



Manor Road / Richmond

Revised Transport Assessment

Sanderson Associates

July 2020

Prepared on behalf of

Avanton Richmond Development Ltd

**Proposed Change of Use Development
off Manor Road, Richmond**

Revised Transport Assessment

Acknowledgements:

The National Geographic Society MapMaker tool has been used to generate figures included in this report.

Imagery from ©Google has been included in this report for illustrative purposes only.

Accident information has been obtained from www.crashmap.co.uk and Transport for London (TfL).

The PTAL rating for the site has been obtained using TfL's WebCAT Planning Tool.

An extract of TfL's Local Cycling Guide 9 has been included in this report.

Census 2011 data has been used to predict modal split.

Disclaimer

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Executive Summary

This Revised Transport Assessment has been prepared by Sanderson Associates (Consulting Engineers) Ltd on behalf of Avanton Richmond Development Ltd ('the Applicant') following further amendments to the proposed scheme for the redevelopment of the Homebase store at 84 Manor Road, North Sheen ('the Site').

The proposed changes necessitate an amendment to the Application's description of development. The revised description of the Amended Proposed Development is as follows:

“Demolition of existing buildings and structures and comprehensive phased residential-led redevelopment to provide 453 residential units (of which 173 units will be affordable), flexible retail, community and office uses, provision of car and cycle parking, landscaping, public and private open spaces and all other necessary enabling works.”

This Revised Transport Assessment provides an assessment of the Amended Proposed Development and considers the impact of the amended proposals in comparison to the Original Proposed Development.

The development will positively influence travel behaviour at the site by incorporating facilities to encourage sustainable trip movements and ensuring easy, convenient access to sustainable travel options. Travel Plans have been developed for the site which sets out the strategy and initiatives that will be adopted in order to encourage the use of sustainable modes of travel.

The impact of the residual trips from the proposed development have been assessed through detailed capacity analysis using junction performance modelling techniques and proportional impact assessment.

The development supports the transport objectives of National and Local Planning Policy.

The proposed development is acceptable in transport planning terms, suitable access for all people can be achieved, and there will be no significant transport impacts as a result of the proposed development as the scheme will result in a reduction of traffic compared to the existing use.

1 Introduction

- 1.1 This Revised Transport Assessment has been prepared by Sanderson Associates (Consulting Engineers) Ltd on behalf of Avanton Richmond Development Ltd ('the Applicant') following further amendments to the proposed scheme for the redevelopment of the Homebase store at 84 Manor Road, North Sheen ('the Site').
- 1.2 A planning application for the redevelopment of the Site was submitted to London Borough of Richmond upon Thames (LBRuT) in February 2019 (ref. 19/0510/FUL) (the 'Original Proposed Development'), and was considered at LBRuT Planning Committee on 3 July 2019. The Planning Committee resolved that they were minded to refuse the Application, however on 29 July 2019 it was confirmed that the Mayor of London would act as the local planning authority for the purposes of determining the application.
- 1.3 Following review of LBRuT's reasons for refusal and discussions with Officers at the Greater London Authority (GLA) and Transport for London (TfL), the Applicant sought to review the scheme, with the principle aim of increasing the delivery of affordable housing through additional density and addressing other issues raised in the Mayor's Stage 2 Report. Initial scheme amendments were submitted in November 2019 ('the November 2019 Amendments') and increased the overall number of units by 48, primarily through the introduction of a new residential building known as Block E.
- 1.4 Following further discussions with TfL and the GLA, it was subsequently agreed that further revisions should be explored in order to deliver an improved scheme, without the need for this additional block.
- 1.5 The proposed changes are described in detail in the accompanying Design and Access Statement Addendum, however, of particular note is the increase in residential units from 385 within the Original Proposed Development (Feb 2019 submission) to 453 within the Amended Proposed Development (July 2020 submission).

-
- 1.6 This increases the total number of affordable units by 39 to a total of 173 affordable homes (40% by habitable room taking account of grant funding, increased from 35% as originally submitted). This increase in units and the higher affordable housing provision has been principally achieved through amendments to the height and internal layout in appropriate locations across the Site.
- 1.7 The proposed changes necessitate an amendment to the Application's description of development. The revised description of development (hereafter referred to as the 'Amended Proposed Development') is as follows:
- “Demolition of existing buildings and structures and comprehensive phased residential-led redevelopment to provide 453 residential units (of which 173 units will be affordable), flexible retail, community and office uses, provision of car and cycle parking, landscaping, public and private open spaces and all other necessary enabling works..”*
- 1.8 This Revised Transport Assessment provides an assessment of the Amended Proposed Development and considers the impact of the amended proposals in comparison to the Original Proposed Development.
- 1.9 Travel Plans have been developed for the site which sets out the strategies and initiatives that will be adopted in order to encourage the use of sustainable modes of travel associated with the development. This Revised Transport Assessment should be considered in conjunction with the Travel Plans.

2 Planning Policy Context

2.1 **National Planning Policy**

2.1.1 The latest National Planning Policy Framework (NPPF) was published in February 2019 and sets out the Government's planning policies for England and how these are expected to be applied.

2.1.2 At NPPF paragraph 38 it is stated that;

'Decision-makers at every level should seek to approve applications for sustainable development where possible.'

2.1.3 Paragraph 108 states that in assessing development applications;

'a) appropriate opportunities to promote sustainable transport modes can be – or have been – taken up, given the type of development and its location;

b) safe and suitable access to the site can be achieved for all users; and

c) any significant impacts from the development on the transport network (in terms of capacity and congestion), or on highway safety, can be cost effectively mitigated to an acceptable degree.'

2.1.4 NPPF Paragraphs 109 and 110 state that;

'Development should only be prevented or refused on highways grounds if there would be an unacceptable impact on highway safety, or the residual cumulative impacts on the road network would be severe.

Within this context, applications for development should:

a) give priority first to pedestrian and cycle movements, both within the scheme and with neighbouring areas; and second – so far as possible – to facilitating access to high quality public transport, with layouts that maximise the catchment area for bus or other public transport services, and appropriate facilities that encourage public transport use;

- b) *address the needs of people with disabilities and reduced mobility in relation to all modes of transport;*
- c) *create places that are safe, secure and attractive – which minimise the scope for conflicts between pedestrians, cyclists and vehicles, avoid unnecessary street clutter, and respond to local character and design standards;*
- d) *allow for the efficient delivery of goods, and access by service and emergency vehicles; and*
- e) *be designed to enable charging of plug-in and other ultra-low emission vehicles in safe, accessible and convenient locations.'*

2.1.5 NPPF Paragraph 111 states that;

'All developments that will generate significant amounts of movement should be required to provide a travel plan, and the application should be supported by a transport statement or transport assessment so that the likely impacts of the proposal can be assessed.'

2.1.6 Travel Plans have been prepared in support of the residential and commercial proposals, and are submitted under separate cover.

2.2 National Planning Practice Guidance

2.2.1 The National Planning Practice Guidance (NPPG) brings together National Planning Policy Framework. It was launched in March 2014 and coincided with the cancelling of the majority of Government Circulars which had previously given guidance on many aspects of planning.

2.2.2 In relation to Transport NPPG provides the following guidance:

- *Transport evidence bases in plan making and decision taking - March 2015*
- *Travel Plans, Transport Assessments and Statements - March 2015*

2.2.3 NPPG *Transport evidence bases in plan making and decision taking* sets out the key issues that local planning authorities should consider in developing the transport base to support the Local Plan, including:

- assess the existing situation and likely generation of trips over time by all modes and the impact on the locality in economic, social and environmental terms;
- assess the opportunities to support a pattern of development that, where reasonable to do so, facilitates the use of sustainable modes of transport
- highlight and promote opportunities to reduce the need for travel where appropriate;
- identify opportunities to prioritise the use of alternative modes in both existing and new development locations if appropriate;
- consider the cumulative impacts of existing and proposed development on transport networks;
- assess the quality and capacity of transport infrastructure and its ability to meet forecast demands;
- identify the short, medium and long-term transport proposals across all modes.

2.2.4 NPPG *Travel Plans, Transport Assessments and Statements* sets out the key principles that should be taken into account in preparing a Travel Plan and Transport Assessment. NPPG states that Travel Plans and Transport Assessments are important as they can positively contribute to:

- encouraging sustainable travel;
- lessening traffic generation and its detrimental impacts;
- reducing carbon emissions and climate impacts;
- creating accessible, connected, inclusive communities;
- improving health outcomes and quality of life;
- improving road safety; and
- reducing the need for new development to increase existing road capacity or provide new roads.

2.3 London Plan Policies

2.3.1 The current 2016 Plan (The London Plan consolidated with alterations since 2011) is still the adopted Development Plan, but the Draft London Plan is a material consideration in planning decisions. The significance given to it is a matter for the decision maker, but it gains more weight as it moves through the process to adoption.

2.3.2 The Plan is at an advanced stage. Policies contained in the Intend to Publish (ItP) London Plan published in December 2019 that are not subject to a direction by the Secretary of State carry significant weight.

2.3.3 Key policies within the ItP London Plan considered applicable to this development are set out below:-

- Policy T1 – Strategic approach to transport
- Policy T2 – Healthy Streets
- Policy T4 – Assessing and mitigating transport impacts
- Policy T5 – Cycling
- Policy T6 – Car Parking

2.4 Local Planning Policies

2.4.1 The Local Plan for LBRuT, adopted July 2018, sets out the key planning policies for the area for a 15 year period.

2.4.2 Policy LP 44 relates to Sustainable Travel Choices including cycling and walking, public transport and location of new developments and states that;

“The Council will work in partnership to promote safe, sustainable and accessible transport solutions, which minimise the impacts of development including in relation to congestion, air pollution and carbon dioxide emissions, and maximise opportunities including for health benefits and providing access to services, facilities and employment”.

2.5 *The Development in Planning Policy Context*

- 2.5.1 This Transport Assessment demonstrates that the development is sustainable, can be accessed by all people and the residual cumulative traffic impact is not severe. The development is therefore in accordance with the transport principles set out in NPPF.
- 2.5.2 The planning application is supported by a Transport Assessment and Travel Plan in accordance with NPPF and NPPG.
- 2.5.3 The proposed car and cycle parking provisions are in accordance with the standards identified within the ItP London Plan.
- 2.5.4 The development supports the general principles of sustainable transport set out within the Local Plan 2018 and does not conflict with the objectives of the Mayor's Transport Strategy.

3 Existing Situation

3.1 The Site and Surrounding Area

3.1.1 The development site is currently occupied by operational Homebase and Pets at Home stores with associated surface level parking. The site is bounded by active railway lines to both the North and the South of the site. The East of the site is bounded by Manor Road as can be seen in the figure below;



Figure 1 – Approximate extents of site

© 2018 Google

3.1.2 Vehicular access is taken from Manor Road in the form of a standard priority junction arrangement, the dimensions of which are able to accommodate heavy goods vehicles and buses. The initial section of the access road within the site also serves the North Sheen Bus Terminus, situated in the northern part of the site.

3.1.3 The existing car park provides a total of 174 spaces. However, 14 of these are occupied by a hand car wash & valeting service and 11 are reserved for use by Europcar Car Hire customers.

3.2 Existing Traffic Flows

3.2.1 Fully classified traffic counts at both the site access and the access to Sainsbury's opposite were undertaken by Nationwide Data Collection Ltd on 2nd October 2018 as part of the original application. The data obtained from the traffic surveys is considered to remain valid and provides a robust assessment of the proposals.

3.2.2 The AM and PM peak hours were shown to be 08:30-09:30 and 17:00-18:00, the full report is included at **Appendix A**.

3.2.3 The recorded vehicle movements at the junctions in the peak hours are shown on the diagram below;

AM 08:30 - 09:30
PM 17:00 - 18:00

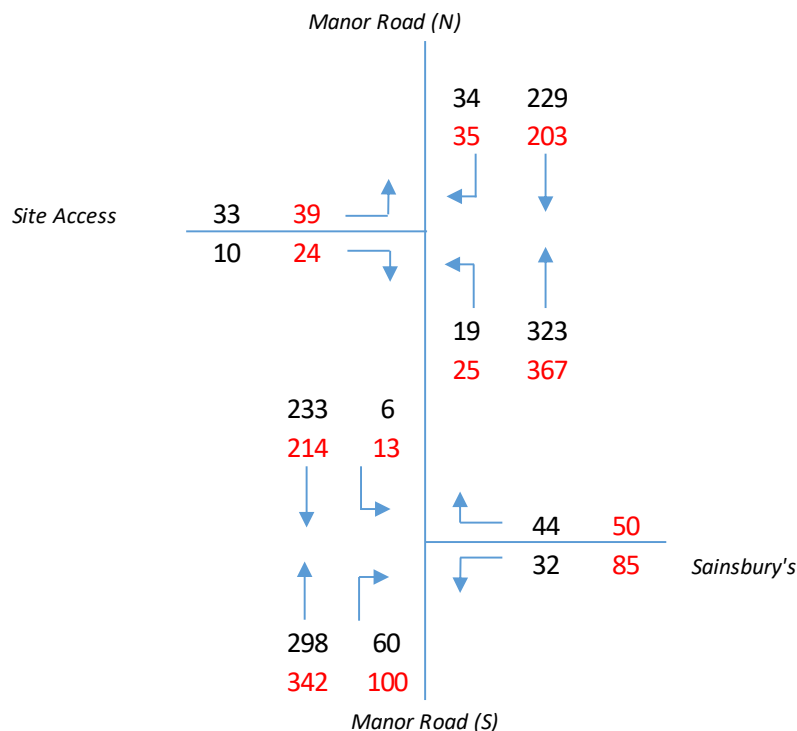


Figure 2 – Recorded peak hour vehicle movements

3.2.4 The peak hour vehicle movements at the existing site access were recorded as shown below:

	Arrivals	Departures	Total
AM Peak	53	43	96
PM Peak	60	63	123

Table 1 – Existing total vehicle movements at the site access

3.2.5 However, it should be noted that the recorded traffic flows include a number of passenger service vehicle movements associated with the bus terminus which will continue to occur post-development. Therefore, the number of light vehicles has been extracted in order to show the number of vehicle movements associated with the Homebase part of the development site in its existing use which will cease to occur. The results of this are shown below:

	Arrivals	Departures	Total
AM Peak	46	33	79
PM Peak	52	55	107

Table 2 – Existing light vehicle movements at the site access

3.3 **Level Crossing**

3.3.1 On Manor Road, adjacent to the southern boundary of the site, a level crossing is present, as indicated on Figure 1. On 2 October 2018, Nationwide Data Collection Ltd undertook surveys of the activations of the level crossing and the associated queues that formed.

3.3.2 In the AM peak hour, the level crossing was activated 9 times resulting in the barrier being down for 37m 28s. In the PM peak hour this was 30m 38s over 11 activations.

3.3.3 In the AM, the average southbound queue caused by the barrier being down was 128 metres which extends to the site access junction. In the PM, the average queue was 83 metres which extends to a point between Manor Grove and Sainsbury's access.

3.4 *The Existing Highway Network*

- 3.4.1 Manor Road, classified as the B353, runs in a north-south direction from Sheen Road (A305) in the south to the roundabout junction of Lower Richmond Road/Lower Mortlake Road (A316) and Sandycombe Road (B353) to the north.
- 3.4.2 Manor Road is a predominantly residential street and is generally a single carriageway with right turn lanes provided for access to both this site and the Sainsbury's supermarket opposite. It is subject to a 30mph speed limit and has double yellow line parking restrictions in place.
- 3.4.3 Along the site frontage there are two central islands which aid pedestrian movements, both have dropped kerbs and at the northern crossing tactile paving is also provided.
- 3.4.4 To the south of the site a stepped bridge is present to allow pedestrian movements to continue whilst the level crossing barriers are down as trains pass.
- 3.4.5 An assessment has been made of the walking routes from the site to the bus stops on Manor Road, Lower Mortlake Road and Lower Richmond Road.
- 3.4.6 Along Manor Road, street-lighting is provided on both flanks, as are footways that link to the wider network. On the western side, the footway width is approximately 2.5m leading to the bus stop and then gradually narrows to approximately 1.8m on the approach to the roundabout junction.
- 3.4.7 At the roundabout junction, all arms have controlled pedestrian crossings in the form of zebra crossings. To the west, on Lower Mortlake Road, is a segregated foot/cycle way providing access to the nearest bus stops.
- 3.4.8 Towards the eastbound bus stop on Lower Richmond Road, raised crossing points with a central island and tactile paving are provided to aid pedestrian crossings of North Road and also act as a traffic calming measure. From North Road, footways with a width of approximately 4m are present.

3.5 *Parking Stress Survey*

3.5.1 In line with the Transport Scoping Study a Parking Stress Survey has been commissioned to establish the current parking restrictions and controls in force and also to identify the level of on-street parking which takes place.

3.5.2 Alpha Parking Limited undertook the surveys between 01:00-05:30, 09:00-10:00 and 13:00-14:00 on Monday 12 and Tuesday 13 November 2018 and a copy of the final report is attached at **Appendix B**.

3.5.3 The overall conclusion of this report is that both day (AM and PM) and overnight parking stress levels are between 62% and 63%.

3.5.4 Further consideration of the implications of the development on existing on-street parking provision is provided in Section 4.2 of this report.

3.6 *Pedestrian Activity Survey at North Sheen Station*

3.6.1 During the consideration of application 19/0510/FUL, the ‘Original Proposed Development’, the matters of potential platform congestion and the availability of space on trains to London, particularly during the AM peak were raised by South Western Rail and TfL.

3.6.2 In order to be able to consider this in greater detail and to enable a development impact assessment to be undertaken a survey was undertaken on three neutral weekdays, Tuesday 8, Wednesday 9 and Thursday 10 October 2019 between the hours of 07:00-09:30 and 15:00-18:00. Unfortunately, due to a camera failure data was not recorded after 09:20 on Thursday 10. However, a further survey was subsequently undertaken on Thursday 24 October 2019 to obtain additional data for analysis.

3.6.3 The full results of the surveys are presented at **Appendix C** and summarised as follows, (numbers in brackets represent cyclists):-

Time Period	Tuesday 08/10/19		Wednesday 09/10/19		Thursday 10/10/19		Thursday 24/10/19	
	In	Out	In	Out	In	Out	In	Out
07:00 – 07:30	99	31	93	25 (1)	90	25 (1)	73	23
07:30 – 08:00	160	31 (1)	129	28 (1)	138	36 (1)	111	27 (2)
08:00 – 08:30	130	51	124	38	114	35	141	47
08:30 – 09:00	81	21	73	24	73	30	75	30
09:00 – 09:30	49	11	58	19			58	15
AM Total	519	145 (1)	477	134 (2)			458	142 (2)
15:00 – 15:30	24	24	27	17 (1)			23	27
15:30 – 16:00	12	18	42 (1)	27			24	21
16:00 – 16:30	27	50	24 (1)	31			28	18
16:30 – 17:00	33	55	31 (6)	46 (1)			23	58
17:00 – 17:30	42 (1)	56 (1)	23 (2)	44 (1)			44 (1)	53
17:30 – 18:00	23	73	31 (2)	95 (3)			30 (1)	80
18:00 – 18:30	32	54	30 (1)	42			27	36
PM Total	193 (1)	330 (1)	208 (13)	302 (6)			199 (2)	293

Table 3 – Summary of pedestrian activity at North Sheen Station

3.6.4 The base data recorded during this survey is analysed in greater in Section 5.4 where the number of visitors to the station is compared to the frequency of trains typically stopping at North Sheen Station during these peak periods.

3.7 **Personal Injury Accident Data**

3.7.1 The Transport Assessment reports prepared in support of the Original Proposed Development (Ref: 10596-002-03, Feb 2019) and the November 2019 Amendments (Ref: 11205-001-03, Nov 2019) provided a review of personal injury accident data on the local highway network for the 5 year period up to 31st December 2017.

3.7.2 The data identified a total of 31 incidents had occurred within the study area; of which 2 were ‘serious’ incidents and the remainder were all considered ‘slight’ in severity. No fatal incidents had been recorded. A review of the contributory factors found that there were no particular accident trends in terms of type or location.

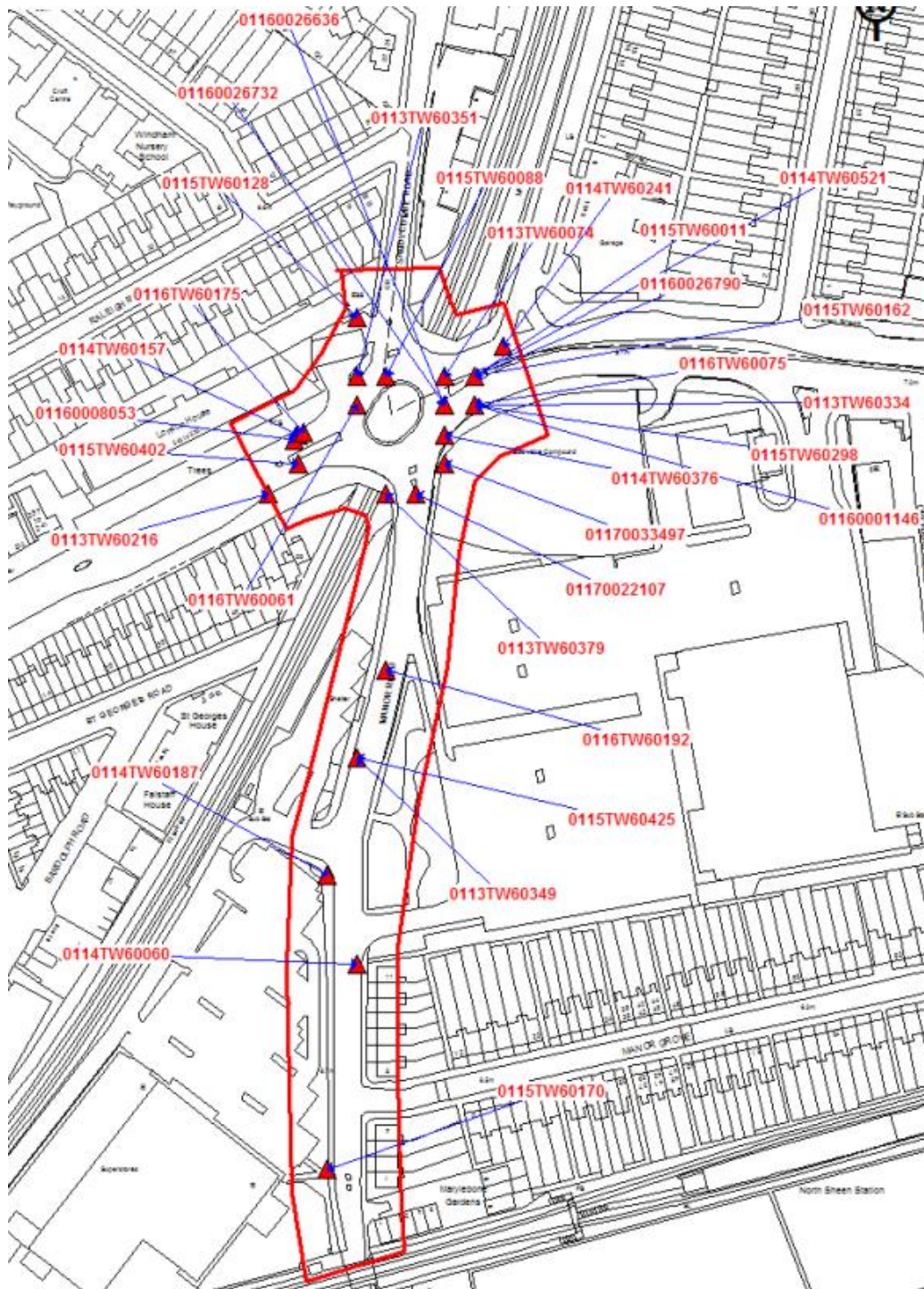


Figure 3 – TfL Accident Data Plot (5 years up to 31st Dec 2017)

3.7.3 In order to bring the assessment up to date, the Crashmap accident database has been reviewed to identify any additional incidents that have taken place since 1st January 2018. It should be noted that the latest available data includes up to 31st December 2019. The following extract from Crashmap shows the location and severity of each incident recorded during the aforementioned two year period.

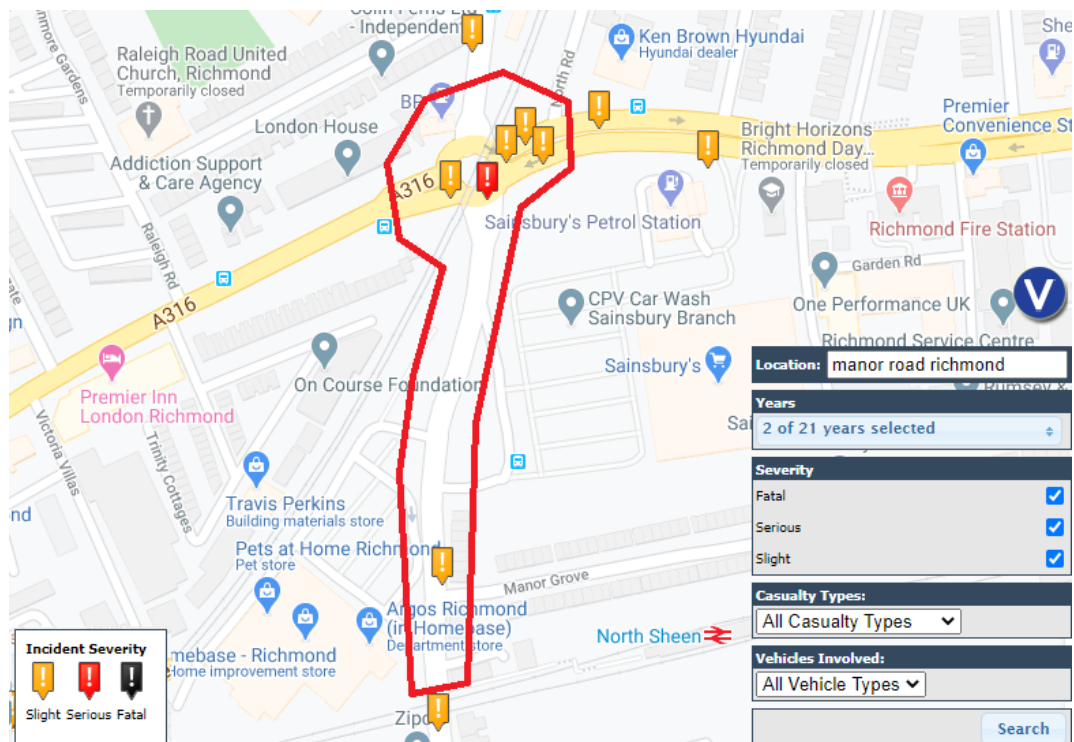


Figure 4 - Crashmap Accident Data Plot (2 years up to 31st Dec 2019)

3.7.4 The Crashmap database identifies that there have been a total of 6 incidents recorded within the latest two year period; of which 1 was a serious incident and 5 were slight in severity.

3.7.5 In terms of location, 1 (slight) incident took place along Manor Road in proximity to the junction with Manor Grove, whilst the remaining incidents (4 slight, 1 serious) all occurred at or in close proximity to the roundabout junction.

3.7.6 In terms of type, 2 incidents (both 'slight') involved pedestrian casualties, 2 incidents (1 'slight', 1 'serious') involved cyclists, and the remaining 2 incidents were collisions between two vehicles.

- 3.7.7 Due to the progression of time since the previous Transport Assessments were prepared, and the subsequent inclusion of the 2018 / 2019 accident data, it is considered appropriate to discount the previously assessed 2013 / 2014 accident data as this now falls outside the accepted 5 year study period.
- 3.7.8 In total, between 1st January 2013 and 31st December 2014, a total of 14 incidents were recorded within the study area, of which, 13 were 'slight' in severity and 1 was a 'serious' incident. 3 incidents (all 'slight') occurred at varying locations along Manor Road, whilst the remaining 11 incidents took place at the roundabout junction.
- 3.7.9 Based on the above, it is considered that the accident history on the local highway network has improved since the original assessments were undertaken, and that there have been no emergent accident trends that require further consideration.

4 Development Proposals

4.1 Development Overview

4.1.1 The development proposes the demolition of existing buildings and structures and comprehensive phased residential-led redevelopment to provide 453 residential units (of which 173 units will be affordable), flexible retail, community and office uses, provision of car and cycle parking, landscaping, public and private open spaces and all other necessary enabling works.

4.1.2 A total of 453 residential units are proposed, of which, 173 are to be affordable homes (40% by habitable rooms). Further details of the development mix are provided below:

Private Rent	= 280 homes (713 habitable rooms)
Shared Ownership	= 34 homes (101 habitable rooms)
London Living Rent	= 55 homes (129 habitable rooms)
London Affordable Rent	= 84 homes (247 habitable rooms)

Unit Type	Mix %	Units
Studio / 1 bed 1 person	6.6%	30
1 bed 2 person	31.6%	143
2 bed 3 person	27.2%	123
2 bed 4 person	27.2%	123
3 bed 5 person	0.4%	2
3 bed 6 person	7.1%	32
Total =		453

Table 4 – Proposed Schedule of Accommodation

4.1.3 The two commercial units are located at ground floor level of Blocks A and D facing on to Manor Road. The Block D unit section extends towards the level crossing both areas flanking the main entrance to the site, opposite Manor Grove. The total proposed commercial floor space is 495m² GIA.

4.1.4 Each building is to have stairwells and lifts to provide access to the residential units on upper floors with access to highway network being available via a network of footpaths and communal areas. The proposed ground floor layout is included at **Appendix D**.

