Project: Proposed Residential Development
Land West of A577 Neverstitch Road, Skelmersdale
(Latham Pastures Phase 2)

Client: Bellway Homes (North West) Ltd

Document: Transport Assessment

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1 Introduction

General

1.1 CBO Transport Ltd [CBO] has been commissioned by Bellway Homes (North West) Ltd to undertake an assessment of the transport matters associated with a proposed residential development at land to the west of the A577 Neverstitch Road, Skelmersdale, known as Lathom Pastures Phase 2.

1.2 This Transport Assessment represents a culmination of this work and is submitted with the planning application for the scheme. A Travel Plan Framework has also been prepared and submitted with the application.

1.3 The site is located to the east of the Lathom Pastures (Phase 1) development on land bound by Old Engine Lane to the north, the A577 Ormskirk Road to the south, the A577 Neverstitch Road to the east and the Lathom Pastures (Phase1) development to the west.

1.4 The proposals would see the site developed to deliver 200 residential units, made up of a mix of dwelling types and bedroom numbers.

Background

1.5 The proposed site forms part of the wider Lathom Pastures development, which is an area of land that is allocated for residential development for approximately 400 dwellings in the West Lancashire Local Plan. A Development Brief was prepared for the land in August 2014.

1.6 Since the above Development Brief was produced, Bellway Homes has received planning permission for (and are currently constructing) the Lathom Pastures Phase 1 development on the site, comprising a total of 94 dwellings accessed entirely off a new access from Firswood Road.

1.7 Wain Homes also have a scheme for a further 130 dwellings on the area of the site located to the north of Old Engine Lane / the Bellway Phase 2 site which would also be accessed entirely from Firswood Road. This scheme received planning permission on 01st October 2020.

Discussions with Lancashire County Council

1.8 With regard to the requirements of this report, CBO submitted a pre-application Highways and Transport Note to, and undertook pre-application scoping discussions with, Lancashire County Council [LCC] Highway officers. This culminated in LCC providing written pre-application advice dated 2nd June 2020. Where appropriate, this report takes on board and makes reference to the comments provided in this pre-application advice.

1.9 It has been agreed through this pre-application exercise that a full Transport Assessment is required in this instance. LCC has also requested / agreed the following:

- That the primary access to the site be taken from the A577 Neverstitch Road. A construction access can also be provided from the A577 Neverstitch Road;
- That a table of amenities be included in the repot identifying amenities and their walk/cycle distances from the site (via safe/suitable paths and not crow-fly distances);
- That an assessment year of application plus 5 years is appropriate for considering the traffic impact on the local road network;
- That the Lathom Pastures Phase 1 scheme and the Wain Homes scheme be included as committed development;
- That the study area for traffic analysis include the site access from the A577 Neverstitch Road, together with the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to the south.

1.10 LCC has also requested that a Travel Plan Framework be submitted with the application. This document has therefore been produced and is submitted separately with the application.

Scope of Report

1.11 In light of the above, the purpose of this report is to provide LCC with the necessary information to support the proposals and consider their transport implications. In order to provide this information, this report has been produced in 7 sections including this introduction.

1.12 Section 2 considers planning policy, whilst Section 3 reviews existing conditions and provides details of the study area from a highways perspective. Section 4 then considers the accessibility of the site by the sustainable modes and linkage to the surrounding area.

1.13 Section 5 goes on to detail the development proposals, whilst Section 6 considers the traffic generations associated with the scheme.

1.14 Section 7 considers the off-site traffic impact of the scheme, before going on to provide details of the traffic flows used to undertake operational assessments, together with the findings of these assessments.

1.15 The conclusions and recommendations of the report are included in Section 8.

2 Planning Policy and Guidance

National Planning Policy Framework

2.1 National planning policy in relation to transport matters is set out in the revised National Planning Policy Framework [NPPF] February 2019. Paragraph 10 of the NPPF states that:

"So that sustainable development is pursued in a positive way, at the heart of the Framework is a presumption in favour of sustainable development."

2.2 In relation to decision taking, it states at paragraph 11(d) that permission should be granted unless "*any adverse impacts of doing so would significantly and demonstrably outweigh the benefits, when assessed against the policies in this Framework taken as a whole*".

2.3 With regard to transport, the policies are contained within paragraphs 102 to 111 at Section 9 and all relate to the promotion of sustainable transport. In considering development proposals, paragraph 108 states that:

"In assessing sites that may be allocated for development in plans, or specific applications for development, it should be ensured that:

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"

2.4 Paragraph 109 then goes on to 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"

2.5 Within this context, paragraph 110 states that applications 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;

And

…..d) allow for the efficient delivery of goods, and access by service and emergency vehicles

2.6 Paragraph 111 then 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*".

Planning Policy Guidance

2.7 Planning Policy Guidance was updated on the 6th March 2014 in relation to "Travel plans, transport assessments and statements in decision-taking".

2.8 In considering the over-arching principles that should be taken into account in preparing a Transport Assessment, this guidance suggests they should be:

- *"proportionate to the size and scope of the proposed development to which they relate and build on existing information wherever possible;*
- *established at the earliest practicable possible stage of a development proposal;*
- *be tailored to particular local;*
- *be brought forward through collaborative ongoing working between the Local Planning Authority/ Transport Authority, transport operators, Rail Network Operators, Highways Agency where there may be implications for the strategic road network and other relevant bodies."*

2.9 This report accords with this guidance.

Local Policy and Development Brief

2.10 As set out in the introduction, the site forms part of the wider Lathom Pastures development. This development sits in an area of land that is allocated for residential development for approximately 400 dwellings under Policy RS1(a)(iv) of the West Lancashire Local Plan.

2.11 This Policy states that:

"Development of sites (i) – (v) above should conform to masterplans or development briefs to be prepared for each site".

2.12 The Development Brief for this land was prepared in August 2014.

2.13 At page 11 under the heading 'Transport', this Development Brief states that:

"The main access to the Firswood Road development site should be taken off Neverstitch Road between Old Engine Lane and the Ormskirk Road roundabout, at a point where maximum visibility can be achieved"

2.14 And that:

"A minor secondary access to the site may be located on the southern part of Firswood Road (south of the bridge over the disused railway line)".

2.15 It then goes on to state that:

"If it is possible, the creation of a more significant secondary access directly onto Blaguegate Lane would be preferred, although it is acknowledged that this would be reliant on a landowner(s) outside of the site boundary being willing to sell their land".

2.16 Since the above Development Brief was produced, Bellway have received planning permission for (and are currently constructing) the Lathom Pastures Phase 1 development on the site, comprising a total of 94 dwellings accessed entirely off a new access from Firswood Road.

2.17 Wain Homes also have a scheme for a further 130 dwellings on the area of the site located to the north of Old Engine Lane / the Bellway Phase 2 site which would also be accessed entirely from Firswood Road. This scheme received planning permission on 01st October 2020.

3 Existing Conditions and Study Area

Site Description

3.1 The site is located to the east of the Lathom Pastures (Phase 1) development on land bound by Old Engine Lane to the north, the A577 Ormskirk Road to the south, the A577 Neverstitch Road to the east and the Lathom Pastures (Phase1) development to the west. The location of the site is shown in **Figure 3.1**.

3.2 The site is made up of a number of open fields, some of which include vacant buildings. There is also a dismantled railway line running approximately east – west through the site from the A577 Neverstitch Road to the east to Firswood Road to the west.

3.3 Vehicular access to the site is currently provided at its north eastern corner via Old Engine Lane. This lane is a private, unadopted road which heads west from the A577 Neverstitch Road along the northern boundary of the site. This lane also forms public footpath number 26.

3.4 There is currently no vehicular access provided to the site from the A577 Neverstitch Road or Firswood Road.

Highway Study Area and Observed Traffic Flows / Speeds

Traffic Flows

3.5 Through discussions with LCC, it has been agreed that the study area in terms of considering traffic impact be made up of the following local junctions:

- The proposed site access from the A577 Neverstitch Road; and
- The A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to the south.

3.6 In order, therefore, to ascertain existing traffic flows at the junction identified above and past the proposed site, surveys were undertaken on two occasions.

3.7 Two automatic traffic counters [ATC] were placed outside and north of the site frontage on the A577 Neverstitch Road for a period of 7 days between Sunday 19th January and Saturday 25th January 2020. The northern ATC was located just north of the A577 Neverstitch Road / Old Engine Lane junction. The southern ATC was located approximately 110 metres south of this junction / approximately 220 metres north of the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout.

3.8 Based on the above ATC surveys, the weekday morning and evening peak hours on the A577 Neverstitch Road past the site frontage were identified as being 8:00 – 9:00 and 15:00 – 16:00 respectively.

3.9 In addition to the above, a fully classified turning count was undertaken by an independent survey company on Tuesday 17th March 2020 between the hours 7:00 - 10:00 and 16:00 - 19:00 at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout.

3.10 Based on the above fully classified turning count, the weekday morning and evening peak hours at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout were identified as being 8:00 – 9:00 and 16:15 – 17:15 respectively.

3.11 In light of the above, **Figure 3.2** shows the observed 2020 weekday morning peak traffic flows for the hour 8:00 – 9:00 at both junctions. Figure 3.2 also shows the observed 2020 weekday evening peak traffic flows for the hour 15:00 – 16:00 on the A577 Neverstitch Road past the site frontage and for the hour 16:15 – 17:15 at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout.

3.12 With regard to the turning count at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout, this was undertaken 6 days before the UK went into a national lockdown due to the COVID-19 pandemic. As a result and using the ATC results from January 2020 on the A577 Neverstitch Road, consideration has been given to whether this could have impacted on the resultant traffic flows. Table 3.1 below therefore sets out the flows observed on the A577 Neverstitch Road in March 2020 and compares these flows to those observed in January 2020.

