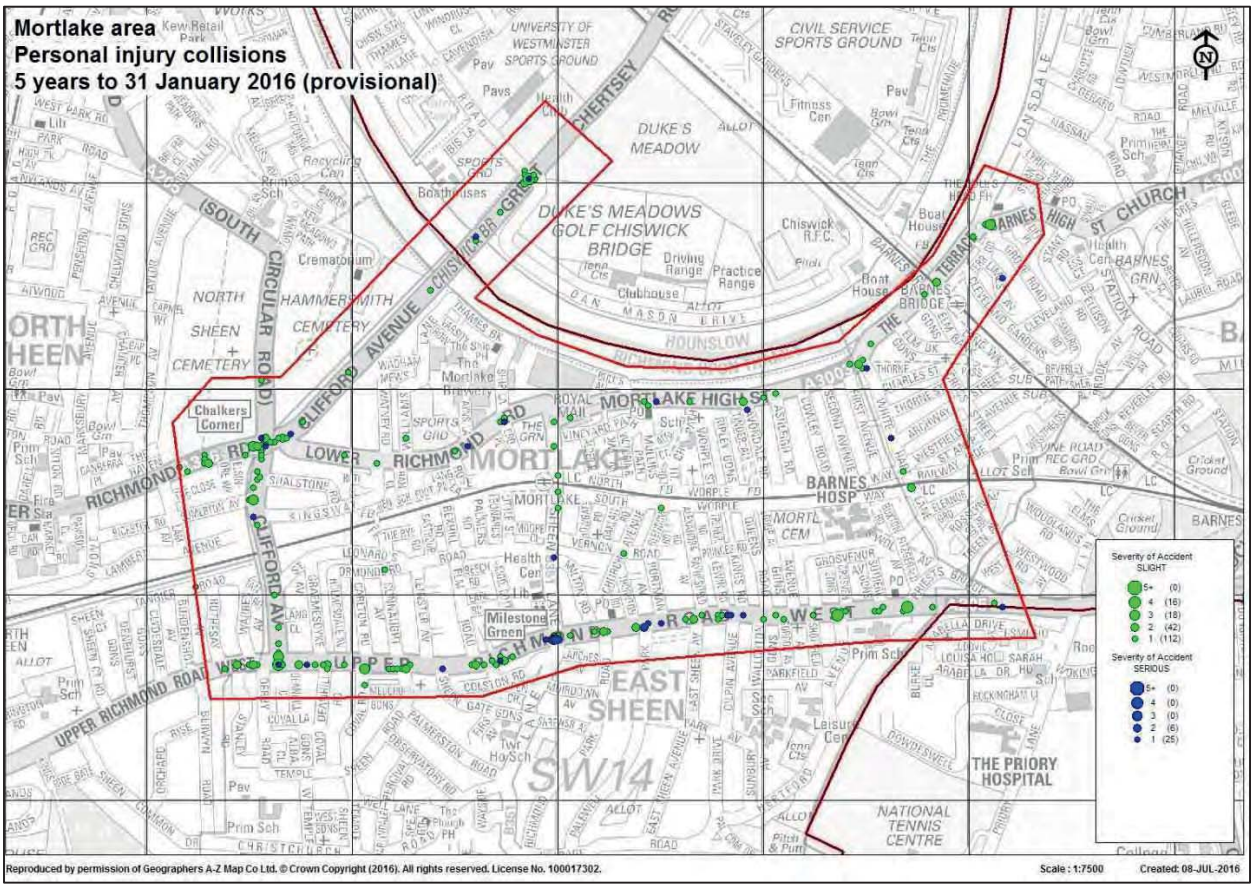


Figure 4.1 Personal Injury Collisions Map provided by LBRuT

4.0.3 Key locations that have been identified and therefore analysed in more detail include Chalkers Corner signalised junction, Lower Richmond Road, Lower Richmond Road junction with Ship Lane, the Upper Richmond Road/Sheen Lane signalised junction and the Sheen Lane Level Crossing. These areas were selected due to their location within the network and in relation to the Site.

Chalkers Corner

4.0.4 At Chalkers Corner (Lower Richmond Road/Clifford Avenue/South Circular) junction there were 19 collisions recorded. Of these 13 were observed at the A316 Lower Richmond Road/South Circular section of the junction with only six observed at the A3003 Lower Richmond Road/Clifford Avenue section.

4.0.5 Of the 19 collisions, five were as a result of road users not seeing or ignoring traffic signals, three occurred due to vehicles not merging correctly, with a total of five involving pedestrians or cyclists. Of the five collisions involving pedestrians or cyclists, three of these also involved vehicles or pedestrian and cyclists ignoring or not seeing traffic signals, whilst the other two involved a car stopping abruptly causing a rider to fall and a car turning into a rider. Whilst there are collisions involving more vulnerable users there is no apparent common causal factor other than poor driver/rider behaviour.

Upper Richmond Road/Sheen Lane

4.0.6 At the Upper Richmond Road/Sheen Lane Junction there were a total of 12 collisions over the five-year period. Of these, five collisions involved pedestrians whilst three involved cyclists (one collision involved both a pedestrian and a cyclist). The collisions involving cyclists all varied with one group being hit by a vehicle turning wildly, one cyclist colliding with a pedestrian and the final collision involving a cyclist overtaking a fellow cyclist and a vehicle hitting the overtaking cyclist from behind.

4.0.7 The collisions involving pedestrians involved one stepping in front of a cyclist, three vehicles ignored signals and turned into crossing pedestrians, whilst the final collision involved a pedestrian running in front of a vehicle whilst there was a red man shown. Again, there appears to be no common causal factor with the exception of poor road user behaviour with signals being ignored.

Sheen Lane Level Crossing

4.0.8 Two collisions were observed close to the Sheen Lane Level Crossing. The first involving a passenger trapping their foot in a car door when exiting the vehicle and the second a vehicle reversing into another, causing a collision. Neither of these collisions to relate to the level crossing and do not show any similarity.

Data Summary

4.0.9 Most recorded injury accidents occur on the TLRN network which reflects the high traffic flows on this network. The incidence of accidents on the local roads serving the Site, the A3003 and Sheen Lane is low and there are no particular clusters apparent, including at the railway level crossings.

4.0.10 The analysis of accidents has revealed no causal factors relating to the design of the infrastructure with the majority appearing to be caused by poor driver/user behaviour. The incidence of pedestrian and cycle accidents does not appear to be high on the local roads.

4.0.11 A summary of the surveys carried out in June 2017 is as follows:

- Fully Classified Turning Counts (Tuesday 27th June 2017 - 07:00 – 10:00 and 15:00 – 19:00);
- Fully Classified Turning Counts, including Queue Length Surveys (Tuesday 27th June - 07:00 – 10:00 and 15:00 – 19:00);
- 7 Day Automatic Traffic Counts (26th June – 3rd July); and
- Level Crossing Downtime Counts - 7am – 7pm.

4.0.12 The 2017 surveys were undertaken following discussion with TfL and were intended primarily to provide detailed data with which to validate the local LinSig junction models.

4.0.13 The survey data used in this assessment are provided within Technical Note 5.

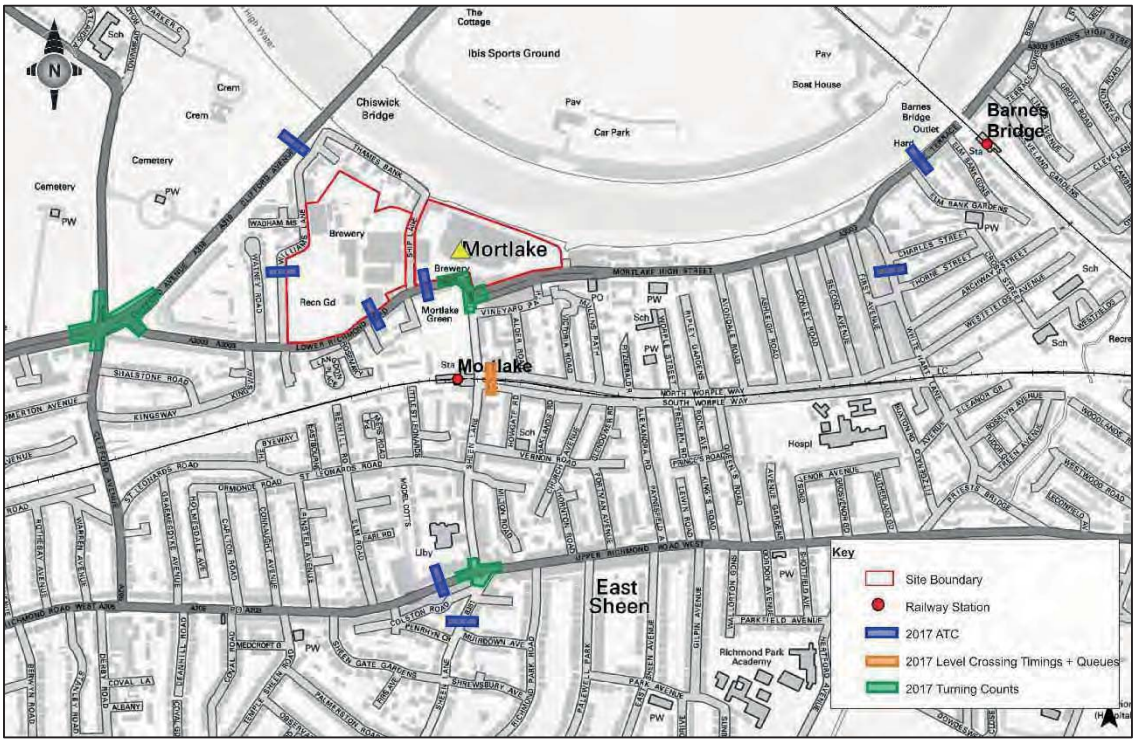


Figure 4.2 ATR traffic survey location plan.

5 Transport Strategy

5.0 Introd uction

5.0.1 This chapter sets out the proposed transport strategy for the development which aims to promote the use of more sustainable modes. The strategy also seeks to address the various impacts of the development.

5.0.2 The Strategy has been shaped by the detailed discussions that have taken place with officers of LBRuT and TfL, with members of the public through CLG meetings and through the two extensive formal public consultation events and with third party stakeholders, including NR.

5.0.3 The overall strategy for the Site is in line with the Planning Brief and with the Mayor's Transport Strategy and the recently issued updated draft Strategy which places considerable emphasis on the creation of "Healthy Streets" and as such has given a high priority to the provision of a high quality public realm which will help to promote walking and cycling.

5.0.4 The Planning Brief for the Site also places a high priority on the need to create a high quality public realm as part of a permeable development and in particular highlights the need to provide a high quality pedestrian link through the Site to connect Mortlake Green and the station with the riverside. It also recognised that there were a number of difficult transport issues that needed to be addressed within the TA including existing congestion and the need to consider improvements to public transport, including the possible provision of a bus turning facility to replace the excising one at Avondale Road.

5.0.5 The remaining part of this chapter sets out the various elements of the Transport Strategy that seek to ensure good access by all modes but with priority to walking and cycling and to minimise adverse impacts on the existing community.

5.0.6 The Transport Strategy comprises the following elements:

- Overall design principles;
- Walking and cycling strategy;
- Public transport strategy;
- Parking strategy and delivery and servicing strategy;
- Highway access strategy; and travel planning/demand management strategy.

5.1 Developme nt Layout Pri nciples

5.1.1 The scheme has two distinct elements:

- To the east of Ship Lane, and in accordance with the Planning Brief, the scheme seeks to create a vibrant new centre for Mortlake with new restaurants and bars, cafes, local retail and employment opportunities. This is reflected in the creation of a new "high street" running east to west parallel to Mortlake High Street as well as a series of new links to the riverside with a number of new public squares being created. The area will essentially be traffic free since all parking is underground with access points on the periphery. Whilst servicing will occur on street access to the area will be controlled physically and by time restriction to minimise conflicts with pedestrians and cycles;

- To the west of Ship Lane, the development is less dense and less mixed in use, comprising the care village, secondary school and residential. With the exception of pedestrian and cycle flows related to the school at the start and end of the school day this part of the site will be subject to much less movement. In addition, it has no direct access to the river. Therefore, the design involves a more traditional streetscape with footways. The key challenge for this part of the Site is to manage the flow of people, cycles and traffic associated with the school.