4.1.5 The primary pedestrian and cycle entrance to the site is to be off Manor Road opposite Manor Grove with vehicular access remaining from Manor Road in the place of the existing site access.

4.2 Parking Provision

4.2.1 The development is to be “car-free” with no standard car parking spaces provided. 14 N^o car parking spaces (3% provision) are proposed within the site and these are all designated as accessible spaces. The potential to increase to the full 10% provision has been assessed and full details of this are available in the Landscape Addendum prepared by Gillespies (see sections 1.7 and 1.8 of the Landscape Addendum report).

4.2.2 In addition to the above, two electric car club spaces are to be provided on site, located within the landscaping along the site’s western boundary adjacent to the bus layover. Car Clubs are widely accessible and provide users with access to a vehicle, without the need to own one themselves. They will be managed by the operators of the scheme who are to be confirmed in due course with the provision to be secured via a S106 obligation.

4.2.3 The ‘Maximum Parking Standards’ set out in the London Plan (2016) note that; “*All developments in areas of good public transport accessibility (in all parts of London) should aim for significantly less than 1 space per unit*”. Moving forward, the ItP London Plan proposes that all new developments in areas of PTAL 5 – 6 should be car-free. It is therefore considered that the car-free proposals are in conformity with the current standards and also satisfy the future aspirations of the draft London Plan.

4.2.4 In line with the policies of TfL and LBRuT, residents of the Amended Proposed Development will be restricted from applying for residents parking permits for those roads in the vicinity of the site subject to such restrictions. This will be secured by way of a planning condition/obligation.

4.2.5 However, in order to mitigate against residents of the proposed development parking on roads in the vicinity of the site which are subject to daytime only parking restrictions or no restriction at all, the results of the parking stress survey attached at Appendix B have been discussed in detail with LBRuT with a view to amending and extending the existing Traffic Regulation Orders covering the Controlled Parking Zones adjacent to the site.

4.2.6 During the LBRuT determination period it was agreed that a contribution of £50,000.00 would be made to support a Controlled Parking Zone study with a further £50,000.00 to be provided (conditionally) should amendments be deemed necessary. This is likely to be secured by way of a planning obligation.

4.3 **Cycle Parking**

4.3.1 With regards to cycle parking; Chapter 10 – ‘Transport’ of the ItP London Plan sets out the applicable standards for the commercial and residential elements of the development. These are summarised in Table 5:

	Use class	Long stay	Short stay
Commercial	A1 Food retail	1 space per 175sqm GEA	1 space per 20sqm
	A1 Non-food retail	1 space per 250sqm	1 space per 60sqm
	A2	1 space per 175sqm GEA	1 space per 20sqm
	B1 Office	1 space per 75sqm	1 space per 500sqm
Residential	C3	1 space per studio/1b1p unit,	1 space per 40 units
		1.5 spaces per 1b2p unit	
		2 spaces all other dwellings	

Table 5 – ItP London Plan - Table 10.2: Minimum Cycle Parking Standards

4.3.2 As the exact use of the commercial areas is not yet known, the most stringent standards have been applied resulting in the following requirements for the proposed development.

Land Use	Long Stay Provision	Short Stay Provision
	Minimum Requirement	Minimum Requirement
Commercial Flexible A1/A2/A3/D2/B1 495m ²	7	25
Residential (C3) 453 Units	805	12
Total	812	37

Table 6 – Amended Proposed Development cycle parking requirements

- 4.3.3 The development proposes to provide a total of 817 long stay cycle parking spaces which is above the standards required in order to promote the use of this transport mode.
- 4.3.4 The required short stay cycle parking provision is to be located throughout the open space of the site, incorporated into the landscaping.
- 4.3.5 An extract from the Assael Architecture Design and Access Statement Addendum which details the locations of the cycle parking/storage across the site is provided overleaf (Figure 5).



Figure 5 – Location of Cycle Parking/Storage (Assael)

4.4 Highway Improvements

4.4.1 As part of the proposals, improvements are to be made to the footway along the site frontage, including widening and planting of trees and shrubs.

4.4.2 TfL have plans to make safety improvements to the roundabout junction to the north of the site. These works are expected to include signalling the junction, including the introduction of signalised pedestrian crossings, and providing an improved environment for both pedestrians and cyclists. During the LBRuT determination period a contribution of £330,000 was agreed with TfL towards this scheme which was 15% of the estimated final scheme costs. This was requested having regard to the predicted increase in users at Manor Circus generated by the proposed development.

4.4.3 However, during more recent pre-application discussions it has been established that the scheme design costs have risen. Therefore, TfL requested a revised financial contribution of £380,000 towards the implementation of the Manor Circus scheme. The developer has agreed to the revised contribution sum.

4.5 Servicing

4.5.1 All servicing of the buildings is to be undertaken within the site. All of the buildings will have a managed waste system whereby the refuse bins will be moved to a collection area in readiness for the refuse collection vehicle.

4.5.2 Swept path analysis of a refuse collection vehicle, rigid vehicle, hydraulic inspection platform and fire appliance has been carried out and is detailed on drawing **11205-007 Rev B** attached at **Appendix E**.

4.5.3 The servicing of the development has been the subject of detailed consideration and assessment, particularly with regards to the proposed commercial units. During the on-going review of the development proposals by both the team and the planning authorities consideration has been given to the feasibility of frontage servicing direct from Manor Road.

-
- 4.5.4 However, given the close proximity of these frontage units to the level crossing it is considered that this would not be in the best interests of highway safety and especially that of pedestrians.
- 4.5.5 The whole length of the Manor Road frontage to the development site (both sides) is subject to a TRO restricting parking at all times. It is unclear whether there are specific restrictions to loading and unloading and it is possible that an amendment to the TRO may be required to enable enforcement of such scenarios
- 4.5.6 The parking of a delivery vehicle of any kind or size would potentially give rise to situations where northbound vehicles would be unable to pass a parked delivery vehicle due to either the island within the carriageway or southbound traffic. Such a queue of traffic would quickly extend to the level crossing and the inherent dangers this would present.
- 4.5.7 The formation of a servicing lay-by along the Manor Road frontage has also been considered. However, the creation of such a facility, whilst maintaining a suitable footway width, would eat into the development site to a significant extent. In addition to this the potential for conflict between the prevalent pedestrian flow (north-south) and the desire line for servicing (east-west) would be significant particularly at peak commuter times.
- 4.5.8 Whilst it is accepted that the above situation already occurs on many of London's streets it is considered that a viable alternative is available in this particular case which avoids such conflicts.
- 4.5.9 The erection of pedestrian guard railing is an option which would prevent ad-hoc loading and unloading but this carries with it the possibility of pedestrian becoming trapped on the wrong side of the guardrails within the carriageway. A line of bollards would, therefore, appear to be a more viable option although this would still reduce the effective footway width as the bollards would have to set in 500mm from the kerb line.

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- 4.5.10 It is, therefore, recommended that all occupiers of the commercial units are required to advise all their delivery providers that they must use the servicing area within the site which has been made available within the development design. It is suggested that such an operational requirement be included in any lease agreement or other similar legal document.
- 4.5.11 Further details regarding the servicing of the development are included within the site's Revised Servicing and Delivery Management Plan, which has been prepared under separate cover.

5 Sustainable Travel

5.1 Overview

5.1.1 This section of the report considers the accessibility of the development by sustainable modes of transport in order to review the opportunities that will exist for residents, staff and visitors.

5.1.2 TfL's WebCAT Planning Tool has been used to identify the site's Public Transport Accessibility Level (PTAL) rating. The site has a PTAL rating of 5 which is considered as being 'very good'. The full PTAL report is included at **Appendix F**.

5.1.3 It should also be noted that the public transport service frequencies detailed in this Chapter are those that were present prior to the disruption caused by Covid-19. At present some services are either closed or running at reduced frequencies, however, services are expected to return to their previous state once things return to normal.

5.2 Accessibility on Foot

5.2.1 Walking is the most important mode of transport in the local level and can replace short car trips in journeys under 2km, which contribute to congestion and pollution, and the need for car parking.

5.2.2 Further guidance on walking accessibility is provided in the Department for Transport's document 'Building Sustainable Transport into New Developments' (2008) which gives the following advice:

"Walkable neighbourhoods are typically characterised as having a range of facilities within 10 minutes walking distance (around 800m). However, the propensity to walk or cycle is not only influenced by distance but also the quality of the experience; people may be willing to walk or cycle further where their surroundings are more attractive, safe and stimulating."

5.2.3 The IHT publication “*Providing for Journeys on Foot*” also identifies suggested acceptable walking distances for commuting, school and sight-seeing as follows with times based on a walking speed of 1.4m/s.

Desirable 500m	6 minutes
Acceptable 1000m	12 minutes
Preferred maximum 2000m	24 minutes

5.2.4 Figure 6 identifies 500m, 1km and 2km walking radii from the site. It is noted that walking routes will not follow the simple radius of this plan and the plan is provided as an indication of where destinations lie and the general extent to which the local area can be accessed on foot.

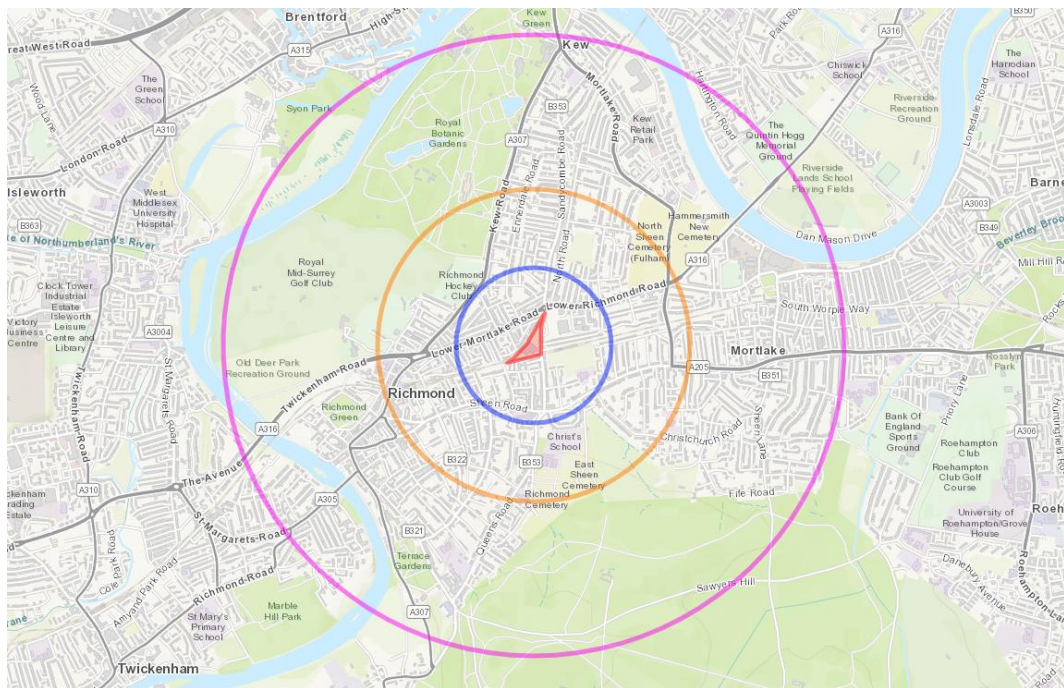


Figure 6 – Walking Radii

[NatGeo]

5.2.5 The following amenities and facilities are all located within walking distance of the site:

- Within a 500m walking distance of the site there are bus stops on Manor Road, Lower Richmond Road, Sandycombe Road and Lower Mortlake Road, North Sheen Train Station, Sainsbury’s supermarket, Lloyd’s Pharmacy, Starbucks coffee shop, Bright Horizons Day Nursery and Preschool.

- Within a 1km walking distance of the site there is Darel Primary School, Windham Nursery School, The Kings Road Nursery, Marshgate Primary School, Christ's School and Sixth Form Centre, Holy Trinity Primary School, North Sheen recreation ground, North Sheen Bowling Club, Skinners Newsagent and Post Office, Seymour House Surgery, Kew Road Dental, Dental Care London, Specsavers and Vision Express.
- Within 2km there is Kings House School, North Road Surgery, Pensford Tennis Club, Richmond Town Centre with various amenities and facilities, Richmond Station, Kew Gardens Station and Royal Botanic Gardens at Kew.

5.2.6 It is therefore considered that local facilities are highly accessible by pedestrians with a wide range of key amenities within acceptable walking distance of the site.

5.2.7 CIHT's 'Buses in Urban Development' (Jan 2018) identifies 500m as the recommended maximum walking distances to a 'core bus corridor with two or more high-frequency services. Furthermore, the PTAL assessment takes into account bus stops within 640m. The bus stops on Manor Road are located approximately 170-180m from the site therefore within the desired walking distance. Bus stops on Lower Mortlake Road and Lower Richmond Road are located approximately 340-390m from the site therefore within acceptable walking distances.

5.3 Accessibility by Cycle

5.3.1 Like walking, cycling has an important part to play in reducing congestion, improving accessibility and reducing pollution. Cycling may also allow people without cars to reach destinations that they may otherwise be unable to reach. CIHT's Planning for Cycling (2014) states that the majority of cycling trips are for short distances, with 80% being less than five miles and with 40% being less than two miles. However, the majority of trips by all modes are also short distances (67% are less than five miles, and 38% are less than two miles); therefore, the bicycle is a potential mode for many of these trips. Electric bicycles extend the range that can be cycled comfortably, and combined cycle-rail or cycle-bus journeys offer an alternative to car travel for many longer trips.

- 5.3.2 Figure 7 identifies an 8km (5 mile) radius from the site. Again, it is noted that cycling routes will not follow the simple radius of this plan and it is provided as an indication of where destinations lie and the general extent to which the local area can be accessed by cycle.

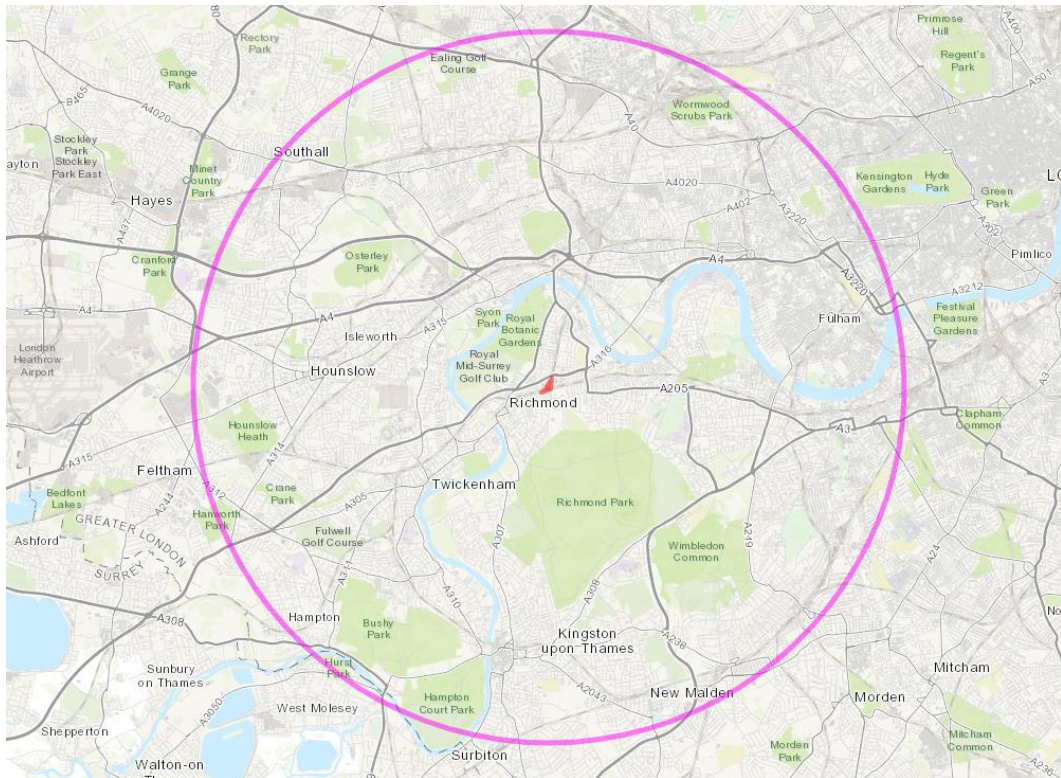


Figure 7 – 8km Cycling Radius

- 5.3.3 In the vicinity of the site, Manor Road, Manor Grove, Lower Richmond Road and Lower Mortlake Road are shown as off road/quiet cycle routes on the Transport for London Cycling Guides.
- 5.3.4 The site is accessible by cycle and plentiful cycle parking will be provided. It is therefore concluded that the site's location provides good cycling accessibility to the local area and the local infrastructure provides good opportunities for cycle use with ongoing connectivity to public transport.

5.4 Accessibility by Public Transport

5.4.1 The closest bus stops to the site are located on Manor Road approximately 170-180m from the site. In addition, bus stops are located on Lower Mortlake Road, Lower Richmond Road and Sandycombe Road slightly further from the site. Meanwhile, the closest train station to the site is North Sheen Station located approximately 180m to the east of the site and Richmond Station (which provides both rail and underground services) is located approximately 1.5km from the site which equates to a 30 minute walk or 7½ minute cycle journey. Figure 8 is an extract from TfL’s Public Transport Map and identifies the location of the aforementioned facilities.

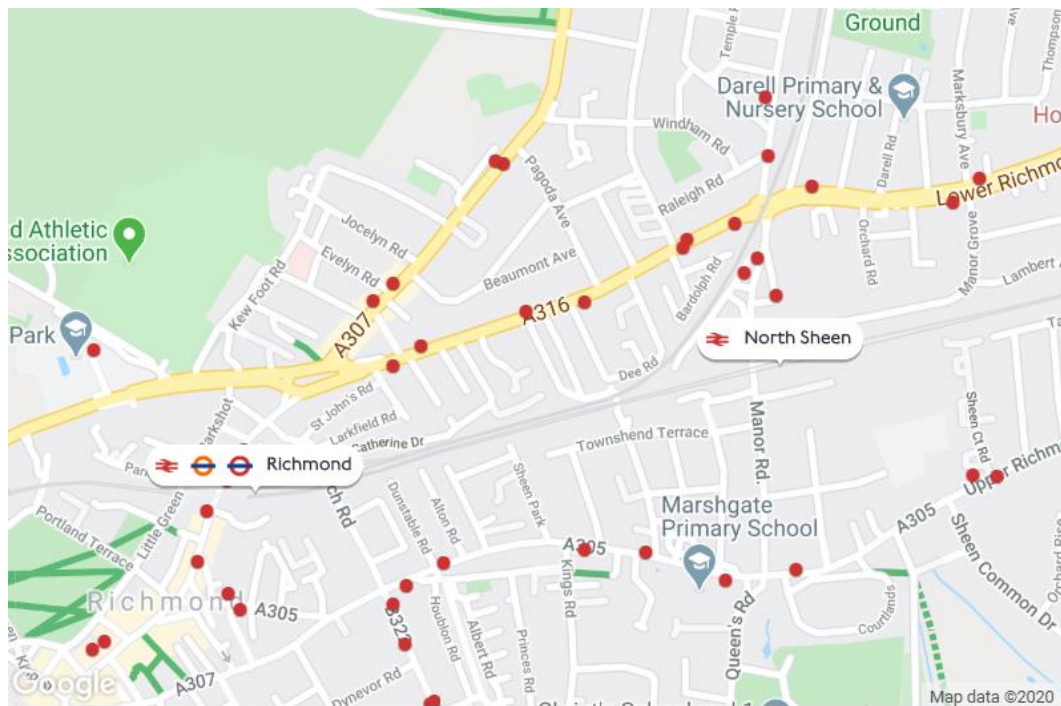


Figure 8 – TfL Public Transport Map extract

5.4.2 A summary of the services available from the bus stops within recommended walking distance of the site is provided overleaf. However, as noted, these frequencies were recorded prior to the disruption caused by Covid-19 and may not reflect current services.

Service	Route	Approximate Peak Frequency		
		Mon - Sat Daytime	Mon - Sat Evening	Sunday
190	George Street – Empress State Building/West Brompton Station	15 mins	20 mins	20 mins
371	Manor Road/Sainsbury's – Kingston Hall Road	8-12 mins	15 mins	11-12 mins
391	George Street – Sands End/Sainsbury's	9-14 mins	15 mins	11-14 mins
419	George Street – Hammersmith Bus Station	15 mins	20-30 mins	30 mins
493	St George's/University of London – Richmond/Manor Road	9-14 mins	20 mins	20 mins
H22	The Bell – Manor Road	11-14 mins	20 mins	20 mins
H37	Hounslow/Blenheim Centre – Manor Road	5-10 mins	6-15 mins	7-10 mins
N22	South Road/Fulwell – Margaret Street/Oxford Circus (Night Bus)	No Service	30 mins	30 mins
R68	Kew Retail Park – Hampton Court Station	15 mins	20 mins	15 mins
R70	Nurserylands Shopping Centre – Richmond/Manor Road	6-12 mins	15-20 mins	15 mins

Table 7 – Summary of bus services

5.4.3 As can be seen from the above, there are a wide range of frequent bus services available seven days a week. The above services stop at various rail and tube stations which provide frequent and varied services to a wider range of destinations for onward travel.

5.4.4 North Sheen Railway Station is a two platform station that is under the management of South Western Railway. It provides the following facilities; information services, ticket counter, ticket machines and help points. No car or cycle parking facilities are available at this station. This station provides services to Chiswick, London Waterloo, Wimbledon, Putney and other local destinations.

5.4.5 As detailed in Section 3.6 a survey of pedestrian activity at the station has been undertaken. This has revealed that on a typical neutral weekday the morning “peak” occurs between 07:30 and 08:30 when an average of 262 passengers enter the station.

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- 5.4.6 As there is only a single point of entry linking to a central platform it is not known for certain which direction passengers are intending to travel in. However, it is noted that trains from North Sheen towards central London (Waterloo) are available on both west and east bound lines with varying journey times and number of stops.
- 5.4.7 In this “peak” period 8 trains are scheduled to stop at North Sheen which provide access to London Waterloo and varying station en-route. Some trains provide an option to change at Richmond to catch a faster onward train.
- 5.4.8 It is, therefore, considered that typically these 8 services would need to be able to accommodate, on average 33 passengers each. Bearing in mind that the South Western Rail trains on this line usually operate between 8 and 10 carriages during peak times this is not considered to be unreasonable.
- 5.4.9 Richmond Station provides access to both rail and underground services. The station provides the following facilities: CCTV monitored cycle stands for 212 cycles, 55 space car park, taxi/drop off area, fully staffed ticket office, ticket machines, help points, ATM, pay phones, post box, toilets, waiting rooms, shops, step free access and ramps for train access with staff available to help.
- 5.4.10 This station provides rail services to Chiswick, London Waterloo, Reading, Wokingham and other local destinations. Richmond Station also provides Overground line services on the Richmond and Clapham Junction to Stratford route with approximately 12-18 minute frequency.
- 5.4.11 There have been recent rail improvements including the introduction of new trains which has increased the available capacity of the trains on key routes in south-west London. In addition, Network Rail has also improved/realigned the platforms at Waterloo Station which now means that all 24 platforms are able to be used for South Western train services thus increasing the available services and reliability.
- 5.4.12 District line underground services are also available at approximately 10 minute intervals.

5.5 Accessibility Summary

5.5.1 The site is considered to be highly accessible by both active and public transport, as reflected by the site’s PTAL rating of 5. As such, residents, staff and visitors to the development will have a choice of sustainable travel options which will reduce the need to travel by car.

5.5.2 From analysis of the pedestrian survey which recorded activity at the entrance/exit at North Sheen Station it is considered that existing rail passengers can be accommodated on peak hour services. Further analysis of the predicted uplift also indicates that the station and attending trains will be able to accommodate future passenger levels during peak hours.

5.6 Healthy Streets Approach

5.6.1 The ‘Healthy Streets Approach’ has been introduced by the Mayor of London, Sadiq Khan, and “aims to reduce traffic, pollution and noise, create more attractive, accessible and people-friendly streets where everybody can enjoy spending time and being physically active, and ultimately to improve people’s health”. There are ten indicators as illustrated below:



Figure 9 – Ten Healthy Streets Indicators (TfL)

-
- 5.6.2 In relation to these indicators, the development will encourage travel by active and sustainable modes by being predominantly car-free, providing ample cycle parking and electric car club vehicles.
- 5.6.3 It will also provide public spaces with seating where people can relax, rest and seek shade and shelter in a safe environment. The improvements to the footway on the site frontage will ensure the space is suitable for all sections of the community and will be able to accommodate a range of activities. A dropped crossing with tactile paving will be provided across the site access road to assist with pedestrian movements along Manor Road.
- 5.6.4 In addition, Manor Road is street-lit and the addition of trees and shrubs will add to the varied appearance of the frontage. The courtyard within the site will be used for various events potentially including markets, art installations and outdoor cinema which will bring life and interest to the area.
- 5.6.5 In line with the strategies incorporated into the Draft London Plan 2019 and additional guidance published by TfL a detailed Active Travel Zone assessment has been undertaken. This is attached at **Appendix G**.
- 5.6.6 The scope of this assessment was agreed in advance with TfL and was limited to Manor Circus to the north of the site and then extended to include the nearest primary school and GP surgery both of which were identified as being located on Sheen Road to the south of the site.
- 5.6.7 The routes assessed generally perform well in relation to the Healthy Streets indicators by providing safe places to cross, being well-maintained, not having an accident history of concern and having public and private areas of vegetation that provide interest and variety. In addition, the development will enhance the routes along the site frontage by providing improved footways, landscaping, places to rest and overlooking buildings.

5.6.8 Within the Draft London Plan the Mayor, through TfL and the boroughs, proposes to set out a programme to achieve the Vision Zero aim of reducing the number of people killed or seriously injured on London's streets to zero. The key aims of this strategy are shown in the diagram below which is extracted from the "Vision Zero Action Plan".

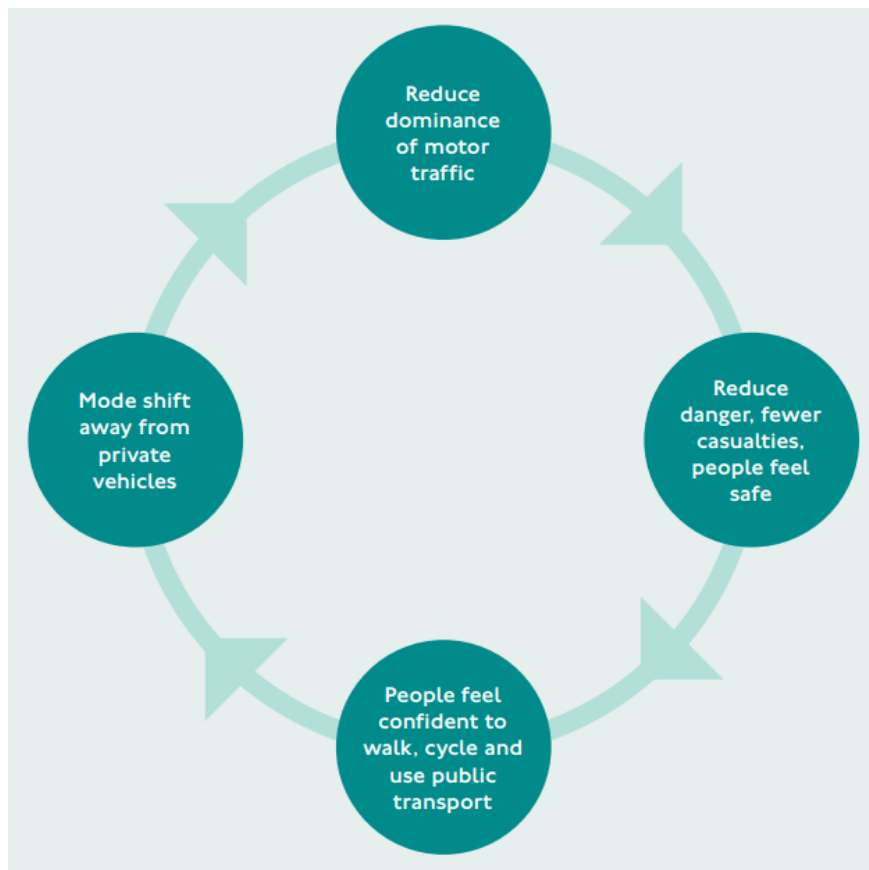


Figure 10 – Road danger reduction (TfL)

5.6.9 In order to tie into this strategy the following initiatives have been integrated within the Amended Proposed Development:-

- Virtually car-free development, providing only disabled parking
- Contribution to improvements to Manor Circus which will benefit pedestrians and cyclists
- Permeable links to all parts of the site
- Improved facilities for public transport

6 Multimodal Traffic Generations

- 6.1 As part of the Environmental Assessment screening process associated with the Original Proposed Development a Technical Note was prepared by Sanderson's (10596-TN1) which considered, in detail, the potential traffic impact resulting from the development proposals. The Technical Note looked at trip generation information from the TRICS database for each proposed land use and highlighted how influencing factors such as accessibility by sustainable travel modes (PTAL ratings) and parking availability within and in proximity to the site have a significant impact on how people travel to and from the site. Consequentially, a considered approach was taken to obtain multimodal trip rates which were as representative of the development proposals as practicable. The resulting trip rates and forecast trip generations were presented in the previously submitted Transport Assessment dated February 2019.
- 6.2 However, during the LBRuT determination period of the Original Proposed Development, TfL advised that it did not agree with the methodology applied to predict the multi modal generation potential of the proposed development. It was advised that the residential trip rate assessment must be based on total person trip rates which had not been adjusted to remove sites from the TRICs Database with higher parking ratios. Instead, TfL advised that 2011 Census 'Method of Travel to Work' data to be used to establish mode share which should then be adjusted down to account for the limited car parking provision and the remaining trips reassigned pro-rata to the other modes.
- 6.3 This chapter of the Revised Transport Assessment identifies the multimodal trip generation potential of the Amended Proposed Development based on both TfL's desired assessment methodology and Sanderson's original approach.