Table 3.1: A577 Neverstitch Road Traffic Survey Comparisons

Direction	8:00 – 9:00					16:00 – 17:00				
	Tue 21st Jan 20	5 Day Ave Jan 20	Tue 17th Mar 20	Percentage Change		Tue 21st Jan 20	5 Day Ave Jan 20	Tue 17th Mar 20	Percentage Change	
				Tue	5 day				Tue	5 day
Northbound	325	320	320	-1.5%	0%	383	405	339	-11.5%	-16.3%
Southbound	490	479	475	-3.1%	-0.8%	395	379	343	-13.2%	-9.5%

3.13 Based on the above, it is suggested that the COVID-19 pandemic was unlikely to be having an impact on weekday morning peak flows during the hour 8:00 – 9:00. During the weekday evening peak hour of 16:00 – 17:00, the above suggests the COVID-19 pandemic might have been having more of an impact.

3.14 In light of the above and for robustness, the observed traffic flows shown in Figure 3.2 for the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout have been increased by 5% during the weekday morning peak and by 20% during the weekday evening peak. These adjusted 2020 traffic flows are shown in **Figure 3.3**.

Traffic Speeds

3.15 In addition to the above, the ATC's collected speed data on the A577 Neverstitch Road for the seven day survey period. A copy of the northbound data from the southern ATC and the southbound data from the northern ATC is included at **Appendix A**, whilst the average results over the 7 day period are set out below in Table 3.2. These datasets are considered appropriate for considering visibility provision in both directions at a site access from the A577 Neverstitch Road.

Table 3.2: A577 Neverstitch Road Speed Survey Results

	85th Percentile Speed (mph)	
	Northbound	Southbound
ATC 7 day raw data average: 24 hours	43.5mph	42.1mph
ATC 7 day 'average of average': 24 hours	**44.3mph**	**42.8mph**
ATC 7 day raw data average: 10:00 – 12:00	43.4mph	41.4mph
ATC 7 day raw data average: 14:00 – 16:00	43.5mph	43.0mph
ATC 7 day 'average of average': 7:00 – 19:00	43.4mph	41.7mph
ATC 7 day 'average of average': 6:00 – 22:00	43.4mph	42.1mph

3.16 Based on the above, the 85th percentile speeds derived from the 'average of average' 7 day, 24 hour data has been used for the consideration of visibility requirements at any A577 Neverstitch Road access, namely 44.3mph northbound and 42.8mph southbound.

Highway Network

A577 Neverstitch Road

3.17 The A577 Neverstitch Road runs along the eastern boundary of the proposed site. As it passes the site, the route is in the order of 7.3 metres in width and curves on a circa 180 metre centreline radius bend, with the site being located on the outside of this bend.

3.18 At the south east corner of the site, the A577 Neverstitch Road passes through a circa 70 metre inscribed circle diameter [ICD] 5 arm roundabout at the junction of the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road. Approximately 550 metres to the northeast of this roundabout (i.e. approximately 200 metres northeast of the northern site boundary), the A577 Neverstitch Road passes through a circa 70 metre ICD 4 arm roundabout at the junction of the A577 Neverstitch Road / School Lane / a private access.

3.19 This 550 metre section of the A577 Neverstitch Road is lit and subject to a 40mph speed limit.

3.20 Just to the north of the site and approximately 200 metres southwest of the northern roundabout referred to above, Old Engine Lane joins the A577 Neverstitch Road as the minor arm of a simple priority junction.

3.21 Considering the wider context and after passing through the A577 Neverstitch Road / School Lane / a private access roundabout to the north east, the A577 continues to a roundabout junction with the A5068 and Glenburn Road. From this junction, the A5068 heads south into Skelmersdale, whilst Glenburn Road heads north and provides access to the A5209.

A577 Ormskirk Road

3.22 The A577 Ormskirk Road heads west from the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout referred to above and passes a circa 10 metre length of site frontage which starts approximately 60 metres west of the roundabout. As it passes this site frontage, the A577 Ormskirk Road is in the order of 6.5 metres in width, lit and subject to a 30mph speed limit.

3.23 The A577 Ormskirk Road (which becomes Blaguegate Lane) then heads west for a distance of approximately 550 metres, where it is joined by Firswood Road. From here, the A577 continues west into Ormskirk.

B5312 Railway Road

3.24 The B5312 Railway Road heads south from the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout referred to above. It then continues around the south side of Skelmersdale and, via the A5068, provides access to the M58 at Junction 4.

3.25 Approximately 400 metres south of the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout, the B5312 Railway Road is joined by the B5312 Liverpool Road via a three arm mini roundabout arrangement. From this junction, the B5312 Liverpool Road heads west to the A570, which provides access to the M58 Junction 3 before heading south to St Helens.

Summary

3.26 Based on the above, the site is considered to be well connected to the local highway network.

Highway Conditions

3.27 Morning peak period observations were undertaken in January 2020. These showed that flows along the A577 Neverstitch Road and A577 Ormskirk Road were modest and that there was no evidence of any delay or queuing at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to the south of the site or at the A577 Neverstitch Road / School Lane / a private access roundabout to the north of the site. There was also no evidence of any notable delay or queuing at the junctions to the north, south, east and west of these junctions serving the wider Skelmersdale area.

Personal Injury Accident Record

3.28 Accident data that is freely available on LCC's MARIO website for the study area agreed with LCC shows there has been one personal injury accident recorded on the 550 metre section of the A577 Neverstitch Road past the site.

3.29 This accident occurred approximately 110 metres south of the A577 Neverstitch Road / Old Engine Lane junction in January 2016. The accident was slight in nature and did not involve a pedestrian or a cyclist.

3.30 Considering the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout, this freely available information shows that there has been a total of 6 accidents recorded, none of which involved a pedestrian or a cyclist.

3.31 Three of these accidents occurred on the roundabout between the A577 Neverstitch Road and Oldham Road. These accidents occurred in July 2016, April 2017 and November 2017 and were all slight in nature.

3.32 The remaining three accidents occurred on Witham Road, the B5312 Railway Road exit from the roundabout and the B5312 Railway Road approach. The accident on the B5312 Railway Road roundabout exit occurred in December 2015 and was a serious injury accident. The accidents on Witham Road and the B5312 Railway Road approach occurred in May 2014 and January 2014 respectively and were both sight injury accidents.

Summary

3.33 Based on the above, there is no notable accident issue along the A577 Neverstitch Road which the introduction of a new access to the proposed development would exacerbate.

3.34 With regard to the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout and taking account of the level of traffic flow associated with the proposed development and its impact as set out later in this report, it is also the case that there is are no notable accident issues within the study area linked to highway layout which traffic from the proposed development would exacerbate.

4 Accessibility by the Sustainable Modes

Pedestrian & Cycle Infrastructure

Existing

4.1 The A577 Neverstitch Road does not include any pedestrian facilities along the site frontage. However, there is a short section of footway on the south side of the A577 Neverstitch Road approximately 60 metres north of Old Engine Lane which links to a westbound / southbound bus stop and the local pedestrian network to the east / Skelmersdale town centre via Turnberry. There is also an underpass in this location which provides a link to an eastbound / northbound bus stop on the opposite side of the A577 Neverstitch Road.

4.2 To the south, there are footways provided across the A577 Neverstitch Road arm of the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout, which link to footways on all other arms of the roundabout. From this roundabout, pedestrians can access the Skelmersdale area to the east, together with facilities along the A577 Ormskirk Road to the west.

4.3 In terms of cycle provision, there are no dedicated facilities in the immediate vicinity of the site. However, the local highway network is considered to be conducive to cycle use.

Proposed

4.4 As set out later in Section 5, it is proposed as part of the development to fill the gaps in the local pedestrian network referred to above to provide:

- A footway on the west side of the A577 Neverstitch Road running from the existing Neverstitch Road footway at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to a point circa 70 metres southwest of Old Engine Lane;
- A pedestrian crossing point on the A577 Neverstitch Road located approximately 70 metres southwest of Old Engine Lane;
- A footway on the east side of the A577 Neverstitch Road running from the above crossing point to the existing footway on the south side of the A77 Neverstitch Road;
- Pedestrian links to this new footway from the development at the end of the dismantled railway line, the new site access from the A577 Neverstitch Road and opposite the new pedestrian crossing point;
- A pedestrian link from the development to the existing footway on the A577 Ormskirk Road.

4.5 These provisions will link the development to the surrounding pedestrian network.

Accessibility for Pedestrians

4.6 Considering the wider accessibility for pedestrians, it is commonly accepted that walking has the greatest potential to replace short car trips, particularly those under two kilometres, whilst the Institution of Highways and Transportation "Guidelines for Providing for Journeys on Foot" states that "*Walking accounts for over a quarter of all journeys and four fifths of journeys less than one mile*".

4.7 The "Guidelines for Providing for Journeys on Foot" also includes a table which suggests that 800 metres is an acceptable maximum walking distance in a town centre and that 1.2km is an acceptable maximum walking distance elsewhere. It also suggests a distance of 2km is an acceptable maximum for commuter and education journeys, although statutory guidance indicates that just over 3km is an acceptable walk distance for primary school pupils, with secondary school pupils being expected to walk up to 5km.

4.8 In the context of the above, **Figure 4.1** shows the areas, services and facilities within these catchments. These are discussed below, with the distances quoted being based on walking route distances from an approximate centre of the site via available routes and not distances as the crow files.

Local Schools

4.9 At approximately 700 metres and 800 metres respectively from the site, **Figure 4.1** shows Broomfield Primary School and St. Richard's Catholic Primary School are the closest to the site and within the 1.2km catchment. There are also two primary schools within the 2km catchment, namely Skelmersdale Trinity C of E / Methodist Primary School and Crow Orchard Primary School, which are 1.5km and 1.7km respectively from the site.