5.2 Walking and Cycling Strategy

5.2.1 The walking and cycling strategy for the site is encompassed within the wider design and landscape of the site. It is envisaged that the site will have a high level of on street activity with walking and cycling providing the best way to travel through, to and from the development.

5.2.2 Street design is crucial in providing an appropriate environment for walking and cycling through the development and therefore streets have been designed to slow vehicle speeds, where they are permitted and to provide areas where vehicles are either not allowed or the access is controlled such as the riverfront with no vehicle access with the exception of delivery and servicing vehicles.

5.2.3 Figures 5.1 and 8.2 show the proposed network of pedestrian and cycle routes through the Site and how these link into the wider networks.

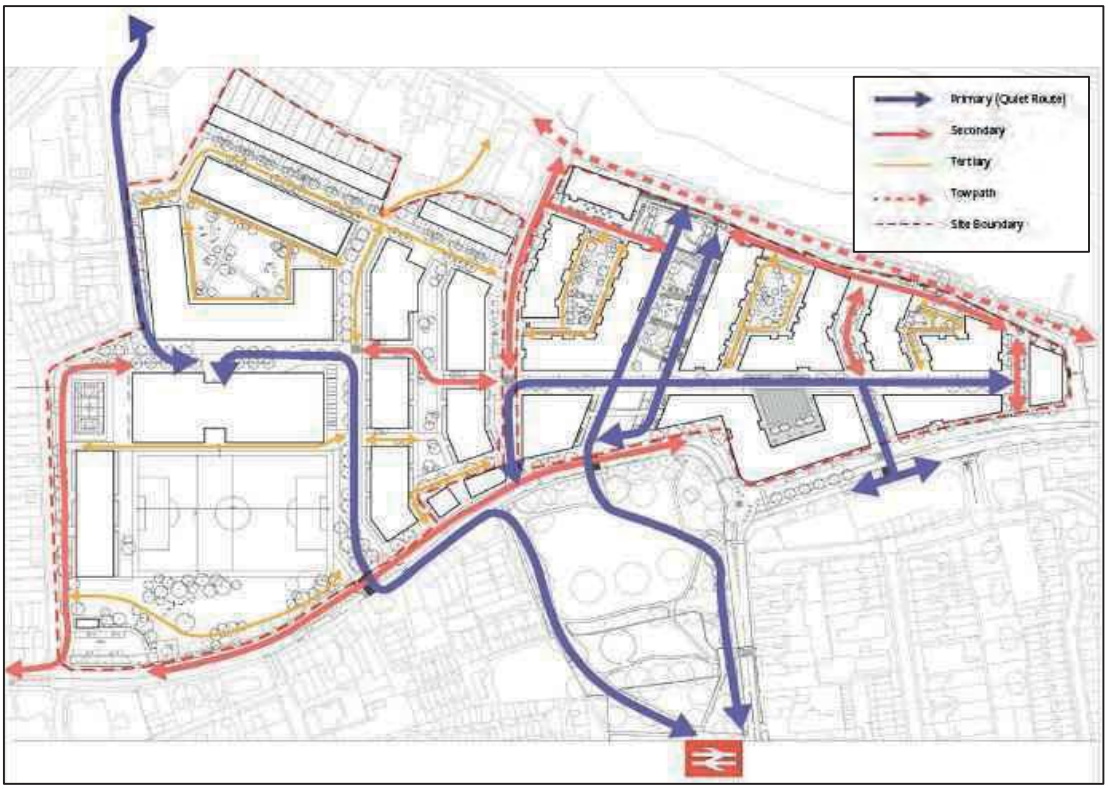


Figure 5.1 proposed pedestrian network

Figure 5.2 proposed cycle network

5.2.4 Key features of the pedestrian network are as follows:

- Provision of the new “Green Link which will run north-south through the Site providing a link between Mortlake Green and the River. This will have an overall width of between 30 and 38 metres and provide an important route for cycles as well as pedestrians;

- New High Street running east- west parallel to Mortlake High Street and linking Ship Lane in the west with Mortlake High street at the eastern end of the Site. This will again be a wide street (14 metres between buildings). It will have a defined vehicular path of 4.1 metres together with a number of defined loading bays. Actual traffic flows will be low and limited to servicing vehicles. Traffic access will be from the eastern end only and will be controlled though barriers which will allow time limited access to be effectively managed. The design will allow cycles to use this as a through route in either direction;

- The existing towpath east of Ship lane will be largely unaffected by the proposals. However, a new pedestrian promenade, with a width of between 4and 4.6 metres) will be provided parallel to the tow path but at a higher level above the flood level. This will be primarily a pedestrian route but will provide an informal route for cycles. Limited servicing activity will also take place along this route since there will be a series of bars and restaurants along the river frontage. Ship Lane, which bisects the

- Site, will continue as a public highway but will be considerably enhanced as a pedestrian route through the provision of a wider footway on the west side and a generous (3 metre) new footway on the east side;

- To the west of Ship Lane, a new east-west pedestrian cycle route will be constructed across the Site immediately to the north of the school. This will be essentially traffic free but there may be limited access for school service vehicles and buses. This will link with Williams Lane to the west and Ship Lane to the east and then in turn with the new east-west "high street" creating a new east-west route across the full site. A crossing treatment is proposed where this route crosses Ship Lane.

5.2.5 Figure 5.3 then shows how the proposed local pedestrian and cycle network will interface with the wider networks.

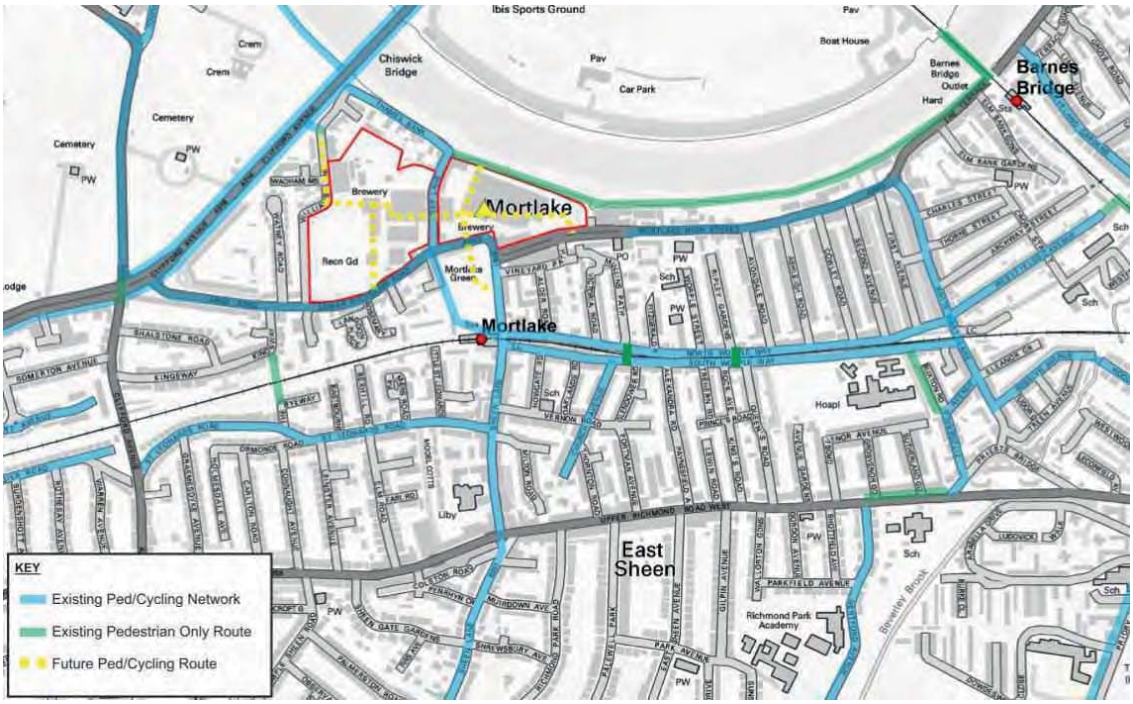


Figure 5.3 Wider pedestrian and cycle links

5.2.6 For pedestrians the main desire lines are considered as follows:

- To the station and south along Sheen Lane – this will be facilitated by providing a new pelican crossing at the southern end of the Green Link.

- To various bus stops located along Mortlake High Street and Lower Richmond Road – two new pedestrian crossings are proposed, one on Mortlake High Street which will connect to the new "high street" and one on Lower Richmond Road to the west of the new access road to the school. This will provide the main pedestrian access to the school and link in turn to Central School Path footbridge for pupils living to the south of the railway;

- To the river towpath, including Thames Path. There are various connections to this route, including via Williams Lane, Ship Lane and the "Green Link". The towpath in turn provides a route to Barnes Bridge Station to the east and to Kew Riverside to the west.

5.2.7 In terms of cycle access, the proposed east-west route connects with both the riverside route towards Kew and the TfL Quiet Way along the A316. This in turn provides access to Chiswick to the north across Chiswick Bridge and to Richmond to the South west. For north-south movement the new Green Link" would provide the main signposted route linking the riverside route with Mortlake Green and onward to the station and the signposted routes along South and North Worpole Way which run either side of the railway line.

5.2.8 Further detail on the highway changes such as the realigned crossings and modifications to the highway layout to benefit pedestrians and cyclists is included within the Highway Strategy section later in this chapter.

5.3 Public Transport Strategy

5.3.1 The key issues identified in discussions with the authorities and the public have been:

- The poor quality of the pedestrian access to the Station;
- The relatively poor bus service that is accessible from the Site;
- The potential need for a bus turnaround facility with driver facilities within the Site.

Buses

5.3.2 From discussions with both LFL and LBRuT, and with the exception of the school requirements, the main issue regarding buses for this Site is not one of capacity but of the relatively unattractive nature of the 419 service due to its relatively low frequency, up to 4 buses an hour. The service does however provide an important link to both Hammersmith (in the west) and to Richmond (in the east) which are considered to be the most important local destinations. In addition, there are a variety of other bus services that can be accessed from the different parts of the Site, as described in chapters 2 and 7, albeit requiring a walk in excess of the preferred walking distance to a stop. Taken together these bus services provide direct access to a wide range of destinations.

- Diversion of the 209 bus service which provides a frequent service to Hammersmith but which currently terminates at the bus turn facility at Avondale Road to the south west of the Site. This was originally the Council's preferred option and would require the provision of a replacement bus turn facility within the Site;
- Upgrading the frequency of the 419 bus service. This would be the most straightforward options;
- Diverting or extending one of a number of other services to the Site that currently terminate in the Richmond area. Again, these options are likely to require the provision of a bus turnaround facility on the Site.

5.3.3 TfL's current position is that, given the uncertainties relating to the repair works at Hammersmith Bridge which are due to start during 2018, they are not yet in a position to advise on their preferred strategy to meet the future requirements of the Stag. They anticipate that, prior to the reopening of Hammersmith Bridge to double deck buses, they will undertake an extensive review of bus services throughout the Hammersmith and Richmond area.

5.3.4 As things stand, the diversion of the 209 bus service is unlikely to be TfL's preferred option since this would be costly and would remove the service from residents living in the Avondale Road area, including to the south of the rail line.

5.3.5 TfL agree that increasing the frequency of the 419 bus service, together with the provision of special school bus services as required once the school's catchment has been determined, would meet the needs of the Stag development proposals. This would not require the provision of the bus turn facility, although in the absence of this, provision would need to be made to accommodate buses. This can be done along the access road to the north of the school.

5.3.6 Therefore, at this stage, and for the purposes of this assessment it is assumed that the 419 bus service will be enhanced to provide a 10-minute peak frequency service with additional buses provided to meet the needs of the school, but the level of provision will be agreed once the catchment area for the school has been established.

5.3.7 Whilst the need for a bus turn facility has not been established and will not be a direct requirement for this development, land has been reserved at the south west corner of the site at the junction of Williams Lane with Lower Richmond Road where a bus turn facility to accommodate up to 4 bus spaces together with driver facilities, could be provided. This is TfL's preferred location for such a facility since it provides them with the greatest flexibility in terms of the management of bus services in the area and would involve least redundant bus mileage. Figure 5.4 shows the location of the safeguarded land and a possible layout for a four bay facility on this land.