6.4 TfL Methodology

6.4.1 Total person trip rates for each proposed land use have been derived from the TRICS database. The sites used to generate the trip rates have been filtered to remove any sites considered unrepresentative in terms of accessibility (PTAL <4 excluded), however, no further filtering in relation to parking has been undertaken as requested by TfL.

6.4.2 A summary of the total person trip rates and generations for each land use is provided below along with details of the TRICS filtering parameters applied.

Residential Multimodal Generations

Privately Owned Flats

Land Use: 03 – Residential

Category: C – Flats Privately Owned

Selected Regions and Areas: Greater London only (sites with PTAL rating less than 4 excluded)

Parameter: Number of Dwellings

Actual Range: 9-472 units

Date Range: 01/01/10 – 03/07/18

Selected Survey Days: Monday – Friday

Selected Locations: Town centre sites excluded

6.4.3 The following table provides details of the resulting weekday AM and PM peak hour total person two-way trip rates per unit along with the corresponding generated trips for the proposed private 280 units. The full TRICS outputs are contained in **Appendix H**.

Time	Trip Rate per Unit	Generations from 280 units
Weekday AM Peak (08:00-09:00)	0.542	152
Weekday PM Peak (17:00-18:00)	0.449	126
Weekday Daily	4.565	1278

Table 8 – Total person trip generations for private residential element (280 units)

Affordable Flats

Land Use: 03 – Residential

Category: D – Affordable/Local Authority Flats

Selected Regions and Areas: Greater London only (sites with PTAL rating less than 4 excluded)

Parameter: Number of Dwellings

Actual Range: 36-247 units

Date Range: 01/01/10 – 27/06/16

Selected Survey Days: Monday – Friday

Selected Locations: Town Centre sites excluded

- 6.4.4 The following tables provide details of the weekday AM and PM peak hour total person two-way trip rates per unit along with the corresponding generated trips for the proposed 173 affordable units. The full TRICS data is contained in **Appendix I**.

Time	Trip Rate per Unit	Generations from 173 units
Weekday AM Peak (08:00-09:00)	0.646	112
Weekday PM Peak (17:00-18:00)	0.450	78
Weekday Daily	6.702	1159

Table 9 – Total person trip generations - affordable residential (173 units)

- 6.4.5 In summary, the total person trip generations associated with the residential element of the development can be summarised as follows:

Time	Total generations
Weekday AM Peak (08:00-09:00)	264
Weekday PM Peak (17:00-18:00)	204
Weekday Daily	2,438

Table 10 – Total person trip generations

- 6.4.6 In order to determine the likely modal split of the person trips calculated above the 2011 Census Data – Method of Travel to Work dataset has been used. The Richmond upon Thames 004 MSOA (Middle Super Output Area), in which the site lies, has been compared to Richmond as a whole and England and the table below gives a summary of this data with a full copy included at **Appendix J**.

Method of Travel to Work	Richmond upon Thames 004	Richmond upon Thames	England
	% working	% working	% working
Work Mainly at or From Home	8.0%	8.9%	5.4%
Underground, Metro, Light Rail, Tram	21.6%	10.7%	4.1%
Train	17.9%	21.9%	5.3%
Bus, Minibus or Coach	7.5%	7.6%	7.5%
Taxi	0.2%	0.2%	0.5%
Motorcycle, Scooter or Moped	1.6%	1.7%	0.8%
Driving a Car or Van	26.8%	32.5%	57.0%
Passenger in a Car or Van	1.2%	1.4%	5.0%
Bicycle	5.9%	6.1%	3.0%
On Foot	8.6%	8.2%	10.7%
Other Method of Travel to Work	0.8%	0.7%	0.6%

Table 11 – Census Data – Method of Travel to Work

6.4.7 As acknowledged by TfL, given the absence of ‘standard’ car parking spaces within the site it is considered that the level of generation associated with car / van drivers is unlikely to be realised. Therefore, to provide a more representative assessment, the modal share proportions have been adjusted so that vehicle occupancy (drivers and passengers) is limited to 3%. This is consistent with the level of car parking provided for disabled occupants.

Method of Travel to Work	%
Underground, Metro, Light Rail, Tram	32.7%
Train	27.1%
Bus, Minibus or Coach	11.3%
Taxi	0.3%
Motorcycle, Scooter or Moped	2.5%
Driving a Car or Van	2.9%
Passenger in a Car or Van	0.1%
Bicycle	8.9%
On Foot	13.0%
Other Method of Travel to Work	1.2%

Table 12 – Adjusted modal splits

6.4.8 The modal splits identified above have been applied to the total person trip rates and generations set out in Table 10 in order to establish the number of people travelling by each mode during the AM and PM peak periods, as well as on a daily basis.

6.4.9 It is acknowledged that due to the distance of the site from Richmond Underground Station, those travelling to work via the Underground are likely to first travel by bus in order to reach the station. Therefore, in order to provide a robust assessment, the estimated modal share for Underground users has been added to the modal share for bus users.

6.4.10 The generations for each mode of travel are summarised below:

Method of Travel to Work	%	8 - 9 AM			17 - 18 PM			Daily		
		Arr	Dep	Two-way	Arr	Dep	Two-way	Arr	Dep	Two-way
		38	226	264	127	77	204	1196	1242	2438
Underground, Metro, Light Rail, Tram	32.7%	12	74	86	42	25	67	391	406	797
Train	27.1%	10	61	72	34	21	55	324	337	661
Bus, Minibus or Coach	11.3%	4	26	30	14	9	23	135	140	275
Taxi	0.3%	0	1	1	0	0	1	4	4	8
Motorcycle, Scooter or Moped	2.5%	1	6	7	3	2	5	30	31	61
Driving a Car or Van	2.9%	1	7	8	4	2	6	35	36	71
Passenger in a Car or Van	0.1%	0	0	0	0	0	0	2	2	3
Bicycle	8.9%	3	20	24	11	7	18	107	111	217
On Foot	13.0%	5	29	34	17	10	27	156	162	317
Other Method of Travel to Work	1.2%	0	3	3	1	1	2	14	14	28
Bus + Underground		17	99	116	56	34	90	526	546	1072

Table 13 – AM, PM and Daily Multimodal Trip Generations (TfL Methodology)

Commercial Multimodal Generations

6.4.11 During the analysis of the TRICS database in relation to the proposed commercial space within the development it was noted that there were no “Greater London” sites in the “Shopping Centre - Local Shops” category.

6.4.12 It is, however, considered that the commercial spaces in question are of such a size that the end use would be limited to those outlets serving the immediate community and thus would generate the majority of its traffic as pass-by movements on foot and cycle.

6.5 Sanderson's Methodology

6.5.1 Again, total person trip rates for each proposed land use have been derived from the TRICS database and the sites used to generate the trip rates have been filtered to remove any sites considered unrepresentative in terms of accessibility (PTAL <4 excluded). However, on this occasion, further filtering has been undertaken to remove sites with a parking ratio per dwelling of > 0.5. Copies of the TRICS outputs with advanced filtering are included at **Appendix K**.

6.5.2 The resulting trip rates and generations associated with the residential elements of the development are summarised below. With regards to the commercial element of the development, the same principle applies as described in paragraphs 6.4.11 and 6.4.12.

Time	Trip Rate per Unit	Generations from 280 Units
Weekday AM Peak (08:00-09:00)	0.334	94
Weekday PM Peak (17:00-18:00)	0.345	97
Weekday Daily	3.637	1,018

Table 14 – Total person trip generations for private residential (280 units)

Time	Trip Rate per Unit	Generations from 173 Units
Weekday AM Peak (08:00-09:00)	0.632	109
Weekday PM Peak (17:00-18:00)	0.463	80
Weekday Daily	6.565	1,136

Table 15 – Total person trip generations - affordable residential (173 units)

Time	Total generations
Weekday AM Peak (08:00-09:00)	203
Weekday PM Peak (17:00-18:00)	177
Weekday Daily	2,154

Table 16 – Total person trip generations

6.5.3 It is considered that given the deliberated approach taken to derive trip rates from the TRICS database, the results of the TRICS assessment are representative of how a car-free development is likely to operate in an area of high accessibility such as the proposed development site (PTAL rating = 5).

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- 6.5.4 It should also be noted that the TRICS data (based on surveys of similar sites) accounts for the movements associated with all journey purposes. As such it is considered appropriate to use the multimodal TRICS data to estimate the likely modal split with all journey purposes accounted for.
- 6.5.5 It is this point where Sanderson's methodology is inherently different to that requested by TfL which is entirely based upon 'Method of Travel to Work' data.
- 6.5.6 The 2018 National Travel Survey (Table NTS0409) identifies that commuting (i.e. Travel to Work journeys) accounts for just 15% of all journey purposes by all modes of travel. It is considered that the mode of travel associated with other common journey purposes such as education / escort education (13%), shopping (19%), personal business (9%) and leisure (26%) is likely to be different to how people choose to travel to work; especially given the proximity of the site to the adjacent supermarket and various primary schools.
- 6.5.7 Given the above, it is considered that the use of TRICS to establish a modal split is a valid approach and that the results of the assessment are representative of how people will travel to and from the development as a whole, not just to and from work.
- 6.5.8 Using the multimodal TRICS data for the 'Privately Owned Flats' element of the development, the predicted modal split is detailed in Table 17. It should be noted that the available TRICS data for the 'Affordable Flats' element of the development does not provide enough detail to determine a split between the various public transport modes. Nevertheless, the split identified by the 'Privately Owned Flats' data is considered representative.

	Mode of Travel	Modal Share			Two-way Trip Generation		
		AM	PM	Total	AM	PM	Total
Active Transport	Pedestrians	34%	33%	43%	69	58	926
	Cyclists	1%	2%	1%	2	4	18
Private Transport	Taxis	4%	1%	3%	7	2	62
	Cars	3%	9%	5%	7	16	103
	LGV	1%	1%	1%	2	1	30
	OGV	0%	0%	0%	0	0	2
	Motorcycles	0%	0%	0%	0	0	6
	Vehicle Passengers	0%	2%	1%	0	3	25
Public Transport	Underground	28%	23%	21%	57	41	443
	Overground	5%	4%	3%	11	7	71
	Bus	24%	26%	21%	49*	45*	458*
Total People		100%	100%	100%	203	177	2154

Table 17 – Predicted modal split based on multimodal TRICS data

6.5.9 As noted by TfL, those travelling on the Underground will likely travel to / from the station by bus. Therefore, the total number of people travelling by bus is estimated to be in the order of 106 people in the AM peak period, 86 people in the PM peak period and 901 people daily.

6.6 Comparison of results

6.6.1 The following tables provide a comparison between the modal split predictions associated with each assessment methodology as well as the resulting trip generations:

Method of Travel	2011 Census 'Method of Travel to Work' modal split %	TRICS data 'Daily' modal split %
Underground, Metro, Light Rail, Tram	32.7%	21%
Train	27.1%	3%
Bus, Minibus or Coach	11.3%	21%
Taxi	0.3%	3%
Motorcycle, Scooter or Moped	2.5%	0%
Driving a Car or Van	2.9%	5%
Passenger in a Car or Van	0.1%	1%
Bicycle	8.9%	1%
On Foot	13.0%	43%
Other Method of Travel to Work	1.2%	0%

Table 18 – Modal Split % Comparison

6.6.2 With regards to the impact on trip generations, a comparison is provided below:

Method of Travel	2011 Census 'Method of Travel to Work' trip generations	TRICS data 'Daily' trip generations
Underground, Metro, Light Rail, Tram	797	443
Train	661	70
Bus, Minibus or Coach	275	458
Taxi	8	62
Motorcycle, Scooter or Moped	61	6
Driving a Car or Van	71	134
Passenger in a Car or Van	3	25
Bicycle	217	18
On Foot	317	926
Other Method of Travel to Work	28	0
Bus and Underground	1072	901

Table 19 – Trip Generation Comparison

6.6.3 From the above it can be seen that there are material differences in predicted modal splits for almost all modes of travel. It is considered that this appropriately reflects how travel modes vary depending upon journey purpose.

6.6.4 The 'Travel to Work' estimations rely more heavily on public transportation, in particular the rail and underground network, which makes sense because most people do not live within a reasonable walking distance from their workplace. In comparison, the TRICS data, which account of all journey purposes, predicts a much greater proportion of people travelling on foot. Given the range of education, leisure and retail opportunities available within reasonable walking distance of the site it is understandable that people are likely to be less reliant upon public transportation.

6.6.5 For the purpose of providing a robust assessment of the impact of the Amended Proposed Development on pedestrian infrastructure as well as on public transport services, it is proposed to use the generations resulting from TfL's assessment methodology. Further details are provided within Chapters 9 – 11 of this report.

7 Vehicle Traffic Generations

7.1 Trip Generations

7.1.1 Notwithstanding the different methodologies described in the previous Chapter of this report, the original Transport Assessment identified no material junction capacity issues surrounding the development proposals. Therefore, for the purpose of this Revised Transport Assessment, the vehicle trips associated with the proposed development have been assessed using vehicle trip rates from the TRICS database which have not been filtered to exclude sites based on parking ratios, as per TfL's request. These trip rates are presented within the multimodal outputs in Appendix H & I and are summarised below:

	Trip Rate Per Dwelling		Traffic Generations from 280 Units		
	Arrivals	Departures	Arrivals	Departures	Total
AM Peak (08:00-09:00)	0.032	0.081	9	23	32
PM Peak (17:00-18:00)	0.054	0.031	15	9	24

Table 20 – Traffic generations for private residential element (280 units)

	Trip Rate Per Dwelling		Traffic Generations from 173 Units		
	Arrivals	Departures	Arrivals	Departures	Total
AM Peak (08:00-09:00)	0.027	0.078	5	13	18
PM Peak (17:00-18:00)	0.054	0.038	9	7	16

Table 21 – Traffic generations for affordable residential element (173 units)

7.1.2 The predicted residential vehicle trips are 50 vehicle movements two-way in the AM and 40 in the PM peak hours. This equates to approximately one vehicle every 1½ to 2 minutes in the AM and PM peak hours.

7.1.3 Providing complementary amenities within the site will reduce the need for residents to travel off site for the same facilities and traffic flows could be expected to be lower than at comparative residential development sites without convenience facilities on site.

7.1.4 At this stage, the exact uses of the commercial space within the development have not yet been confirmed. However, it is understood that this could be a mix of A1/A2 retail outlets and B1 office.

7.1.5 To provide an initial assessment the TRICS land use category '01 Retail – I Shopping Centre Local Shops' has been utilised. It is considered that whilst this category may not necessarily be exactly representative of the development proposals, it is the most appropriate land use category available within the TRICS database.

7.1.6 The table below shows the trip rates and associated traffic generations based on the available sites with the full report included at **Appendix L**;

	Time Period	Trip Rates (per 100m ² GFA)		Traffic Generations		
		Arrivals	Departures	Arrivals	Departures	Two-way
Commercial Space (495m ²)	AM (08:00-09:00)	5.180	4.773	26	24	50
	PM (17:00-18:00)	6.369	6.933	32	34	66

Table 22 - Trip rates and generations for proposed commercial use

7.1.7 It is considered that the generations identified in the table above are wholly unrealistic and in reality are unlikely to be realised at the proposed development site. This is due to no on-site parking provision associated with the commercial element of the development combined with TRO's along Manor Road which prohibit on-street car parking. In addition, the modest size of the proposed commercial areas means it is unlikely that trips would be drawn from further-a-field and use of the retail space is likely to be by pass-by trips.

7.1.8 Taking this into account the trip generations are envisaged to be as detailed in the table below:-

	Time Period	Traffic Generations		
		Arrivals	Departures	Two-way
Commercial Space (495m ²)	AM (08:00-09:00)	6	6	12
	PM (17:00-18:00)	8	8	16

Table 23 - Trip generations for proposed commercial use with reductions applied

7.1.9 This equates to approximately one vehicle every 4 - 5 minutes in the AM and PM peak hours.

7.2 *Total Traffic Generations*

7.2.1 Following the above assessments, the total vehicle trip generations associated with the development proposals can be summarised as follows:-

Time Period	Land Use	Traffic Generations		
		Arrivals	Departures	Two-way
AM	Private Flats	9	23	32
	Affordable Flats	5	13	18
	Commercial	6	6	15
	Total	20	42	62
PM	Private Flats	15	9	24
	Affordable Flats	9	7	16
	Commercial	8	8	18
	Total	32	24	56

Table 24 - Total proposed development vehicle trip generations

7.2.2 Taking into consideration the existing use of the development site, described in Table 2, the proposed development could be expected to result in a reduction of 17 traffic movements in the AM peak and 51 in the PM peak.

7.3 *Development Traffic Distribution*

7.3.1 The distribution of the traffic generated by the residential element of the site has been predicted using the 'WU03EW - Location of usual residence and place of work by method of travel to work (MSOA level)' dataset from the 2011 Census. The site falls within Richmond upon Thames 004 MSOA which is illustrated overleaf.



Figure 11 – Richmond upon Thames 004 MSA (MapItUK)

- 7.3.2 The traffic generated by the commercial element of the site has been distributed by the existing turning proportions of light vehicles at the site access.
- 7.3.3 The residential and commercial traffic distributions and resulting traffic flows, along with the total development traffic flows are included at **Appendix M**.

8 Traffic Impact Assessment

8.1 This section of the report seeks to quantify the impact of the Amended Proposed Development upon the operation of the local highway network.

8.2 *Base Traffic Flows*

8.2.1 Fully classified traffic counts of the site access and Sainsbury's supermarket access opposite were undertaken by Nationwide Data Collection Ltd on 2 October 2018.

8.2.2 A diagram showing the base traffic flows is included at **Appendix N**.

8.3 *Committed Development*

8.3.1 During the pre-application discussions on the November 2019 Amendments no committed development sites were identified.

8.4 *Traffic Growth*

8.4.1 The traffic impact of the development has been assessed at the initial year of 2018, an opening year of 2024 and a design year of 2029.

8.4.2 Traffic growth factors have been generated utilising the latest version of TEMPRO (v7.2b), adjusted against Department for Transport's Road Traffic Forecasts 2018 Scenario 1 (RTF18) and updated National Trip End Model (NTEM). The growth factors used are shown below:

2018 to 2024	AM	1.0526	2018 to 2029	AM	1.0898
	PM	1.0519		PM	1.0900

8.4.3 Diagrams showing the base traffic flows growthed to 2024 and 2029 are included at **Appendix N**.

8.5 *Junction Modelling*

8.5.1 Detailed junction capacity modelling has been undertaken using Junctions software. Both the site access and the access to Sainsbury's supermarket opposite have been modelled in the 2024 and 2029 future years.

Site Access priority junction

8.5.2 The results of this assessment are summarised as follows;

Arm A = Manor Road (S)

Arm B = Site Access

Arm C = Manor Road (N)

	2018 Base AM		2018 Base PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-AC	0.10	0.1	0.15	0.2
C-B	0.08	0.1	0.08	0.1

	2024 Base + Dev AM		2024 Base + Dev PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-AC	0.26	0.4	0.24	0.3
C-B	0.17	0.2	0.20	0.2

	2029 Base + Dev AM		2029 Base + Dev PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-AC	0.27	0.4	0.35	0.5
C-B	0.18	0.2	0.20	0.3

Table 25 – Junctions results

8.5.3 The output results can be found at **Appendix O**.

8.5.4 This shows that, even in the worst case situation of 2029 with development traffic, the junction would operate comfortably within its practical capacity, which is generally accepted as being represented by a ratio of flow to capacity (RFC) of 0.850.

Sainsbury's supermarket access priority junction

8.5.5 The results of this assessment are summarised as follows;

Arm A = Manor Road (N)

Arm B = Site Access

Arm C = Manor Road (S)

	2018 Base AM		2018 Base PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-C	0.07	0.1	0.18	0.2
B-A	0.14	0.2	0.18	0.2
C-AB	0.10	0.1	0.17	0.2

	2024 Base + Dev AM		2024 Base + Dev PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-C	0.07	0.1	0.19	0.2
B-A	0.15	0.2	0.19	0.2
B-C	0.11	0.1	0.18	0.2

	2029 Base + Dev AM		2029 Base + Dev PM	
	Max RFC	Max Queue (veh)	Max RFC	Max Queue (veh)
B-C	0.08	0.1	0.20	0.2
B-A	0.16	0.2	0.20	0.2
C-AB	0.11	0.1	0.19	0.2

Table 26 – Junctions results

8.5.6 The output results can be found at **Appendix P**.

8.5.7 This shows that, even in the worst case situation of 2029 with development traffic, the junction would operate comfortably within its practical capacity, which is generally accepted as being represented by a ratio of flow to capacity (RFC) of 0.850.

Southbound queues

8.5.8 As the total proposed traffic generations during the peak AM and PM hours are predicted to result in reductions when compared to the existing use of the site, it is considered that queues at the level crossing to the south would not be adversely affected by the proposals.

9 Impact of the Development on the Pedestrian Network

- 9.1 TfL's multimodal assessment methodology, detailed in Chapter 6 of this report used '2011 Census: Method of Travel to Work data' to form a modal split. However, as previously noted, there are other journey purposes to consider as well as Travel to Work (e.g. education and shopping). Furthermore, those using public transport modes are likely to require a short journey on foot in order to be able to access those services.
- 9.2 The multimodal trip generations set out within Table 13 of this report estimates that the development is likely to generate in the order of 34 pedestrian trips (two-way) in AM peak, 27 pedestrian trips (two-way) in the PM peak hour and 317 trips (two-way) daily.
- 9.3 Further to the above, those utilising public transport modes are expected to generate an additional pedestrian demand in the order of 188 trips (two-way) in the AM, 145 trips in the PM and 1,733 trips (two-way) daily. These journeys on foot would be limited to between the site and local bus stops / North Sheen Station.
- 9.4 The following assessment is based on data from the National Travel Survey and seeks to provide a realistic estimate of the distribution of pedestrian movement about the site and evaluate the suitability of existing crossing facilities.
- **Commuting:-** Trips to / from home to usual place of work
 - **Business:-** Personal trips in course of work.
 - **Education / Escort:-** Trips to school or college / Accompanying someone else (e.g. taking a child to school)
 - **Shopping:-** Trips to the shops or from the shops to home.
 - **Personal Business:-** Visits to services, medical consultations etc.
 - **Visit friends:-** Trips to visit friends
 - **Other leisure:-** Mostly entertainment, sport, holidays and day trips.

9.5 **Just Walking (23%)**

9.5.1 This journey purpose would account for around 73 trips (two-way) daily. This would include activities such as dog walking, walking / running for exercise etc. It is considered that these activities would predominantly occur outside of typical network peak periods.

9.5.2 With regards to distribution it is difficult to determine in what direction people would travel. As such a 50/50 split is to be assumed northbound / southbound along Manor Road (without the need to cross-over). The northbound proportion will then be evenly split between westbound and northbound movements at Manor Circus.

9.6 **Education / Escort Education (21%)**

9.6.1 This journey purpose would account for 67 trips (two-way) daily. The outbound journeys would likely occur on a morning during the typical AM peak period of 8am – 9am (with parents / guardians returning home after 9am), and in the afternoon between 3pm – 4pm, prior to the typical PM peak period 5pm – 6pm.

9.6.2 As part of the Health Impact Assessment undertaken for this scheme, the GLA's SPG Play Space Requirement Calculator was used to determine the child yield (aged up to and including 17) from the proposed development. The child yield from the proposed development is as detailed in the table below:-

Age of children	Number of children
Under 5	73
5-11 years	51
12 -17 years	24
Total	148

Table 26 – Proposed Development Child Yield

9.6.3 It is considered that those children walking (including being escorted) to / from school will be mostly primary school children (51 total). Those at secondary level and above are likely to have to travel further and are therefore included within the public transport user element of trips; the impact of which is still to be considered. On this basis, the estimation of 67 trips (two-way) associated with education appears to be reasonable.

9.6.4 With regards to distribution, schools within walking distance of the site include;

- Holy Trinity Primary School and Nursery (550m to the south)
- Marshgate Primary School (550m to the south)
- Darell Primary & Nursery School (550m to the north)
- Christ's School and Sixth Form (800m to the south)

9.6.5 It is estimated that 75% of journeys to / from school would be to the south of the site; of which 25% would cross Manor Road via the 0.8m wide pedestrian crossing refuge. The remaining 50% could continue along the western flank of Manor Road before utilising the controlled crossing facility at the junction with Sheen Rd (A305).

9.6.6 The 25% travelling northbound would utilise the zebra crossing facilities around the Manor Circus roundabout junction.

9.7 Shopping (19%)

9.7.1 This journey purpose would account for 60 trips (two-way) daily. It is considered that these activities would predominantly occur outside of typical network peak periods, with a small proportion coinciding with journeys home from work in the PM peak. Given the proximity a size of the adjacent supermarket, it is considered that most 'shopping' trips would be generated from there.

9.7.2 People travelling between the site and the supermarket would utilise the existing 2.0m wide pedestrian crossing refuge which is located immediately adjacent the access to the store.

9.8 Leisure (17%)

9.8.1 This journey purpose would account for 54 trips (two-way) daily. Again, it is considered that these trips would predominantly occur outside of typical network peak periods.

9.8.2 Local 'leisure' destinations are considered to include:

- Allotments to the south of North Sheen Station (200m south)
- North Sheen Recreation Ground (550m north)
- Old Deer Park / Kew Gardens (900m – 1.2km north/west)
- Richmond Park (within 1km)

9.8.3 With regards to distribution it is difficult to determine how popular each of the above locations will be. As such a 50 / 50 split is to be assumed northbound / southbound along Manor Road, with 10% crossing via the 0.8m wide pedestrian crossing refuge on Manor Road to access the allotments.

9.9 Personal Business (9%)

9.9.1 This journey purpose would account for 29 trips (two-way) daily. Again, it is considered that these trips would predominantly occur outside of typical network peak periods.

9.9.2 A number of things associated with 'Personal Business' are provided within the adjacent supermarket, including a pharmacy and banking facilities. The nearest Post Office is located approximately 800m to the south-west of the site along Sheen Road.

9.9.3 For the purpose of distribution for this assessment, and to be robust, all personal business trips are to be assigned to / from the supermarket via the 2.0m wide pedestrian crossing refuge adjacent the supermarket access.

9.10 Commuting (7%)

9.10.1 This journey purpose would account for 22 trips (two-way) daily; a material proportion of which would likely occur during network peak periods.

9.10.2 With regards to distribution, the surrounding area is predominantly residential, with the exception of the supermarket and various schools. The main employment areas are likely to be Richmond (west), Kew (north) and North Sheen (east). For the purpose of this assessment a split of 50/25/25 is to be applied, respectively.

9.11 Other including Business and Other Escort (4%)

9.11.1 These journey purposes would account for 13 trips (two-way) daily. There is unlikely to be a fixed or likely destination associated with these journeys as such the assignment of a distribution is difficult. However, it is considered that these trips would likely occur throughout the day (non-peak) or could be linked with a journey home in the PM peak.

9.12 Accessing Public Transport

9.12.1 As previously noted, those utilising public transport modes are expected to generate an additional pedestrian demand in the order of 188 trips (two-way) in the AM, 145 trips (two-way) in the PM and 1,733 trips (two-way) daily.

9.12.2 Pedestrian movements to / from North Sheen Station are expected to be in the order to 72 trips (two-way) in the AM, 55 trips (two-way) in the PM and 661 trips (two-way) daily. These movements would be required to cross Manor Road using the 0.8m wide pedestrian crossing refuge.

9.12.3 Pedestrian movements to / from Richmond Underground Station (via bus services along Lower Mortlake Road) are expected to be in the order of 86 trips (two-way) in the AM, 67 trips (two-way) in the PM and 797 trips (two-way) daily. Given the location of bus stop 'SB', outbound journeys (to Richmond Underground) would not require anybody to cross a road. Inbound journeys (arriving at bus stop 'SA') would require people to cross Lower Mortlake Road using the zebra crossing facilities at the manor Circus roundabout junction.

9.12.4 With regards to pedestrian movements to / from bus stops (specifically for bus journeys) are expected to be in the order of 30 trips (two-way) in the AM, 23 trips (two-way) in the PM and 275 trips (two-way) daily.

9.12.5 The majority of bus services operate along Lower Mortlake Road via the aforementioned bus stops 'SA' and 'SB', with a relatively even split between north-eastbound and south-westbound journeys. It is also acknowledged that a frequent service (371) is provided via stop 'SU' located within the adjacent supermarket car park. For the purpose of this assessment, 10% of bus journeys are to be assigned via bus stop 'SU' with the remaining 90% via stops 'SA' and 'SB'.

9.13 *Pedestrian Impact Summary*

9.13.1 The total number and distribution of daily pedestrian movements are illustrated within **Appendix Q**, and summarised in the following table:

Links

A = Southbound on Manor Road

B = Crossing Manor Road at 0.8m pedestrian crossing refuge

C = Crossing Manor Road at 2.0m pedestrian crossing refuge

D = Westbound on Lower Mortlake Road

E = Crossing Manor Road via Manor Circus zebra crossing facility

F = Crossing Lower Mortlake Road via Manor Circus zebra crossing facility

LINK ID	A	B	C	D	E	F
Daily	102	683	117	558	24	567

Table 27 – Summary of pedestrian movements

9.14 *Review of Crossing Facilities*

9.14.1 To determine the suitability of the existing crossing facilities, in particular those provided along Manor Road, guidance set out within Local Transport Note 1/95 'The Assessment of Pedestrian Crossings' has been reviewed.