4.10 The above schools are therefore all within the 2km distance deemed acceptable by the IHT guidelines and well within the 3km statutory walk distance. In addition and as also shown in **Figure 4.1**, St. Edmund's Catholic Primary School falls just outside the 2km catchment but, at a 2.1km walk, would still be accessible on foot.

4.11 With regard to high schools and as shown in **Figure 4.1**, West Lancashire Community High School is located 500 metres to the east of the site. This school is therefore within the 2km distance deemed acceptable by the IHT guidelines and well within the 5km statutory walk distance.

4.12 In the context of the above, it is suggested that the site is well placed to allow future pupils to walk to and from school.

Convenience Stores and Local Shops

4.13 As shown in **Figure 4.1** and approximately 600 metres from the site, there is a convenience store located on the east side of the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout. In addition and approximately 800 metres from the site, and as also shown in Figure 4.1, there is convenience store located at the southern end of Sandy Lane. This area forms a local centre which includes a cluster of shops including a pharmacy, a betting shop and a take-away.

4.14 These provisions allow for 'convenience' shopping within an acceptable walk distance of the proposed site for future residents.

Post office

4.15 As shown in **Figure 4.1**, the closest Post Office to the site is located in the Sandy Lane area referred to above. At around 800 metres from the site, it is accessible on foot.

Doctors / Health Facilities

4.16 As shown in **Figure 4.1**, Sandy Lane Health Centre is located to the south east of the site, again in the Sandy Lane area referred to above. At around 850 metres from the site, it is considered that there is access to health facilities within walking distance.

Local Employment Areas

4.17 As shown in **Figure 4.1**, Stanley Industrial Estate and West Gillibrand Industrial Estate are within a 2km walking catchment. There is therefore considered to be access to local employment areas within walking distance of the site.

Leisure Facilities

4.18 As shown in **Figure 4.1**, JMO Sports Park is located approximately 1km to the south of the site. There is therefore considered to be access to local leisure facilities within walking distance of the site.

Bus Stops

4.19 As shown in **Figure 4.1**, the closest bus stops to the scheme are located on the A577 Neverstitch Road and A577 Ormskirk Road. The stops on the A577 Neverstitch Road are located approximately 350 metres from the site for the eastbound stop and approximately 220 metres from the site for the westbound stop. The stops on the A577 Ormskirk Road are located approximately 600 metres from the site for the eastbound stop and approximately 550 metres from the site for the westbound stop. As set out later in this section, these stops are considered to be accessible from the site.

Summary

4.20 The above demonstrates that the site is accessible for pedestrians, with walking representing a realistic mode of transport for future residents undertaking educational journeys and those making use of the various local shops, facilities and employment areas in the local area. The site also offers the opportunity for future residents to connect to the local bus network on foot.

Accessibility for Cyclists

4.21 Considering the accessibility of the site by bicycle, it is commonly accepted that cycling also has the potential to substitute for short car trips, particularly those under five kilometres, and to form part of a longer journey by public transport.

4.22 As can be seen from **Figure 4.2**, the 5km cycling catchment for the site takes in the whole of the Skelmersdale area, the Lathom and Westhead areas to the west and part of the large employment area to the south of the M58. Whilst outside the 5km catchment, Ormskirk and Edge Hill University are around a 5 to 6km ride from the site and could therefore be accessible by bike for some future residents.

4.23 In addition, Ormskirk railway station is around a 6km cycle ride from the site and could also be accessible by bike for some future residents of the site.

4.24 The site is therefore well placed for residents to travel by bicycle for educational, employment, retail and leisure trips. Future residents could also travel by bicycle to access the local rail network.

Summary of Amenities withing Walking / Cycling Distance

4.25 Based on the findings set out above and as requested by LCC, Table 4.1 below summarises the local amenities and their walk / cycle distance from the site.

Table 4.1: Local Amenities and Their Walk / Cycle Distance from the Proposed Site

Amenity	Distance
Broomfield Primary School	700m
St. Richard's Catholic Primary School	800m
Skelmersdale Trinity C of E / Methodist Primary School	1.5km
Crow Orchard Primary School	1.7km
West Lancashire Community High School	500m
Convenience store: A577 / Witham Road roundabout	600m
Convenience store: Sandy Lane	800m
Post Office	800m
Local shops / facilities at Sandy Lane	Circa 800m
Sandy Lane Health Centre	850m
Pharmacy	850m
Local Employment area: Stanley Industrial Estate	Within 2km
Local employment area: West Gillibrand Industrial Estate	Within 2km
Sports Park	1km
Bus stops	220m – 600m
Ormskirk railway station	Circa 6km

Accessibility by Public Transport

4.26 As shown in **Figure 4.1**, the closest bus stops to the scheme are located on the A577 Neverstitch Road and A577 Ormskirk Road. The stops on the A577 Neverstitch Road are located approximately 350 metres from the site for the eastbound stop and approximately 220 metres from the site for the westbound stop. The stops on the A577 Ormskirk Road are located approximately 600 metres from the site for the eastbound stop and approximately 550 metres from the site for the westbound stop.

4.27 Based on these distances, the stops on the A577 Neverstitch Road are within the recognised 400 metre walk distance, whilst the stops on the A577 Ormskirk Road fall around 200 metres outside this distance. However, at total 7 to 8 minute walk time to the stops on the A577 Ormskirk Road, it is considered that this additional circa 200 metre walk distance would not deter future residents from using these stops.

4.28 In light of the above, Table 4.2 below shows the buses serving the site.

Table 4.2: Local Bus Services Serving the Proposed Site

No.	Route	Frequency				
		AM Peak	Off Peak	PM Peak	Sat	Sun
A577 Neverstitch Road						
310	Skelmersdale – Ormskirk – Aughton – Maghull – Aintree – Walton - Liverpool	Every 30mins	Every 30mins	Every 30mins	Every 30mins	Hourly
375 / 385	Southport – Ormskirk – Skelmersdale - Wigan	Every 30mins	Every 30mins	Every 30mins	Every 30mins	Hourly
A577 Ormskirk Road						
310	As above					
375 / 385	As above					

4.29 As can be seen from the above, the 310 and 375/385 buses passing the site offer frequent services to local towns. With journey times in the order of 25 to 30 minutes to Ormskirk, 40 minutes to Wigan and 70 minutes to Southport, these buses offer an opportunity for travel by bus to local employment, retail and leisure destinations.

4.30 The site is therefore connected to the local bus network and offers opportunities for future residents to travel via this mode for a variety of journey purposes.

Rail

4.31 As previously identified, Ormskirk railway station is around a 6km cycle ride from the site and could be accessible by bicycle for some future residents of the site.

4.32 Via the Merseyrail Northern line, Ormskirk station provides access to regular services between Ormskirk and Hunts Cross, calling at stations in between including Aintree, Liverpool Central and Liverpool South. Northern Rail also operates a regular service between Ormskirk and Preston, calling a stations in between including Burscough Junction.

5 Development Proposals

Development Proposals

5.1 The proposals include the development of a new residential scheme. The scheme will provide a total of 200 residential units, made up of a mix of dwelling types and bedroom numbers as follows:

- 10 No. 1 bed apartments;
- 12 No. 2 bed apartments;
- 9 No. 2 bed houses;
- 115 No. 3 bed houses; and
- 54 No. 4 bed houses.

5.2 All of these dwellings would be served by a new access from the A577 Neverstitch Road.

5.3 The proposed site layout for the scheme is reproduced at **Appendix B**.

Site Access

5.4 As shown on the proposed site layout at **Appendix B**, access to the site would be provided via a new priority junction arrangement from the A577 Neverstitch Road. This access arrangement is also shown in more detail on **CBO drawing number CBO-0603-002 Rev D** at **Appendix C**, whilst the below sets out how this access arrangement has been derived.

Access geometry

5.5 Given that the A577 Neverstitch Road is an 'A' class road that is subject to a 40mph speed limit, and that the observed 85th percentile speeds referred to in Section 3 are comparable to the design speed (43.75mph) for such a speed limit, it is considered that the design standards set out in the Design Manual for Roads & Bridges [DMRB] are appropriate in this location. These are also the design standards referred to in the Development Brief for the site.

5.6 Again given the observed speeds on the A577 Neverstitch Road, and giving due cognisance to its "A road" classification, the bend in the route which restricts forward visibility and the scale of development, it is considered that a 'ghost island' priority junction is appropriate in this instance.

5.7 With regard to the geometry of this ghost island arrangement and again based on the status and alignment of the A577 Neverstitch Road, it is considered appropriate to provide through lanes at the maximum 3.65 metre width and the right turn lane at the desirable 3.5 metre width. It is also considered that the length of the right turn lane should be provided based on the 40mph speed limit design speed of 43.75mph. With regard to the minor arm (i.e. the site access), it is considered that this should join the A577 Neverstitch Road via 10 metre radii.

Visibility provision

5.8 With regard to visibility provision at the access, DMRB indicates that a 'y' distance of 120 metres is required for a design speed of 43.75mph based on a 40mph speed limit. Applying the requirements of DMRB to the observed 85th percentile speeds set out in Table 3.2, the observed 44.3mph northbound speed requires a 'y' distance of 122 metres, whilst the observed 42.8mph southbound speed requires a 'y' distance of 115 metres.

5.9 In terms of the 'x' distance, a 2.4 metre provision is considered sufficient.

Wain Homes Scheme

5.10 In addition to the above, there is an improvement proposed as part of the Wain Homes development that would see a pedestrian crossing with a refuge island and an element of carriageway widening implemented to the north of the A577 Neverstitch Road / Old Engine Lane junction. It is therefore considered appropriate to take due cognisance of this improvement as part of any access proposals.

Proposed access

5.11 Based on the above, **drawing CBO-0603-002 Rev D at Appendix C** shows the proposed access arrangement for the development. This shows a 5.5 metre wide access with 2 metre footways to both sides located approximately 130 metres southwest of the A577 Neverstitch Road / Old Engine Lane junction, together with widening of the A577 Neverstitch Road on the western side and within the adopted highway / proposed site.