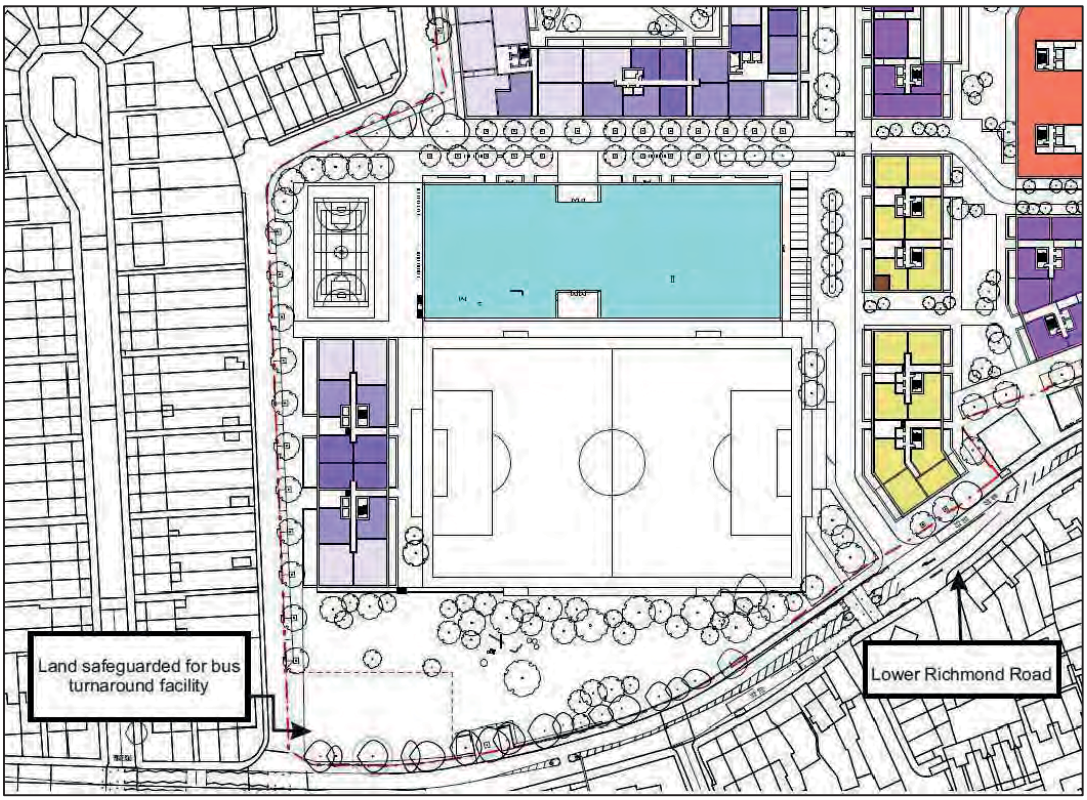


Figure 5.4 Location of Bus Turnaround Safeguarded Land

5.4 Highway Strategy

5.4.1 The highway access strategy has focussed on the following aspects:

- Strategic access to the area recognising the need to ensure that the Stag development does not add further to existing levels of congestion in the area. This

reflects the concerns expressed by the Council, including within the Planning Brief, and members of public through the various consultation exercises;

- The operation of the local network, in particular, the site frontage of Lower Richmond Road and Mortlake High Street to ensure that it does not act as a barrier to pedestrian / cycle access to the Site and aligns with the Mayor's Policy for Health Streets; and

- Efficient Site access to the two underground car parks and for servicing vehicles that does not prejudice through traffic movement or the movement of pedestrians and cycles through the Site.

Strategic Access

5.4.2 Whilst the Transport Strategy gives priority to non-car modes it is recognised that the area is subject to existing high levels of congestion at busy times. This relates to the limited points of access to Mortlake due to the combined barriers created by the River Thames and the railway lines and the congested nature of the main access to the area via Chalkers Corner. Also, two of the main access points are across level crossings which are characterised by extended and unpredictable barrier down times (which average at around 45 minutes per hour).

5.4.3 The Planning Brief recognised the importance of addressing congestion as part of the TA. Whilst options for improving vehicular access over the level crossings has been examined, it is clear that improvements are not practical, certainly in the context of the proposed development. NR has confirmed that it has no plans to alter the level crossings or introduce any measures that would reduce or better regulate barrier down time. It has also been confirmed with LBRuT that there are no realistic options for replacing either of the crossings with an underpass or road bridge due to constraints of land availability, cost and environmental issues.

5.4.4 Therefore, the highway assessment has focussed on the option of improving the design of the Chalkers Corner junction as the main way of ensuring that the proposed development does not further increase congestion levels in the area. These improvement works are considered to form an essential element of the development and will form a separate detailed application.

5.4.5 The proposed works will provide additional capacity, in particular on the exit arm from Mortlake (Lower Richmond Road) but also some additional entry capacity into Mortlake. In addition, by lengthening the queuing space between the main cross roads and the Lower Richmond Road arm the works will reduce the risks of traffic queuing back and blocking the main cross roads. It is considered therefore that the works will improve the overall resilience of the junction as well as improving capacity.

5.4.6 The current proposals are shown in **Drawing 38262/5501/51C** and are included in Appendix A

5.4.7 As noted previously, whilst the main objective of the scheme is to provide additional highway capacity to mitigate the impacts of the proposed development, the scheme does also provide a number of features to enhance pedestrian and cycle access providing a better linkage for cycles between Lower Richmond Road and the TfL A316 Quiet Way, enhanced pedestrian islands and improved cycle features at the main Chalkers Corner junction, in line with TfL requirements.

5.4.8 Whilst the scheme will necessarily require the removal of a number of mature trees along Lower Richmond Road and one in Clifford Avenue, as well as a number within the Chertsey Gardens site, it is proposed to add new planting to compensate for this loss. The landscape scheme proposes to replace the existing wall and fence on the revised alignment with a 2m high brick wall to help mitigate any noise impacts arising from moving the road slightly closer to Chertsey Court. In addition, a number of semi-mature trees are proposed within the Chertsey Court site to augment existing trees and visually screen the building with greenery.

These proposed trees will include a mix of deciduous and evergreen species which assist in pollution absorption. The trees will be supplied at 6m height (4+ years old) to maximise immediate impact of the proposed landscape. A small pocket park with additional trees is also proposed on the opposite side of Lower Richmond Road intersection.

5.4.9 Chertsey Court will be set back a minimum of 14.0 metres from the carriageway of Lower Richmond Road (compared with 16.2 metres now). The nearest property to Clifford Avenue carriageway will be 16.2 metres (compared to 18.3 currently).

5.4.10 The scheme will have very little impact on parking. The existing informal car park on the corner of Lower Richmond Road will be retained and no spaces are lost within Chertsey Court. As part of the proposals TfL has asked that the scheme includes a protected bus clearway for the westbound service on the approach to the junction. Currently buses cannot access the kerb due to parking and this is particularly unsatisfactory for less mobile passengers boarding and alighting at this location. If this element of the proposals is included in the scheme it will result in the loss of three currently uncontrolled on-street spaces plus one overnight parking space

Lower Richmond Road/Mortlake High Street

5.4.11 In addition to the works at Chalkers Corner, a package of works is proposed along the Lower Richmond Road corridor including Mortlake High Street and extending down Sheen Lane towards the level crossing. These works focus on enhancing the pedestrian and cycle environment and by slowing speeds and improving pedestrian and cycle crossing facilities, further enhancing the safety and in particular creating a suitable environment for a new secondary school.

5.4.12 The specific proposals are shown in Drawing **38262/5501/58C** which is included in Appendix A as follows:

- A New 20mph speed limit enforced between Williams Lane and Bulls Alley including Sheen Lane, between the Mortlake High Street / Lower Richmond Road junction and the Sheen Lane level crossing.
- A number of physical measures are proposed to help manage speeds including junction entry treatments, carriageway narrowing and provision of a textured tarmac resin to differentiate the area of speed restraint. Potentially, table tops to comply with TfL requirements for buses could be installed at pedestrian crossing points by the school and on the “Green Link”.
- A new crossing provided just to the west of the new access road to the school to improve access for pupils needing to cross Lower Richmond Road. This is currently shown as a zebra crossing but could potentially be upgraded to a pelican crossing;
- Moving of Bus Stop P further to the east to align with the new crossing point and encourage them to cross at the crossing rather than informally;
- The existing signalised crossing point adjacent to Ship Lane is relocated to align better with the Green Link. This also requires the removal of Bus Stop Z;
- Extension of the two lanes on the Lower Richmond Road arm of the Sheen Lane mini-roundabout so as to provide more capacity for those heading from west to east across the roundabout. This will reduce the tendency for the eastbound traffic movement through the junction to become blocked when the level crossing barriers are down;
- Provision of ‘KEEP CLEAR’ markings on the Sheen Lane mini-roundabout to free up the roundabout when the level crossing is down;

- Provision of an informal crossing point on the east side of the roundabout enabled by providing a kerb buildout on the corner to slow traffic and improve pedestrian/vehicle inter visibility at this location;
- Provision of a new zebra crossing to serve a desire line to the eastern portion of the development and help to reduce speeds on Mortlake High Street
- Possible enlargement of the central reserve and narrowing of traffic lanes, again to improve the pedestrian environment by slowing vehicle speeds.
- Provision of a new right turn lane on Mortlake High Street to provide for right turners into the development car park at the current junction with Vineyard Path.
- Tightening of radii and footway build-out at Vineyard Path Junction
- Relocation of bus stops and bus stands on Mortlake High Street to allow for the new access points and the new crossing.

5.4.13 All these modifications whilst part of the highway strategy also widely benefit the walking and cycling strategy with many of the changes aimed at reducing vehicle speeds and increasing the permeability across Lower Richmond Road.

Site Access

5.4.14 Figure 5.5 shows the proposed Site access strategy.

Figure 5.5 Site Access Strategy

5.4.15 As discussed above, the majority of car parking will be provided within two underground car parks. The main car park which will serve the mix of uses to the east of Ship Lane can be accessed at two locations, from Ship Lane and from Mortlake High Street. The second access onto Mortlake High Street was added following feedback from public consolation with a view to reducing the impacts of the development upon the Sheen Lane mini roundabout. The addition

of this second access will mean that only traffic specifically wishing to use Sheen Lane will need to travel thought the mini roundabout form this part of the development.

5.4.16 Because of the nature of the land uses that it is serving (residential and Care Village) the western underground traffic will generate much less traffic movement than will the eastern car park. Access is to the north of the Site and can be achieved via a number of alternative routes minimising impacts on any one access road.

5.4.17 Access for servicing vehicles is described within the section of servicing below.

- Improve the health of residents and minimise the development impacts on the surrounding environment.
- Promote sustainable modes of travel to all visitors of the site

5.5 Delivery and Servicing

5.5.1 A delivery and servicing plan (DSP) has also been produced as part of the developments Transport Strategy. The DSP outlines the management of delivery and servicing trips and how they will operate within the Site. Figure 8.7 shows the access routes for servicing vehicles.

Figure 5.6 Delivery and Servicing Routes

5.5.2 The main delivery and servicing area will be the ‘new High Street’ as this is where the main retail area will be. This will also provide access to the main restaurant/bar area on the river front. As part of the strategy this area will be controlled by the estate management company through the use of rising bollards close to the entrance to the ‘new High Street’.

5.5.3 The servicing and waste strategy for the detailed application involves the following elements:

- Entry to the area will be from the eastern end of the ‘new High Street’ and controlled by bollards close to the entry but allow for “u” turns for which arrive out of hours;

- The management control room is located close to the bollards to improve the effective management of the entrance;
- Loading bays of appropriate size identified throughout the Site. The capacity of these to accommodate the demand has been estimated based on industry data as set out in the DSP;
- Access for servicing will be time controlled to minimise conflicts with pedestrians and cycles and to ensure servicing does not occur at unsociable hours; and
- All residential buildings will have a concierge service during agreed servicing times. The control room will offer a collection service out of hours.