9.14.2 The purpose of a crossing is to provide pedestrians with a passage across a carriageway. Each type of crossing has advantages and disadvantages; the type chosen should be appropriate to the circumstances of the site and the demand and behaviour of road users.

9.14.3 Details relating to the ‘circumstances of the site’ and ‘behaviour of road users’ are provided in the Site Assessment below;

9.15 *Highway Description*

9.15.1 The B353 Manor Road has one pedestrian crossing refuge approximately 20m south of the mid-point of the main pedestrian access to the site, which is approximately 1.6m wide and one 12m north of the secondary pedestrian access to the site which is 2m wide. There are chevrons to accommodate both of these established crossing points and maintain a carriageway width of 3m in both directions for vehicular traffic.

9.15.2 There is a carriageway length of 92m between the two crossing refuges and 24m between the smaller refuge and the railway level crossing, which can act as a pedestrian crossing facility when the barriers are down, and the pedestrian footbridge across the railway line on the eastern side of Manor Road.

9.15.3 LBRuT commented that “Current highway design standards state that there should be a carriageway length of at least 90m between signalised pedestrian crossing facilities, and that these should be considered when there is a gap in vehicular traffic to enable able-bodied pedestrians to cross two lanes of traffic of less than 5 seconds and a gap of less than 12 seconds for other groups of pedestrians.” Firstly, it is noted that the pedestrian crossing facilities on Manor Road are not signal controlled. However, the distance between the two refuges is still greater than 90m.

9.15.4 The road is surfaced, providing adequate skid resistance for vehicles and street lighting is provided in accordance with standards for built-up areas.

9.15.5 Manor Road has a relatively straight alignment and Traffic Regulation Orders (TROs) in the form of double yellow lines are present on both sides of the carriageway preventing on-street parking. As such, adequate visibility is considered to be available between pedestrians and vehicles in relation to the 30mph speed limit of the road.

9.16 Existing Traffic Flows

- 9.16.1 Traffic surveys undertaken along Manor Road in October 2018 identified that two-way vehicle flows were in the order of 623 vehicles in the AM peak period and 741 vehicles in the PM. The recorded HGV percentages were 4.2% in the AM and 2.7% in the PM.
- 9.16.2 As the presence of the pedestrian crossing refuges allows pedestrians to cross the road in two stages, pedestrians must only give-way to one direction of vehicle traffic at a time. Assuming free-flow conditions, the northbound vehicles equate to (358) approximately 1 vehicle every 10 seconds in the AM peak and (442) approximately 1 vehicle every 8 seconds in the PM peak. Meanwhile, southbound vehicles equate to (265) approximately 1 vehicle every 14 seconds in the AM peak and (299) approximately 1 vehicle every 12 seconds in the PM peak.
- 9.16.3 However, consideration must also be given to the presence of the railway level crossing and its impact on the flow of vehicle traffic.
- 9.16.4 As set out in Section 3.3 of this report, surveys of the level crossing identified that in the AM peak hour, the level crossing was activated 9 times resulting in the barrier being down for 37m 28s. In the PM peak hour this was 30m 38s over 11 activations. The typical duration for which the barriers were down was observed to be in the order of 3 to 4 minutes per crossing.
- 9.16.5 Whilst the operation of the crossing often results in vehicles travelling in platoons (with minimal gaps to allow pedestrians to cross), it also creates extended periods of time whereby pedestrians can cross the road without having to give-way to moving vehicles.

9.16.6 As part of the original TA, pedestrian surveys were undertaken identifying crossing movements along Manor Road. The study area and zones are illustrated below:

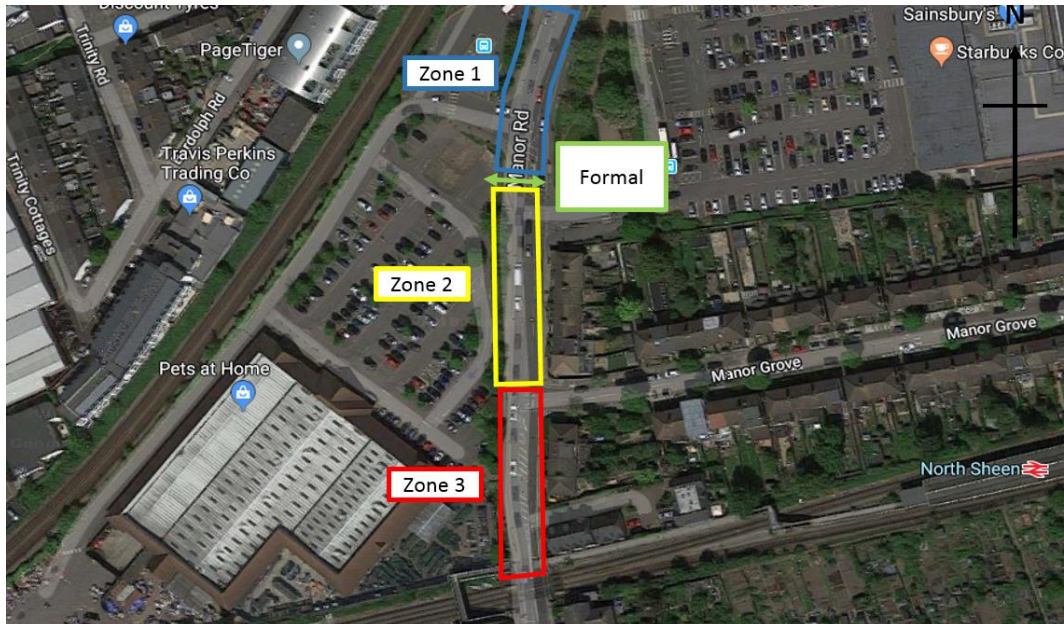


Figure 12 – Pedestrian survey study area

9.16.7 The results of the pedestrian survey are tabulated below:

TIME	Zone 1		Formal Crossing		Zone 2		Zone 3	
	EB	WB	EB	WB	EB	WB	EB	WB
07:30	5	1	1	5	0	4	16	9
07:45	5	1	3	2	1	5	29	30
08:00	0	1	1	2	1	14	17	34
08:15	0	2	0	6	3	1	19	27
08:30	3	2	4	4	2	8	14	61
08:45	2	1	3	1	4	3	20	19
09:00	2	2	3	3	3	3	39	6
09:15	3	3	2	0	2	5	10	1
P/TOT	20	13	17	23	16	43	164	187

Table 28 – AM Pedestrian survey results

TIME	Zone 1		Formal Crossing		Zone 2		Zone 3	
	EB	WB	EB	WB	EB	WB	EB	WB
15:00	5	4	1	4	5	4	17	17
15:15	3	4	17	6	1	3	22	9
15:30	2	2	9	4	5	6	25	2
15:45	1	0	5	2	4	9	21	11
16:00	6	6	5	1	6	2	11	12
16:15	2	3	8	6	1	2	19	9
16:30	6	3	15	5	1	1	16	10
16:45	2	4	5	1	4	4	19	13
17:00	3	1	3	0	4	2	9	5
17:15	2	1	4	3	1	2	12	7
17:30	1	5	1	3	1	3	7	16
17:45	8	2	2	2	5	8	15	10
P/TOT	41	35	75	37	38	46	193	121

Table 29 – PM Pedestrian survey results

- 9.16.8 The survey results identify that during both the AM and PM survey periods, there were significant levels of pedestrian activity. The pedestrian peak hours were 07:45 – 08:45 during which time a total of 302 crossings occurred, and 15:00 – 16:00 during which time a total of 230 crossings occurred. Over the course of the entire AM and PM survey periods, a total of 1,069 crossing movements were recorded.
- 9.16.9 What is also notable from the survey results is that more people were recorded crossing the road not at a crossing, than those recorded using a crossing. This would suggest that pedestrians typically have the opportunity to cross the full carriageway in one stage, rather than requiring refuge.
- 9.16.10 Based on the predicted level of pedestrian movements generated by the development set out earlier in this Chapter, the number of additional crossing movements along Manor Road equates to 800 movements daily.

9.17 Accident History

9.17.1 The Crashmap database has been reviewed to investigate the accident history along Manor Road in proximity to the site, specifically relating to incidents involving pedestrians. The following image shows all pedestrian related incidents that have been recorded in the 21 year period between 01/01/1999 and 31/12/2019.

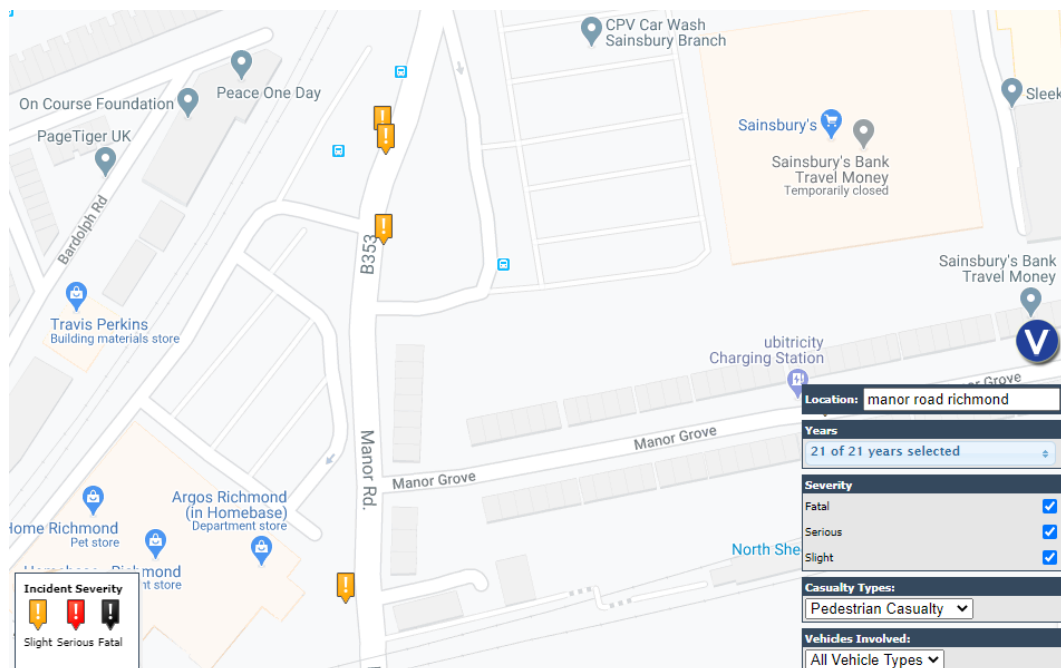


Figure 13 – Pedestrian Accident History

[Crashmap]

9.17.2 Crashmap indicates that just 4 pedestrian related incidents (all slight in severity) have been recorded in the last 20 years. Two events occurred approximately 30m north of the existing site entrance, one event occurred at the 2.0m wide pedestrian crossing refuge and one occurred between the 0.8m wide pedestrian crossing refuge and the level crossing.

9.17.3 It is considered that the number of recorded pedestrian related incidents (4) over a period of 20 years is particularly low, especially given the surveyed volume of pedestrian crossing movements. This would indicate that the existing relationship between pedestrian and vehicle movements is a manageable one and that the existing crossing facilities do not require upgrading. Furthermore, the forecast increase in pedestrian movements as a result of the proposed development is unlikely to have a material adverse effect on road safety.

- 9.17.4 The pedestrian refuge island widths provided on Manor Road (2.0m and 1.6m with hatching to either side) comply with current design standards and are considered satisfactory to accommodate the proposed level of pedestrian activity.

10 Impact of the Development on Local Bus Services

- 10.1 Based on TfL's assessment methodology, it is identified (in Table 13) that the additional demand for buses which could potentially be generated by the proposed development equates to around 116 people in the AM peak period, 90 people in the PM peak period and 1,072 people daily. These figures include all those using a bus to access Richmond Underground Station.
- 10.2 The above estimate is considered robust because (as noted by the Council) there are schools (primary and secondary) and higher education establishments within acceptable walking distance of the site. As such, pupils are unlikely to be dependent upon bus services to access education. Furthermore, the site is located immediately adjacent a supermarket (with Pharmacy); therefore journeys for the purposes of shopping are unlikely to require access to bus services.
- 10.3 It is our understanding that TfL propose to make changes to existing bus services in order to reallocate bus resources to where additional capacity is needed in Richmond, Twickenham and Whitton. The proposed changes involve service numbers 110, 419, 493, H22 and H37, and would come into effect from December 2020.
- 10.4 Further to the above, it should be noted that on the 'Proposed bus service changes in Richmond, Twickenham and Whitton' consultation information webpage TfL state that:
- "Our review of bus services in outer London has revealed that a number of corridors running in Richmond, Twickenham and Whitton are operating with spare capacity. This means that buses are not full. There are also missing links around Whitton and Chertsey Road"*
- "Through routes 190, 391, 419 and R68, 17 buses per hour are provided which are sufficient to meet demand."*
- 10.5 On this basis, it is understood that the existing demand for bus services in the local area is neither at, nor nearing, full capacity.

- 10.6 Given the anticipated increase in demand (116 people in the AM peak period, 90 people in the PM peak period and 1,072 people daily) and the number of available bus services per hour (55 under normal circumstances / 41 after the proposed changes), the number of additional people using each service would likely be modest; in the order of 2 or 3 people. This is considered unlikely to have a material adverse effect on existing bus capacity.
- 10.7 With regards to the peak hour direction of travel for bus trips, we have analysed 2011 Census: Origin / Destination statistics which identifies place of work by method of travel to work. Again, it is acknowledged that bus journeys will be undertaken for other journey purposes as well as 'travel to work'. However, for the purpose of distribution, this dataset is considered to be appropriate.
- 10.8 The figure overleaf depicts the Middle Super Output Area (MSOA) destination of journeys to work by bus from the MSOA of the site and the general direction of travel they would take based on Census data. As can be seen, there is a relatively even distribution between south-westbound and north-eastbound bus journeys to / from work. The split has been calculated as follows:

Direction of travel	Number of Travel to Work Journeys by Bus from 'Richmond 004'	% Split
South-westbound	124	53.7
North-eastbound	107	46.3

Table 30 - Direction of bus travel based on 2011 Census statistics

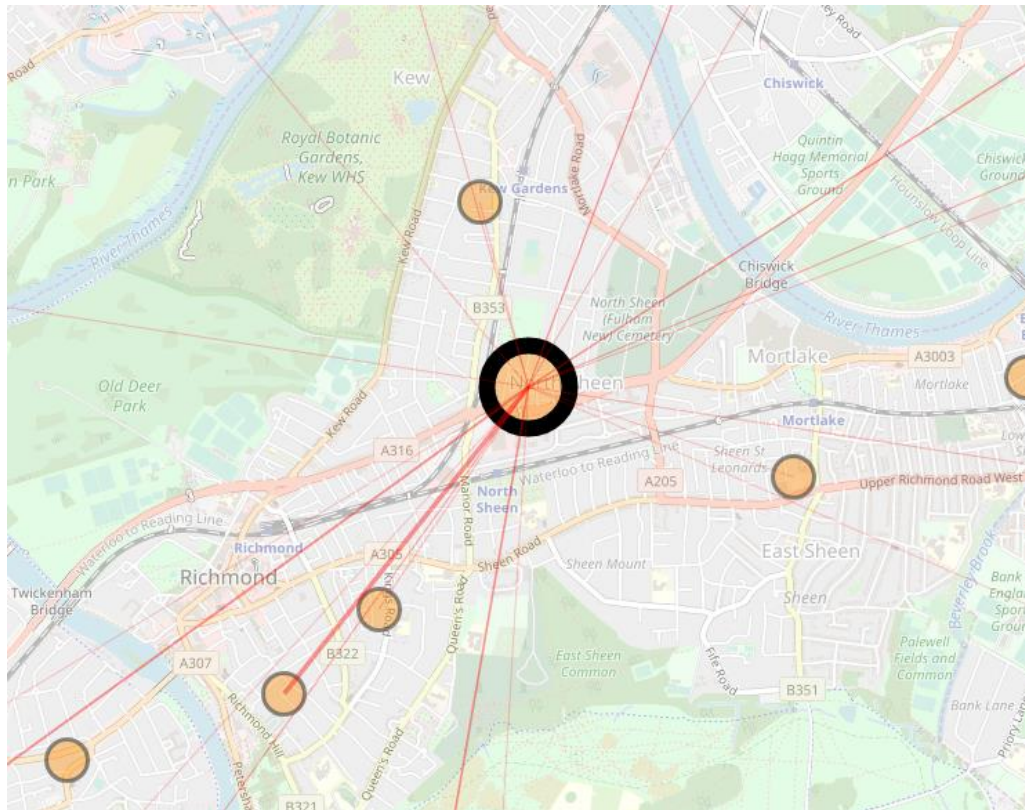


Figure 14 - Travel by bus (Source: <http://commute.datashine.org.uk>)

- 10.9 It should be noted that for the purpose of this assessment; areas generating less than 6 bus trips have been omitted. This is considered to be appropriate as the impact of these low generating areas on distribution would be minimal. The dataset identifying the percentage draw to each area is included at **Appendix R**.
- 10.10 The relatively even distribution of bus journeys to / from work supports the assertion that an excessive demand on a particular bus service is unlikely to occur as a result of the development proposals.

11 Impact of the Development on Local Rail Services

- 11.1 Given its proximity to the site, it is considered the vast majority of rail users generated by the development will access the rail network via North Sheen Station.
- 11.2 During the consideration of application 19/0510/FUL, the 'Original Proposed Development', the matters of potential platform congestion and the availability of space on trains to London, particularly during the AM peak were raised.
- 11.3 In order to be able to consider this in greater detail and to enable a development impact assessment to be undertaken, surveys were undertaken at North Sheen Station on three neutral weekdays; Tuesday 8, Wednesday 9 and Thursday 10 October 2019 between the hours of 07:00-09:30 and 15:00-18:00. Due to camera failure during the 10 October survey Thursday 24 October was surveyed for comparison.
- 11.4 The results of the surveys (detailed in Section 3.6 and attached at Appendix C) revealed that on a typical neutral weekday the morning "peak" occurs between 07:30 and 08:30 when an average of 262 passengers enter the station.
- 11.5 As there is only a single point of entry linking to a central platform it is not known for certain which direction passengers are intending to travel in. However, it is noted that trains from North Sheen towards central London (Waterloo) are available on both west and east bound lines with varying journey times and number of stops.
- 11.6 In this "peak" period 8 trains are scheduled to stop at North Sheen which provide access to London Waterloo and varying station en-route. Some trains provide an option to change at Richmond to catch a faster onward train.
- 11.7 It is, therefore, considered that typically these 8 services would need to be able to accommodate, on average 33 passengers each. Bearing in mind that the South Western Rail trains on this line usually operate between 8 and 10 carriages during peak times this is not considered to be unreasonable.

-
- 11.8 It is identified (in Table 13) that the additional demand for rail services which could potentially be generated by the proposed development equates to around 72 people in the AM peak period, 55 people in the PM peak period and 661 people daily.
- 11.9 Based on the above, it is considered the development could result in an increase of circa 7 – 9 people per service, or an additional 1 person per carriage, during the peak periods.
- 11.10 It is considered that this level of increase would not have a material impact on the capacity of local rail services and in reality the additional demand would not be discernible amongst typical daily fluctuations.
- 11.11 From analysis of the pedestrian survey which recorded activity at the entrance/exit at North Sheen Station it is considered that existing rail passengers can be accommodated on peak hour services. Further analysis of the predicted uplift also indicates that the station and attending trains will be able to accommodate future passenger levels during peak hours.
- 11.12 There have been recent rail improvements including the introduction of new trains which has increased the available capacity of the trains on key routes in south-west London. In addition, Network Rail has also improved/realigned the platforms at Waterloo Station which now means that all 24 platforms are able to be used for South Western train services thus increasing the available services and reliability.

12 Comparison of Proposals

12.1 As requested by the GLA, this chapter of the Revised Transport Assessment provides a comparison of the Original Proposed Development (Feb 2019) and the Amended Proposed Development (July 2020), and their associated assessments.

12.2 The proposed changes are described in detail in the accompanying Design and Access Statement Addendum, however, of particular note is the increase in residential units from 385 within the Original Proposed Development to 453 within the Amended Proposed Development. This increases the total number of affordable units by 39 to a total of 173 affordable homes (40% by habitable room taking account of grant funding, increased from 35% as originally submitted). This increase in units and the higher affordable housing provision has been principally achieved through amendments to the height and internal layout in appropriate locations across the Site.

12.3 From a Traffic and Transportation perspective, a comparison of the salient points is provided below;

	Original Proposed Development (Feb 2019)	Amended Proposed Development (July 2020)
Total Homes	385	453
Private	253	280
Affordable	132	173
Commercial	480.1m ²	495m ²
Accessible Car Parking	14	14
Long Stay Cycle Parking	840	817
Short Stay Cycle Parking	35	37

Table 31 – Summary of Changes

12.4 It should be noted that as part of the Original Proposed Development, 720 of the 840 long stay cycle parking spaces were proposed within a basement storage area. The Amended Proposed Development provides all cycle parking facilities at ground floor level.

12.5 With regards to the comparative impact of the proposals, this can be summarised as follows:

12.6 *Accident history*

12.6.1 The accident history on the local highway network has improved since the original Transport Assessment was undertaken. There have been no emergent accident trends that require further consideration, or that are likely to be exacerbated by the Amended Proposed Development.

12.7 *Multimodal trip generations*

Method of Travel	TfL Methodology		
	Original Proposed Development	Amended Proposed Development	+/-
Underground, Metro, Light Rail, Tram	667	797	+130
Train	553	661	+108
Bus, Minibus or Coach	230	275	+45
Taxi	6	8	+2
Motorcycle, Scooter or Moped	51	61	+10
Driving a Car or Van	59	71	+12
Passenger in a Car or Van	3	3	+0
Bicycle	182	217	+35
On Foot	265	317	+52
Other Method of Travel to Work	24	28	+4
Bus and Underground	897	1072	+175

Table 32 – Daily Trip Generation Comparison (TfL Methodology)

Method of Travel	SA Methodology		
	Original Proposed Development	Amended Proposed Development	+/-
Underground, Metro, Light Rail, Tram	368	443	+75
Train	58	70	+12
Bus, Minibus or Coach	380	458	+78
Taxi	51	62	+11
Motorcycle, Scooter or Moped	5	6	+1
Driving a Car or Van	112	134	+22
Passenger in a Car or Van	21	25	+4
Bicycle	15	18	+3
On Foot	768	926	+158
Other Method of Travel to Work	0	0	+0
Bus and Underground	748	901	+153

Table 33 – Daily Trip Generation Comparison (SA Methodology)

12.8 *Impact on pedestrian network*

12.8.1 The following table provides a comparison of the predicted daily pedestrian flows on various links on the local highway network.

Links

A = Southbound on Manor Road

B = Crossing Manor Road at 0.8m pedestrian crossing refuge

C = Crossing Manor Road at 2.0m pedestrian crossing refuge

D = Westbound on Lower Mortlake Road

E = Crossing Manor Road via Manor Circus zebra crossing facility

F = Crossing Lower Mortlake Road via Manor Circus zebra crossing facility

LINK ID	Original Proposed Development	Amended Proposed Development	+/-
A	85	102	+17
B	571	683	+112
C	98	117	+19
D	467	558	+91
E	20	24	+4
F	474	567	+93

Table 34 – Comparison of impact on pedestrian network

12.8.2 Despite the predicted increase in pedestrian movements on the local highway network, in particular the additional 131 daily pedestrian movements that are likely to utilise the pedestrian crossing refuges on Manor Road; given the absence of any existing pedestrian related accident trends, it is considered that no significant adverse impact on highway safety is likely to occur as a result of the increased demand.

12.9 *Impact on local bus services*

12.9.1 The following table identifies the predicted demand on local bus services generated by the Original Proposed Development and Amended Proposed Development, based on TfL assessment methodology. The predicted demands include those who are likely to use buses in order to access the Underground services.

	Original Proposed Development	Amended Proposed Development	+/-
AM Peak	98	116	+18
PM Peak	76	90	+14
Daily	897	1072	+175

Table 35 – Comparison of impact on local bus services

12.9.2 Further to the proposed changes to bus services, and beyond the current Covid-19 pandemic, it is understood that there will be 41 bus services per hour provided via the stops in proximity to the site.

12.9.3 Based on TfL's recent review of bus services which identified that several local services were operating with spare capacity, and that the existing services were sufficient to meet demand, it is considered that the additional demand for bus services generated by the Amended Proposed Development would have no material adverse impact on the capacity of local services.

12.10 Impact on local rail services

12.10.1 The following table identifies the predicted demand on local rail services generated by the Original Proposed Development and Amended Proposed Development, based on TfL assessment methodology.

	Original Proposed Development	Amended Proposed Development	+/-
AM Peak	60	72	+12
PM Peak	47	55	+8
Daily	553	661	+108

Table 36 – Comparison of impact on local rail services

12.10.2 It is considered that the additional demand generated by the Amended Proposed Development would equate to an additional 1 – 2 passengers per service during peak periods. This modest increase is unlikely to have a significant adverse impact on the capacity of existing rail services.

12.11 Vehicle trip generations

12.11.1 The predicted peak hour vehicle trip generations associated with the residential element of the Original Proposed Development and Amended Proposed Development are summarised below. The predicted commercial vehicle trip generations have not been compared as there is no discernible difference in the proposed GIA's, as such no changes to the traffic flows would occur.

Time Period	Arrivals	Departures	Two-way
AM	12	31	42
PM	21	13	34

Table 37 – Original Proposed Development Peak Hour Vehicle Trips

Time Period	Arrivals	Departures	Two-way
AM	14	36	50
PM	25	15	40

Table 38 – Amended Proposed Development Peak Hour Vehicle Trips

12.11.2 Despite the comparative increase of 8 vehicle trips (two-way) in the AM peak period and 6 vehicle trips (two-way) in the PM peak period, the Amended Proposed Development is still expected to result in a reduction of 17 traffic movements in the AM peak and 51 in the PM peak when compared against the site's existing vehicle trip generation potential. As such, the proposal remains to result in a betterment on the operation of the local highway network.

13 Summary and Conclusions

- 13.1 This Revised Transport Assessment has been prepared by Sanderson Associates (Consulting Engineers) Ltd on behalf of Avanton Richmond Development Ltd ('the Applicant') following further amendments to the proposed scheme for the redevelopment of the Homebase store at 84 Manor Road, North Sheen ('the Site').
- 13.2 The proposed changes necessitate an amendment to the Application's description of development. The revised description of the Amended Proposed Development is as follows:
- "Demolition of existing buildings and structures and comprehensive phased residential-led redevelopment to provide 453 residential units (of which 173 units will be affordable), flexible retail, community and office uses, provision of car and cycle parking, landscaping, public and private open spaces and all other necessary enabling works."*
- 13.3 The residential units are proposed to be a mix of private and affordable units including studios, 1, 2 and 3 bed.
- 13.4 The primary pedestrian and cycle entrance to the site is to be off Manor Road opposite Manor Grove with vehicular access being retained at the existing site access.
- 13.5 The London Plan (2016) notes that; *"All developments in areas of good public transport accessibility (in all parts of London) should aim for significantly less than 1 space per unit"*. Moving forward, the Draft London Plan (2019) proposes that all new developments in areas of PTAL 5 – 6 should be car-free.
- 13.6 Therefore, on-site parking is limited to fourteen (3%) disabled spaces with the capability to increase this to 10% if required. 20% of these spaces will be provided with electric vehicle charging facilities in line with the draft London Plan requirements. Two Electric Car Club vehicles are to be provided within the development. These will be managed by the operators of the scheme who are to be confirmed in due course with the provision being secured via a S106 obligation.

-
- 13.7 Cycle parking is proposed in excess of the standards contained within the Draft London Plan and in order to increase accessibility for residents and in response to comments from statutory consultees the cycle parking has been relocated from the basement to the ground floor of residential blocks.
- 13.8 As part of the proposals, improvements are to be made to the footway along the site frontage including widening and planting of trees and shrubs.
- 13.9 A detailed assessment of the surrounding highway network and public transport infrastructure has been undertaken and it is considered that the site is highly accessible by both active and public transport. As such, residents, staff and visitors to the development will have a choice of sustainable travel options which will reduce the need to travel by car.
- 13.10 From analysis of the pedestrian survey which recorded activity at the entrance/exit at North Sheen Station it is considered that existing rail passengers can be accommodated on peak hour services. Further analysis of the predicted uplift also indicates that the station and attending trains will be able to accommodate future passenger levels during peak hours.
- 13.11 In line with the strategies incorporated into the Draft London Plan 2019 and additional guidance published by TfL a detailed Active Travel Zone assessment has been undertaken. The routes assessed, which had been previously agreed with TfL, generally performed well in relation to the Healthy Streets indicators by providing safe places to cross, being well-maintained, not having an accident history of concern and having public and private areas of vegetation that provide interest and variety. In addition, it is considered that the development will enhance the routes along the site frontage by providing improved footways, landscaping, places to rest and overlooking buildings.
- 13.12 It is therefore considered that, as the development site is situated in a highly accessible area, the virtually car-free proposals are in conformity with the current policies adopted by LBRuT, and also satisfy the future aspirations of the London Plan.