5.12 Drawing CBO-0603-002 Rev D also shows that, with the access positioned in the proposed location, the works associated with the Wain Homes pedestrian improvement could be implemented.

5.13 With regard to visibility, drawing CBO-0603-002 Rev D shows the necessary provisions can be made for vehicles leaving the access.

5.14 Considering drivers travelling south on the A577 Neverstitch Road seeing vehicles waiting to turn right into the site access, drawing CBO-0603-002 Rev D shows a 107.5 metre forward visibility provision is achievable, which equates to a design speed of 41.15mph.

5.15 Although this design speed is circa 1.5mph below the observed 24 hour 85th percentile southbound speed, it is only 0.5mph below the 7:00 to 19:00 observed 85th percentile speed (41.7mph) and just under 1mph below the 6:00 to 22:00 observed 85th percentile speed (42.1mph) shown in Table 3.2. Furthermore, it is the case that these right turning vehicles would not impede through traffic and that any vehicle approaching and turning right would be slowing down in the deceleration lane in any event to turn into the access. It is therefore considered reasonable to accept this small departure in relation to the forward visibility provision on the southbound approach to the proposed access.

5.16 In terms of drivers waiting to turn right into the access seeing vehicles approaching from the south, drawing CBO-0603-002 Rev D shows a 106.1 metre forward visibility provision is achievable to a point 1 metre from the nearside kerbline, which equates to an approach speed of 40.9mph. Measuring to the centreline, a provision of 116.5 metres is achievable, whilst a provision of 122 metres is achievable to a point 1 metre into the northbound lane. These provisions equate to approach speeds of 43.0mph and 44.3mph respectively.

5.17 With the central island shown on drawing CBO-0603-002 Rev D to the south of the access, it is appropriate to measure to the centreline / the centre of the northbound carriageway on the basis that approaching vehicles would not be overtaking. Adopting this approach, the 43.0mph speed associated with the forward visibility provision to the centreline is 1.3mph below the observed 24 hour 85th percentile northbound speed. However, the speed associated with the forward visibility to the centreline (43.0mph) is comparable to the northbound speeds for all other time periods set out in Table 3.2 (43.4mph to 43.5mph), whilst the forward visibility to the centre of the northbound lane is appropriate for the 44.3mph approach speed. It is therefore considered reasonable to accept this small departure in relation to the forward visibility provision for vehicles turning right into the access seeing oncoming vehicles.

5.18 In light of the above and in relation to the Development Brief for the site, it is considered that the proposals provide an access from the A577 Neverstitch Road "*at a point where maximum visibility can be achieved*" and that they therefore accord with the requirements of the brief.

Swept Path Analysis

5.19 Following the receipt of confirmation from LCC regarding the required vehicle dimensions, swept path analysis has been carried out based on a 9.9m long, 3 axle Econic refuse vehicle entering and exiting the proposed access at 10mph. The findings of these swept path analyses are included in **Figures 5.1 and 5.2**, which show that this refuse vehicle can suitably negotiate the access.

Summary

5.20 Based on the above, the proposed access arrangements from the A577 Neverstitch Road are considered acceptable and appropriate from a design, safety and operational perspective. The principle of these access arrangements has also been agreed with LCC through the pre-application process.

Construction Access

5.21 It is proposed to provide a construction access in the early stages of the delivery of the development in the location of the turning head outside plots 190 and 195 of the scheme layout at Appendix B. It is envisaged that this construction access would sit next to the main site access discussed above. **Drawing CBO-0603-003 Rev A** at **Appendix C** therefore shows the achievable visibility provision at a construction access in this location.

5.22 As can be seen from Drawing CBO-0603-003 Rev A, a large construction vehicle could wait in the hatching formed by the main site access when wating to turn into the construction access. There is, therefore, no issue with drivers travelling south on the A577 Neverstitch Road seeing these waiting vehicles.

5.23 With regard to visibility from the construction access, drawing CBO-0603-003 Rev A shows the necessary provisions can be made for vehicles leaving the access

5.24 In terms of construction vehicle drivers waiting to turn right into the construction access seeing vehicles approaching from the south, drawing CBO-0603-003 Rev A shows a 114.5 forward visibility provision is achievable when measuring to the centreline. This provision equates to approach speeds of 42.6mph.

5.25 The 42.6mph speed associated with the forward visibility provision to the centreline is just 0.8 to 0.9mph below the observed working day 85th percentile northbound speeds. As with the main site access, it is considered reasonable to accept this small departure in relation to the forward visibility provision for vehicles turning right into the construction access seeing oncoming vehicles.

Summary

5.26 Based on the above, the proposed construction access arrangement from the A577 Neverstitch Road is considered acceptable. LCC has also indicated that they would not be averse to such a construction access.

Internal Site Layout

5.27 Within the site and as shown on the proposed site layout at Appendix B, the new access from the A577 Neverstitch Road would continue west for a distance of approximately 65 metres. At this point, the access would form a T junction arrangement, with routes heading north and south.

5.28 Approximately 30 metres north of this T junction arrangement, the access road would form another T junction, with a cul-de-sac heading north and the main access heading west, with this main access serving a loop road arrangement and a number of cul-de-sacs.

5.29 Approximately 100 metres south of the first T junction arrangement, the access road would form another T junction, with a cul-de-sac heading northwest and the main access heading southeast, with this main access serving a loop road arrangement and a cul-de-sac.

5.30 All of the above routes would be 5.5 metres in width with 2 metre footways to both sides.

5.31 With regard to servicing and access by refuse vehicles, the layout has been tracked using a 9.9m long, 3 axle Econic refuse vehicle. **Figures 5.3 and 5.4** show this vehicle can negotiate the streets within the scheme, whilst **Figures 5.5 to 5.7** show this vehicle negotiating the turning heads within the site.

Pedestrian and Cycle Provision

5.32 As set out above, access to the site would be provided via a new priority junction arrangement from the A577 Neverstitch Road. This access would include 2 metre wide footways to both sides. These footways would continue throughout the site on both sides of the highway network.

5.33 In addition to these internal provisions and as set out in Section 4, and as shown on the proposed site layout at **Appendix B** and the access drawing **CBO drawing number CBO-0603-002 Rev D** at **Appendix C**, there are a number of new pedestrian facilities proposed as part of the development to link the site to the surrounding network. These new facilities include:

- A footway on the west side of the A577 Neverstitch Road running from the existing Neverstitch Road footway at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to a point circa 70 metres southwest of Old Engine Lane;

- A pedestrian crossing point on the A577 Neverstitch Road located approximately 70 metres southwest of Old Engine Lane;
- A footway on the east side of the A577 Neverstitch Road running from the above crossing point to the existing footway on the south side of the A77 Neverstitch Road;
- Pedestrian links to this new footway from the development at the end of the dismantled railway line, the new site access from the A577 Neverstitch Road and opposite the new pedestrian crossing point;
- A pedestrian link from the development to the existing footway on the A577 Ormskirk Road.

5.34 With regard to cycle provision, the internal site layout is considered to be conducive to cycle use.

6 Traffic Generation and Assignment

TRICS Derived Trip Rates

6.1 In order to determine the trip rates associated with the proposed residential development, the TRICS database has been interrogated for the sub land use of 'Houses Privately Owned'. To achieve a broad dataset, sites from London and Ireland have been removed and the sites chosen based on a 100 to 300 dwelling range. Multi modal sites have also been utilised, whilst sites including bungalows and low average bed numbers / rates have been removed. TRICS outputs for this interrogation are included in **Appendix D**.

6.2 Based on this methodology the resultant trip rates for the traditional 8:00 – 9:00 weekday morning and 17:00 – 18:00 weekday evening peak hours are shown below in Table 6.1. In addition, Table 6.1 also reproduces the trip rates used and agreed for the previously referred to Lathom Pastures Phase 1 development and the Wain Homes application.

Table 6.1: Proposed Development Trip Rates

	Weekday Morning Peak			Weekday Evening Peak		
	Arrivals	Departures	Total	Arrivals	Departures	Total
TRICS Rates	0.152	0.387	0.539	0.352	0.154	0.506
'Agreed' Rates	0.153	0.427	0.580	0.396	0.238	0.634

6.3 As can be seen from the above, the trip rates derived from the TRICS interrogation are comparable to those previously agreed during the morning peak. For the evening peak, the previously agreed rates are notably higher. As a result and for robustness, the previously agreed trip rates have been used to consider the traffic generation associated with the proposed development. This approach has been agreed with LCC.

6.4 It should be noted that, whilst the referred to trip rates correspond to the traditional 8:00 – 9:00 weekday morning and 17:00 – 18:00 weekday evening peak hours, as set out in Section 3 the network evening peak occurs earlier in the afternoon, namely at 15:00 – 16:00 on the A577 Neverstitch Road past the site and at 16:15 – 17:15 at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout. It is also the case that no allowance has been made in the above trip rates for the lower trip rates that would be associated with the apartment element of the scheme.

6.5 The application of the previously agreed trip rates therefore represents a robust approach.

Resultant Traffic Generation

6.6 Applying the above trip rates to the proposed 200 dwelling development, Table 6.2 below sets out the resultant traffic generation.

Table 6.2: Proposed Development Traffic Generations

	Weekday Morning Peak			Weekday Evening Peak		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Traffic Generation	31	85	116	79	48	127

Traffic Distribution and Assignment

6.7 Trip distribution has been based on the 2011 census journey to work [JTW] information using journeys to work made by car drivers. The distribution is based on data at a middle super output area level [MSOA].