5.5.4 Vehicle tracking for refuse vehicles and for appropriate service vehicles has been undertaken to ensure the highway layout is navigable by large refuse trucks and delivery vehicles. Drawings for these tracks is included in Appendix A.

6 Survey Brief

6.0.1 The Road Safety Audit Team is required to undertake a Stage 1 RSA based upon the drawings in Appendix A and supporting information contained in this document.

6.0.2 A separate report is to be provided for each of the following:

1. Chalkers Corner junction – comprising the following sections of public highway:–

    - Mortlake Road up to a point 50m north of the junction
    - Clifford Avenue from the junction southwards to Shalstone Road
    - A316 Lower Richmond Road westwards to the North Sheen Cemetery entrance
    - A316 Clifford Avenue eastwards to the Mortlake Cemetery entrance
    - A3003 Lower Richmond Road, eastwards to the junction of Lower Richmond Road and Watney Road.

2. Lower Richmond Road and Mortlake High Street – comprising the following sections of public highway:

    - Lower Richmond Road from Watney Road to Sheen Lane,
    - Sheen Lane southwards to the level crossing,
    - Mortlake High Street from Sheen Lane to a point approximately 60m east of Bulls Alley/ Boatrace Court
    - Williams Lane from Lower Richmond Road to Reid Court
    - Ship Lane from Lower Richmond Road to Thames Bank

6.0.3 As previously agreed, copies of the draft reports will also need to be supplied to Transport for London for their comments.

Appendix A – drawings

List of drawings :

Drawing no.	Title
38262/5501/051 C	Clifford Avenue / Lower Richmond Road Short Flare Option
38262/5501/058 C	Lower Richmond Road and Mortlake High Street Possible Highway Layout
38262/5501/062 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis For A 10m Rigid Lorry
38262/5501/063 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis For A Fire Tender (Pump Appliance)
38262/5501/064 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis For A Refuse Truck
38262/5501/065 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis For A Single Decker Bus
38262/5501/066 C	Possible Highway Layout – Phases 1/2 Vehicle Swept Path Analysis For A Large Car
38262/5501/067 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis For A Pantechnicon (Removals Truck)
38262/5501/068 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis For A Single Decker Bus
38262/5501/069 C	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis For A 12m School Coach
38262/5501/077	Clifford Avenue / Lower Richmond Road – Vehicle Swept Path Analysis For A 16.5m Articulated Lorry
38262/5501/078	Clifford Avenue / Lower Richmond Road – Vehicle Swept Path Analysis For A 10m Rigid Lorry

Appendix B – Traffic Survey Data Review

Stag Brewery, Mortlake

Traffic Survey Data Review

Technical Note 5

On behalf of **Reselton Properties Ltd**

Project Ref: 38262/5501 | Rev: AA | Date: November 2016

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Document Control Sheet

Project Name: **Stag Brewery, Mortlake**
Project Ref: **38262**
Report Title: **Traffic Survey Data Review**
Doc Ref: **Technical Note 5**
Date: **July 2016**

	Name	Position	Signature	Date
Prepared by:	M Bolshaw	Graduate Transport Planner	*M Bolshaw*	November 2016
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Approved by:	G Callaghan	Partner	*G Callaghan*	November 2016
For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
AA					

Contents

Figures

Tables

Appendices

No table of contents entries found.

1.1 Background

1.1.1 This document sets out a review of the traffic survey data collected in the area surrounding the Stag Brewery site, Mortlake.

1.2 Survey Scope

1.2.1 Nationwide Data Collection was commissioned to carry out the traffic surveys on behalf of Peter Brett Associates LLP in June 2016.

1.2.2 The extent of the surveys included the following:

- Turning Counts and Queue Length Surveys, from 07:00 – 10:00 and 14:30 to 19:00 at:
  - A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction
  - Upper Richmond Road W (S Circular) / Sheen Lane Signalised Junction
  - A3003 Lower Richmond Road / Mortlake High Street / Sheen Lane Roundabout
  - Mortlake Station Level Crossing
- Mortlake Station Pedestrian Counts, from 07:00 to 10:00 and 16:00 to 19:00 at:
  - Mortlake Station at all 4 access points
- Level Crossing Timings and Queues, from 07:00 to 10:00 and 14:30 to 19:00 at:
  - Mortlake Station Level Crossing on Sheen Lane
- 7 Day Automatic Traffic Counts on:
  - Mortlake High Street, to the east of the Lower Richmond Road / Mortlake High Street / Sheen Lane Roundabout

1.2.3 The location of these surveys is shown in Figure 1.1 below.

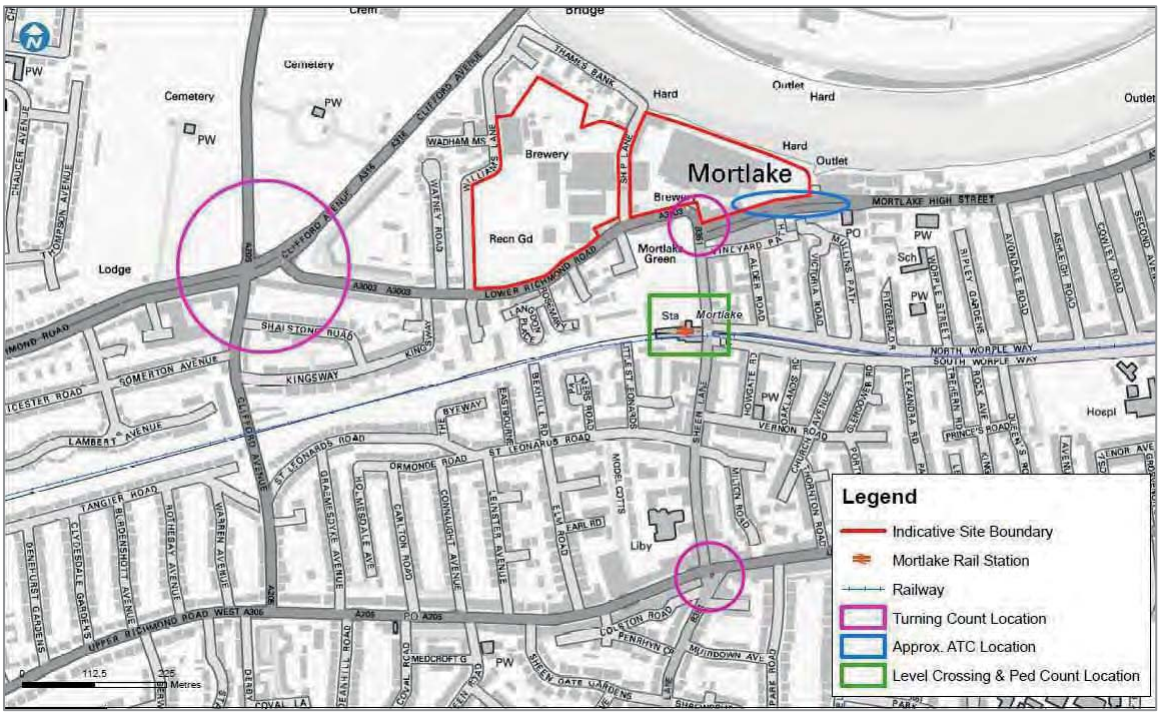


Figure 1.1 – Location of Traffic Surveys undertaken in June 2016

1.2.4 The AM peak was surveyed between 07:00 – 10:00, however the PM peak was extended to be from 14:30 to 19:00 at the request of London Borough of Richmond upon Thames in order to collect data at school pick up times.

1.3 Automatic Traffic Count (ATC)

1.3.1 A 7 day ATC was carried out on Mortlake High Street to the south-east of the Proposed Development.

1.3.2 The graph below demonstrates the daily all vehicles flow recorded in each direction.

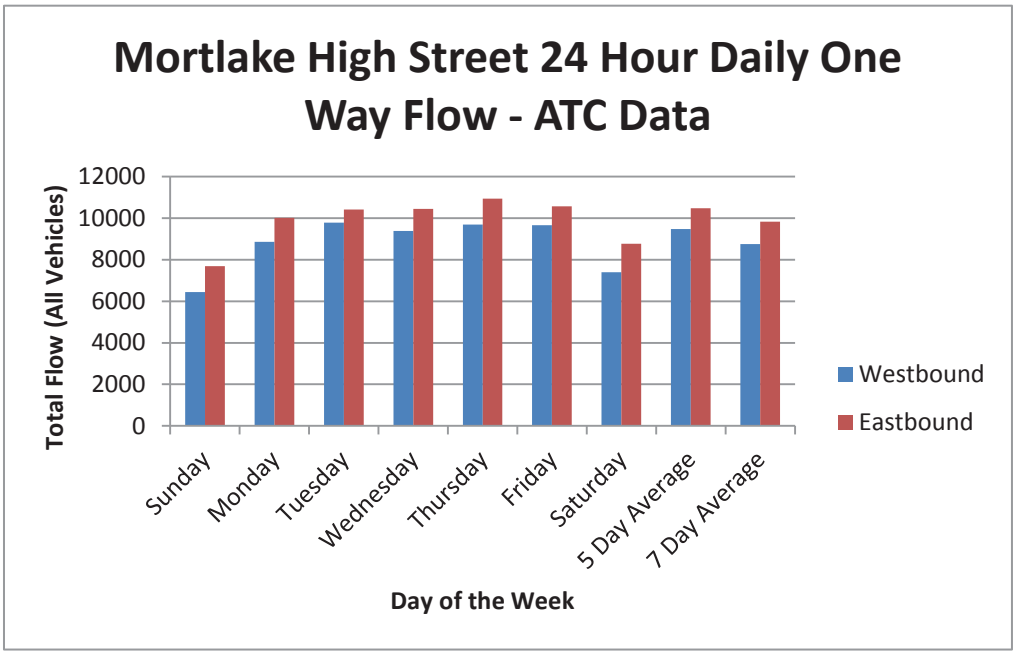


Figure 1.2 – Summary of Mortlake High Street 24 Hour Flows by Direction

1.3.3 Figure 1.2 shows that on average eastbound flows (5 day average of 10,474) were higher than the westbound flows (5 day average of 9,472).

1.3.4 This shows a greater amount of traffic heading towards Barnes Bridge than towards either Mortlake Station or the Lower Richmond Road.

1.3.5 Figure 1.3 below demonstrates the average weekday flow across 24 hours on Mortlake High Street.

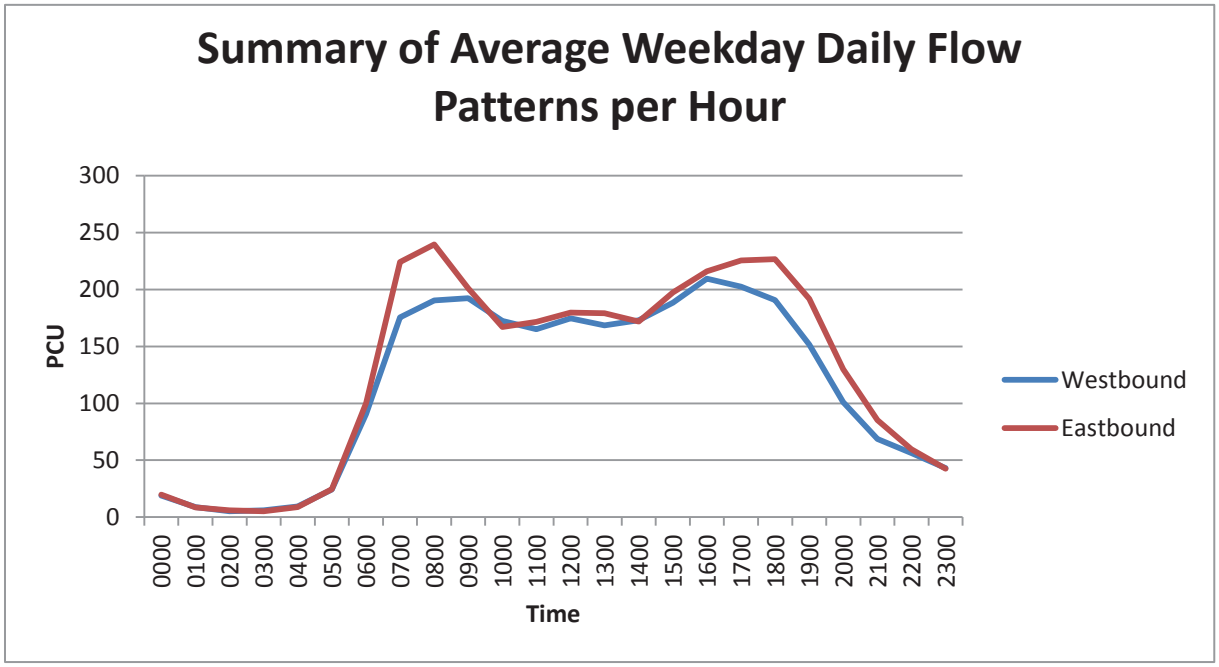


Figure 1.3 – Summary of Average Weekday Daily Flow Patterns per Hour – Mortlake High Street

1.3.6 The patterns show that eastbound there are two clear peaks. One a shorter more pronounced peak between approximately 07:00 and 09:00 and the second a slightly longer peak between 16:00 and 19:00.