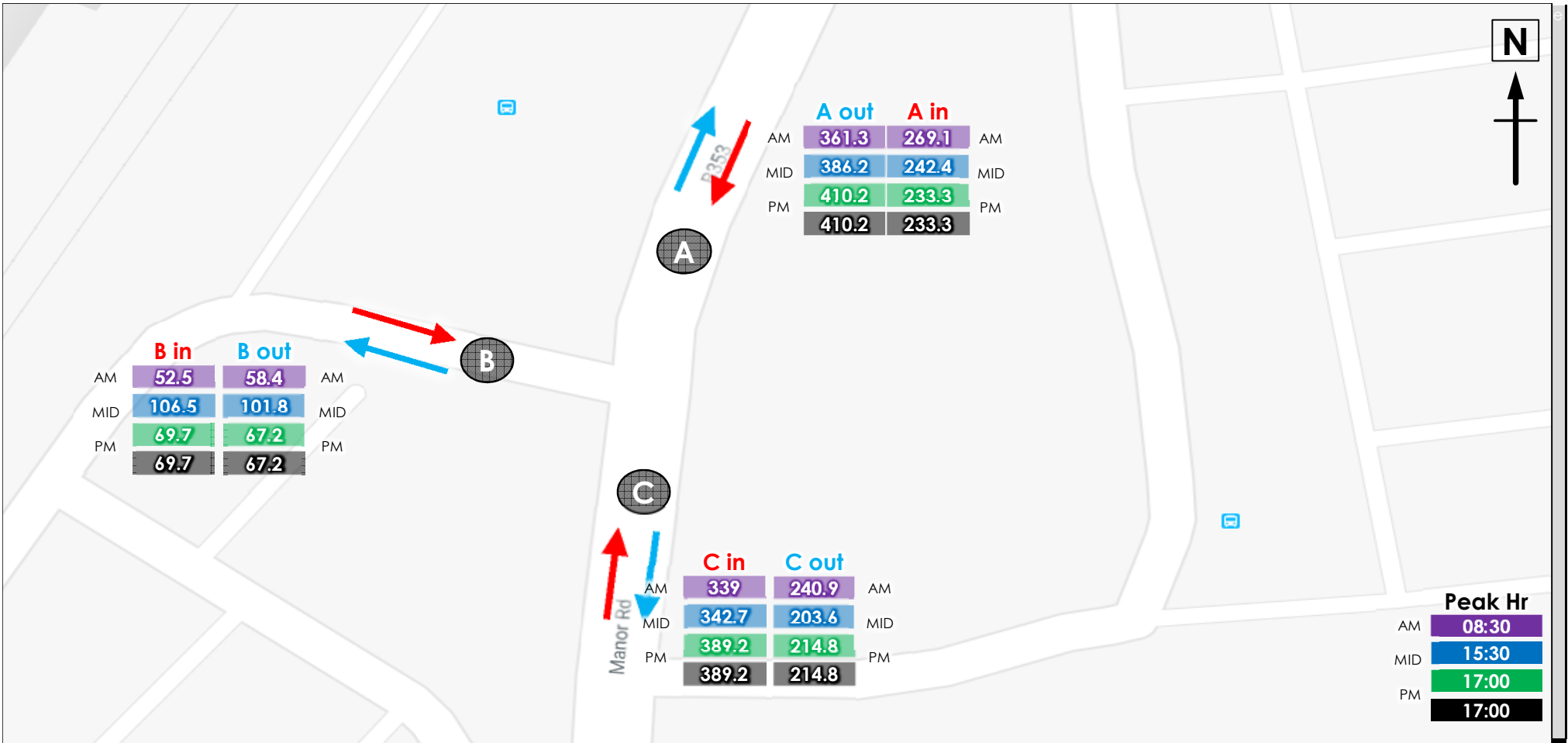
13.13 A number of financial contributions were previously agreed in relation to the Original Proposed Development and it is understood that these will be similarly applicable to the Amended Proposed Development. These are to be secured by a S106 Agreement and include:-

- Manor Circus Improvement Scheme £330,000
- Railway Safety £ 15,000
- Level Crossing Improvements £ 60,000
- Station Access Feasibility £ 30,000
- Controlled Parking Zone Study £ 50,000
- Controlled Parking Zone Amendments £ 50,000 (if deemed necessary)

13.14 During more recent pre-application discussions it has been established that the scheme design costs for Manor Circus have risen. Therefore, TfL have requested a revised financial contribution of £380,000 towards the implementation of the Manor Circus scheme. This revised contribution sum has been agreed by the developer. A further contribution of £40,000.00 has also been agreed towards improvements within North Sheen station.

13.15 It is therefore, considered that the Amended Proposed Development, complies the current policies adopted by LBRuT, and also satisfies the future aspirations of the London Plan. It is further considered that appropriate mitigation is proposed either within the parameters of the development itself or in the form of financial contributions and that there are no transportation related reasons why the development should not be allowed to proceed.

APPENDIX A
Traffic Count Data



Arms: **A B C**

	Site / Location: 1 Manor Road / Retail Park Access	Project No: 9256	Drawing No: 9256 - 01	Drawn By: MB
	Survey Date: 02/10/2018	Project Name: MANOR ROAD, RICHMOND		
	Survey Times: from: 07:30 15:00 to: 09:30 18:00	Drawing Title: Junction Labels and Peak Hr PCU's		



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0
Period I Total:		0	0	0	0	0	0	0	0	0
Period II Total:		0	0	0	0	0	0	0	0	0

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	1	0	1	0	1	0	0	3	4.5
07:45	08:00	3	1	0	0	3	0	0	7	10
08:00	08:15	2	1	0	0	2	0	0	5	7
08:15	08:30	8	1	0	0	3	0	0	12	15
08:30	08:45	4	0	0	0	2	0	0	6	8
08:45	09:00	4	1	0	0	0	0	1	6	5.2
09:00	09:15	6	0	0	0	2	0	0	8	10
09:15	09:30	6	5	0	0	2	0	1	14	15.2
15:00	15:15	10	0	0	0	2	0	0	12	14
15:15	15:30	12	0	0	0	3	1	0	16	18.4
15:30	15:45	15	1	0	0	3	1	1	21	22.6
15:45	16:00	9	0	0	0	3	0	1	13	15.2
16:00	16:15	16	0	0	0	1	0	0	17	18
16:15	16:30	2	2	0	0	4	0	0	8	12
16:30	16:45	9	2	1	0	3	0	0	15	18.5
16:45	17:00	5	1	0	0	0	0	0	6	6
17:00	17:15	7	0	0	0	3	0	0	10	13
17:15	17:30	6	0	0	0	2	0	0	8	10
17:30	17:45	6	0	0	0	1	0	0	7	8
17:45	18:00	8	0	0	0	2	0	0	10	12
P/TOT		139	15	2	0	42	2	4	204	242.6

Period I Total: 34 9 1 0 15 0 2 0 0 61 74.9
 Period II Total: 105 6 1 0 27 2 2 0 0 143 167.7

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	14	3	1	0	9	0	0	27	36.5
07:45	08:45	17	3	0	0	10	0	0	30	40
08:00	09:00	18	3	0	0	7	0	1	29	35.2
08:15	09:15	22	2	0	0	7	0	1	32	38.2
08:30	09:30	20	6	0	0	6	0	2	34	38.4
08:45	09:45	16	6	0	0	4	0	2	28	30.4
09:00	10:00	12	5	0	0	4	0	1	22	25.2
09:15	10:15	6	5	0	0	2	0	1	14	15.2
15:00	16:00	46	1	0	0	11	2	2	62	70.2
15:15	16:15	52	1	0	0	10	2	2	67	74.2
15:30	16:30	42	3	0	0	11	1	2	59	67.8
15:45	16:45	36	4	1	0	11	0	1	53	63.7
16:00	17:00	32	5	1	0	8	0	0	46	54.5
16:15	17:15	23	5	1	0	10	0	0	39	49.5
16:30	17:30	27	3	1	0	8	0	0	39	47.5
16:45	17:45	24	1	0	0	6	0	0	31	37
17:00	18:00	27	0	0	0	8	0	0	35	43
17:15	18:15	20	0	0	0	5	0	0	25	30
17:30	18:30	14	0	0	0	3	0	0	17	20
17:45	18:45	8	0	0	0	2	0	0	10	12
P/TOT		139	15	2	0	42	2	4	204	242.6



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	30	15	4	0	2	0	2	53	55.4		
07:45	08:00	38	12	3	1	0	0	1	55	57		
08:00	08:15	29	6	4	0	1	1	3	44	44		
08:15	08:30	36	8	2	0	0	2	4	52	48.6		
08:30	08:45	56	8	3	0	0	1	3	71	69.5		
08:45	09:00	58	9	2	0	1	1	0	71	72.4		
09:00	09:15	27	7	5	0	0	0	3	42	42.1		
09:15	09:30	34	6	3	0	1	0	1	45	46.7		
15:00	15:15	46	9	1	0	1	3	2	62	60.1		
15:15	15:30	27	6	3	0	1	0	1	38	39.7		
15:30	15:45	39	7	2	0	0	2	3	53	50.4		
15:45	16:00	33	8	0	0	0	0	1	42	41.2		
16:00	16:15	32	5	1	0	1	1	1	41	41.1		
16:15	16:30	34	5	1	0	0	3	1	44	41.9		
16:30	16:45	35	6	1	0	1	1	0	44	44.9		
16:45	17:00	37	6	0	0	0	0	1	44	43.2		
17:00	17:15	41	5	2	0	1	2	1	52	52		
17:15	17:30	39	6	1	0	0	3	4	53	48.5		
17:30	17:45	40	4	0	0	0	1	4	49	45.2		
17:45	18:00	38	5	0	0	0	2	4	49	44.6		
P/TOT		749	143	38	1	10	23	40	0	0	1004	988.5

Period I Total: 308 71 26 1 5 5 17 0 0 433 435.7
 Period II Total: 441 72 12 0 5 18 23 0 0 571 552.8

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	133	41	13	1	3	3	10	204	205		
07:45	08:45	159	34	12	1	1	4	11	222	219.1		
08:00	09:00	179	31	11	0	2	5	10	238	234.5		
08:15	09:15	177	32	12	0	1	4	10	236	232.6		
08:30	09:30	175	30	13	0	2	2	7	229	230.7		
08:45	09:45	119	22	10	0	2	1	4	158	161.2		
09:00	10:00	61	13	8	0	1	0	4	87	88.8		
09:15	10:15	34	6	3	0	1	0	1	45	46.7		
15:00	16:00	145	30	6	0	2	5	7	195	191.4		
15:15	16:15	131	26	6	0	2	3	6	174	172.4		
15:30	16:30	138	25	4	0	1	6	6	180	174.6		
15:45	16:45	134	24	3	0	2	5	3	171	169.1		
16:00	17:00	138	22	3	0	2	5	3	173	171.1		
16:15	17:15	147	22	4	0	2	6	3	184	182		
16:30	17:30	152	23	4	0	2	6	6	193	188.6		
16:45	17:45	157	21	3	0	1	6	10	198	188.9		
17:00	18:00	158	20	3	0	1	8	13	203	190.3		
17:15	18:15	117	15	1	0	0	6	12	151	138.3		
17:30	18:30	78	9	0	0	0	3	8	98	89.8		
17:45	18:45	38	5	0	0	0	2	4	49	44.6		
P/TOT		749	143	38	1	10	23	40	0	0	1004	988.5



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	31	15	5	0	3	0	2	56	59.9		
07:45	08:00	41	13	3	1	3	0	1	62	67		
08:00	08:15	31	7	4	0	3	1	3	49	51		
08:15	08:30	44	9	2	0	3	2	4	64	63.6		
08:30	08:45	60	8	3	0	2	1	3	77	77.5		
08:45	09:00	62	10	2	0	1	1	1	77	77.6		
09:00	09:15	33	7	5	0	2	0	3	50	52.1		
09:15	09:30	40	11	3	0	3	0	2	59	61.9		
15:00	15:15	56	9	1	0	3	3	2	74	74.1		
15:15	15:30	39	6	3	0	4	1	1	54	58.1		
15:30	15:45	54	8	2	0	3	3	4	74	73		
15:45	16:00	42	8	0	0	3	0	2	55	56.4		
16:00	16:15	48	5	1	0	2	1	1	58	59.1		
16:15	16:30	36	7	1	0	4	3	1	52	53.9		
16:30	16:45	44	8	2	0	4	1	0	59	63.4		
16:45	17:00	42	7	0	0	0	0	1	50	49.2		
17:00	17:15	48	5	2	0	4	2	1	62	65		
17:15	17:30	45	6	1	0	2	3	4	61	58.5		
17:30	17:45	46	4	0	0	1	1	4	56	53.2		
17:45	18:00	46	5	0	0	2	2	4	59	56.6		
P/TOT		888	158	40	1	52	25	44	0	0	1208	1231

Period I Total: 342 80 27 1 20 5 19 0 0 494 510.6
 Period II Total: 546 78 13 0 32 20 25 0 0 714 720.5

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	147	44	14	1	12	3	10	231	241.5		
07:45	08:45	176	37	12	1	11	4	11	252	259.1		
08:00	09:00	197	34	11	0	9	5	11	267	269.7		
08:15	09:15	199	34	12	0	8	4	11	268	270.8		
08:30	09:30	195	36	13	0	8	2	9	263	269.1		
08:45	09:45	135	28	10	0	6	1	6	186	191.6		
09:00	10:00	73	18	8	0	5	0	5	109	114		
09:15	10:15	40	11	3	0	3	0	2	59	61.9		
15:00	16:00	191	31	6	0	13	7	9	257	261.6		
15:15	16:15	183	27	6	0	12	5	8	241	246.6		
15:30	16:30	180	28	4	0	12	7	8	239	242.4		
15:45	16:45	170	28	4	0	13	5	4	224	232.8		
16:00	17:00	170	27	4	0	10	5	3	219	225.6		
16:15	17:15	170	27	5	0	12	6	3	223	231.5		
16:30	17:30	179	26	5	0	10	6	6	232	236.1		
16:45	17:45	181	22	3	0	7	6	10	229	225.9		
17:00	18:00	185	20	3	0	9	8	13	238	233.3		
17:15	18:15	137	15	1	0	5	6	12	176	168.3		
17:30	18:30	92	9	0	0	3	3	8	115	109.8		
17:45	18:45	46	5	0	0	2	2	4	59	56.6		
P/TOT		888	158	40	1	52	25	44	0	0	1208	1231



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: all
 to arm: A

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	79	13	4	0	7	4	2	109	114		
07:45	08:00	48	8	1	0	8	1	2	68	74.3		
08:00	08:15	63	11	1	1	3	5	5	89	86.8		
08:15	08:30	63	13	2	1	4	1	4	88	90.5		
08:30	08:45	64	11	1	0	3	4	3	86	84.7		
08:45	09:00	80	13	1	1	1	1	3	100	99.8		
09:00	09:15	65	6	2	0	2	1	1	77	78.6		
09:15	09:30	74	12	1	1	4	1	0	93	98.2		
15:00	15:15	64	8	3	0	3	1	4	83	83.7		
15:15	15:30	47	13	5	1	6	1	1	74	82.4		
15:30	15:45	87	11	1	2	4	3	2	110	113.7		
15:45	16:00	53	12	3	0	5	1	0	74	79.9		
16:00	16:15	70	12	3	1	4	1	1	92	97.4		
16:15	16:30	70	13	1	1	4	0	2	91	95.2		
16:30	16:45	69	10	3	0	5	1	4	92	94.7		
16:45	17:00	61	14	1	0	3	1	1	81	83.1		
17:00	17:15	62	19	0	0	6	1	3	91	94		
17:15	17:30	88	16	1	0	3	1	4	113	112.7		
17:30	17:45	81	9	5	0	3	4	2	104	105.5		
17:45	18:00	81	12	0	0	2	2	1	98	98		
P/TOT		1369	236	39	9	80	35	45	0	0	1813	1867

Period I Total: 536 87 13 4 32 18 20 0 0 710 726.9
 Period II Total: 833 149 26 5 48 17 25 0 0 1103 1140

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	253	45	8	2	22	11	13	354	365.6		
07:45	08:45	238	43	5	2	18	11	14	331	336.3		
08:00	09:00	270	48	5	3	11	11	15	363	361.8		
08:15	09:15	272	43	6	2	10	7	11	351	353.6		
08:30	09:30	283	42	5	2	10	7	7	356	361.3		
08:45	09:45	219	31	4	2	7	3	4	270	276.6		
09:00	10:00	139	18	3	1	6	2	1	170	176.8		
09:15	10:15	74	12	1	1	4	1	0	93	98.2		
15:00	16:00	251	44	12	3	18	6	7	341	359.7		
15:15	16:15	257	48	12	4	19	6	4	350	373.4		
15:30	16:30	280	48	8	4	17	5	5	367	386.2		
15:45	16:45	262	47	10	2	18	3	7	349	367.2		
16:00	17:00	270	49	8	2	16	3	8	356	370.4		
16:15	17:15	262	56	5	1	18	3	10	355	367		
16:30	17:30	280	59	5	0	17	4	12	377	384.5		
16:45	17:45	292	58	7	0	15	7	10	389	395.3		
17:00	18:00	312	56	6	0	14	8	10	406	410.2		
17:15	18:15	250	37	6	0	8	7	7	315	316.2		
17:30	18:30	162	21	5	0	5	6	3	202	203.5		
17:45	18:45	81	12	0	0	2	2	1	98	98		
P/TOT		1369	236	39	9	80	35	45	0	0	1813	1867



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS:

from arm: **B**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	2	0	1	0	2	0	0	5	7.5		
07:45	08:00	1	0	0	0	3	0	0	4	7		
08:00	08:15	2	1	0	0	2	0	0	5	7		
08:15	08:30	5	3	0	0	2	0	0	10	12		
08:30	08:45	3	0	0	0	3	0	0	6	9		
08:45	09:00	2	0	0	0	1	0	0	3	4		
09:00	09:15	4	2	0	0	2	0	0	8	10		
09:15	09:30	11	2	0	1	2	0	0	16	19.3		
15:00	15:15	9	0	0	0	2	0	0	11	13		
15:15	15:30	8	2	0	0	3	0	0	13	16		
15:30	15:45	15	0	0	0	3	2	1	21	22		
15:45	16:00	7	1	0	0	2	0	0	10	12		
16:00	16:15	17	1	1	0	3	0	0	22	25.5		
16:15	16:30	13	1	0	0	2	0	0	16	18		
16:30	16:45	16	0	0	0	4	0	1	21	24.2		
16:45	17:00	7	1	0	0	1	0	0	9	10		
17:00	17:15	6	1	0	0	3	0	1	11	13.2		
17:15	17:30	8	1	0	0	2	0	0	11	13		
17:30	17:45	6	1	0	0	2	0	0	9	11		
17:45	18:00	8	0	0	0	0	0	0	8	8		
P/TOT		150	17	2	1	44	2	3	0	0	219	261.7

Period I Total: 30 8 1 1 17 0 0 0 0 57 75.8
 Period II Total: 120 9 1 0 27 2 3 0 0 162 185.9

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	10	4	1	0	9	0	0	24	33.5		
07:45	08:45	11	4	0	0	10	0	0	25	35		
08:00	09:00	12	4	0	0	8	0	0	24	32		
08:15	09:15	14	5	0	0	8	0	0	27	35		
08:30	09:30	20	4	0	1	8	0	0	33	42.3		
08:45	09:45	17	4	0	1	5	0	0	27	33.3		
09:00	10:00	15	4	0	1	4	0	0	24	29.3		
09:15	10:15	11	2	0	1	2	0	0	16	19.3		
15:00	16:00	39	3	0	0	10	2	1	55	63		
15:15	16:15	47	4	1	0	11	2	1	66	75.5		
15:30	16:30	52	3	1	0	10	2	1	69	77.5		
15:45	16:45	53	3	1	0	11	0	1	69	79.7		
16:00	17:00	53	3	1	0	10	0	1	68	77.7		
16:15	17:15	42	3	0	0	10	0	2	57	65.4		
16:30	17:30	37	3	0	0	10	0	2	52	60.4		
16:45	17:45	27	4	0	0	8	0	1	40	47.2		
17:00	18:00	28	3	0	0	7	0	1	39	45.2		
17:15	18:15	22	2	0	0	4	0	0	28	32		
17:30	18:30	14	1	0	0	2	0	0	17	19		
17:45	18:45	8	0	0	0	0	0	0	8	8		
P/TOT		150	17	2	1	44	2	3	0	0	219	261.7



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

per quarter of an hour

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0
Period I Total:		0	0	0	0	0	0	0	0	0
Period II Total:		0	0	0	0	0	0	0	0	0

per hour

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	0	0	0	0	0	0	0	0	0		
07:45	08:00	1	0	0	0	0	0	0	1	1		
08:00	08:15	0	0	0	0	0	0	0	0	0		
08:15	08:30	2	0	0	0	0	0	0	2	2		
08:30	08:45	0	0	0	0	0	0	0	0	0		
08:45	09:00	1	0	0	0	0	0	0	1	1.2		
09:00	09:15	3	0	0	0	0	0	0	3	3		
09:15	09:30	4	0	0	0	1	0	0	5	6		
15:00	15:15	6	1	0	0	0	0	0	7	7		
15:15	15:30	9	1	0	0	0	0	0	10	10		
15:30	15:45	7	1	0	0	0	0	0	8	8		
15:45	16:00	8	0	0	0	0	0	0	8	8		
16:00	16:15	6	0	0	0	0	0	0	6	6		
16:15	16:30	6	1	0	0	0	0	0	7	7		
16:30	16:45	7	2	0	0	0	0	0	9	9		
16:45	17:00	6	1	0	0	0	0	0	7	7		
17:00	17:15	7	1	0	0	0	0	0	8	8		
17:15	17:30	6	0	1	0	0	0	0	7	7.5		
17:30	17:45	4	0	0	0	0	0	0	4	4		
17:45	18:00	5	0	0	0	0	0	0	5	5		
P/TOT		88	8	1	0	1	0	1	0	0	99	99.7

Period I Total: 11 0 0 0 1 0 1 0 0 13 13.2
 Period II Total: 77 8 1 0 0 0 0 0 0 86 86.5

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	3	0	0	0	0	0	0	3	3		
07:45	08:45	3	0	0	0	0	0	0	3	3		
08:00	09:00	3	0	0	0	0	0	1	4	3.2		
08:15	09:15	6	0	0	0	0	0	1	7	6.2		
08:30	09:30	8	0	0	0	1	0	1	10	10.2		
08:45	09:45	8	0	0	0	1	0	1	10	10.2		
09:00	10:00	7	0	0	0	1	0	0	8	9		
09:15	10:15	4	0	0	0	1	0	0	5	6		
15:00	16:00	30	3	0	0	0	0	0	33	33		
15:15	16:15	30	2	0	0	0	0	0	32	32		
15:30	16:30	27	2	0	0	0	0	0	29	29		
15:45	16:45	27	3	0	0	0	0	0	30	30		
16:00	17:00	25	4	0	0	0	0	0	29	29		
16:15	17:15	26	5	0	0	0	0	0	31	31		
16:30	17:30	26	4	1	0	0	0	0	31	31.5		
16:45	17:45	23	2	1	0	0	0	0	26	26.5		
17:00	18:00	22	1	1	0	0	0	0	24	24.5		
17:15	18:15	15	0	1	0	0	0	0	16	16.5		
17:30	18:30	9	0	0	0	0	0	0	9	9		
17:45	18:45	5	0	0	0	0	0	0	5	5		
P/TOT		88	8	1	0	1	0	1	0	0	99	99.7



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	2	0	1	0	2	0	0	5	7.5		
07:45	08:00	2	0	0	0	3	0	0	5	8		
08:00	08:15	2	1	0	0	2	0	0	5	7		
08:15	08:30	7	3	0	0	2	0	0	12	14		
08:30	08:45	3	0	0	0	3	0	0	6	9		
08:45	09:00	3	0	0	0	1	0	1	5	5.2		
09:00	09:15	7	2	0	0	2	0	0	11	13		
09:15	09:30	15	2	0	1	3	0	0	21	25.3		
15:00	15:15	15	1	0	0	2	0	0	18	20		
15:15	15:30	17	3	0	0	3	0	0	23	26		
15:30	15:45	22	1	0	0	3	2	1	29	30		
15:45	16:00	15	1	0	0	2	0	0	18	20		
16:00	16:15	23	1	1	0	3	0	0	28	31.5		
16:15	16:30	19	2	0	0	2	0	0	23	25		
16:30	16:45	23	2	0	0	4	0	1	30	33.2		
16:45	17:00	13	2	0	0	1	0	0	16	17		
17:00	17:15	13	2	0	0	3	0	1	19	21.2		
17:15	17:30	14	1	1	0	2	0	0	18	20.5		
17:30	17:45	10	1	0	0	2	0	0	13	15		
17:45	18:00	13	0	0	0	0	0	0	13	13		
P/TOT		238	25	3	1	45	2	4	0	0	318	361.4

Period I Total: 41 8 1 1 18 0 1 0 0 70 89
 Period II Total: 197 17 2 0 27 2 3 0 0 248 272.4

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	13	4	1	0	9	0	0	27	36.5		
07:45	08:45	14	4	0	0	10	0	0	28	38		
08:00	09:00	15	4	0	0	8	0	1	28	35.2		
08:15	09:15	20	5	0	0	8	0	1	34	41.2		
08:30	09:30	28	4	0	1	9	0	1	43	52.5		
08:45	09:45	25	4	0	1	6	0	1	37	43.5		
09:00	10:00	22	4	0	1	5	0	0	32	38.3		
09:15	10:15	15	2	0	1	3	0	0	21	25.3		
15:00	16:00	69	6	0	0	10	2	1	88	96		
15:15	16:15	77	6	1	0	11	2	1	98	107.5		
15:30	16:30	79	5	1	0	10	2	1	98	106.5		
15:45	16:45	80	6	1	0	11	0	1	99	109.7		
16:00	17:00	78	7	1	0	10	0	1	97	106.7		
16:15	17:15	68	8	0	0	10	0	2	88	96.4		
16:30	17:30	63	7	1	0	10	0	2	83	91.9		
16:45	17:45	50	6	1	0	8	0	1	66	73.7		
17:00	18:00	50	4	1	0	7	0	1	63	69.7		
17:15	18:15	37	2	1	0	4	0	0	44	48.5		
17:30	18:30	23	1	0	0	2	0	0	26	28		
17:45	18:45	13	0	0	0	0	0	0	13	13		
P/TOT		238	25	3	1	45	2	4	0	0	318	361.4



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	1	0	1	0	1	0	0	3	4.5		
07:45	08:00	4	1	0	0	3	0	0	8	11		
08:00	08:15	2	1	0	0	2	0	0	5	7		
08:15	08:30	9	1	0	0	3	0	0	13	16		
08:30	08:45	5	0	0	0	2	0	0	7	9		
08:45	09:00	8	2	0	0	0	0	1	11	10.2		
09:00	09:15	13	0	0	0	2	0	0	15	17		
09:15	09:30	11	5	0	0	3	0	1	20	22.2		
15:00	15:15	19	0	0	0	2	0	0	21	23		
15:15	15:30	18	1	0	0	3	1	0	23	25.4		
15:30	15:45	17	2	0	0	3	1	1	24	25.6		
15:45	16:00	16	0	0	0	3	0	1	20	22.2		
16:00	16:15	29	1	0	0	1	0	0	31	32		
16:15	16:30	11	3	0	0	4	0	0	18	22		
16:30	16:45	15	2	1	0	3	0	1	22	24.7		
16:45	17:00	13	2	0	0	0	0	0	15	15		
17:00	17:15	11	0	0	0	3	0	0	14	17		
17:15	17:30	15	1	0	0	2	0	0	18	20		
17:30	17:45	12	0	0	0	1	0	0	13	14		
17:45	18:00	12	0	0	0	2	0	1	15	16.2		
P/TOT		241	22	2	0	43	2	6	0	0	316	354

Period I Total: 53 10 1 0 16 0 2 0 0 **82** 96.9
 Period II Total: 188 12 1 0 27 2 4 0 0 **234** 257.1

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	16	3	1	0	9	0	0	29	38.5		
07:45	08:45	20	3	0	0	10	0	0	33	43		
08:00	09:00	24	4	0	0	7	0	1	36	42.2		
08:15	09:15	35	3	0	0	7	0	1	46	52.2		
08:30	09:30	37	7	0	0	7	0	2	53	58.4		
08:45	09:45	32	7	0	0	5	0	2	46	49.4		
09:00	10:00	24	5	0	0	5	0	1	35	39.2		
09:15	10:15	11	5	0	0	3	0	1	20	22.2		
15:00	16:00	70	3	0	0	11	2	2	88	96.2		
15:15	16:15	80	4	0	0	10	2	2	98	105.2		
15:30	16:30	73	6	0	0	11	1	2	93	101.8		
15:45	16:45	71	6	1	0	11	0	2	91	100.9		
16:00	17:00	68	8	1	0	8	0	1	86	93.7		
16:15	17:15	50	7	1	0	10	0	1	69	78.7		
16:30	17:30	54	5	1	0	8	0	1	69	76.7		
16:45	17:45	51	3	0	0	6	0	0	60	66		
17:00	18:00	50	1	0	0	8	0	1	60	67.2		
17:15	18:15	39	1	0	0	5	0	1	46	50.2		
17:30	18:30	24	0	0	0	3	0	1	28	30.2		
17:45	18:45	12	0	0	0	2	0	1	15	16.2		
P/TOT		241	22	2	0	43	2	6	0	0	316	354