6.8 Two MSOAs have been used in the analysis, West Lancashire 009 and 011. Whilst the site lies just to the west of these two areas, they are considered to provide the best approximation of the JTW pattern from the site. Work destinations from these two areas have been amalgamated to calculate the work based trip distributions and assignment for residential traffic leaving the site to travel to work.

6.9 Having determined the destination of car driver based journeys, these journeys have then been manually assigned to the study network based on the following routes / destinations:

- Route 1: South along the A577 Neverstitch Road then west along the A577 Ormskirk Road;
- Route 2: South along the A577 Neverstitch Road / B5312 Railway Road then east towards Skelmersdale;
- Route 3: South along the A577 Neverstitch Road / B5312 Railway Road then west on B5312 Liverpool Road towards M58 Jct 3;
- Route 4: North along the A577 Neverstitch Road then north at Half Mile Island;
- Route 5: North along the A577 Neverstitch Road then east at Half Mile Island;
- Route 6: North along the A577 Neverstitch Road then south at Half Mile Island.

6.10 The destination and origin areas associated with the above routes are shown in the information included at **Appendix E**, which provides the raw ward data used to derive the distribution.

6.11 Based on the methodology detailed above, Table 6.3 below shows the percentage of development related traffic assigned to each of the six routes.

Table 6.3: Trip Distribution and Assignment

Route	Origin / Destination	Percentage
1	South along the A577 Neverstitch Road then west along the A577 Ormskirk Road	22%
2	South along the A577 Neverstitch Road / B5312 Railway Road then east towards Skelmersdale	31%
3	South along the A577 Neverstitch Road / B5312 Railway Road then west on B5312 Liverpool Road towards M58 Jct 3	16%
4	North along the A577 Neverstitch Road then north at Half Mile Island	6%
5	North along the A577 Neverstitch Road then east at Half Mile Island	18%
6	North along the A577 Neverstitch Road then south at Half Mile Island	7%
Total		100%

6.12 Adopting the above methodology, which LCC has confirmed does not seem unreasonable, the percentage traffic assignments within the study area are shown graphically in **Figure 6.1**.

Resultant Development Traffic Flows

6.13 Based on the traffic generations shown in Table 6.2 and the assignments discussed above, the weekday morning and evening peak traffic flows associated with the proposed development are shown diagrammatically in **Figure 6.2**.

7 Off-Site Traffic Impact and Operational Assessments

Off-Site Traffic Impact

A577 Neverstitch Rd / A577 Ormskirk Rd / B5312 Railway Rd / Witham Rd / Ormskirk Rd

7.1 As set out earlier in the report, LCC has requested that the impact of the proposed development be considered at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout to the south.

7.2 In light of the above, the traffic impact of the proposals at this junction, compared to the observed traffic flows and not adjusted or future year assessment flows in order to provide further robustness, are shown in **Figure 7.1.**

7.3 **Figure 7.1** shows that the total percentage impact of the proposed development would be 4.9% during the weekday morning peak and 6.1% during the weekday evening peak at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout.

7.4 This figure also shows that, during the weekday morning peak, the maximum single arm impact is 12.4% on the A577 Neverstitch Road, with the A577 Ormskirk Road and B5312 Railway Road arms seeing impacts of between circa 2% and 3%. During the weekday evening peak, the maximum single arm impact is 9.6% on the A577 Neverstitch Road, with the A577 Ormskirk Road and B5312 Railway Road arms seeing impacts of between circa 5% and 10%.

7.5 Based on these increases, it is considered appropriate to undertake operational assessments of this junction.

7.6 In light of the above, the remainder of this section provides details of the traffic flows used to undertake these assessments, together with the resultant model findings.

Committed Development

7.7 Following pre-application discussions with LCC, they have indicated that there are two committed developments in the study area:

- The Lathom Pastures Phase 1 scheme and accessed from Firswood Road; and
- The Wain Homes scheme located to the north of the Lathom Pastures Phase 1 scheme and also accessed from Firswood Road.

7.8 Traffic flows for these two developments have therefore been taken from the respective Transport Assessments that supported the applications.

7.9 Based on the above, **Figure 7.2** shows the Lathom Pastures Phase 1 committed development peak hour flows, whilst **Figure 7.3** shows the Wain Homes committed development peak hour flows.

Future Years and Traffic Growth

Future Years

7.10 The now withdrawn Guidance on Transport Assessment [GTA] document stated that, on local roads, future year assessments should be carried out based on a year 5 years after the year of registration of the planning application. On this basis, assessment of the potential impact on the surrounding highway network should be considered at 2025.

7.11 In order to derive factors for this future year the "RTF 2018 Scenario 1 – Reference" Indices, adjusted to local conditions using the geographical parameters within the TEMPRO program, has been utilised. Based on the geographical parameter of 'West Lancashire 014' and the 'all' roads parameter within TEMPRO 7.2, Table 7.1 below details the growth factors to be applied to the 2020 observed traffic flows set out in Section 3 to derive a set of assessment year background traffic flows.

Table 7.1: TEMPRO Adjusted Growth Factors for West Lancashire

	Weekday Morning Peak	Weekday Evening Peak
2020 – 2025	1.0539	1.0522

Assessment Year Traffic Flows

7.12 Giving due cognisance to the above, **Figure 7.4** shows the 2025 TEMPRO growthed background traffic flows for the weekday morning and evening peaks.

7.13 From these background flows, **Figure 7.5** shows the 2025 base flows for the weekday morning and evening peaks respectively with the committed development traffic flows added.

7.14 Following on from the above, 2025 base plus proposed development traffic flows are shown in **Figure 7.6** for the weekday morning and evening peaks.

Operational Assessments: Proposed A577 Neverstitch Road Site Access Junction

7.15 Based on the identified 2025 base plus proposed development traffic flows and the proposed access junction detailed in Section 5, Junctions 9 assessments have been carried out for the A577 Neverstitch Road site access. Table 7.2 below shows the results of these operational assessments, whilst the full LINSIG outputs are included at **Appendix F** for information.

Table 7.2: Proposed A577 Neverstitch Road Site Access: Junctions 9 Results

	Weekday Morning Peak		Weekday Evening Peak	
	RFC	Q	RFC	Q
Site Access: Left turn	0.056	0	0.033	0
Site Access: Right turn	0.203	0	0.122	0
Neverstitch Road: Right turn	0.017	0	0.049	0

RFC: Ratio of Flow to Capacity. Q: Queue length in vehs

7.16 As can be seen from the above table the Junctions 9 modelling indicates that the maximum RFC value at the proposed site access would be 0.203 during the weekday morning peak and 0.122 during the weekday evening peak. These levels of RFC are significantly below the traditional 0.850 design capacity. There would also be no queuing during either peak.

7.17 Based on these results it is suggested that there would be no operational issues associated with the proposed site access and that the proposed access arrangement would be more than sufficient to safely serve the proposed development.

Operational Assessments: A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road Roundabout

7.18 Based on the adjusted 2020, 2025 base and 2025 base plus proposed development traffic flows, Junctions 9 assessments have been carried out for the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout. Table 7.3 below shows the results of these operational assessments, whilst the full Junctions 9 outputs are included at **Appendix G** for information.

Table 7.3: A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road Roundabout: Junctions 9 Results

	Existing		2025 Base		2025 Base Plus Dev	
	RFC	Q	RFC	Q	RFC	Q
Weekday Morning Peak						
A577 Neverstitch Road	0.372	1	0.406	1	0.447	1
Witham Road	0.297	0	0.327	1	0.336	1
B5312 Railway Road	0.293	0	0.317	1	0.326	1
A577 Ormskirk Road	0.396	1	0.475	1	0.484	1
Weekday Evening Peak						
A577 Neverstitch Road	0.282	0	0.307	0	0.329	1
Witham Road	0.351	1	0.403	1	0.408	1
B5312 Railway Road	0.248	0	0.283	0	0.303	0
A577 Ormskirk Road	0.465	1	0.534	1	0.558	1

RFC: Ratio of Flow to Capacity. Q: Queue length in vehs

7.19 As can be seen from the above table the Junctions 9 modelling indicates that at a five year future year and with the development in place, and despite the onerous traffic flows used in the assessments, the maximum RFC value at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout would be 0.484 during the weekday morning peak and 0.558 during the weekday evening peak. These levels of RFC remain significantly below the traditional 0.850 design capacity. There would also be minimal queuing.

7.20 Based on these results it is suggested that there would be no operational issues at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout and that the existing junction arrangements are sufficient to serve the proposed development.

Summary

7.21 Based on the modelling presented in this section of the report, it is concluded that there would be no operational issues associated with the proposed site access and that the proposed access arrangement would be more than sufficient to safely serve the proposed development. It is also concluded that there would be no operational issues at the A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout and that the existing junction arrangements are sufficient to serve the proposed development.