1.3.7 The westbound flow has a slightly flatter profile with a less prominent AM Peak between 08:00 and 09:00. The PM peak is also shorter and earlier occurring between 16:00 and 17:00.

1.3.8 As well as having less severe peaks the daily flow also suggests that the westbound flow is less than the eastbound flows.

1.4 Turning Count Surveys

1.4.1 The turning count surveys were carried out on the Wednesday in the week of the ATC count. Figure 1.2 above shows that there were no drastic differences in terms of daily flow between Wednesday and the rest of the week, demonstrating that traffic conditions were representative of a normal day.

A316 Lower Richmond Road / Clifford Road / South Circular Road / A3003 Lower Richmond Road Junction Inflow

1.4.2 The principal junction and main connection to the wider highway network is the A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction.

1.4.3 The Graphs below highlight the percentage of Inflow and Outflow from the Lower Richmond Road arm to this junction over each peak.

1.4.4 The Lower Richmond Road Arm would provide the main access point to the wider highway network from the Proposed Development and therefore would be expected to see the greatest impact in terms of additional traffic flows.

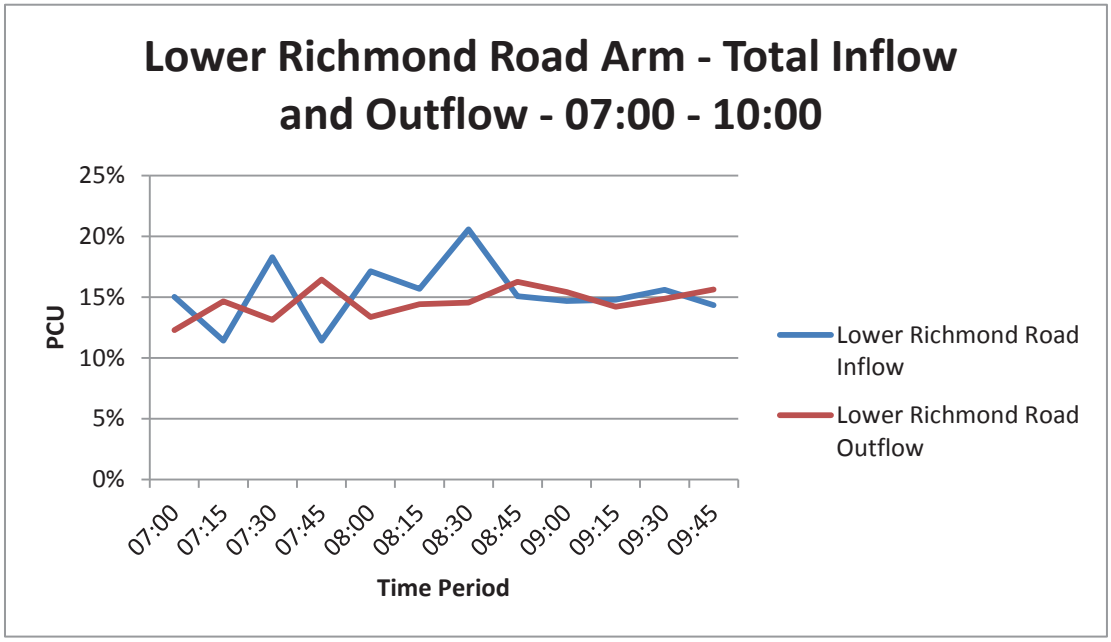


Figure 1.4 – Lower Richmond Road Arm - AM Peak - Total Inflow and Outflow

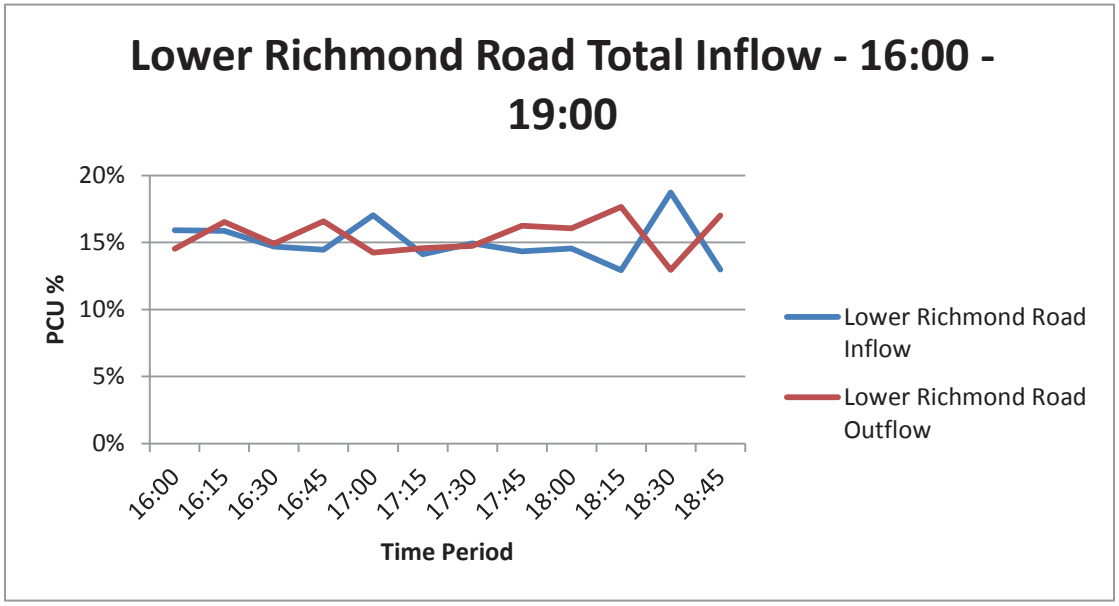


Figure 1.5 – Lower Richmond Road Arm – PM Peak – Total Inflow and Outflow

1.4.5 Figures 1.4 and 1.5 highlight that the current level of inflow and outflow to and from the junction ranges from between 11% and 21% of total junction inflow in the AM peak and 13% and 19% in the PM peak for each 15 minute period. This equates to approximately 150 vehicles in each direction per 15 minutes.

1.4.6 The average total inflow for the whole junction in each 15 minute period is 992 PCU in the AM Peak and 1174 PCU in the PM peak.

1.4.7 In terms of peak hours, the figures show in the AM peak that the peak hour would be between 08:00 and 09:00 whilst the PM peak shows a much flatter more consistant profile. This corelates with site observations where in the PM peak flows were consistant due to the large amound of traffic.

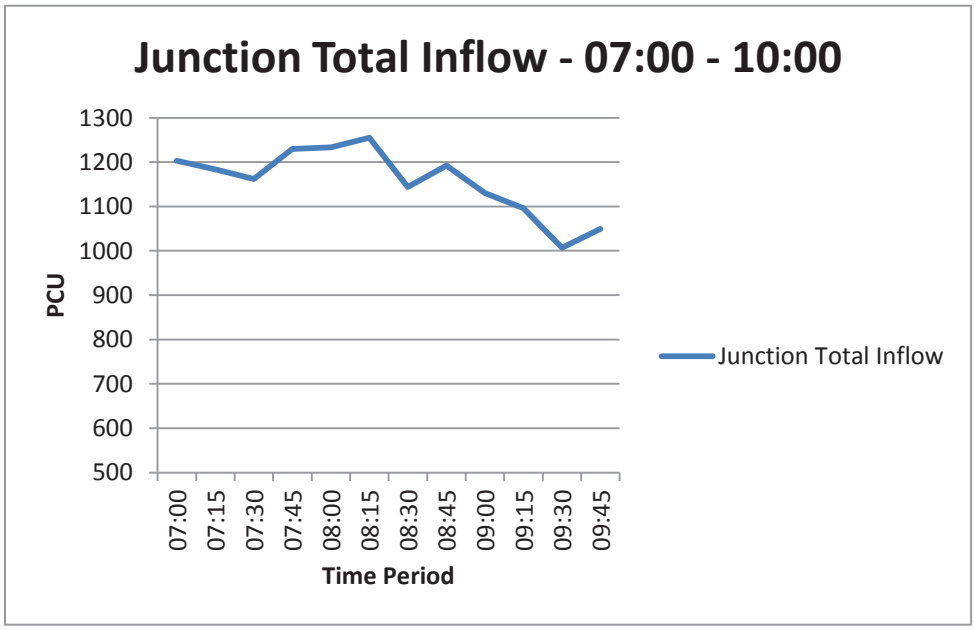


Figure 1.6 - A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction – AM Peak – Total Inflow

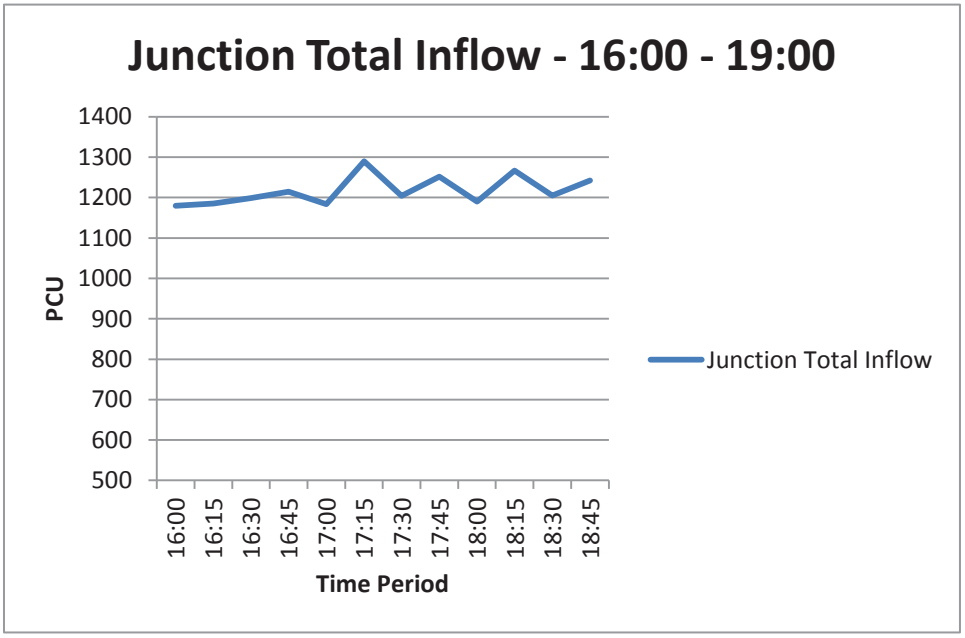


Figure 1.7 - A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction – PM Peak – Total Inflow

1.4.8 Figures 1.6 and 1.7 show the total junction inflow for the AM and PM peaks. In the AM peak there is a small peak observed between 07:30 and 08:30 whereas in the PM peak there is a much flatter junction profile with no real peak observed.

1.5 Lower Richmond Road Turning Proportions

1.5.1 Table 1.1 below demonstrates the traffic flows per direction for the A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction.

Table 1.1 – Summary of junction turning movements for the A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction.