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS:

from arm: **C**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	77	13	3	0	5	4	2	104	106.5		
07:45	08:00	47	8	1	0	5	1	2	64	67.3		
08:00	08:15	61	10	1	1	1	5	5	84	79.8		
08:15	08:30	58	10	2	1	2	1	4	78	78.5		
08:30	08:45	61	11	1	0	0	4	3	80	75.7		
08:45	09:00	78	13	1	1	0	1	3	97	95.8		
09:00	09:15	61	4	2	0	0	1	1	69	68.6		
09:15	09:30	63	10	1	0	2	1	0	77	78.9		
15:00	15:15	55	8	3	0	1	1	4	72	70.7		
15:15	15:30	39	11	5	1	3	1	1	61	66.4		
15:30	15:45	72	11	1	2	1	1	1	89	91.7		
15:45	16:00	46	11	3	0	3	1	0	64	67.9		
16:00	16:15	53	11	2	1	1	1	1	70	71.9		
16:15	16:30	57	12	1	1	2	0	2	75	77.2		
16:30	16:45	53	10	3	0	1	1	3	71	70.5		
16:45	17:00	54	13	1	0	2	1	1	72	73.1		
17:00	17:15	56	18	0	0	3	1	2	80	80.8		
17:15	17:30	80	15	1	0	1	1	4	102	99.7		
17:30	17:45	75	8	5	0	1	4	2	95	94.5		
17:45	18:00	73	12	0	0	2	2	1	90	90		
P/TOT		1219	219	37	8	36	33	42	0	0	1594	1606

Period I Total: 506 79 12 3 15 18 20 0 0 653 651.1
 Period II Total: 713 140 25 5 21 15 22 0 0 941 954.4

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	243	41	7	2	13	11	13	330	332.1		
07:45	08:45	227	39	5	2	8	11	14	306	301.3		
08:00	09:00	258	44	5	3	3	11	15	339	329.8		
08:15	09:15	258	38	6	2	2	7	11	324	318.6		
08:30	09:30	263	38	5	1	2	7	7	323	319		
08:45	09:45	202	27	4	1	2	3	4	243	243.3		
09:00	10:00	124	14	3	0	2	2	1	146	147.5		
09:15	10:15	63	10	1	0	2	1	0	77	78.9		
15:00	16:00	212	41	12	3	8	4	6	286	296.7		
15:15	16:15	210	44	11	4	8	4	3	284	297.9		
15:30	16:30	228	45	7	4	7	3	4	298	308.7		
15:45	16:45	209	44	9	2	7	3	6	280	287.5		
16:00	17:00	217	46	7	2	6	3	7	288	292.7		
16:15	17:15	220	53	5	1	8	3	8	298	301.6		
16:30	17:30	243	56	5	0	7	4	10	325	324.1		
16:45	17:45	265	54	7	0	7	7	9	349	348.1		
17:00	18:00	284	53	6	0	7	8	9	367	365		
17:15	18:15	228	35	6	0	4	7	7	287	284.2		
17:30	18:30	148	20	5	0	3	6	3	185	184.5		
17:45	18:45	73	12	0	0	2	2	1	90	90		
P/TOT		1219	219	37	8	36	33	42	0	0	1594	1606



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	1	0	0	0	0	0	0	1	1
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	1	0	0	0	0	0	0	1	1
08:30	08:45	1	0	0	0	0	0	0	1	1
08:45	09:00	4	1	0	0	0	0	0	5	5
09:00	09:15	7	0	0	0	0	0	0	7	7
09:15	09:30	5	0	0	0	1	0	0	6	7
15:00	15:15	9	0	0	0	0	0	0	9	9
15:15	15:30	6	1	0	0	0	0	0	7	7
15:30	15:45	2	1	0	0	0	0	0	3	3
15:45	16:00	7	0	0	0	0	0	0	7	7
16:00	16:15	13	1	0	0	0	0	0	14	14
16:15	16:30	9	1	0	0	0	0	0	10	10
16:30	16:45	6	0	0	0	0	0	1	7	6.2
16:45	17:00	8	1	0	0	0	0	0	9	9
17:00	17:15	4	0	0	0	0	0	0	4	4
17:15	17:30	9	1	0	0	0	0	0	10	10
17:30	17:45	6	0	0	0	0	0	0	6	6
17:45	18:00	4	0	0	0	0	0	1	5	4.2
P/TOT		102	7	0	0	1	0	2	112	111.4

Period I Total: 19 1 0 0 1 0 0 0 0 21 22
 Period II Total: 83 6 0 0 0 0 2 0 0 91 89.4

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	2	0	0	0	0	0	0	2	2
07:45	08:45	3	0	0	0	0	0	0	3	3
08:00	09:00	6	1	0	0	0	0	0	7	7
08:15	09:15	13	1	0	0	0	0	0	14	14
08:30	09:30	17	1	0	0	1	0	0	19	20
08:45	09:45	16	1	0	0	1	0	0	18	19
09:00	10:00	12	0	0	0	1	0	0	13	14
09:15	10:15	5	0	0	0	1	0	0	6	7
15:00	16:00	24	2	0	0	0	0	0	26	26
15:15	16:15	28	3	0	0	0	0	0	31	31
15:30	16:30	31	3	0	0	0	0	0	34	34
15:45	16:45	35	2	0	0	0	0	1	38	37.2
16:00	17:00	36	3	0	0	0	0	1	40	39.2
16:15	17:15	27	2	0	0	0	0	1	30	29.2
16:30	17:30	27	2	0	0	0	0	1	30	29.2
16:45	17:45	27	2	0	0	0	0	0	29	29
17:00	18:00	23	1	0	0	0	0	1	25	24.2
17:15	18:15	19	1	0	0	0	0	1	21	20.2
17:30	18:30	10	0	0	0	0	0	1	11	10.2
17:45	18:45	4	0	0	0	0	0	1	5	4.2
P/TOT		102	7	0	0	1	0	2	112	111.4



SITE: **1**
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

per quarter of an hour

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0

Period I Total: 0 0 0 0 0 0 0 0 0 0 0
 Period II Total: 0 0 0 0 0 0 0 0 0 0 0

per hour

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	77	13	3	0	5	4	2	104	106.5		
07:45	08:00	48	8	1	0	5	1	2	65	68.3		
08:00	08:15	61	10	1	1	1	5	5	84	79.8		
08:15	08:30	59	10	2	1	2	1	4	79	79.5		
08:30	08:45	62	11	1	0	0	4	3	81	76.7		
08:45	09:00	82	14	1	1	0	1	3	102	100.8		
09:00	09:15	68	4	2	0	0	1	1	76	75.6		
09:15	09:30	68	10	1	0	3	1	0	83	85.9		
15:00	15:15	64	8	3	0	1	1	4	81	79.7		
15:15	15:30	45	12	5	1	3	1	1	68	73.4		
15:30	15:45	74	12	1	2	1	1	1	92	94.7		
15:45	16:00	53	11	3	0	3	1	0	71	74.9		
16:00	16:15	66	12	2	1	1	1	1	84	85.9		
16:15	16:30	66	13	1	1	2	0	2	85	87.2		
16:30	16:45	59	10	3	0	1	1	4	78	76.7		
16:45	17:00	62	14	1	0	2	1	1	81	82.1		
17:00	17:15	60	18	0	0	3	1	2	84	84.8		
17:15	17:30	89	16	1	0	1	1	4	112	109.7		
17:30	17:45	81	8	5	0	1	4	2	101	100.5		
17:45	18:00	77	12	0	0	2	2	2	95	94.2		
P/TOT		1321	226	37	8	37	33	44	0	0	1706	1717

Period I Total: 525 80 12 3 16 18 20 0 0 674 673.1
 Period II Total: 796 146 25 5 21 15 24 0 0 1032 1044

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	245	41	7	2	13	11	13	332	334.1		
07:45	08:45	230	39	5	2	8	11	14	309	304.3		
08:00	09:00	264	45	5	3	3	11	15	346	336.8		
08:15	09:15	271	39	6	2	2	7	11	338	332.6		
08:30	09:30	280	39	5	1	3	7	7	342	339		
08:45	09:45	218	28	4	1	3	3	4	261	262.3		
09:00	10:00	136	14	3	0	3	2	1	159	161.5		
09:15	10:15	68	10	1	0	3	1	0	83	85.9		
15:00	16:00	236	43	12	3	8	4	6	312	322.7		
15:15	16:15	238	47	11	4	8	4	3	315	328.9		
15:30	16:30	259	48	7	4	7	3	4	332	342.7		
15:45	16:45	244	46	9	2	7	3	7	318	324.7		
16:00	17:00	253	49	7	2	6	3	8	328	331.9		
16:15	17:15	247	55	5	1	8	3	9	328	330.8		
16:30	17:30	270	58	5	0	7	4	11	355	353.3		
16:45	17:45	292	56	7	0	7	7	9	378	377.1		
17:00	18:00	307	54	6	0	7	8	10	392	389.2		
17:15	18:15	247	36	6	0	4	7	8	308	304.4		
17:30	18:30	158	20	5	0	3	6	4	196	194.7		
17:45	18:45	77	12	0	0	2	2	2	95	94.2		
P/TOT		1321	226	37	8	37	33	44	0	0	1706	1717



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	30	15	4	0	2	0	2	53	55.4		
07:45	08:00	39	12	3	1	0	0	1	56	58		
08:00	08:15	29	6	4	0	1	1	3	44	44		
08:15	08:30	38	8	2	0	0	2	4	54	50.6		
08:30	08:45	56	8	3	0	0	1	3	71	69.5		
08:45	09:00	59	9	2	0	1	1	1	73	73.6		
09:00	09:15	30	7	5	0	0	0	3	45	45.1		
09:15	09:30	38	6	3	0	2	0	1	50	52.7		
15:00	15:15	52	10	1	0	1	3	2	69	67.1		
15:15	15:30	36	7	3	0	1	0	1	48	49.7		
15:30	15:45	46	8	2	0	0	2	3	61	58.4		
15:45	16:00	41	8	0	0	0	0	1	50	49.2		
16:00	16:15	38	5	1	0	1	1	1	47	47.1		
16:15	16:30	40	6	1	0	0	3	1	51	48.9		
16:30	16:45	42	8	1	0	1	1	0	53	53.9		
16:45	17:00	43	7	0	0	0	0	1	51	50.2		
17:00	17:15	48	6	2	0	1	2	1	60	60		
17:15	17:30	45	6	2	0	0	3	4	60	56		
17:30	17:45	44	4	0	0	0	1	4	53	49.2		
17:45	18:00	43	5	0	0	0	2	4	54	49.6		
P/TOT		837	151	39	1	11	23	41	0	0	1103	1088

Period I Total: 319 71 26 1 6 5 18 0 0 446 448.9
 Period II Total: 518 80 13 0 5 18 23 0 0 657 639.3

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	136	41	13	1	3	3	10	207	208		
07:45	08:45	162	34	12	1	1	4	11	225	222.1		
08:00	09:00	182	31	11	0	2	5	11	242	237.7		
08:15	09:15	183	32	12	0	1	4	11	243	238.8		
08:30	09:30	183	30	13	0	3	2	8	239	240.9		
08:45	09:45	127	22	10	0	3	1	5	168	171.4		
09:00	10:00	68	13	8	0	2	0	4	95	97.8		
09:15	10:15	38	6	3	0	2	0	1	50	52.7		
15:00	16:00	175	33	6	0	2	5	7	228	224.4		
15:15	16:15	161	28	6	0	2	3	6	206	204.4		
15:30	16:30	165	27	4	0	1	6	6	209	203.6		
15:45	16:45	161	27	3	0	2	5	3	201	199.1		
16:00	17:00	163	26	3	0	2	5	3	202	200.1		
16:15	17:15	173	27	4	0	2	6	3	215	213		
16:30	17:30	178	27	5	0	2	6	6	224	220.1		
16:45	17:45	180	23	4	0	1	6	10	224	215.4		
17:00	18:00	180	21	4	0	1	8	13	227	214.8		
17:15	18:15	132	15	2	0	0	6	12	167	154.8		
17:30	18:30	87	9	0	0	0	3	8	107	98.8		
17:45	18:45	43	5	0	0	0	2	4	54	49.6		
P/TOT		837	151	39	1	11	23	41	0	0	1103	1088



SITE: 1
 LOCATION: Manor Road / Retail Park Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

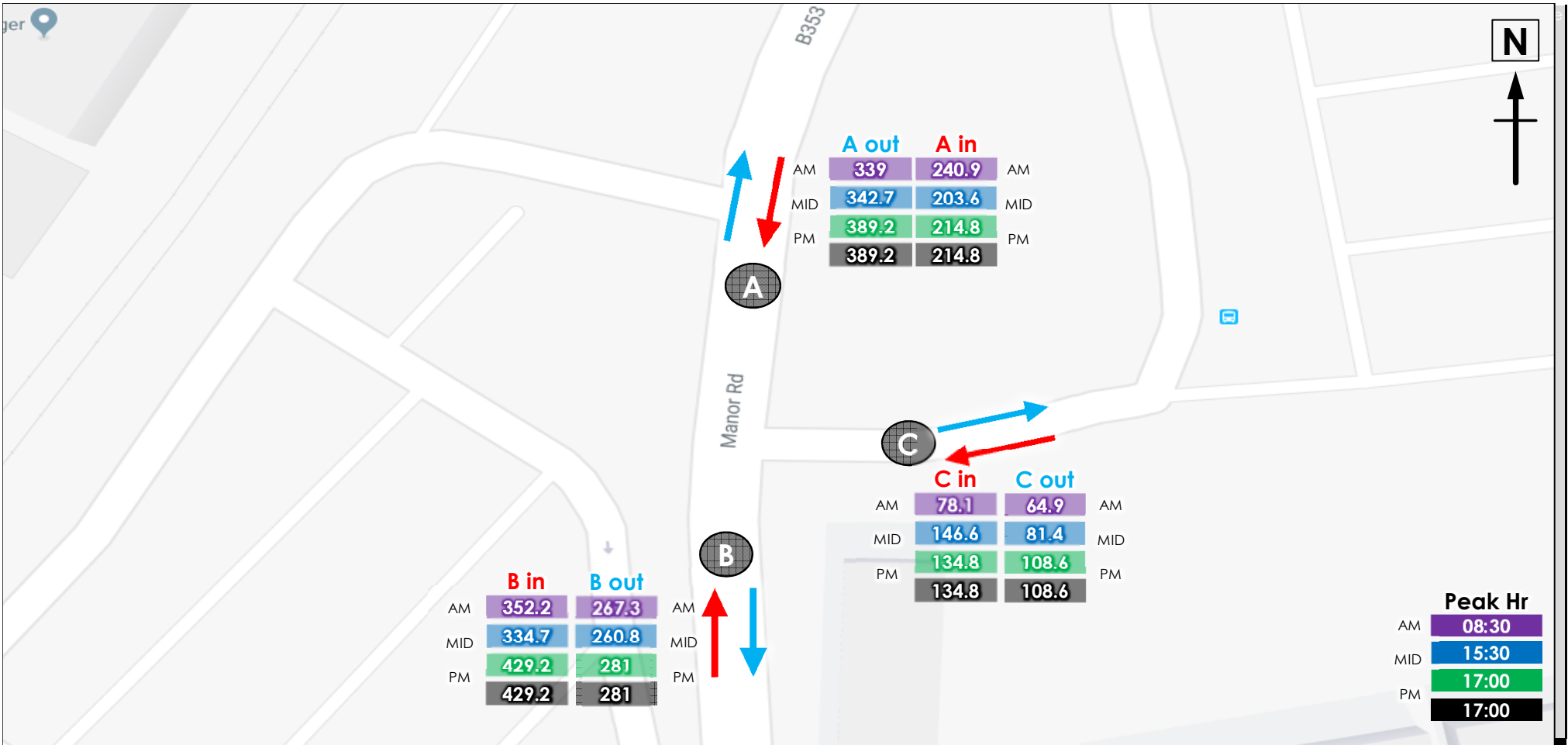
DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	110	28	9	0	10	4	4	165	173.9
07:45	08:00	91	21	4	1	11	1	3	132	143.3
08:00	08:15	94	18	5	1	6	6	8	138	137.8
08:15	08:30	110	22	4	1	7	3	8	155	157.1
08:30	08:45	125	19	4	0	5	5	6	164	163.2
08:45	09:00	147	24	3	1	2	2	5	184	183.6
09:00	09:15	108	13	7	0	4	1	4	137	140.7
09:15	09:30	123	23	4	1	9	1	2	163	173.1
15:00	15:15	135	18	4	0	6	4	6	173	173.8
15:15	15:30	101	21	8	1	10	2	2	145	157.5
15:30	15:45	150	21	3	2	7	6	6	195	197.7
15:45	16:00	110	20	3	0	8	1	2	144	151.3
16:00	16:15	137	18	4	1	6	2	2	170	176.5
16:15	16:30	121	22	2	1	8	3	3	160	166.1
16:30	16:45	126	20	5	0	9	2	5	167	173.3
16:45	17:00	117	23	1	0	3	1	2	147	148.3
17:00	17:15	121	25	2	0	10	3	4	165	171
17:15	17:30	148	23	3	0	5	4	8	191	188.7
17:30	17:45	137	13	5	0	4	5	6	170	168.7
17:45	18:00	136	17	0	0	4	4	6	167	163.8
P/TOT		2447	409	80	10	134	60	92	3232	3309

Period I Total: 908 168 40 5 54 23 40 0 0 1238 1273
 Period II Total: 1539 241 40 5 80 37 52 0 0 1994 2037

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	405	89	22	3	34	14	23	590	612.1
07:45	08:45	420	80	17	3	29	15	25	589	601.4
08:00	09:00	476	83	16	3	20	16	27	641	641.7
08:15	09:15	490	78	18	2	18	11	23	640	644.6
08:30	09:30	503	79	18	2	20	9	17	648	660.6
08:45	09:45	378	60	14	2	15	4	11	484	497.4
09:00	10:00	231	36	11	1	13	2	6	300	313.8
09:15	10:15	123	23	4	1	9	1	2	163	173.1
15:00	16:00	496	80	18	3	31	13	16	657	680.3
15:15	16:15	498	80	18	4	31	11	12	654	683
15:30	16:30	518	81	12	4	29	12	13	669	691.6
15:45	16:45	494	80	14	2	31	8	12	641	667.2
16:00	17:00	501	83	12	2	26	8	12	644	664.2
16:15	17:15	485	90	10	1	30	9	14	639	658.7
16:30	17:30	512	91	11	0	27	10	19	670	681.3
16:45	17:45	523	84	11	0	22	13	20	673	676.7
17:00	18:00	542	78	10	0	23	16	24	693	692.2
17:15	18:15	421	53	8	0	13	13	20	528	521.2
17:30	18:30	273	30	5	0	8	9	12	337	332.5
17:45	18:45	136	17	0	0	4	4	6	167	163.8
P/TOT		2447	409	80	10	134	60	92	3232	3309

from: to:
 08:30 09:30 AM Peak Hour AM 07:00 10:00 AM Peak PCU 660.6
 15:30 16:30 MID Peak Hour MID 10:00 16:00 MID Peak PCU 691.6
 17:00 18:00 PM Peak Hour PM 16:00 19:00 PM Peak PCU 692.2
 17:00 18:00 TOT Peak Hour TOT Peak PCU 692.2



Arms: **A B C**

	Site / Location: 2 Manor Road / Sainsbury's Access	Project No: 9256	Drawing No: 9256 - 02	Drawn By: MB	
	Survey Date: 02/10/2018	Project Name: MANOR ROAD, RICHMOND			
	Survey Times: from: 07:30 15:00 to: 09:30 18:00	Drawing Title: Junction Labels and Peak Hr PCU's			



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0

Period I Total: 0 0 0 0 0 0 0 0 0 0 0
 Period II Total: 0 0 0 0 0 0 0 0 0 0 0

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	28	15	4	0	2	0	2	51	53.4		
07:45	08:00	39	12	3	1	0	0	1	56	58		
08:00	08:15	28	6	4	0	1	1	3	43	43		
08:15	08:30	37	8	2	0	0	2	4	53	49.6		
08:30	08:45	54	8	3	0	0	1	3	69	67.5		
08:45	09:00	59	8	2	0	1	1	0	71	72.4		
09:00	09:15	30	7	5	0	0	0	3	45	45.1		
09:15	09:30	36	6	3	0	2	0	1	48	50.7		
15:00	15:15	50	10	1	0	1	3	2	67	65.1		
15:15	15:30	29	7	3	0	1	0	1	41	42.7		
15:30	15:45	44	7	2	0	0	2	3	58	55.4		
15:45	16:00	34	8	0	0	0	0	0	42	42		
16:00	16:15	36	5	1	0	1	1	1	45	45.1		
16:15	16:30	34	6	1	0	0	3	1	45	42.9		
16:30	16:45	37	8	1	0	1	1	0	48	48.9		
16:45	17:00	40	7	0	0	0	0	1	48	47.2		
17:00	17:15	44	5	2	0	1	2	1	55	55		
17:15	17:30	42	6	1	0	0	3	4	56	51.5		
17:30	17:45	40	4	0	0	0	1	4	49	45.2		
17:45	18:00	43	5	0	0	0	2	4	54	49.6		
P/TOT		784	148	38	1	11	23	39	0	0	1044	1030

Period I Total: 311 70 26 1 6 5 17 0 0 436 439.7
 Period II Total: 473 78 12 0 5 18 22 0 0 608 590.6

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	132	41	13	1	3	3	10	203	204		
07:45	08:45	158	34	12	1	1	4	11	221	218.1		
08:00	09:00	178	30	11	0	2	5	10	236	232.5		
08:15	09:15	180	31	12	0	1	4	10	238	234.6		
08:30	09:30	179	29	13	0	3	2	7	233	235.7		
08:45	09:45	125	21	10	0	3	1	4	164	168.2		
09:00	10:00	66	13	8	0	2	0	4	93	95.8		
09:15	10:15	36	6	3	0	2	0	1	48	50.7		
15:00	16:00	157	32	6	0	2	5	6	208	205.2		
15:15	16:15	143	27	6	0	2	3	5	186	185.2		
15:30	16:30	148	26	4	0	1	6	5	190	185.4		
15:45	16:45	141	27	3	0	2	5	2	180	178.9		
16:00	17:00	147	26	3	0	2	5	3	186	184.1		
16:15	17:15	155	26	4	0	2	6	3	196	194		
16:30	17:30	163	26	4	0	2	6	6	207	202.6		
16:45	17:45	166	22	3	0	1	6	10	208	198.9		
17:00	18:00	169	20	3	0	1	8	13	214	201.3		
17:15	18:15	125	15	1	0	0	6	12	159	146.3		
17:30	18:30	83	9	0	0	0	3	8	103	94.8		
17:45	18:45	43	5	0	0	0	2	4	54	49.6		
P/TOT		784	148	38	1	11	23	39	0	0	1044	1030



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	2	0	0	0	0	0	0	2	2
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	1	0	0	0	0	0	0	1	1
08:15	08:30	1	0	0	0	0	0	0	1	1
08:30	08:45	2	0	0	0	0	0	0	2	2
08:45	09:00	0	1	0	0	0	0	1	2	1.2
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	2	0	0	0	0	0	0	2	2
15:00	15:15	2	0	0	0	0	0	0	2	2
15:15	15:30	7	0	0	0	0	0	0	7	7
15:30	15:45	2	1	0	0	0	0	0	3	3
15:45	16:00	7	0	0	0	0	0	1	8	7.2
16:00	16:15	2	0	0	0	0	0	0	2	2
16:15	16:30	6	0	0	0	0	0	0	6	6
16:30	16:45	5	0	0	0	0	0	0	5	5
16:45	17:00	3	0	0	0	0	0	0	3	3
17:00	17:15	4	1	0	0	0	0	0	5	5
17:15	17:30	3	0	1	0	0	0	0	4	4.5
17:30	17:45	4	0	0	0	0	0	0	4	4
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		53	3	1	0	0	0	2	59	57.9

Period I Total: 8 1 0 0 0 0 1 0 0 10 9.2
 Period II Total: 45 2 1 0 0 0 1 0 0 49 48.7

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	4	0	0	0	0	0	0	4	4
07:45	08:45	4	0	0	0	0	0	0	4	4
08:00	09:00	4	1	0	0	0	0	1	6	5.2
08:15	09:15	3	1	0	0	0	0	1	5	4.2
08:30	09:30	4	1	0	0	0	0	1	6	5.2
08:45	09:45	2	1	0	0	0	0	1	4	3.2
09:00	10:00	2	0	0	0	0	0	0	2	2
09:15	10:15	2	0	0	0	0	0	0	2	2
15:00	16:00	18	1	0	0	0	0	1	20	19.2
15:15	16:15	18	1	0	0	0	0	1	20	19.2
15:30	16:30	17	1	0	0	0	0	1	19	18.2
15:45	16:45	20	0	0	0	0	0	1	21	20.2
16:00	17:00	16	0	0	0	0	0	0	16	16
16:15	17:15	18	1	0	0	0	0	0	19	19
16:30	17:30	15	1	1	0	0	0	0	17	17.5
16:45	17:45	14	1	1	0	0	0	0	16	16.5
17:00	18:00	11	1	1	0	0	0	0	13	13.5
17:15	18:15	7	0	1	0	0	0	0	8	8.5
17:30	18:30	4	0	0	0	0	0	0	4	4
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		53	3	1	0	0	0	2	59	57.9



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **A**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	30	15	4	0	2	0	2	53	55.4		
07:45	08:00	39	12	3	1	0	0	1	56	58		
08:00	08:15	29	6	4	0	1	1	3	44	44		
08:15	08:30	38	8	2	0	0	2	4	54	50.6		
08:30	08:45	56	8	3	0	0	1	3	71	69.5		
08:45	09:00	59	9	2	0	1	1	1	73	73.6		
09:00	09:15	30	7	5	0	0	0	3	45	45.1		
09:15	09:30	38	6	3	0	2	0	1	50	52.7		
15:00	15:15	52	10	1	0	1	3	2	69	67.1		
15:15	15:30	36	7	3	0	1	0	1	48	49.7		
15:30	15:45	46	8	2	0	0	2	3	61	58.4		
15:45	16:00	41	8	0	0	0	0	1	50	49.2		
16:00	16:15	38	5	1	0	1	1	1	47	47.1		
16:15	16:30	40	6	1	0	0	3	1	51	48.9		
16:30	16:45	42	8	1	0	1	1	0	53	53.9		
16:45	17:00	43	7	0	0	0	0	1	51	50.2		
17:00	17:15	48	6	2	0	1	2	1	60	60		
17:15	17:30	45	6	2	0	0	3	4	60	56		
17:30	17:45	44	4	0	0	0	1	4	53	49.2		
17:45	18:00	43	5	0	0	0	2	4	54	49.6		
P/TOT		837	151	39	1	11	23	41	0	0	1103	1088

Period I Total: 319 71 26 1 6 5 18 0 0 **446** 448.9
 Period II Total: 518 80 13 0 5 18 23 0 0 **657** 639.3

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	136	41	13	1	3	3	10	207	208		
07:45	08:45	162	34	12	1	1	4	11	225	222.1		
08:00	09:00	182	31	11	0	2	5	11	242	237.7		
08:15	09:15	183	32	12	0	1	4	11	243	238.8		
08:30	09:30	183	30	13	0	3	2	8	239	240.9		
08:45	09:45	127	22	10	0	3	1	5	168	171.4		
09:00	10:00	68	13	8	0	2	0	4	95	97.8		
09:15	10:15	38	6	3	0	2	0	1	50	52.7		
15:00	16:00	175	33	6	0	2	5	7	228	224.4		
15:15	16:15	161	28	6	0	2	3	6	206	204.4		
15:30	16:30	165	27	4	0	1	6	6	209	203.6		
15:45	16:45	161	27	3	0	2	5	3	201	199.1		
16:00	17:00	163	26	3	0	2	5	3	202	200.1		
16:15	17:15	173	27	4	0	2	6	3	215	213		
16:30	17:30	178	27	5	0	2	6	6	224	220.1		
16:45	17:45	180	23	4	0	1	6	10	224	215.4		
17:00	18:00	180	21	4	0	1	8	13	227	214.8		
17:15	18:15	132	15	2	0	0	6	12	167	154.8		
17:30	18:30	87	9	0	0	0	3	8	107	98.8		
17:45	18:45	43	5	0	0	0	2	4	54	49.6		
P/TOT		837	151	39	1	11	23	41	0	0	1103	1088



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	77	13	3	0	5	4	2	104	106.5		
07:45	08:00	48	8	1	0	5	1	2	65	68.3		
08:00	08:15	61	10	1	1	1	5	5	84	79.8		
08:15	08:30	59	10	2	1	2	1	4	79	79.5		
08:30	08:45	62	11	1	0	0	4	3	81	76.7		
08:45	09:00	82	14	1	1	0	1	3	102	100.8		
09:00	09:15	68	4	2	0	0	1	1	76	75.6		
09:15	09:30	68	10	1	0	3	1	0	83	85.9		
15:00	15:15	64	8	3	0	1	1	4	81	79.7		
15:15	15:30	45	12	5	1	3	1	1	68	73.4		
15:30	15:45	74	12	1	2	1	1	1	92	94.7		
15:45	16:00	53	11	3	0	3	1	0	71	74.9		
16:00	16:15	66	12	2	1	1	1	1	84	85.9		
16:15	16:30	66	13	1	1	2	0	2	85	87.2		
16:30	16:45	59	10	3	0	1	1	4	78	76.7		
16:45	17:00	62	14	1	0	2	1	1	81	82.1		
17:00	17:15	60	18	0	0	3	1	2	84	84.8		
17:15	17:30	89	16	1	0	1	1	4	112	109.7		
17:30	17:45	81	8	5	0	1	4	2	101	100.5		
17:45	18:00	77	12	0	0	2	2	2	95	94.2		
P/TOT		1321	226	37	8	37	33	44	0	0	1706	1717

Period I Total: 525 80 12 3 16 18 20 0 0 **674** 673.1
 Period II Total: 796 146 25 5 21 15 24 0 0 **1032** 1044