8 Summary, Conclusions and Recommendations

Summary and Conclusions

8.1 Based on the findings of this report it is concluded that:

- The proposed site is allocated for residential development in the West Lancashire Local Plan and, in relation to transport, the scheme complies the Development Brief for the site;

Sustainability and Linkage

- With the improvements in place that are proposed as part of the development, the proposed site will have good accessibility for pedestrians and cyclists;
- Considering the wider context, the site is well placed in terms of pedestrian connectivity, with walking representing a very realistic alternative to the car for future residents undertaking educational journeys and those making use of the various local shops, facilities and employment areas in the local area. The site also offers the opportunity for future residents to connect to the local bus network on foot;
- Considering cycling in the wider context, the 5km cycling catchment for the site takes in the whole of the Skelmersdale area, the Lathom and Westhead areas to the west and part of the large employment area to the south of the M58. Whilst outside the 5km catchment, Ormskirk and Edge Hill University are around a 5 to 6km ride from the site and could therefore be accessible by bike for some future residents. Ormskirk railway station is also around a 6km cycle ride from the site and could also be accessible by bike for some future residents of the site. The site is therefore well placed for residents to travel by bicycle for educational, employment, retail and leisure trip;
- With regard to public transport, the site is well placed for future residents to connect to the local bus network on foot. It also offers some opportunity for future residents to connect to the local rail network by bicycle. There are therefore opportunities for future residents to travel by these modes for a variety of journey purposes;

Site Access, Pedestrian and Cycle Provision

- The proposed access arrangements from the A577 Neverstitch Road are considered acceptable and appropriate from a design, safety and operational perspective. The principle of these access arrangements has also been agreed with LCC through the pre-application process. Furthermore, assessments show that the access junction would be sufficient to serve the proposed development;
- The proposed construction access arrangement from the A577 Neverstitch Road is considered acceptable. LCC has also indicated that they would not be averse to such a construction access;
- The internal highway arrangement is appropriate to suitably serve the proposed development;
- The proposed access from the A577 Neverstitch Road would include 2 metre wide footways to both sides which would continue throughout the site on both sides of the highway network;
- In addition to these internal provisions, there are a number of new pedestrian facilities proposed as part of the development to link the site to the surrounding network. These new facilities include footways and a crossing point on the A577 Neverstitch Road, pedestrian links to these new footways from the development at various points and a pedestrian link from the development to the existing footway on the A577 Ormskirk Road. These provisions will link the development to the surrounding pedestrian network;
- With regard to cycle provision, the internal site layout is considered to be conducive to cycle use;

Traffic Impact

- Based on the existing accident record and in the context of the increases in traffic flow as a result of the development, it is considered that the proposals would not materially impact on the areas existing highway safety record;
- As agreed with LCC through the pre-application process, operational assessments have been carried out at A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road roundabout. These assessments show that the existing junction arrangements are sufficient at this location to serve the proposed development.

Recommendations

8.2 In light of the above it is the recommendation of CBO Transport that there are no traffic or transportation grounds on which to refuse the application for the proposed residential development.

Figures

Figure 3.1 Site Location

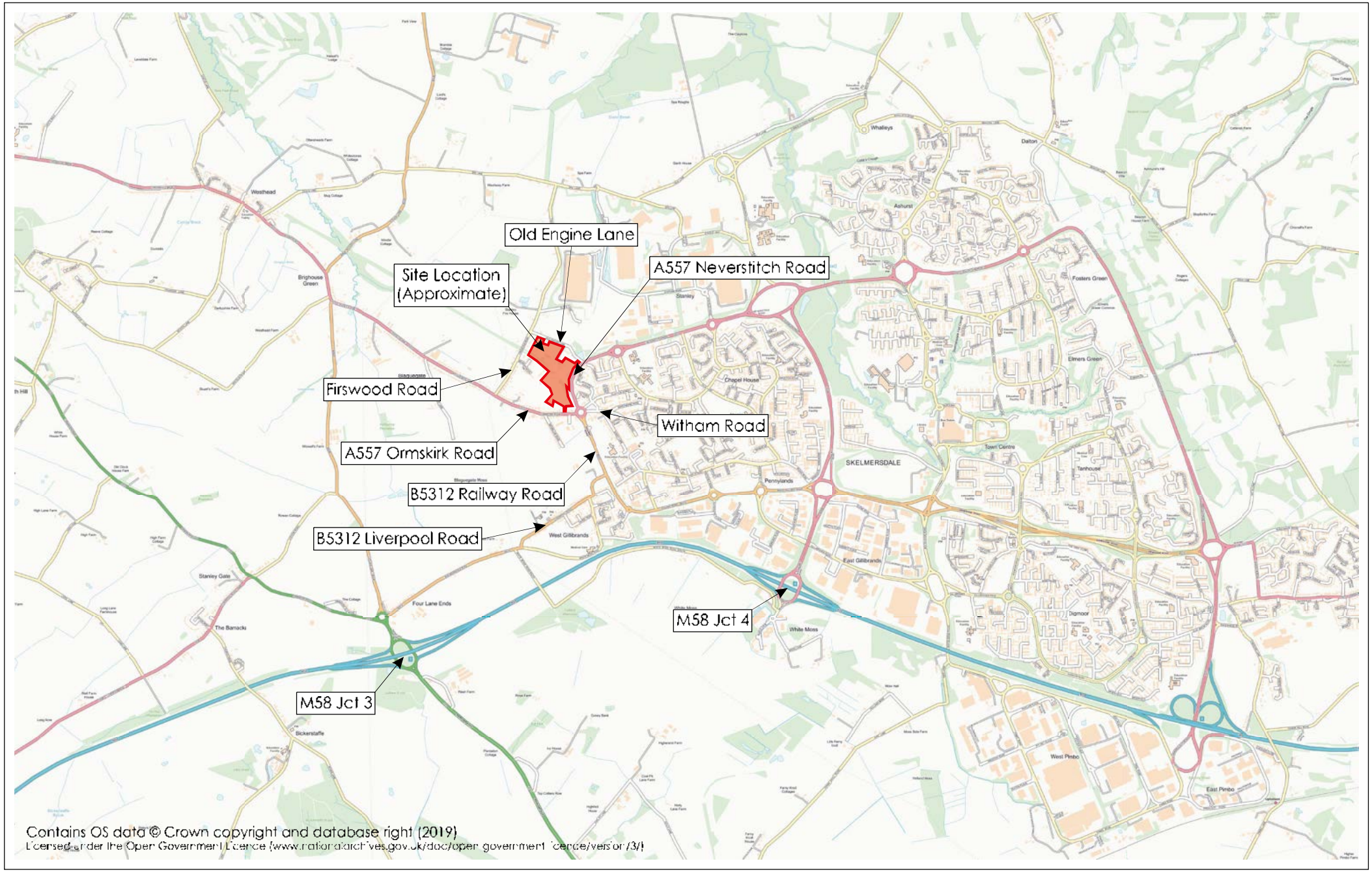
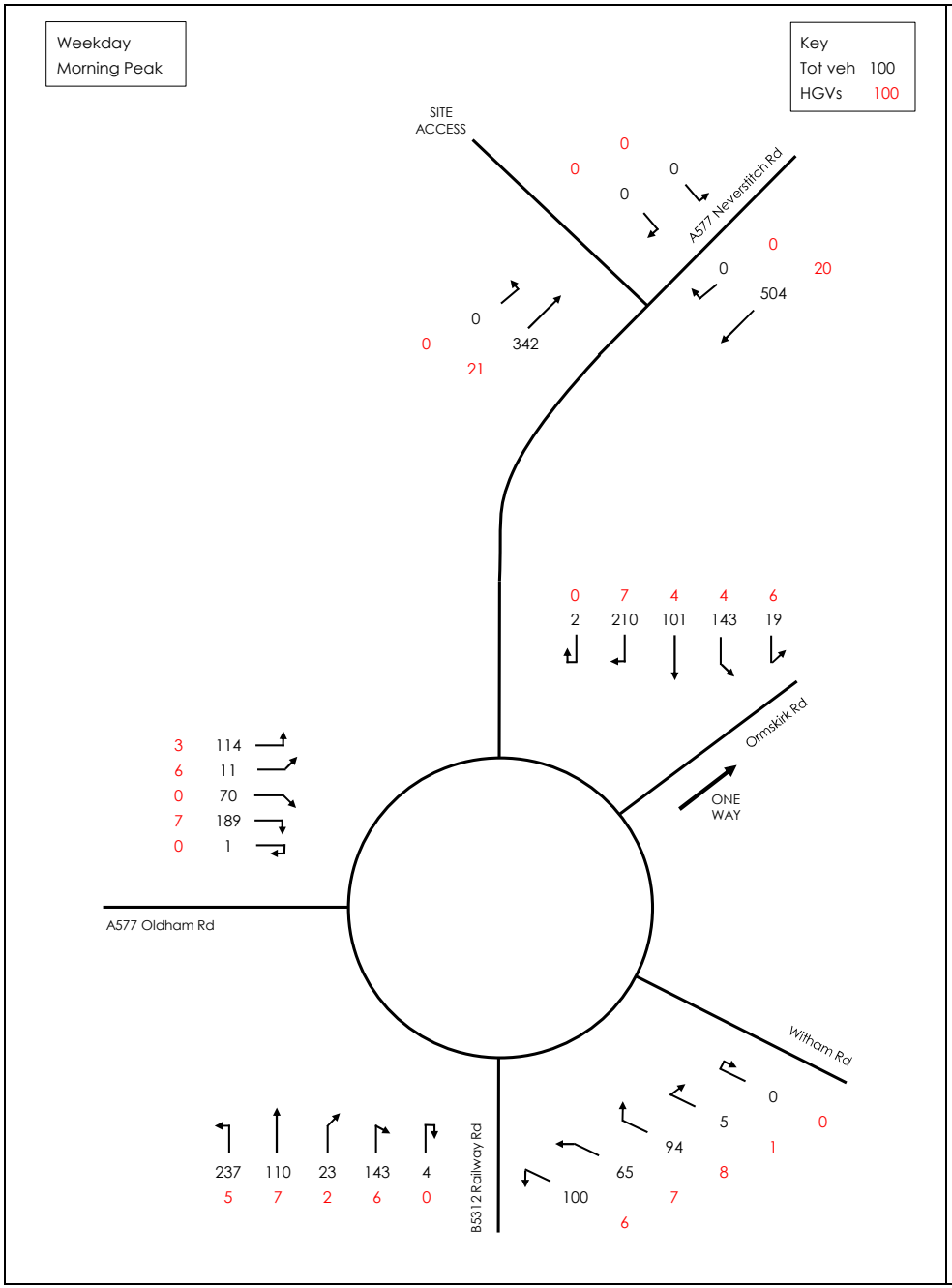