Arm		AM Peak 07:00 – 10:00						PM Peak 16:00 – 19:00					
		Arm A	Arm B	Arm C	Arm D	Arm E	Total	Arm A	Arm B	Arm C	Arm D	Arm E	Total
A	S Circular Road (N)	0	233	481	1116	38	1869	0	255	593	1190	44	2082
B	A316 Clifford Avenue	131	0	645	453	1747	2975	149	0	786	620	2392	3947
C	Lower Richmond Road (E)	431	863	0	97	738	2128	368	943	0	62	822	2195
D	S Circular Road (S)	1254	866	34	0	495	2649	1045	741	23	0	500	2308
E	Lower Richmond Road (W)	203	2751	867	452	5	4277	194	2587	866	428	2	4077
Total		2018	4713	2026	2117	3023	13898	1756	4526	2267	2300	3760	14609

Table 1.2 – Summary of junction turning proportions for the A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction.

Arm		AM Peak 07:00 – 10:00						PM Peak 16:00 – 19:00					
		Arm A	Arm B	Arm C	Arm D	Arm E	Total	Arm A	Arm B	Arm C	Arm D	Arm E	Total
Arm A	S Circular Road (N)	0%	12%	26%	60%	2%	100%	0%	12%	28%	57%	2%	100%
Arm B	A316 Clifford	4%	0%	22%	15%	59%	100%	4%	0%	20%	16%	61%	100%

	Avenue												
Arm C	Lower Richmond Road (E)	20%	41%	0%	5%	35%	100%	17%	43%	0%	3%	37%	100%
Arm D	S Circular Road (S)	47%	33%	1%	0%	19%	100%	45%	32%	1%	0%	22%	100%
Arm E	Lower Richmond Road (W)	5%	64%	20%	11%	0%	100%	5%	63%	21%	10%	0%	100%

1.5.2 Tables 1.1 and 1.2 demonstrate that in the AM peak of the existing traffic inflow from the Lower Richmond Road arm, the majority turns north-east towards Chiswick Bridge (41%/863 PCU) or south-west towards Richmond (35%/738 PCU). A further 20% or 431 PCU turns towards Kew via the S Circular Road (N).

1.5.3 The same pattern was then recorded in the PM peak, with 43%/943 PCU turning towards Chiswick Bridge and 37%/822 PCU towards Richmond. The percentage turning towards Kew and the S Circular Road (N) was slightly less than the AM peak (17%/368).

1.5.4 Figure 1.8 below demonstrates these flows in a diagram.

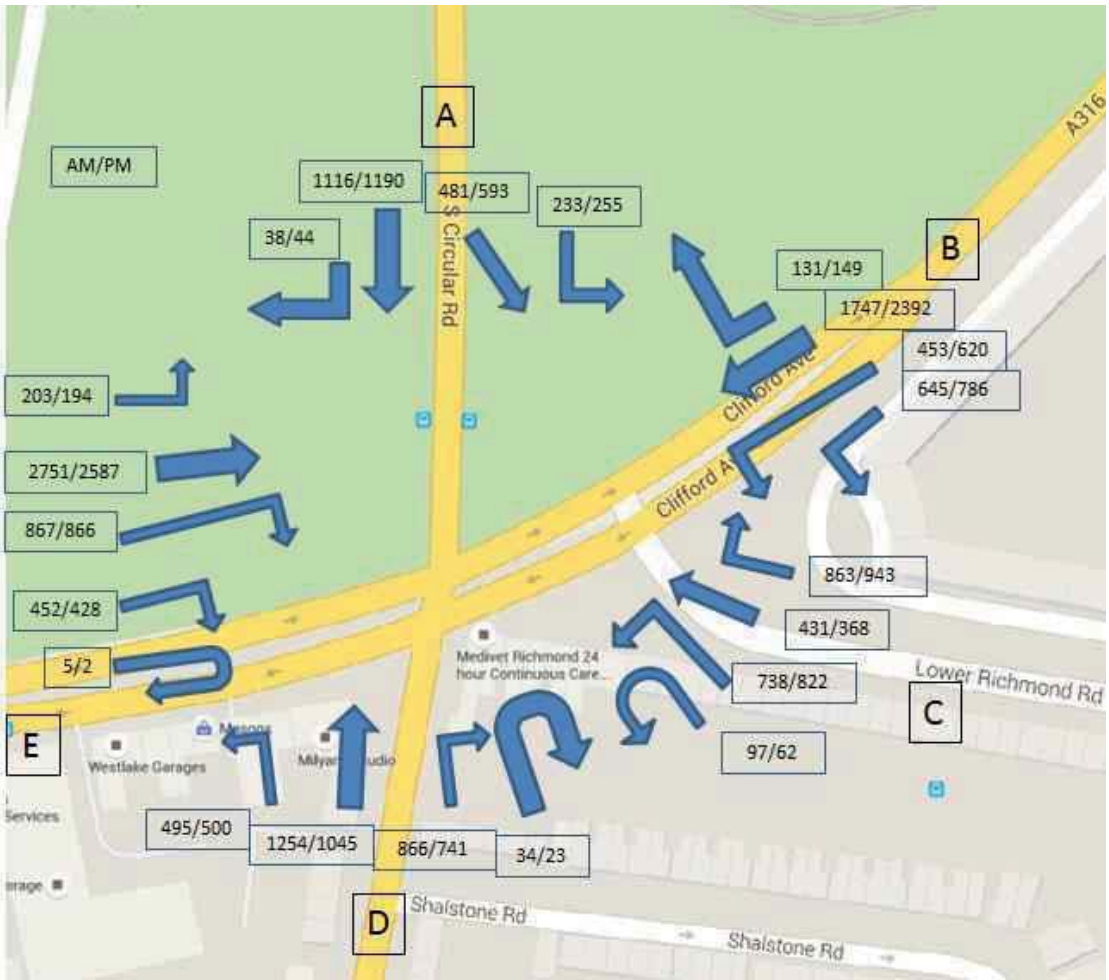


Figure 1.8 – Diagram of turning flows at A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction.

1.6 Mortlake Station Level Crossing Flows

1.6.1 Traffic flows using the crossing were recorded as northbound and southbound flows for the 07:00 – 10:00 and 16:00 – 19:00 time periods.

1.6.2 Table 1.2 below demonstrates the level and proportion of traffic in each direction.

Table 1.2 – Summary of Mortlake Station Level Crossing Directional Flows

Direction of Travel	AM Peak (07:00 – 10:00)		PM Peak (16:00 – 19:00)	
	Traffic Flow (PCU)	Proportion	Traffic Flow (PCU)	Proportion
Northbound	717	57%	670	48%
Southbound	547	43%	726	52%
Total	1265	100%	2057	100%

1.6.3 Table 1.2 shows that in the AM peak the majority of traffic is using the crossing point to travel northbound (57%), whilst in the PM peak the majority of traffic uses the crossing to travel southbound (52%).

1.7 Mortlake Station Level Crossing Queues

1.7.1 A queue survey was carried out at the Mortlake Station Level Crossing in order to determine the level of queueing during barrier down-times in each peak and to ascertain the impact this has on the surrounding road network.

1.7.2 The graphs below demonstrate the queue length in PCUs during 'Red Times', times when the barrier was down.

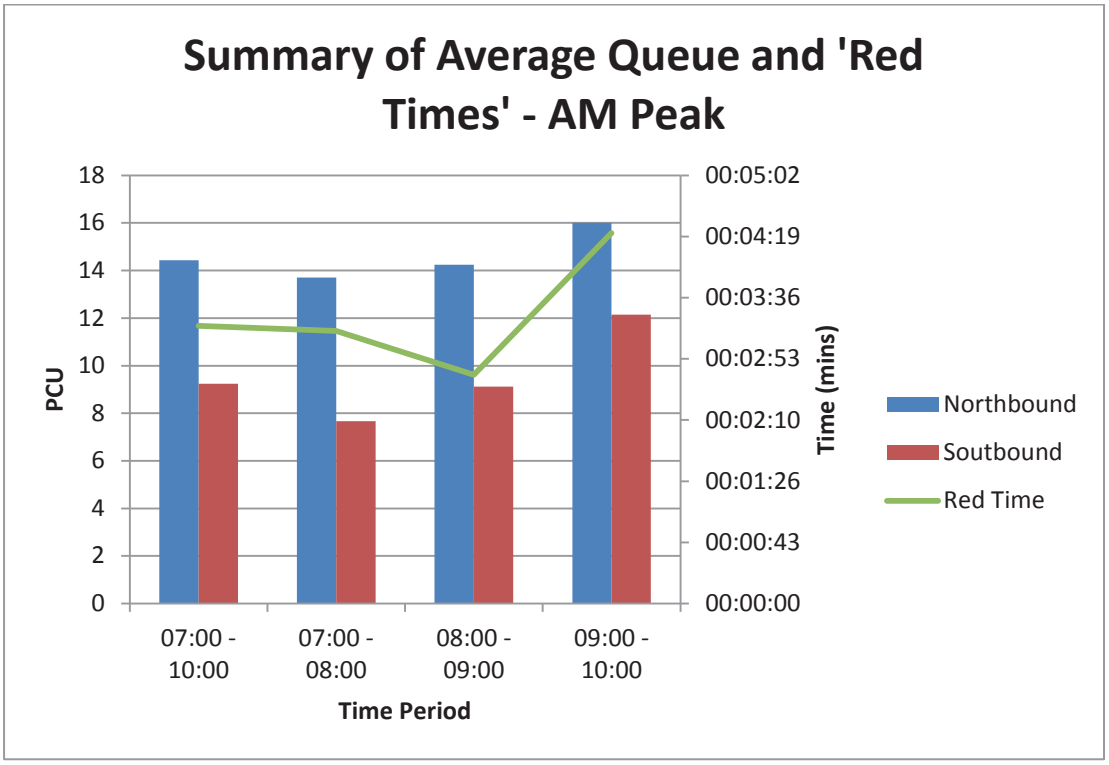


Figure 1.9 – Summary of Mortlake Station Level Crossing Averages Queues and 'Red Times' – AM peak

1.7.3 Figure 1.9 shows the results of the AM peak where northbound queueing was recorded as being greater than the southbound queues across the peak period. Between 07:00 and 10:00 the northbound queue averaged 14 PCUs whilst the southbound queue average 9 PCUs. The maximum southbound queue recorded was 43 PCUs and northbound was 35 PCUs.

1.7.4 Average 'Red Time' varied across the peak with it averaging 3 minutes 13 seconds across the three hour period. The maximum 'Red Time' observed in the AM peak was 9 minutes 07 seconds in the 09:00 – 10:00.

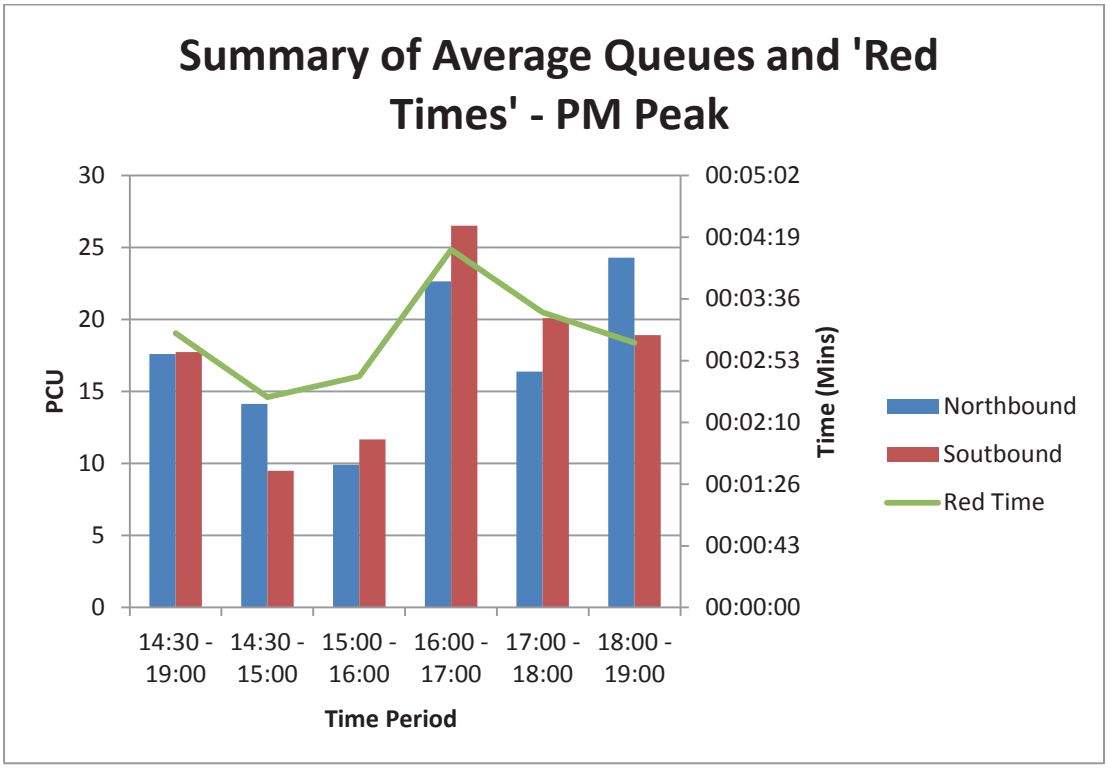


Figure 1.10 – Summary of Mortlake Station Level Crossing Averages Queues and 'Red Times' – PM peak

1.7.5 Figure 1.10 shows the results of the PM peak where southbound queues were generally greater than northbound queues. Between 14:30 and 19:00 both the northbound and southbound queues averaged 18 PCU. The 16:00 – 17:00 time period contained the maximum southbound queue (35 PCU) while the 18:00 – 19:00 time period contained the maximum northbound queue (43 PCU).