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	245	41	7	2	13	11	13	332	334.1		
07:45	08:45	230	39	5	2	8	11	14	309	304.3		
08:00	09:00	264	45	5	3	3	11	15	346	336.8		
08:15	09:15	271	39	6	2	2	7	11	338	332.6		
08:30	09:30	280	39	5	1	3	7	7	342	339		
08:45	09:45	218	28	4	1	3	3	4	261	262.3		
09:00	10:00	136	14	3	0	3	2	1	159	161.5		
09:15	10:15	68	10	1	0	3	1	0	83	85.9		
15:00	16:00	236	43	12	3	8	4	6	312	322.7		
15:15	16:15	238	47	11	4	8	4	3	315	328.9		
15:30	16:30	259	48	7	4	7	3	4	332	342.7		
15:45	16:45	244	46	9	2	7	3	7	318	324.7		
16:00	17:00	253	49	7	2	6	3	8	328	331.9		
16:15	17:15	247	55	5	1	8	3	9	328	330.8		
16:30	17:30	270	58	5	0	7	4	11	355	353.3		
16:45	17:45	292	56	7	0	7	7	9	378	377.1		
17:00	18:00	307	54	6	0	7	8	10	392	389.2		
17:15	18:15	247	36	6	0	4	7	8	308	304.4		
17:30	18:30	158	20	5	0	3	6	4	196	194.7		
17:45	18:45	77	12	0	0	2	2	2	95	94.2		
P/TOT		1321	226	37	8	37	33	44	0	0	1706	1717



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS:

from arm: **B**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	69	12	3	0	3	4	2	93	93.5		
07:45	08:00	45	5	1	0	2	1	2	56	56.3		
08:00	08:15	53	9	1	1	0	4	5	73	68.4		
08:15	08:30	54	7	2	1	0	1	4	69	67.5		
08:30	08:45	57	9	1	0	0	4	3	74	69.7		
08:45	09:00	76	13	0	1	0	1	3	94	92.3		
09:00	09:15	54	3	2	0	0	1	1	61	60.6		
09:15	09:30	57	9	1	0	1	1	0	69	69.9		
15:00	15:15	51	7	3	0	0	1	4	66	63.7		
15:15	15:30	36	11	5	1	1	1	1	56	59.4		
15:30	15:45	65	12	1	2	0	1	1	82	83.7		
15:45	16:00	40	9	3	0	1	1	0	54	55.9		
16:00	16:15	51	11	2	1	0	1	0	66	67.7		
16:15	16:30	49	11	1	1	0	0	2	64	64.2		
16:30	16:45	51	10	3	0	0	1	3	68	66.5		
16:45	17:00	50	11	1	0	1	1	1	65	65.1		
17:00	17:15	48	17	0	0	1	1	2	69	67.8		
17:15	17:30	84	15	1	0	0	1	4	105	101.7		
17:30	17:45	64	8	4	0	0	4	1	81	79.8		
17:45	18:00	72	12	0	0	0	1	2	87	84.8		
P/TOT		1126	201	35	8	10	31	41	0	0	1452	1439

Period I Total: 465 67 11 3 6 17 20 0 0 **589** 578.2
 Period II Total: 661 134 24 5 4 14 21 0 0 **863** 860.3

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	221	33	7	2	5	10	13	291	285.7		
07:45	08:45	209	30	5	2	2	10	14	272	261.9		
08:00	09:00	240	38	4	3	0	10	15	310	297.9		
08:15	09:15	241	32	5	2	0	7	11	298	290.1		
08:30	09:30	244	34	4	1	1	7	7	298	292.5		
08:45	09:45	187	25	3	1	1	3	4	224	222.8		
09:00	10:00	111	12	3	0	1	2	1	130	130.5		
09:15	10:15	57	9	1	0	1	1	0	69	69.9		
15:00	16:00	192	39	12	3	2	4	6	258	262.7		
15:15	16:15	192	43	11	4	2	4	2	258	266.7		
15:30	16:30	205	43	7	4	1	3	3	266	271.5		
15:45	16:45	191	41	9	2	1	3	5	252	254.3		
16:00	17:00	201	43	7	2	1	3	6	263	263.5		
16:15	17:15	198	49	5	1	2	3	8	266	263.6		
16:30	17:30	233	53	5	0	2	4	10	307	301.1		
16:45	17:45	246	51	6	0	2	7	8	320	314.4		
17:00	18:00	268	52	5	0	1	7	9	342	334.1		
17:15	18:15	220	35	5	0	0	6	7	273	266.3		
17:30	18:30	136	20	4	0	0	5	3	168	164.6		
17:45	18:45	72	12	0	0	0	1	2	87	84.8		
P/TOT		1126	201	35	8	10	31	41	0	0	1452	1439



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0
Period I Total:		0	0	0	0	0	0	0	0	0
Period II Total:		0	0	0	0	0	0	0	0	0

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	11	2	1	0	0	1	0	15	14.9		
07:45	08:00	4	1	0	0	0	1	0	6	5.4		
08:00	08:15	10	1	0	0	0	0	0	11	11		
08:15	08:30	5	1	0	0	0	0	1	7	6.2		
08:30	08:45	11	1	0	0	0	0	0	12	12		
08:45	09:00	9	1	0	0	0	0	0	10	10		
09:00	09:15	16	3	0	0	0	0	1	20	19.2		
09:15	09:30	17	0	1	0	0	0	0	18	18.5		
15:00	15:15	9	1	0	0	0	0	1	11	10.2		
15:15	15:30	11	1	0	0	0	0	0	12	12		
15:30	15:45	17	1	0	0	0	0	0	18	18		
15:45	16:00	15	1	0	0	0	0	1	17	16.2		
16:00	16:15	21	0	0	0	0	2	1	24	22		
16:15	16:30	7	0	0	0	0	0	0	7	7		
16:30	16:45	22	1	0	0	0	0	0	23	23		
16:45	17:00	9	0	0	0	0	0	2	11	9.4		
17:00	17:15	17	0	0	0	0	0	2	19	17.4		
17:15	17:30	31	3	0	0	0	0	1	35	34.2		
17:30	17:45	23	1	0	0	0	1	2	27	24.8		
17:45	18:00	15	2	1	0	0	0	1	19	18.7		
P/TOT		280	21	3	0	0	5	13	0	0	322	310.1

Period I Total: 83 10 2 0 0 2 2 0 0 **99** 97.2
 Period II Total: 197 11 1 0 0 3 11 0 0 **223** 212.9

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	30	5	1	0	0	2	1	39	37.5		
07:45	08:45	30	4	0	0	0	1	1	36	34.6		
08:00	09:00	35	4	0	0	0	0	1	40	39.2		
08:15	09:15	41	6	0	0	0	0	2	49	47.4		
08:30	09:30	53	5	1	0	0	0	1	60	59.7		
08:45	09:45	42	4	1	0	0	0	1	48	47.7		
09:00	10:00	33	3	1	0	0	0	1	38	37.7		
09:15	10:15	17	0	1	0	0	0	0	18	18.5		
15:00	16:00	52	4	0	0	0	0	2	58	56.4		
15:15	16:15	64	3	0	0	0	2	2	71	68.2		
15:30	16:30	60	2	0	0	0	2	2	66	63.2		
15:45	16:45	65	2	0	0	0	2	2	71	68.2		
16:00	17:00	59	1	0	0	0	2	3	65	61.4		
16:15	17:15	55	1	0	0	0	0	4	60	56.8		
16:30	17:30	79	4	0	0	0	0	5	88	84		
16:45	17:45	80	4	0	0	0	1	7	92	85.8		
17:00	18:00	86	6	1	0	0	1	6	100	95.1		
17:15	18:15	69	6	1	0	0	1	4	81	77.7		
17:30	18:30	38	3	1	0	0	1	3	46	43.5		
17:45	18:45	15	2	1	0	0	0	1	19	18.7		
P/TOT		280	21	3	0	0	5	13	0	0	322	310.1



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **B**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	80	14	4	0	3	5	2	108	108.4		
07:45	08:00	49	6	1	0	2	2	2	62	61.7		
08:00	08:15	63	10	1	1	0	4	5	84	79.4		
08:15	08:30	59	8	2	1	0	1	5	76	73.7		
08:30	08:45	68	10	1	0	0	4	3	86	81.7		
08:45	09:00	85	14	0	1	0	1	3	104	102.3		
09:00	09:15	70	6	2	0	0	1	2	81	79.8		
09:15	09:30	74	9	2	0	1	1	0	87	88.4		
15:00	15:15	60	8	3	0	0	1	5	77	73.9		
15:15	15:30	47	12	5	1	1	1	1	68	71.4		
15:30	15:45	82	13	1	2	0	1	1	100	101.7		
15:45	16:00	55	10	3	0	1	1	1	71	72.1		
16:00	16:15	72	11	2	1	0	3	1	90	89.7		
16:15	16:30	56	11	1	1	0	0	2	71	71.2		
16:30	16:45	73	11	3	0	0	1	3	91	89.5		
16:45	17:00	59	11	1	0	1	1	3	76	74.5		
17:00	17:15	65	17	0	0	1	1	4	88	85.2		
17:15	17:30	115	18	1	0	0	1	5	140	135.9		
17:30	17:45	87	9	4	0	0	5	3	108	104.6		
17:45	18:00	87	14	1	0	0	1	3	106	103.5		
P/TOT		1406	222	38	8	10	36	54	0	0	1774	1749

Period I Total: 548 77 13 3 6 19 22 0 0 **688** 675.4
 Period II Total: 858 145 25 5 4 17 32 0 0 **1086** 1073

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	251	38	8	2	5	12	14	330	323.2		
07:45	08:45	239	34	5	2	2	11	15	308	296.5		
08:00	09:00	275	42	4	3	0	10	16	350	337.1		
08:15	09:15	282	38	5	2	0	7	13	347	337.5		
08:30	09:30	297	39	5	1	1	7	8	358	352.2		
08:45	09:45	229	29	4	1	1	3	5	272	270.5		
09:00	10:00	144	15	4	0	1	2	2	168	168.2		
09:15	10:15	74	9	2	0	1	1	0	87	88.4		
15:00	16:00	244	43	12	3	2	4	8	316	319.1		
15:15	16:15	256	46	11	4	2	6	4	329	334.9		
15:30	16:30	265	45	7	4	1	5	5	332	334.7		
15:45	16:45	256	43	9	2	1	5	7	323	322.5		
16:00	17:00	260	44	7	2	1	5	9	328	324.9		
16:15	17:15	253	50	5	1	2	3	12	326	320.4		
16:30	17:30	312	57	5	0	2	4	15	395	385.1		
16:45	17:45	326	55	6	0	2	8	15	412	400.2		
17:00	18:00	354	58	6	0	1	8	15	442	429.2		
17:15	18:15	289	41	6	0	0	7	11	354	344		
17:30	18:30	174	23	5	0	0	6	6	214	208.1		
17:45	18:45	87	14	1	0	0	1	3	106	103.5		
P/TOT		1406	222	38	8	10	36	54	0	0	1774	1749



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	33	16	4	0	2	0	2	57	59.4		
07:45	08:00	44	14	4	1	0	0	1	64	66.5		
08:00	08:15	38	8	4	0	1	1	3	55	55		
08:15	08:30	42	9	3	0	0	2	6	62	57.5		
08:30	08:45	60	9	4	0	0	1	3	77	76		
08:45	09:00	67	8	2	0	1	2	0	80	80.8		
09:00	09:15	38	7	5	0	0	0	3	53	53.1		
09:15	09:30	39	8	4	0	2	0	2	55	57.4		
15:00	15:15	66	11	1	0	1	3	2	84	82.1		
15:15	15:30	48	8	3	0	1	0	4	64	63.3		
15:30	15:45	64	7	3	0	0	2	7	83	77.7		
15:45	16:00	45	10	0	0	0	0	1	56	55.2		
16:00	16:15	49	7	2	0	1	1	1	61	61.6		
16:15	16:30	55	7	1	0	0	4	6	73	66.3		
16:30	16:45	50	10	1	0	1	1	0	63	63.9		
16:45	17:00	57	8	0	0	0	0	1	66	65.2		
17:00	17:15	60	6	2	0	1	3	3	75	72.8		
17:15	17:30	59	7	3	0	0	3	7	79	73.1		
17:30	17:45	62	6	1	0	0	2	6	77	71.5		
17:45	18:00	57	5	0	0	0	2	4	68	63.6		
P/TOT		1033	171	47	1	11	27	62	0	0	1352	1322

Period I Total: 361 79 30 1 6 6 20 0 0 **503** 505.7
 Period II Total: 672 92 17 0 5 21 42 0 0 **849** 816.3

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	157	47	15	1	3	3	12	238	238.4		
07:45	08:45	184	40	15	1	1	4	13	258	255		
08:00	09:00	207	34	13	0	2	6	12	274	269.3		
08:15	09:15	207	33	14	0	1	5	12	272	267.4		
08:30	09:30	204	32	15	0	3	3	8	265	267.3		
08:45	09:45	144	23	11	0	3	2	5	188	191.3		
09:00	10:00	77	15	9	0	2	0	5	108	110.5		
09:15	10:15	39	8	4	0	2	0	2	55	57.4		
15:00	16:00	223	36	7	0	2	5	14	287	278.3		
15:15	16:15	206	32	8	0	2	3	13	264	257.8		
15:30	16:30	213	31	6	0	1	7	15	273	260.8		
15:45	16:45	199	34	4	0	2	6	8	253	247		
16:00	17:00	211	32	4	0	2	6	8	263	257		
16:15	17:15	222	31	4	0	2	8	10	277	268.2		
16:30	17:30	226	31	6	0	2	7	11	283	275		
16:45	17:45	238	27	6	0	1	8	17	297	282.6		
17:00	18:00	238	24	6	0	1	10	20	299	281		
17:15	18:15	178	18	4	0	0	7	17	224	208.2		
17:30	18:30	119	11	1	0	0	4	10	145	135.1		
17:45	18:45	57	5	0	0	0	2	4	68	63.6		
P/TOT		1033	171	47	1	11	27	62	0	0	1352	1322



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS:

from arm: **C**
 to arm: **A**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	8	1	0	0	2	0	0	11	13		
07:45	08:00	3	3	0	0	3	0	0	9	12		
08:00	08:15	8	1	0	0	1	1	0	11	11.4		
08:15	08:30	5	3	0	0	2	0	0	10	12		
08:30	08:45	5	2	0	0	0	0	0	7	7		
08:45	09:00	6	1	1	0	0	0	0	8	8.5		
09:00	09:15	14	1	0	0	0	0	0	15	15		
09:15	09:30	11	1	0	0	2	0	0	14	16		
15:00	15:15	13	1	0	0	1	0	0	15	16		
15:15	15:30	9	1	0	0	2	0	0	12	14		
15:30	15:45	9	0	0	0	1	0	0	10	11		
15:45	16:00	13	2	0	0	2	0	0	17	19		
16:00	16:15	15	1	0	0	1	0	1	18	18.2		
16:15	16:30	17	2	0	0	2	0	0	21	23		
16:30	16:45	8	0	0	0	1	0	1	10	10.2		
16:45	17:00	12	3	0	0	1	0	0	16	17		
17:00	17:15	12	1	0	0	2	0	0	15	17		
17:15	17:30	5	1	0	0	1	0	0	7	8		
17:30	17:45	17	0	1	0	1	0	1	20	20.7		
17:45	18:00	5	0	0	0	2	1	0	8	9.4		
P/TOT		195	25	2	0	27	2	3	0	0	254	278.4

Period I Total: 60 13 1 0 10 1 0 0 0 **85** 94.9
 Period II Total: 135 12 1 0 17 1 3 0 0 **169** 183.5

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	24	8	0	0	8	1	0	41	48.4		
07:45	08:45	21	9	0	0	6	1	0	37	42.4		
08:00	09:00	24	7	1	0	3	1	0	36	38.9		
08:15	09:15	30	7	1	0	2	0	0	40	42.5		
08:30	09:30	36	5	1	0	2	0	0	44	46.5		
08:45	09:45	31	3	1	0	2	0	0	37	39.5		
09:00	10:00	25	2	0	0	2	0	0	29	31		
09:15	10:15	11	1	0	0	2	0	0	14	16		
15:00	16:00	44	4	0	0	6	0	0	54	60		
15:15	16:15	46	4	0	0	6	0	1	57	62.2		
15:30	16:30	54	5	0	0	6	0	1	66	71.2		
15:45	16:45	53	5	0	0	6	0	2	66	70.4		
16:00	17:00	52	6	0	0	5	0	2	65	68.4		
16:15	17:15	49	6	0	0	6	0	1	62	67.2		
16:30	17:30	37	5	0	0	5	0	1	48	52.2		
16:45	17:45	46	5	1	0	5	0	1	58	62.7		
17:00	18:00	39	2	1	0	6	1	1	50	55.1		
17:15	18:15	27	1	1	0	4	1	1	35	38.1		
17:30	18:30	22	0	1	0	3	1	1	28	30.1		
17:45	18:45	5	0	0	0	2	1	0	8	9.4		
P/TOT		195	25	2	0	27	2	3	0	0	254	278.4



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **B**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	5	1	0	0	0	0	0	6	6		
07:45	08:00	5	2	1	0	0	0	0	8	8.5		
08:00	08:15	10	2	0	0	0	0	0	12	12		
08:15	08:30	5	1	1	0	0	0	2	9	7.9		
08:30	08:45	6	1	1	0	0	0	0	8	8.5		
08:45	09:00	8	0	0	0	0	1	0	9	8.4		
09:00	09:15	8	0	0	0	0	0	0	8	8		
09:15	09:30	3	2	1	0	0	0	1	7	6.7		
15:00	15:15	16	1	0	0	0	0	0	17	17		
15:15	15:30	19	1	0	0	0	0	3	23	20.6		
15:30	15:45	20	0	1	0	0	0	4	25	22.3		
15:45	16:00	11	2	0	0	0	0	1	14	13.2		
16:00	16:15	13	2	1	0	0	0	0	16	16.5		
16:15	16:30	21	1	0	0	0	1	5	28	23.4		
16:30	16:45	13	2	0	0	0	0	0	15	15		
16:45	17:00	17	1	0	0	0	0	0	18	18		
17:00	17:15	16	1	0	0	0	1	2	20	17.8		
17:15	17:30	17	1	2	0	0	0	3	23	21.6		
17:30	17:45	22	2	1	0	0	1	2	28	26.3		
17:45	18:00	14	0	0	0	0	0	0	14	14		
P/TOT		249	23	9	0	0	4	23	0	0	308	291.7

Period I Total: 50 9 4 0 0 1 3 0 0 67 66
 Period II Total: 199 14 5 0 0 3 20 0 0 241 225.7

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	25	6	2	0	0	0	2	35	34.4		
07:45	08:45	26	6	3	0	0	0	2	37	36.9		
08:00	09:00	29	4	2	0	0	1	2	38	36.8		
08:15	09:15	27	2	2	0	0	1	2	34	32.8		
08:30	09:30	25	3	2	0	0	1	1	32	31.6		
08:45	09:45	19	2	1	0	0	1	1	24	23.1		
09:00	10:00	11	2	1	0	0	0	1	15	14.7		
09:15	10:15	3	2	1	0	0	0	1	7	6.7		
15:00	16:00	66	4	1	0	0	0	8	79	73.1		
15:15	16:15	63	5	2	0	0	0	8	78	72.6		
15:30	16:30	65	5	2	0	0	1	10	83	75.4		
15:45	16:45	58	7	1	0	0	1	6	73	68.1		
16:00	17:00	64	6	1	0	0	1	5	77	72.9		
16:15	17:15	67	5	0	0	0	2	7	81	74.2		
16:30	17:30	63	5	2	0	0	1	5	76	72.4		
16:45	17:45	72	5	3	0	0	2	7	89	83.7		
17:00	18:00	69	4	3	0	0	2	7	85	79.7		
17:15	18:15	53	3	3	0	0	1	5	65	61.9		
17:30	18:30	36	2	1	0	0	1	2	42	40.3		
17:45	18:45	14	0	0	0	0	0	0	14	14		
P/TOT		249	23	9	0	0	4	23	0	0	308	291.7



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15
07:30	07:45	0	0	0	0	0	0	0	0	0
07:45	08:00	0	0	0	0	0	0	0	0	0
08:00	08:15	0	0	0	0	0	0	0	0	0
08:15	08:30	0	0	0	0	0	0	0	0	0
08:30	08:45	0	0	0	0	0	0	0	0	0
08:45	09:00	0	0	0	0	0	0	0	0	0
09:00	09:15	0	0	0	0	0	0	0	0	0
09:15	09:30	0	0	0	0	0	0	0	0	0
15:00	15:15	0	0	0	0	0	0	0	0	0
15:15	15:30	0	0	0	0	0	0	0	0	0
15:30	15:45	0	0	0	0	0	0	0	0	0
15:45	16:00	0	0	0	0	0	0	0	0	0
16:00	16:15	0	0	0	0	0	0	0	0	0
16:15	16:30	0	0	0	0	0	0	0	0	0
16:30	16:45	0	0	0	0	0	0	0	0	0
16:45	17:00	0	0	0	0	0	0	0	0	0
17:00	17:15	0	0	0	0	0	0	0	0	0
17:15	17:30	0	0	0	0	0	0	0	0	0
17:30	17:45	0	0	0	0	0	0	0	0	0
17:45	18:00	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0
Period I Total:		0	0	0	0	0	0	0	0	0
Period II Total:		0	0	0	0	0	0	0	0	0

		per hour							TOT	PCU.h
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL		
PCU factor		1	1	1.5	2.3	2	0.4	0.2		
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00
07:30	08:30	0	0	0	0	0	0	0	0	0
07:45	08:45	0	0	0	0	0	0	0	0	0
08:00	09:00	0	0	0	0	0	0	0	0	0
08:15	09:15	0	0	0	0	0	0	0	0	0
08:30	09:30	0	0	0	0	0	0	0	0	0
08:45	09:45	0	0	0	0	0	0	0	0	0
09:00	10:00	0	0	0	0	0	0	0	0	0
09:15	10:15	0	0	0	0	0	0	0	0	0
15:00	16:00	0	0	0	0	0	0	0	0	0
15:15	16:15	0	0	0	0	0	0	0	0	0
15:30	16:30	0	0	0	0	0	0	0	0	0
15:45	16:45	0	0	0	0	0	0	0	0	0
16:00	17:00	0	0	0	0	0	0	0	0	0
16:15	17:15	0	0	0	0	0	0	0	0	0
16:30	17:30	0	0	0	0	0	0	0	0	0
16:45	17:45	0	0	0	0	0	0	0	0	0
17:00	18:00	0	0	0	0	0	0	0	0	0
17:15	18:15	0	0	0	0	0	0	0	0	0
17:30	18:30	0	0	0	0	0	0	0	0	0
17:45	18:45	0	0	0	0	0	0	0	0	0
P/TOT		0	0	0	0	0	0	0	0	0



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **C**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

		per quarter of an hour							TOT	PCU		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	13	2	0	0	2	0	0	17	19		
07:45	08:00	8	5	1	0	3	0	0	17	20.5		
08:00	08:15	18	3	0	0	1	1	0	23	23.4		
08:15	08:30	10	4	1	0	2	0	2	19	19.9		
08:30	08:45	11	3	1	0	0	0	0	15	15.5		
08:45	09:00	14	1	1	0	0	1	0	17	16.9		
09:00	09:15	22	1	0	0	0	0	0	23	23		
09:15	09:30	14	3	1	0	2	0	1	21	22.7		
15:00	15:15	29	2	0	0	1	0	0	32	33		
15:15	15:30	28	2	0	0	2	0	3	35	34.6		
15:30	15:45	29	0	1	0	1	0	4	35	33.3		
15:45	16:00	24	4	0	0	2	0	1	31	32.2		
16:00	16:15	28	3	1	0	1	0	1	34	34.7		
16:15	16:30	38	3	0	0	2	1	5	49	46.4		
16:30	16:45	21	2	0	0	1	0	1	25	25.2		
16:45	17:00	29	4	0	0	1	0	0	34	35		
17:00	17:15	28	2	0	0	2	1	2	35	34.8		
17:15	17:30	22	2	2	0	1	0	3	30	29.6		
17:30	17:45	39	2	2	0	1	1	3	48	47		
17:45	18:00	19	0	0	0	2	1	0	22	23.4		
P/TOT		444	48	11	0	27	6	26	0	0	562	570.1

Period I Total: 110 22 5 0 10 2 3 0 0 **152** 160.9
 Period II Total: 334 26 6 0 17 4 23 0 0 **410** 409.2

		per hour							TOT	PCU.h		
from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL				
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	49	14	2	0	8	1	2	76	82.8		
07:45	08:45	47	15	3	0	6	1	2	74	79.3		
08:00	09:00	53	11	3	0	3	2	2	74	75.7		
08:15	09:15	57	9	3	0	2	1	2	74	75.3		
08:30	09:30	61	8	3	0	2	1	1	76	78.1		
08:45	09:45	50	5	2	0	2	1	1	61	62.6		
09:00	10:00	36	4	1	0	2	0	1	44	45.7		
09:15	10:15	14	3	1	0	2	0	1	21	22.7		
15:00	16:00	110	8	1	0	6	0	8	133	133.1		
15:15	16:15	109	9	2	0	6	0	9	135	134.8		
15:30	16:30	119	10	2	0	6	1	11	149	146.6		
15:45	16:45	111	12	1	0	6	1	8	139	138.5		
16:00	17:00	116	12	1	0	5	1	7	142	141.3		
16:15	17:15	116	11	0	0	6	2	8	143	141.4		
16:30	17:30	100	10	2	0	5	1	6	124	124.6		
16:45	17:45	118	10	4	0	5	2	8	147	146.4		
17:00	18:00	108	6	4	0	6	3	8	135	134.8		
17:15	18:15	80	4	4	0	4	2	6	100	100		
17:30	18:30	58	2	2	0	3	2	3	70	70.4		
17:45	18:45	19	0	0	0	2	1	0	22	23.4		
P/TOT		444	48	11	0	27	6	26	0	0	562	570.1



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **C**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	13	2	1	0	0	1	0	17	16.9		
07:45	08:00	4	1	0	0	0	1	0	6	5.4		
08:00	08:15	11	1	0	0	0	0	0	12	12		
08:15	08:30	6	1	0	0	0	0	1	8	7.2		
08:30	08:45	13	1	0	0	0	0	0	14	14		
08:45	09:00	9	2	0	0	0	0	1	12	11.2		
09:00	09:15	16	3	0	0	0	0	1	20	19.2		
09:15	09:30	19	0	1	0	0	0	0	20	20.5		
15:00	15:15	11	1	0	0	0	0	1	13	12.2		
15:15	15:30	18	1	0	0	0	0	0	19	19		
15:30	15:45	19	2	0	0	0	0	0	21	21		
15:45	16:00	22	1	0	0	0	0	2	25	23.4		
16:00	16:15	23	0	0	0	0	2	1	26	24		
16:15	16:30	13	0	0	0	0	0	0	13	13		
16:30	16:45	27	1	0	0	0	0	0	28	28		
16:45	17:00	12	0	0	0	0	0	2	14	12.4		
17:00	17:15	21	1	0	0	0	0	2	24	22.4		
17:15	17:30	34	3	1	0	0	0	1	39	38.7		
17:30	17:45	27	1	0	0	0	1	2	31	28.8		
17:45	18:00	15	2	1	0	0	0	1	19	18.7		
P/TOT		333	24	4	0	0	5	15	0	0	381	368

Period I Total: 91 11 2 0 0 2 3 0 0 **109** 106.4
 Period II Total: 242 13 2 0 0 3 12 0 0 **272** 261.6

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	34	5	1	0	0	2	1	43	41.5		
07:45	08:45	34	4	0	0	0	1	1	40	38.6		
08:00	09:00	39	5	0	0	0	0	2	46	44.4		
08:15	09:15	44	7	0	0	0	0	3	54	51.6		
08:30	09:30	57	6	1	0	0	0	2	66	64.9		
08:45	09:45	44	5	1	0	0	0	2	52	50.9		
09:00	10:00	35	3	1	0	0	0	1	40	39.7		
09:15	10:15	19	0	1	0	0	0	0	20	20.5		
15:00	16:00	70	5	0	0	0	0	3	78	75.6		
15:15	16:15	82	4	0	0	0	2	3	91	87.4		
15:30	16:30	77	3	0	0	0	2	3	85	81.4		
15:45	16:45	85	2	0	0	0	2	3	92	88.4		
16:00	17:00	75	1	0	0	0	2	3	81	77.4		
16:15	17:15	73	2	0	0	0	0	4	79	75.8		
16:30	17:30	94	5	1	0	0	0	5	105	101.5		
16:45	17:45	94	5	1	0	0	1	7	108	102.3		
17:00	18:00	97	7	2	0	0	1	6	113	108.6		
17:15	18:15	76	6	2	0	0	1	4	89	86.2		
17:30	18:30	42	3	1	0	0	1	3	50	47.5		
17:45	18:45	15	2	1	0	0	0	1	19	18.7		
P/TOT		333	24	4	0	0	5	15	0	0	381	368



SITE: **2**
 LOCATION: Manor Road / Sainsbury's Access
 TOTAL ARMS: A B C

from arm: **all**
 to arm: **all**

period I period II
 from: 07:30 15:00
 to: 09:30 18:00

DATE: 02/10/2018
 DAY: Tuesday

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15	00:15		
07:30	07:45	123	31	8	0	7	5	4	178	182.8		
07:45	08:00	96	23	5	1	5	2	3	135	140.2		
08:00	08:15	110	19	5	1	2	6	8	151	146.8		
08:15	08:30	107	20	5	1	2	3	11	149	144.2		
08:30	08:45	135	21	5	0	0	5	6	172	166.7		
08:45	09:00	158	24	3	1	1	3	4	194	192.8		
09:00	09:15	122	14	7	0	0	1	5	149	147.9		
09:15	09:30	126	18	6	0	5	1	2	158	163.8		
15:00	15:15	141	20	4	0	2	4	7	178	174		
15:15	15:30	111	21	8	1	4	1	5	151	155.7		
15:30	15:45	157	21	4	2	1	3	8	196	193.4		
15:45	16:00	120	22	3	0	3	1	3	152	153.5		
16:00	16:15	138	19	4	1	2	4	3	171	171.5		
16:15	16:30	134	20	2	1	2	4	8	171	166.5		
16:30	16:45	136	21	4	0	2	2	4	169	168.6		
16:45	17:00	131	22	1	0	2	1	4	161	159.7		
17:00	17:15	141	25	2	0	4	4	7	183	180		
17:15	17:30	182	26	5	0	1	4	12	230	221.5		
17:30	17:45	170	15	6	0	1	7	10	209	200.8		
17:45	18:00	149	19	1	0	2	4	7	182	176.5		
P/TOT		2687	421	88	9	48	65	121	0	0	3439	3407

Period I Total: 977 170 44 4 22 26 43 0 0 1286 1285
 Period II Total: 1710 251 44 5 26 39 78 0 0 2153 2122

from	to	CAR	LGV	OGV1	OGV2	PSV	MCL	PCL	TOT	PCU.h		
PCU factor		1	1	1.5	2.3	2	0.4	0.2				
INTERVAL		01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00	01:00		
07:30	08:30	436	93	23	3	16	16	26	613	614		
07:45	08:45	448	83	20	3	9	16	28	607	597.9		
08:00	09:00	510	84	18	3	5	17	29	666	650.5		
08:15	09:15	522	79	20	2	3	12	26	664	651.6		
08:30	09:30	541	77	21	1	6	10	17	673	671.2		
08:45	09:45	406	56	16	1	6	5	11	501	504.5		
09:00	10:00	248	32	13	0	5	2	7	307	311.7		
09:15	10:15	126	18	6	0	5	1	2	158	163.8		
15:00	16:00	529	84	19	3	10	9	23	677	676.6		
15:15	16:15	526	83	19	4	10	9	19	670	674.1		
15:30	16:30	549	82	13	4	8	12	22	690	684.9		
15:45	16:45	528	82	13	2	9	11	18	663	660.1		
16:00	17:00	539	82	11	2	8	11	19	672	666.3		
16:15	17:15	542	88	9	1	10	11	23	684	674.8		
16:30	17:30	590	94	12	0	9	11	27	743	729.8		
16:45	17:45	624	88	14	0	8	16	33	783	762		
17:00	18:00	642	85	14	0	8	19	36	804	778.8		
17:15	18:15	501	60	12	0	4	15	29	621	598.8		
17:30	18:30	319	34	7	0	3	11	17	391	377.3		
17:45	18:45	149	19	1	0	2	4	7	182	176.5		
P/TOT		2687	421	88	9	48	65	121	0	0	3439	3407

from: to:
 08:30 09:30 AM Peak Hour AM 07:00 10:00 AM Peak PCU 671.2
 15:30 16:30 MID Peak Hour MID 10:00 16:00 MID Peak PCU 684.9
 17:00 18:00 PM Peak Hour PM 16:00 19:00 PM Peak PCU 778.8
 17:00 18:00 TOT Peak Hour TOT Peak PCU 778.8

APPENDIX B
Parking Stress Survey Data





Manor Road, Richmond

Parking Stress Survey Report

PARKING STRESS SURVEY REPORT

Development: Manor Road, Richmond

Location: London Borough of Richmond

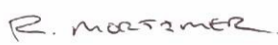

Client: Avanton Richmond Developments Limited

Project Manager: Roger Mortimer

Version No: V01

Date: 26/11/2018

Approvals:

Name	Signature	Title
Roger Mortimer		Project Manager
Penny Winder		Director

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1 INTRODUCTION

Avanton Richmond Developments Limited has commissioned Alpha Parking Ltd to undertake a parking stress survey around the development site known as Manor Road in Richmond.