Figure 3.2 Observed Traffic Flows



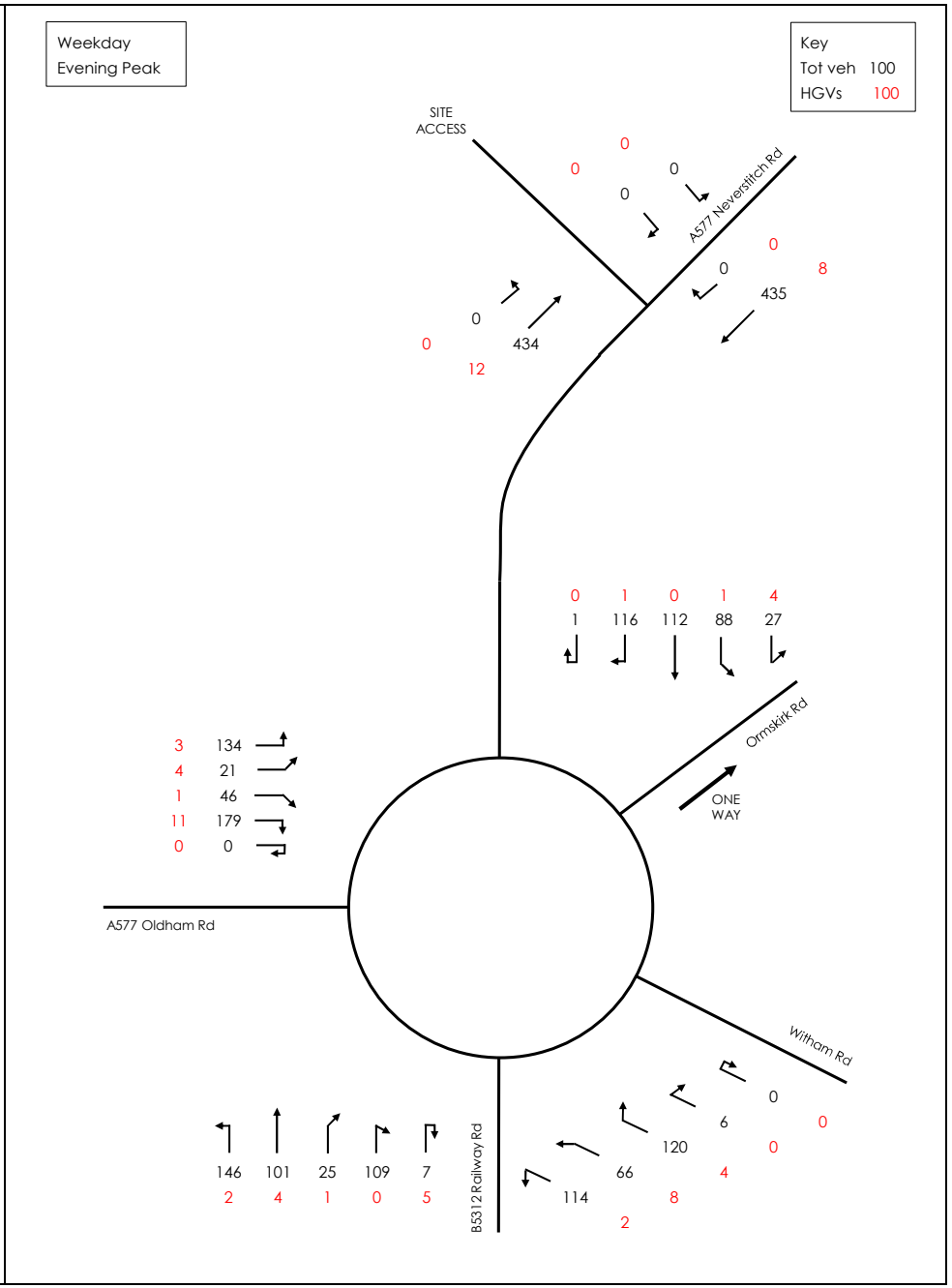


Figure 3.3 Adjusted 2020 Traffic Flows

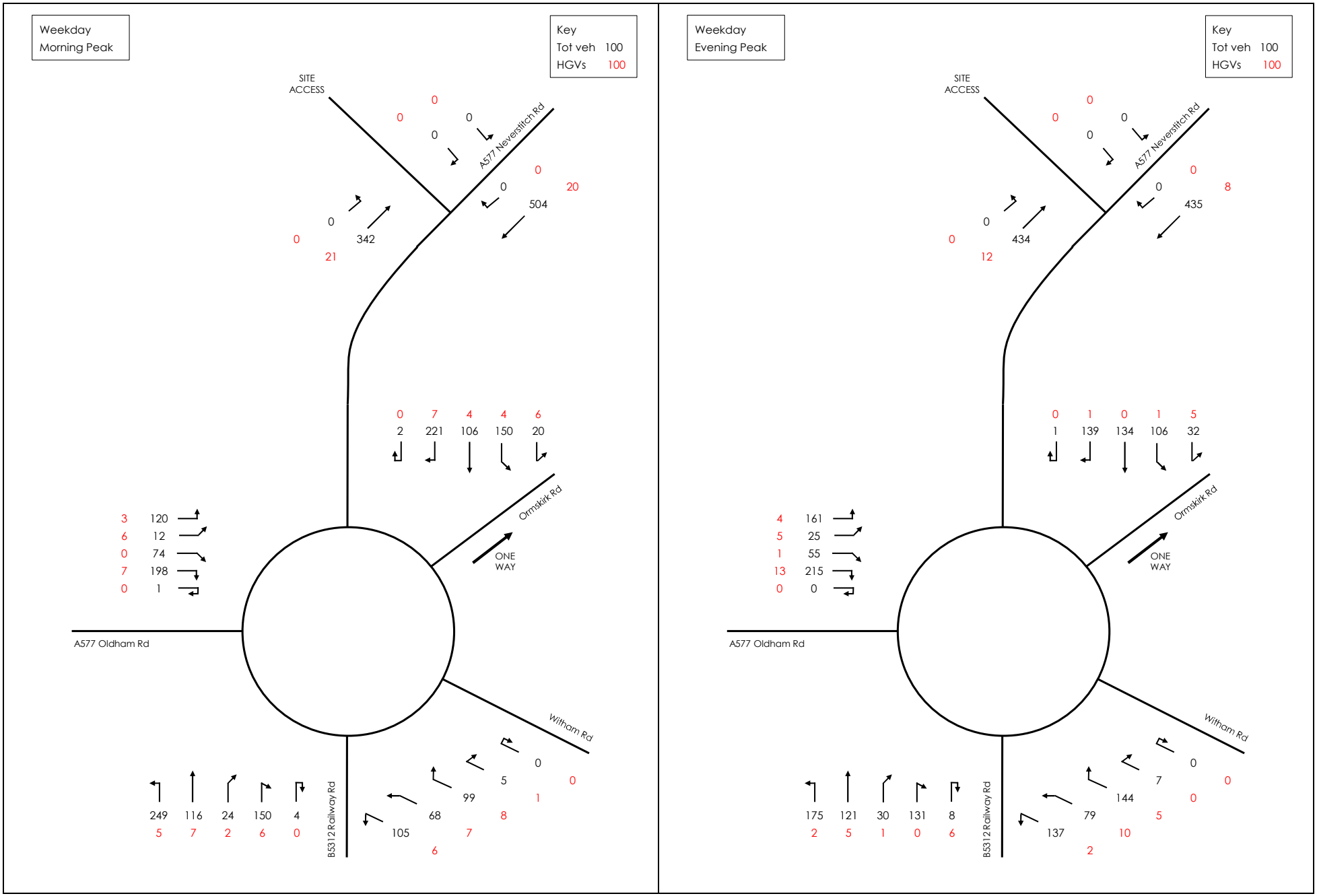


Figure 4.1 Walking Catchment and Site Accessibility

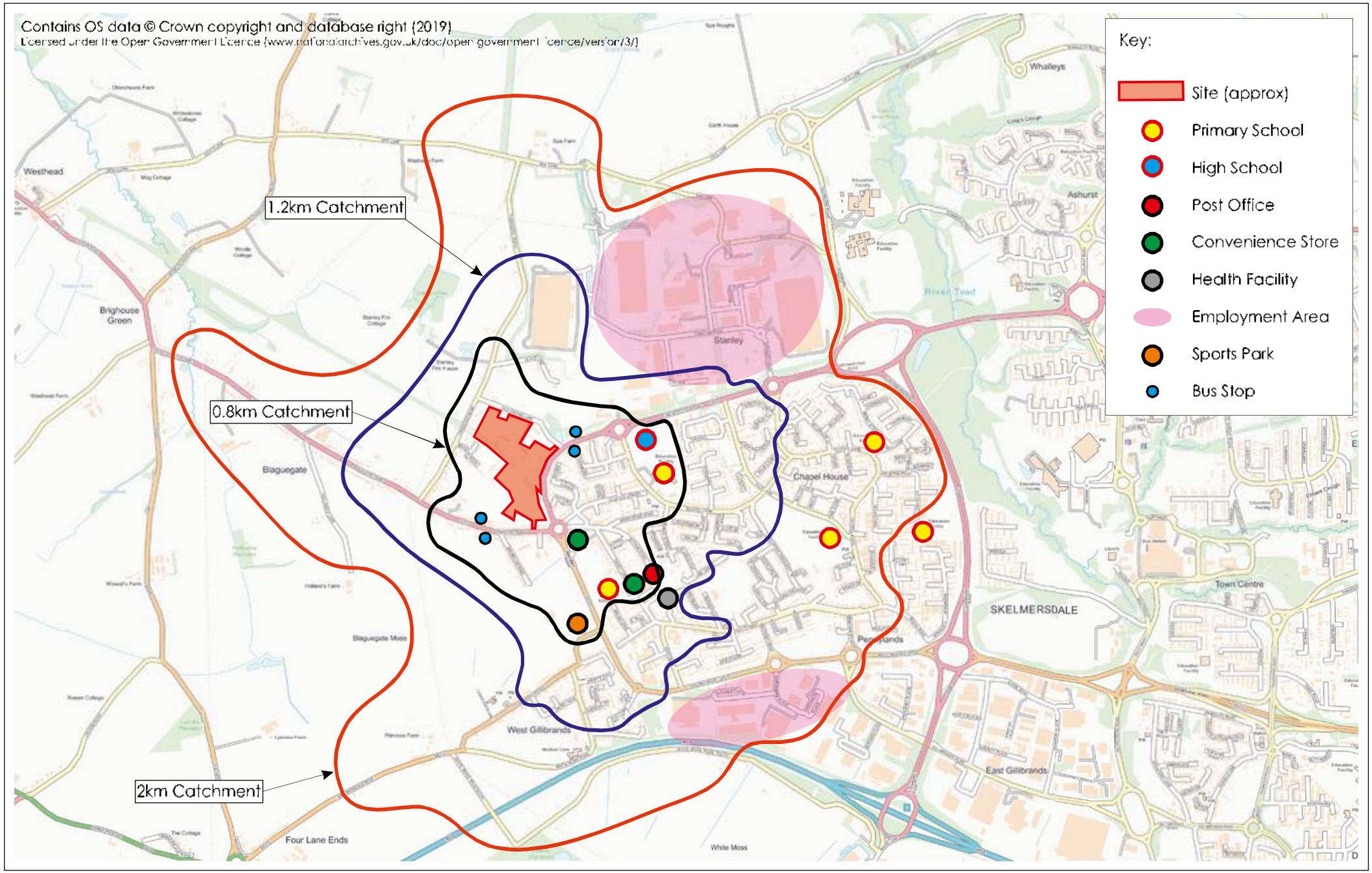