1.7.6 The average 'Red Time' across the whole period was 3 minutes 12 seconds with the maximum 'Red Time' – 7 minutes 24 seconds - observed within the 16:00 – 17:00 time period.

1.7.7 The table below shows the total down time, maximum down time, flows and maximum queues for each 15 minute period.

Table 1.3 – Summary of Level Crossing Down Time and Queues

Time	Total Down Time	Maximum Down Time	Northbound		Southbound	
			Flow	Max Queue	Flow	Max Queue
07:00	06:43	04:33	53	11	25	9
07:15	13:26	06:28	45	26	30	14
07:30	09:45	05:04	61	18	34	8
07:45	08:37	02:56	65	22	48	16
08:00	06:17	02:24	73	17	57	9

Time	Total Down Time	Maximum Down Time	Northbound		Southbound	
			Flow	Max Queue	Flow	Max Queue
08:15	09:55	03:15	86	18	57	15
08:30	10:34	04:44	60	25	45	21
08:45	05:33	03:54	69	16	45	10
09:00	09:07	09:07	51	35	49	20
09:15	07:39	05:30	55	26	44	14
09:30	07:27	05:48	57	22	60	18
09:45	06:19	04:19	45	15	54	17
16:00	08:44	07:24	62	35	65	27
16:15	12:18	05:52	44	40	48	30
16:30	11:21	06:24	59	40	51	35
16:45	09:20	04:44	67	22	88	35
17:00	07:53	02:49	68	22	92	25
17:15	09:28	05:57	49	25	41	30
17:30	11:50	03:48	55	19	60	27
17:45	07:28	05:52	57	31.5	61	25
18:00	12:40	04:39	60	43	60	30
18:15	11:56	03:54	49	43	52	24
18:30	05:43	05:43	58	20	71	23
18:45	12:22	04:46	43	11	38	24

1.7.8 Table 1.3 shows that in both the AM and PM peak there are points where the barrier is down for the majority of the 15 minute period.

1.7.9 The Northbound queues are generally higher than the southbound queues in both the AM and PM peaks.

1.7.10 Queue Lengths, with the odd anomaly, tend to increase throughout the peak period, with less queueing observed earlier in the peak.

1.8 Mortlake Station Pedestrian Access

1.8.1 Pedestrian surveys were carried out between 16:00 and 19:00 at all four entrances/exits to Mortlake Train Station.

1.8.2 The station has two exits to the north of the railway line. One through Sheen Lane Building Merchants (Entrance/Exit 1) and one via the footbridge (Entrance/Exit 2). There are two further entrances/exits to the south – one again via the footbridge and another via the station car park.

1.8.3 These are shown in Figure 1.11 below.

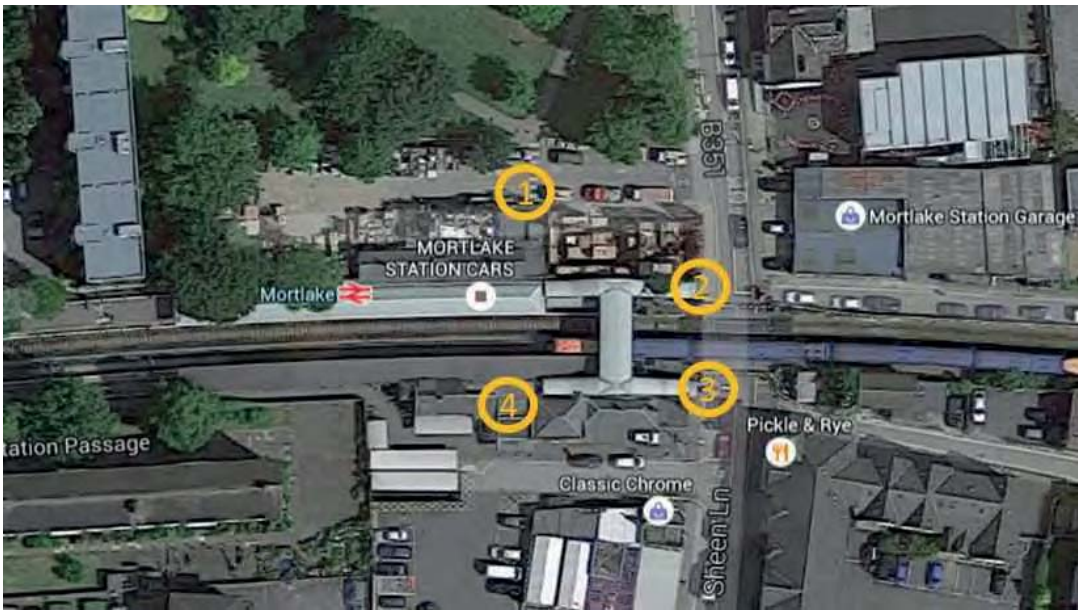


Figure 1.11 – Map of Mortlake Station Entrances/Exits

1.8.4 Tables 1.3 and 1.4 below details the number and proportion of pedestrians using each entrance/exit to the station.

Table 1.3 – Summary of Pedestrian Entry/Exit Movements at Mortlake Station AM Peak

Site	AM Peak					
	Entrance		Exit		Combined	
	No.	%	No.	%	No.	%
Site 1	615	18%	49	16%	664	18%
Site 2	216	6%	29	9%	245	7%
Site 3	639	19%	59	19%	698	19%
Site 4	1880	56%	178	57%	2058	56%
Total	3350	100%	315	100%	3665	100%

1.8.5 Table 1.3 demonstrates that there is more than 3,000 pedestrians entering the station in the AM peak then there are exiting.

1.8.6 The most frequently used Entrance/Exit is Site 4 with 56% of people entering the station using this entrance/exit and 57% of people leaving also using this Entrance/Exit.

1.8.7 Only 6% of people arriving at the station enter via Site 2 with only 9% of leavers exiting via Site 2.

1.8.8 18% and 19% enter via Sites 1 and 3 respectively, whilst 16% and 19% leave via these sites.

Table 1.4 – Summary of Pedestrian Entry/Exit Movements at Mortlake Station PM Peak

Site	PM Peak					
	Entrance		Exit		Combined	
	No.	%	No.	%	No.	%
Site 1	256	17%	330	16%	586	17%
Site 2	228	15%	172	9%	400	11%
Site 3	367	24%	292	15%	659	19%
Site 4	670	44%	1211	60%	1881	53%
Total	1521	100%	2005	100%	3526	100%

1.8.9 Table 1.4 demonstrates that the number of people entering and exiting the station in the PM peak has a greater similarity than in the AM peak.

1.8.10 The most common entry/exit point is again Site 4 (44%/60%), with Site 2 again being the least common entry/exit point (15%/9%)

1.8.11 Site 1 and 3 were observed to have 17% and 24% of the entry share in the PM peak, whilst they were observed to have 16% and 15% of the exit share.

1.8.12 Figure 1.12 below shows the total inflow and outflow for the station per 15 minute period.

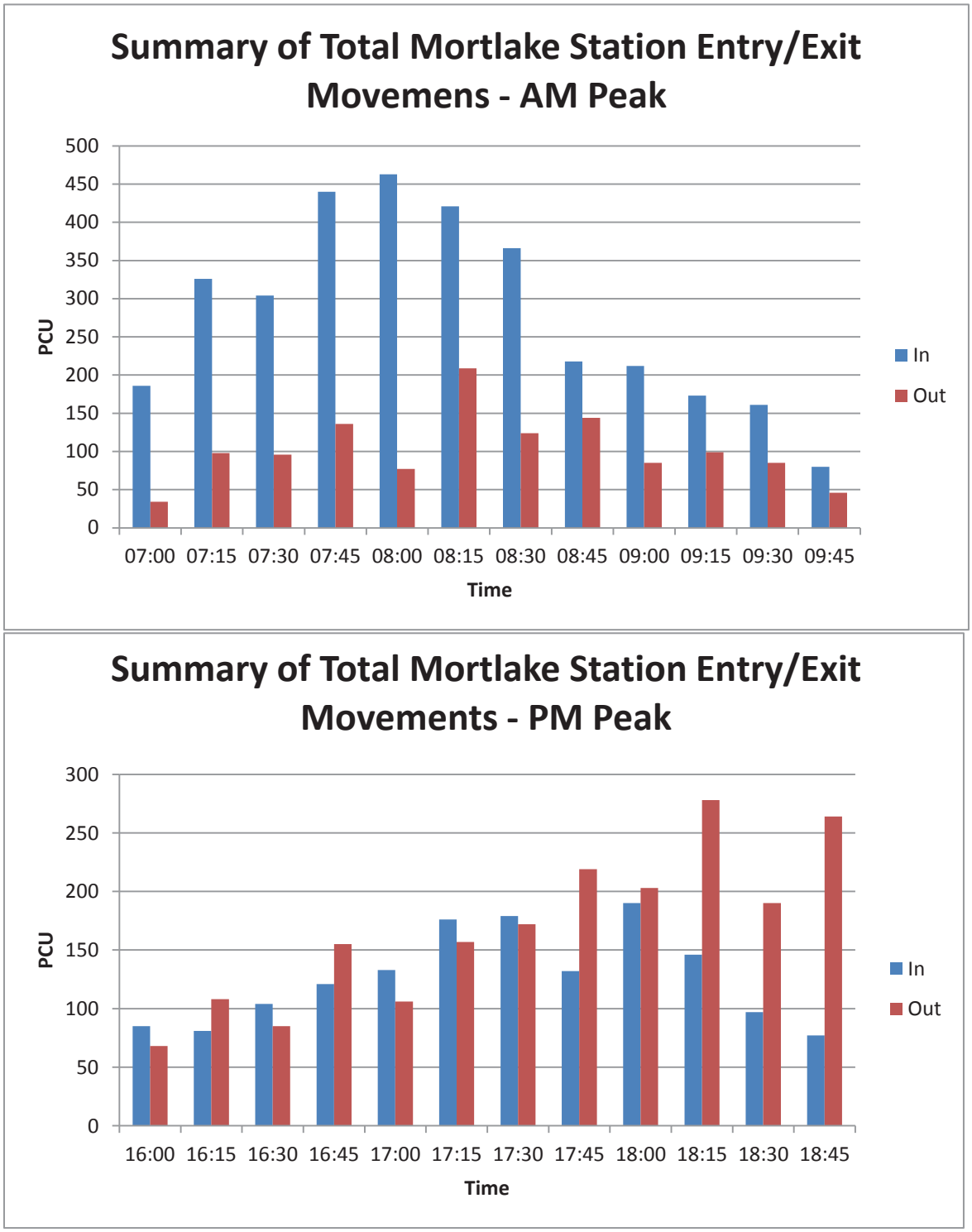


Figure 1.12 - Graph of Mortlake Station entry and exit movements in the Am and PM peaks

1.8.13 The figure shows that in the AM peak the peak time is shown as between 07:30 and 08:30 whilst in the PM peak it is between 17:45 and 19:00

1.9 Conclusions

1.9.1 In summary Nationwide Data Collection carried out Traffic Survey Data collection on behalf of Peter Brett Associates in June 2015.