The purpose of the survey is to examine the roads within 500 metres' walking distance of the site and establish the existing levels of "parking stress", meaning the percentage of the kerbside parking space occupied at peak periods. This information can be used to assess whether there would be sufficient spare capacity on the streets for any additional parking generated by the development or whether special measures would be needed to manage the pressure for parking space.

Further details of the survey project are given in the inception document shown in Appendix A and a plan of the development site and survey area is shown in Figure 1.

The idea of parking stress surveys arose following changes in government policy in the 1990s to address concerns about growth in car use. In order to limit the available parking spaces the previous requirements to provide parking within housing developments were dropped and, instead, planning authorities were given new powers to cap the number of spaces that developers might choose to provide. However, reducing the levels of parking space did not necessarily stop the new residents from wanting cars. This tended to put pressure on the parking facilities in surrounding roads and, in some cases, for parking demand to exceed the available capacity.

In response to this a number of local authorities, such as the The London Borough of Lambeth, realised the need to assess such problems at the planning stage and the concept of "planning/parking stress surveys" came into being. These allowed early identification of likely problems and meant that protective measures (often in the form of parking restrictions on the streets) could be brought in with, and funded by, the development. The London Borough of Lambeth produced what are recognised as the standard guidelines on how to approach these surveys the "Lambeth Methodology". This approach is used as the basis for this survey.

2 PROJECT APPROACH

Alpha Parking Ltd recognises that the parking stress survey method developed by Lambeth Council has become an unofficial standard for this type of work and we use this as a basis for our surveys. This standard approach has an added benefit in allowing the results to be readily understood by anyone familiar with previous surveys.

However, we recommend that survey times and technical standards (such as the nominal length of road occupied by a parked vehicle) are tailored to reflect the preferences of the particular local authority involved and we plan the surveys to reflect these requirements.

Every Planning Department will decide on the parking situation on a case by case basis. This means that it is not possible to predict the planning decision, therefore the surveys are providing an independent and professional set of results to facilitate the decision rather than a conclusion. As an indication of the message from the results we would suggest that 85% is an indicative level at which parking stress becomes a cause for concern after allowance has been made for parking generated by the development. At this point, residents will begin to have difficulty parking close to their homes. Anything over 95% represents a situation where full capacity has effectively been reached. The use of a 500 metre walking distance to define the roads affected by the development is accepted as standard practice.

3 METHODOLOGY

Background Assessment

An initial assessment was made taking into account the following factors:-

- The size and nature of the development
- Setting of development – residential/industrial etc, proximity to shopping centres, schools, railway stations etc
- Parking provisions within the development
- Other transport improvements linked to the development.

Surveys

The survey area and the times and days of the surveys were defined taking into account the results of the background assessment. Within each road, the lengths of each section of restricted or unrestricted parking were measured and recorded, together with the number of vehicles parked upon that section and the lengths of any dropped kerbs. The position of skips was also noted, as well as any other unexpected items on the roads.

Analysis

The lengths of restricted and unrestricted parking recorded on site were converted into equivalent numbers of parking spaces, assuming a 5.5 metre length for each space. Any sections with dropped kerbs were excluded from the calculation, as were any lengths of less than 5.5 metres.

4 RESULTS

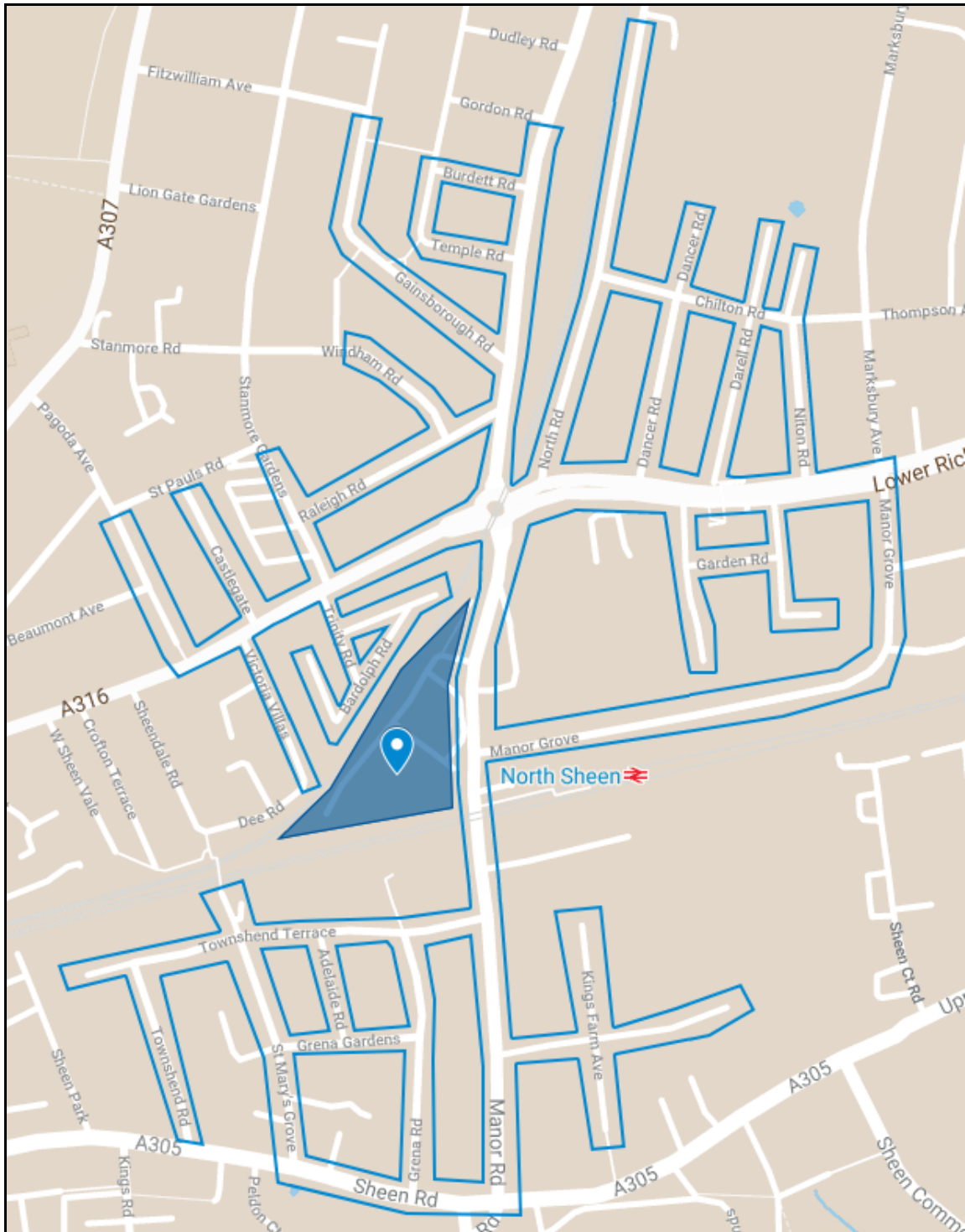
Surveys

The area surveyed is shown on the plan in Figure 1 and the roads surveyed together with any additional comments are listed underneath each table.

The surveys took place between 01:00 – 05:30, 09:00 – 10:00 and 13:00 – 14:00 on Monday 12th and Tuesday 13th November 2018.

The tables show a detailed breakdown of the results for both days and beats and what restrictions are in place on the streets within the survey area.

Figure 1 – Survey Area



- The shaded area/pin drop shows the site location

Adelaide Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	0	0	1	0.00%	1	0.00%	1	0.00%	1	0.00%	1	0.00%	1	0.00%
Resident Permit Holder	10	10	8	80.00%	9	90.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%
Resident Permit Holder & Limited Waiting	4	4	3	75.00%	3	75.00%	4	100.00%	4	100.00%	4	100.00%	4	100.00%
Single Yellow/Red Lines	0	15	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	14	29	12	85.71%	13	92.86%	13	44.83%	13	92.86%	13	92.86%	13	44.83%

Bardolph Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Pay & Display	2	3	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Resident Permit Holders	13	17	10	76.92%	10	76.92%	12	70.59%	10	76.92%	10	76.92%	12	70.59%
Single Yellow/Red Lines	0	2	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	15	22	10	66.67%	10	66.67%	12	54.55%	10	66.67%	10	66.67%	12	54.55%

Burdett Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	1	100.00%	0	0.00%	1	100.00%	1	100.00%	0	0.00%	1	100.00%
Limited Waiting	2	2	2	100.00%	1	50.00%	0	0.00%	2	100.00%	2	100.00%	0	0.00%
Resident Permit Holder	18	18	13	72.22%	14	77.78%	17	94.44%	12	66.67%	14	77.78%	17	94.44%
Total	21	21	16	76.19%	15	71.43%	18	85.71%	15	71.43%	16	76.19%	18	85.71%

Carrington Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	2	2	1	50.00%	1	50.00%	2	100.00%	2	100.00%	2	100.00%	2	100.00%
Unrestricted	48	48	32	66.67%	30	62.50%	40	83.33%	28	58.33%	28	58.33%	41	85.42%
Total	50	50	33	66.00%	31	62.00%	42	84.00%	30	60.00%	30	60.00%	43	86.00%

Castlegate			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	0	0.00%	1	100.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Resident Permit Holder	27	27	23	85.19%	22	81.48%	26	96.30%	20	74.07%	21	77.78%	24	88.89%
Resident Permit Holder & Limited Waiting	4	4	4	100.00%	4	100.00%	3	75.00%	4	100.00%	4	100.00%	3	75.00%
Single Yellow/Red Lines	0	13	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	32	45	27	84.38%	27	84.38%	29	64.44%	24	75.00%	25	78.13%	27	60.00%

Chilton Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %

Resident Permit Holder	19	19	14	73.68%	14	73.68%	17	89.47%	14	73.68%	13	68.42%	17	89.47%
Unrestricted	25	25	20	80.00%	19	76.00%	22	88.00%	20	80.00%	20	80.00%	21	84.00%
Total	44	44	34	77.27%	33	75.00%	39	88.64%	34	77.27%	33	75.00%	38	86.36%

Dancer Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1			Day 2								
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%
Resident Permit Holder	79	79	53	67.09%	51	64.56%	67	84.81%	50	63.29%	51	64.56%	67	84.81%
Total	80	87	54	67.50%	52	65.00%	68	78.16%	51	63.75%	52	65.00%	68	78.16%

Darrel Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1			Day 2								
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	0	0.00%	0	0.00%	1	100.00%	0	0.00%	0	0.00%	1	100.00%
School Keep Clear	6	6	1	16.67%	0	0.00%	0	0.00%	2	33.33%	0	0.00%	0	0.00%
Unrestricted	65	65	47	72.31%	49	75.38%	52	80.00%	48	73.85%	48	73.85%	53	81.54%
Total	72	81	48	66.67%	49	68.06%	53	65.43%	50	69.44%	48	66.67%	54	66.67%

* School Keep Clear restriction applies Monday - Friday between 08.00 to 09.30 and 14.30-16.30

Gainsborough Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1			Day 2								
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Car Club	1	1	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%
Limited Waiting	2	2	1	50.00%	1	50.00%	0	0.00%	0	0.00%	0	0.00%	1	50.00%
Resident Permit Holder	82	82	55	67.07%	59	71.95%	76	92.68%	51	62.20%	56	68.29%	76	92.68%
Single Yellow/Red Lines	0	4	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	85	89	57	67.06%	61	71.76%	77	86.52%	52	61.18%	57	67.06%	78	87.64%

Garden Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1			Day 2								
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Unrestricted	19	19	17	89.47%	17	89.47%	14	73.68%	18	94.74%	17	89.47%	14	73.68%
Total	19	19	17	89.47%	17	89.47%	14	73.68%	18	94.74%	17	89.47%	14	73.68%

Grena Gardens

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1			Day 2								
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	2	2	1	50.00%	1	50.00%	2	100.00%	2	100.00%	1	50.00%	2	100.00%
Resident Permit Holder	16	16	12	75.00%	12	75.00%	13	81.25%	11	68.75%	12	75.00%	13	81.25%
Resident Permit Holder & Limited Waiting	2	2	2	100.00%	2	100.00%	2	100.00%	2	100.00%	2	100.00%	2	100.00%
Single Yellow/Red Line	0	14	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	20	34	15	75.00%	15	75.00%	17	50.00%	15	75.00%	15	75.00%	17	50.00%

Grena Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	25	25	23	92.00%	22	88.00%	24	96.00%	22	88.00%	21	84.00%	24	96.00%
Resident Permit Holder & Limited Waiting	5	5	2	40.00%	2	40.00%	4	80.00%	3	60.00%	3	60.00%	4	80.00%
Total	30	31	25	83.33%	24	80.00%	28	93.33%	25	83.33%	24	80.00%	28	93.33%

Kings Farm Avenue			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	3	3	4	133.33%	3	100.00%	4	133.33%	3	100.00%	3	100.00%	4	133.33%
Unrestricted	52	52	38	73.08%	37	71.15%	44	84.62%	38	73.08%	37	71.15%	45	86.54%
Total	55	55	42	76.36%	40	72.73%	48	87.27%	41	74.55%	40	72.73%	49	89.09%

Lower Mortlake Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Loading & Disabled	4	4	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Resident Permit Holder	6	6	5	83.33%	5	83.33%	5	83.33%	5	83.33%	5	83.33%	5	83.33%
Resident Permit Holder & Limited Waiting	2	2	4	200.00%	4	200.00%	4	200.00%	4	200.00%	4	200.00%	4	200.00%
Total	12	12	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%	9	75.00%

Lower Richmond Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Loading	2	2	0	0.00%	0	0.00%	0	0.00%	1	50.00%	0	0.00%	0	0.00%
Limited Waiting	4	4	2	50.00%	1	25.00%	0	0.00%	0	0.00%	1	25.00%	0	0.00%
Single Yellow/Red Lines	0	40	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	6	46	2	33.33%	1	16.67%	0	0.00%	1	16.67%	1	16.67%	0	0.00%

Manor Gardnes			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	10	10	8	80.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%	8	80.00%
Resident Permit Holder & Limited Waiting	10	10	9	90.00%	9	90.00%	9	90.00%	8	80.00%	9	90.00%	8	80.00%
Total	20	23	17	85.00%	17	85.00%	17	85.00%	16	80.00%	17	85.00%	16	80.00%

Manor Grove			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	2	2	2	100.00%	2	100.00%	2	100.00%	1	50.00%	1	50.00%	2	100.00%
Unrestricted	190	190	116	61.05%	112	58.95%	127	66.84%	113	59.47%	107	56.32%	130	68.42%
Total	192	192	118	61.46%	114	59.38%	129	67.19%	114	59.38%	108	56.25%	132	68.75%

Manor Park			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	2	2	1	50.00%	1	50.00%	2	100.00%	2	100.00%	2	100.00%	2	100.00%
Unrestricted	22	22	20	90.91%	19	86.36%	21	95.45%	20	90.91%	20	90.91%	21	95.45%
Total	24	24	21	87.50%	20	83.33%	23	95.83%	22	91.67%	22	91.67%	23	95.83%

Manor Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Single Yellow/Red Lines	0	15	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Unrestricted	39	39	30	76.92%	29	74.36%	34	87.18%	27	69.23%	27	69.23%	34	87.18%
Total	39	54	30	76.92%	29	74.36%	34	62.96%	27	69.23%	27	69.23%	34	62.96%

Market Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Loading & Disabled	2	2	1	50.00%	1	50.00%	0	0.00%	1	50.00%	1	50.00%	0	0.00%
Single Yellow/Red Lines	0	2	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Unrestricted	8	8	6	75.00%	6	75.00%	3	37.50%	8	100.00%	7	87.50%	3	37.50%
Total	10	12	7	70.00%	7	70.00%	3	25.00%	9	0.00%	8	80.00%	3	25.00%

Niton Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
School Keep Clear	4	4	0	0.00%	0	0.00%	1	25.00%	0	0.00%	0	0.00%	1	25.00%
Unrestricted	31	31	21	67.74%	21	67.74%	22	70.97%	21	67.74%	19	61.29%	25	80.65%
Total	35	35	21	60.00%	21	60.00%	23	65.71%	21	60.00%	19	54.29%	26	74.29%

* School Keep Clear restriction applies Monday - Friday between 08.00 to 09.30 and 14.30-16.30

North Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Limited Waiting	3	3	2	66.67%	2	66.67%	3	100.00%	1	33.33%	3	100.00%	2	66.67%
Resident Permit Holder	108	108	67	62.04%	74	68.52%	95	87.96%	66	61.11%	71	65.74%	89	82.41%
Single Yellow/Red Lines	0	3	1	33.33%	0	0.00%	0	0.00%	0	0.00%	1	33.33%	0	0.00%
Total	111	114	70	63.06%	76	68.47%	98	85.96%	67	60.36%	75	67.57%	91	79.82%

Orchard Road			Day 1						Day 2					
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Limited Waiting & Disabled	4	4	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Unrestricted	26	26	23	88.46%	23	88.46%	9	34.62%	25	96.15%	23	88.46%	8	30.77%

Total	30	30	23 76.67%	23 76.67%	9 30.00%	25 83.33%	23 76.67%	8 26.67%
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Pagoda Avenue			Day 1				Day 2							
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	28	28	24	85.71%	23	82.14%	25	89.29%	22	78.57%	22	78.57%	26	92.86%
Resident Permit Holder & Limited Waiting	4	4	5	125.00%	5	125.00%	7	175.00%	5	125.00%	6	150.00%	7	175.00%
Total	32	32	29 90.63%		28 87.50%		32 100.00%		27 84.38%		28 87.50%		33 103.13%	

Raleigh Road			Day 1				Day 2							
Restriction Type	No. Spaces	No. Spaces	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	64	64	63	98.44%	60	93.75%	68	106.25%	61	95.31%	61	95.31%	68	106.25%
Total	64	64	63 98.44%		60 93.75%		68 106.25%		61 95.31%		61 95.31%		68 106.25%	

Sandycombe Road			Day 1				Day 2							
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Single Yellow/Red Lines	0	13	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Unrestricted	41	41	36	87.80%	33	80.49%	39	95.12%	36	87.80%	36	87.80%	39	95.12%
Total	41	54	36 87.80%		33 80.49%		39 72.22%		36 87.80%		36 87.80%		39 72.22%	

Sheen Road			Day 1				Day 2							
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	19	19	15	78.95%	14	73.68%	15	78.95%	15	78.95%	14	73.68%	15	78.95%
Resident Permit Holder & Limited Waiting	10	10	7	70.00%	7	70.00%	7	70.00%	8	80.00%	6	60.00%	7	70.00%
Single Yellow/Red Lines	0	12	0	0.00%	1	>100.00%	0	0.00%	0	0.00%	2	>100.00%	0	0.00%
Total	29	41	22 75.86%		22 75.86%		22 53.66%		23 79.31%		22 75.86%		22 53.66%	

St George's Road			Day 1				Day 2							
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	26	26	15	57.69%	14	53.85%	14	53.85%	16	61.54%	14	53.85%	14	53.85%
Total	26	26	15 57.69%		14 53.85%		14 53.85%		16 61.54%		14 53.85%		14 53.85%	

St Mary's Grove			Day 1				Day 2							
Restriction Type	No. Spaces (day)	No. Spaces (night)	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	25	25	17	68.00%	17	68.00%	19	76.00%	17	68.00%	16	64.00%	18	72.00%
Resident Permit Holder & Limited Waiting	9	9	5	55.56%	4	44.44%	6	66.67%	6	66.67%	5	55.56%	5	55.56%
Total	34	34	22 64.71%		21 61.76%		25 73.53%		23 67.65%		21 61.76%		23 67.65%	

Stanmore Grove

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	15	15	12	80.00%	13	86.67%	16	106.67%	12	80.00%	12	80.00%	15	100.00%
Resident Permit Holder & Pay at Machine	13	13	11	84.62%	11	84.62%	11	84.62%	10	76.92%	10	76.92%	11	84.62%
Single Yellow/Red Lines	0	1	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	28	29	23	82.14%	24	85.71%	27	93.10%	22	0.00%	22	78.57%	26	89.66%

Temple Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%
Limited Waiting	2	2	2	100.00%	2	100.00%	1	50.00%	0	0.00%	0	0.00%	1	50.00%
Resident Permit Holder	36	36	19	52.78%	19	52.78%	32	88.89%	21	58.33%	22	61.11%	31	86.11%
Total	39	39	22	56.41%	22	56.41%	34	87.18%	22	56.41%	23	58.97%	33	84.62%

Townshed Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	31	31	23	74.19%	23	74.19%	29	93.55%	25	80.65%	26	83.87%	28	90.32%
Single Yellow/Red Lines	0	14	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	31	45	23	74.19%	23	74.19%	29	64.44%	25	80.65%	26	83.87%	28	62.22%

Townshed Terrace

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Disabled	1	1	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%
Resident Permit Holder	40	40	30	75.00%	29	72.50%	28	70.00%	30	75.00%	28	70.00%	31	77.50%
Single Yellow/Red Lines	0	41	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	1	2.44%
Total	41	82	31	75.61%	30	73.17%	29	35.37%	31	0.00%	29	70.73%	33	40.24%

Trinity Cottages

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	1	1	0	0.00%	0	0.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%
Total	1	1	0	0.00%	0	0.00%	1	100.00%	1	100.00%	1	100.00%	1	100.00%

Trinity Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	19	19	8	42.11%	9	47.37%	14	73.68%	9	47.37%	7	36.84%	15	78.95%
Total	19	19	8	42.11%	9	47.37%	14	73.68%	9	47.37%	7	36.84%	15	78.95%

Victoria Villas

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Loading & Disabled	2	2	1	50.00%	1	50.00%	0	0.00%	0	0.00%	1	50.00%	0	0.00%
Resident Permit Holder	11	11	3	27.27%	3	27.27%	2	18.18%	3	27.27%	4	36.36%	2	18.18%
Resident Permit Holder & Pay at Machine	12	12	5	41.67%	4	33.33%	2	16.67%	3	25.00%	3	25.00%	2	16.67%
Single Yellow/Red Lines	0	3	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	25	28	9	36.00%	8	32.00%	4	14.29%	6	24.00%	8	32.00%	4	14.29%

Windham Road

Restriction Type	No. Spaces (day)	No. Spaces (night)	Day 1						Day 2					
			0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %	0900-1000	Stress %	1300-1400	Stress %	Overnight	Stress %
Resident Permit Holder	11	11	7	63.64%	9	81.82%	9	81.82%	10	90.91%	9	81.82%	9	81.82%
Resident Permit Holder & Limited Waiting	13	13	10	76.92%	10	76.92%	11	84.62%	9	69.23%	11	84.62%	10	76.92%
School Keep Clear	3	3	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Single Yellow/Red Lines	0	4	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Total	27	31	17	62.96%	19	70.37%	20	64.52%	19	70.37%	20	74.07%	19	61.29%

* School Keep Clear restriction applies Monday - Friday between 08.00 to 09.30 and 14.30-16.30

Overall Results

Overall Results	Spaces	Usage	Average Stress	Average Stress per beat/day	Overall Average Stress
Day 1 - 0900-1000	1453	1028	70.75%	70.13%	67.45%
Day 2 - 0900-1000		1010	69.51%		
Day 1 - 1300-1400	1628	1017	62.47%	62.93%	
Day 2 - 1300-1400		1032	63.39%		
Day 1 - overnight	1674	1161	69.35%	69.30%	
Day 2 - overnight		1159	69.24%		

CONCLUSION

The overall stress percentage covering the survey area is 67.45%. While the parking decisions for developments remains with the Council the results here are moderate for a busy London Borough.

Appendix A

A. CONTACT DETAILS

1. Client Contact Name	Avanton Richmond Developments Limited
2. Client Contact Email address	<u>chris@avanton.co.uk</u>

B. DEVELOPMENT DETAILS

3. Development Name	Manor Road, Richmond
4. Development address (please include post code)	84 Manor Road, Richmond, TW9 1YB
5. Can development plans be provided?	n/a

PLANNING REQUIREMENTS

6. Which Local Authority is requiring the Parking Stress Survey?	London Borough of Richmond
7. Local Authority Planning contact:	n/a



Key to Restriction Types Displayed

- Bus Stop
- Car Club
- Day 1 AM
- Disabled Bay
- Double Red Line
- Limited Waiting
- Loading Bay
- No waiting
- No waiting at any time
- Pay and Display
- Residents Parking Only
- School Keep Clear
- Shared Use - Disabled Bay & Loading
- (None)
- (None)
- Single Red Line
- Space
- ~ Zig Zag - Pedestrian Crossing



Manor Road, Richmond: PSS Day 1 AM

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Key to Restriction Types Displayed

- Bus Stop
- Car Club
- Day 1 Night
- Disabled Bay
- Double Red Line
- Limited Waiting
- Loading Bay
- No waiting
- No waiting at any time
- Pay and Display
- Residents Parking Only
- School Keep Clear
- Shared Use - Disabled Bay & Loading
- (None)
- (None)
- Single Red Line
- Space
- Zig Zag - Pedestrian Crossing



Manor Road, Richmond: PSS Day 1 Night

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Key to Restriction Types Displayed

- Bus Stop
- Car Club
- Day 1 PM
- Disabled Bay
- Double Red Line
- Limited Waiting
- Loading Bay
- No waiting
- No waiting at any time
- Pay and Display
- Residents Parking Only
- School Keep Clear
- Shared Use - Disabled Bay & Loading
- (None)
- (None)
- Single Red Line
- Space
- Zig Zag - Pedestrian Crossing



Manor Road, Richmond: PSS Day 1 PM

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