1.9.2 The ATC data from Mortlake High Street demonstrated that over the course of a day eastbound flows were greater than westbound flows and that on average approximately 9,500 – 10,000 vehicles were observed in each direction per day.

1.9.3 The A31 Lower Richmond Road / Clifford Road / S Circular Road / A3003 Lower Richmond Road Staggered Signalised Junction is a primary junction where a large proportion of traffic from the Proposed Development will enter the wider highway network.

1.9.4 The total junction inflow and outflow for the Lower Richmond Road arm most likely to be used by development traffic currently varies between 11% and 21% of the total junction inflow.

1.9.5 41% of Existing AM peak traffic from Lower Richmond Road currently turns towards Chiswick Bridge with 39% making this turn in the PM peak, whilst 35% turns towards Richmond in the AM peak with 40% making this turn in the PM peak.

1.9.6 Surveys at Mortlake Station Level Crossing show that the majority of flow (57%) in the AM peak is travelling Northbound whilst it reverses to southbound in the PM peak (51%).

1.9.7 Average AM queues were recorded as 14 PCU Northbound and 9 PCU Southbound, whilst in the PM peak both directions average 18 PCU.

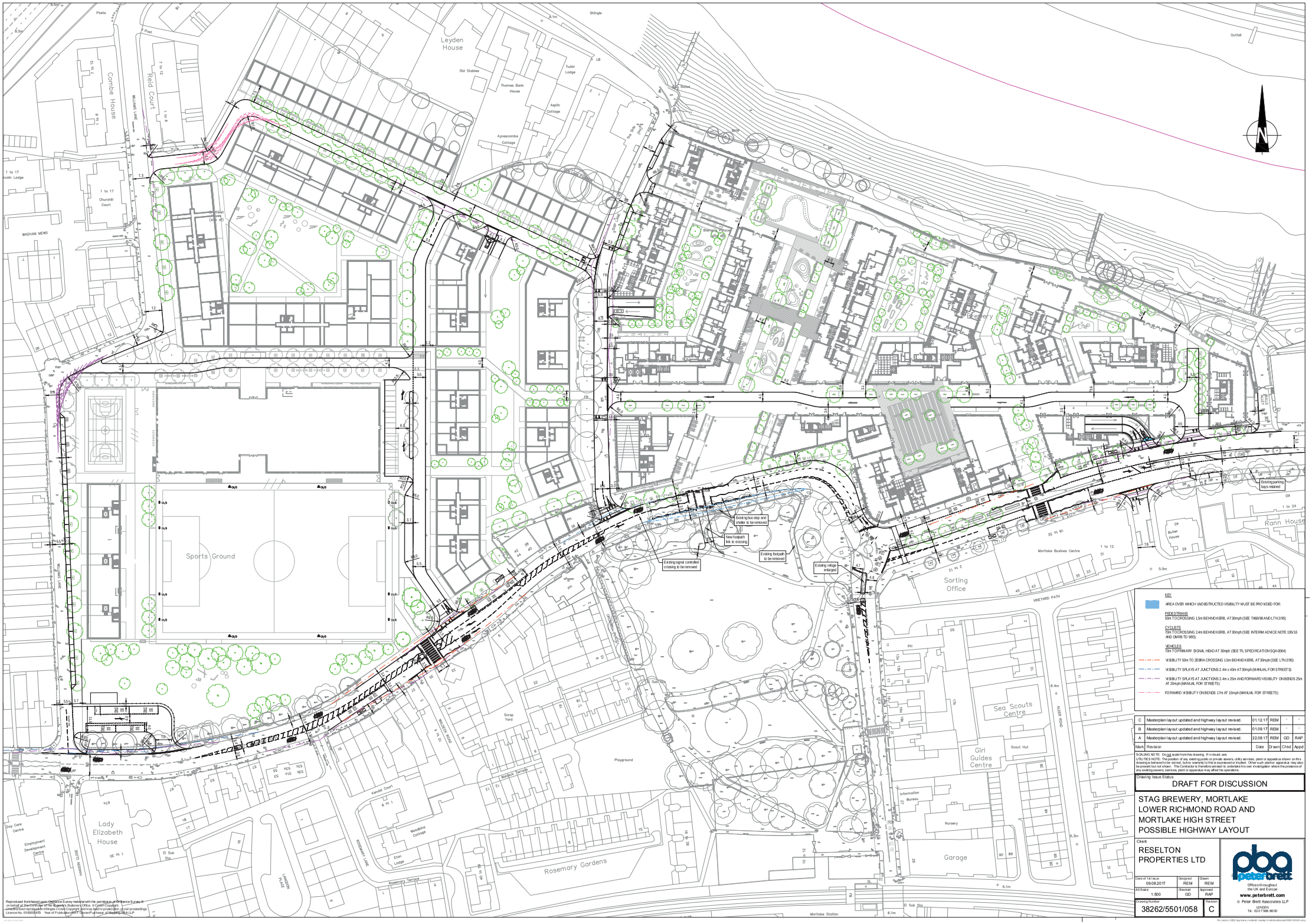
1.9.8 The average 'Red Time' in the AM peak was 3 minutes 13 seconds, whilst it was 3 minutes 12 seconds in the PM peak.

1.9.9 Mortlake Station has four access points with Site 4 being the most frequently used and Site 2 the least frequent.

1.9.10 An almost even number of people enter and exit the station in the PM peak but the number of people entering the station in the AM peak is more than 3,000 greater than the number exiting.

Appendix C Drawings

Drawing number	Drawing title
38262/5501/058 C	Lower Richmond Road and Mortlake High Street Possible Highway Layout
38262/5501/062 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 10m Rigid Lorry
38262/5501/063 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Fire Tender (Pump Appliance)
38262/5501/064 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Refuse Truck
38262/5501/065 D	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a Single Decker Bus
38262/5501/066 C	Possible Highway Layout – Phases 1/2 Vehicle Swept Path Analysis for a Large Car
38262/5501/067 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Pantechnicon (Removals Truck)
38262/5501/068 D	Possible Highway Layout – Phase 2 Vehicle Swept Path Analysis for a Single Decker Bus
38262/5501/069 C	Possible Highway Layout – Phase 1 Vehicle Swept Path Analysis for a 12m School Coach



Mark	Revision	Date	Drawn	Chkd	Appd
C	Masterplan layout updated and highway layout revised.	01.12.17	REM	-	-
B	Masterplan layout updated and highway layout revised.	01.09.17	REM	-	-
A	Masterplan layout updated and highway layout revised.	22.08.17	REM	GD	RAP

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 his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status
DRAFT FOR DISCUSSION

STAG BREWERY, MORTLAKE LOWER RICHMOND ROAD AND MORTLAKE HIGH STREET POSSIBLE HIGHWAY LAYOUT

Client
RESELTON PROPERTIES LTD

Date of 1st Issue	Designed	Drawn
09.08.2017	REM	REM
All Scale	**Checked**	**Approved**
1:500	GD	RAP
Drawing Number		**Revision**
38262/5501/058		C

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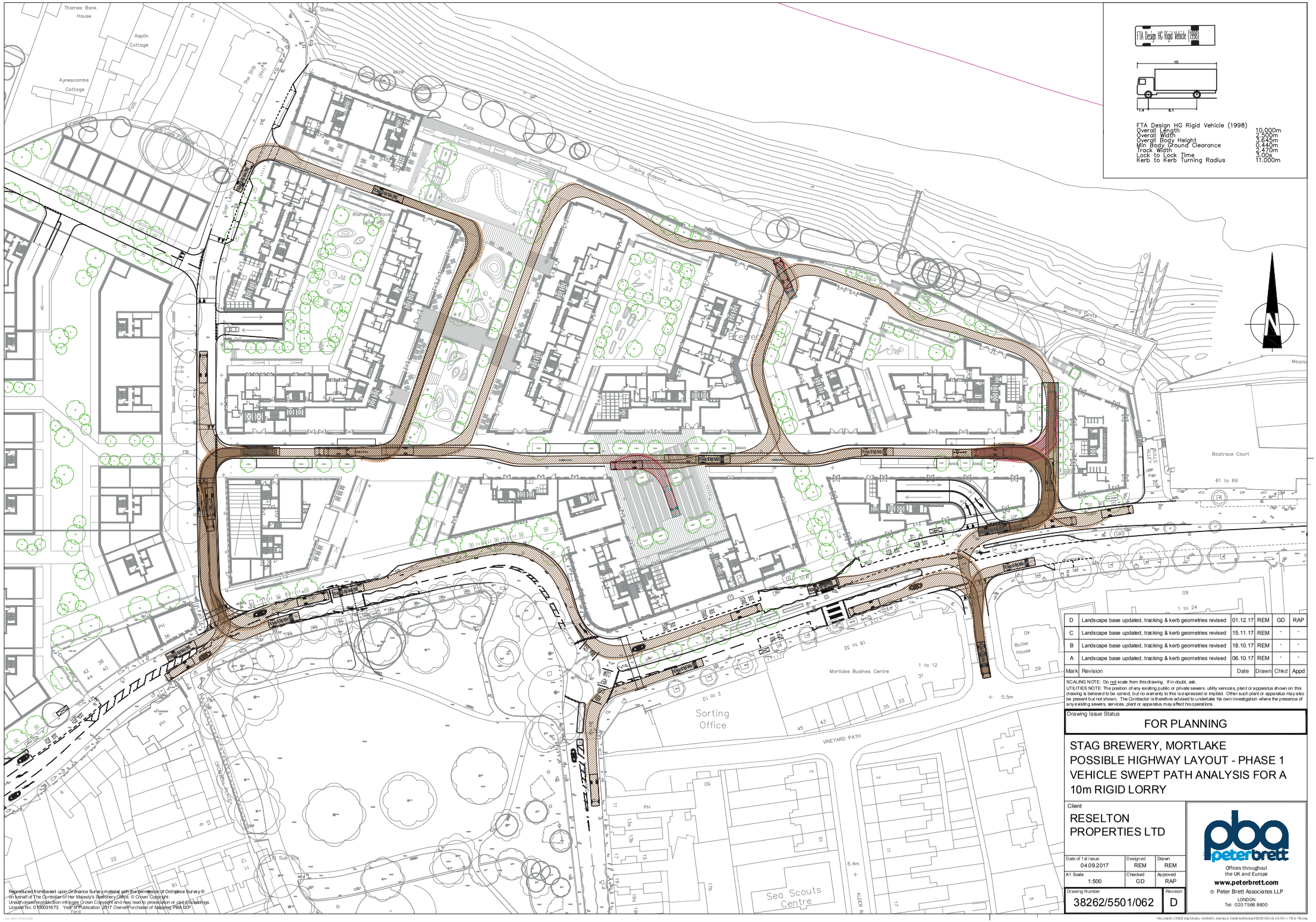

Mark	Revision	Date	Drawn	Chkd	Appd
D	Landscape base updated, tracking & kerb geometries revised	01.12.17	REM	GD	RAP
C	Landscape base updated, tracking & kerb geometries revised	15.11.17	REM	-	-
B	Landscape base updated, tracking & kerb geometries revised	18.10.17	REM	-	-
A	Landscape base updated, tracking & kerb geometries revised	06.10.17	REM	-	-

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 his own investigation where the presence of any existing sewers, services, plant or apparatus may affect his operations.

Drawing Issue Status

FOR PLANNING

STAG BREWERY, MORTLAKE
POSSIBLE HIGHWAY LAYOUT - PHASE 1
VEHICLE SWEPT PATH ANALYSIS FOR A 10m RIGID LORRY

Client

RESELTON PROPERTIES LTD

Date of 1st Issue	Designed	Drawn
04.09.2017	REM	REM
A1 Scale	Checked	Approved
1:500	GD	RAP
Drawing Number		Revision
38262/5501/062		D

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