Figure 4.2 5km Cycling Catchment

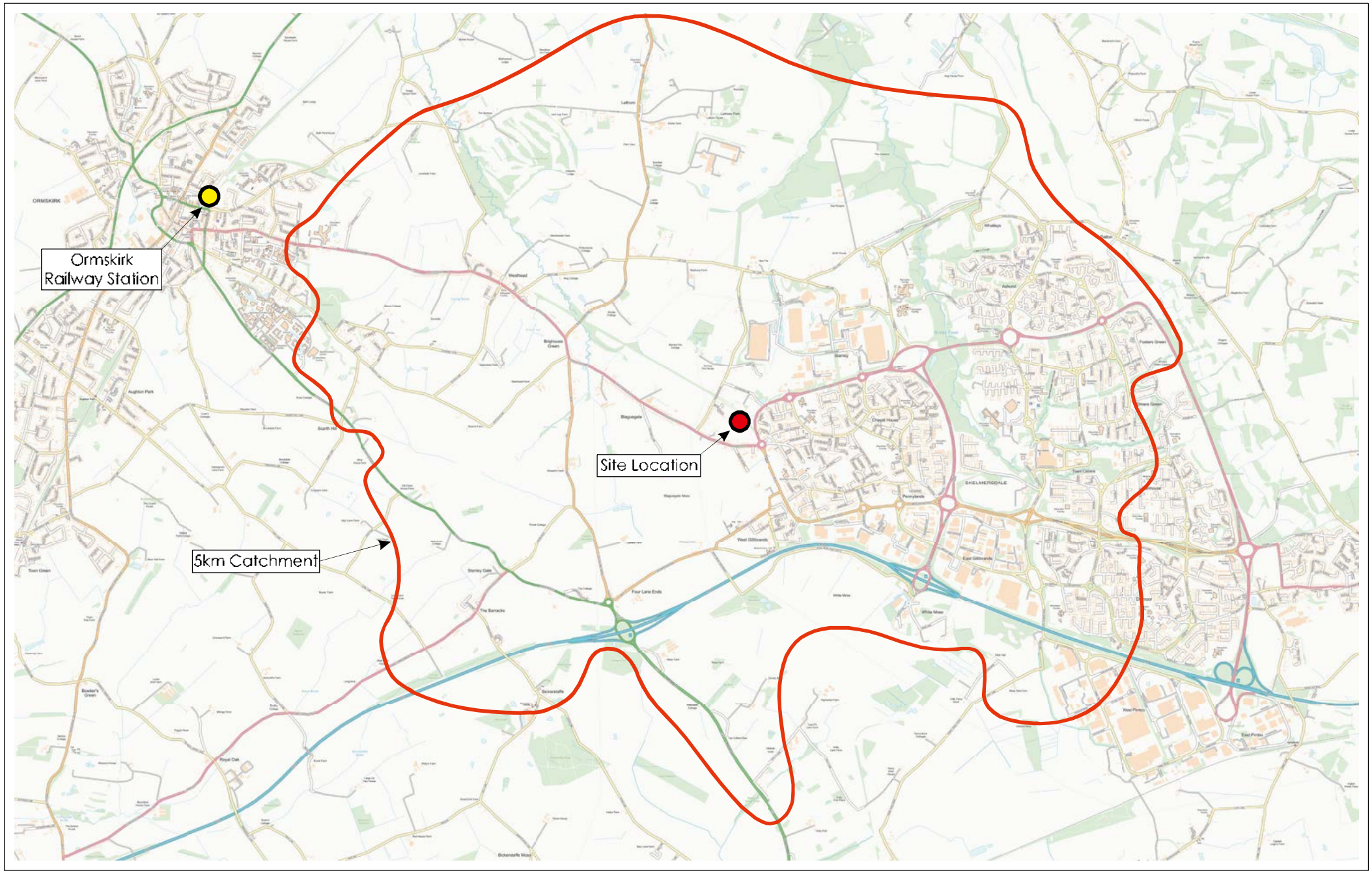


Figure 5.1 Swept Path Analysis: Large Refuse Vehicle Entering Access
(1:250 @ A3)

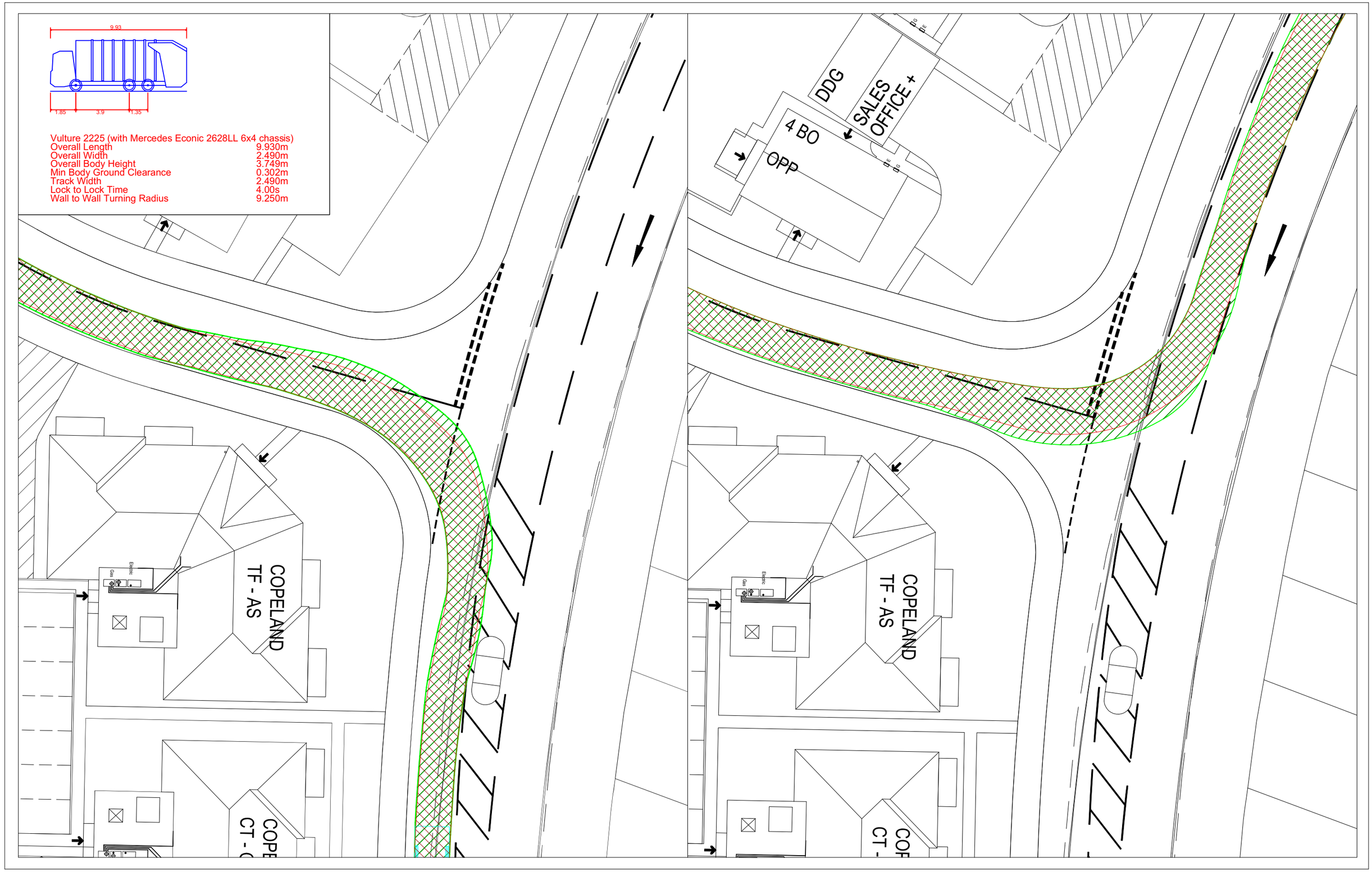


Figure 5.2 Swept Path Analysis: Large Refuse Vehicle Exiting Access
(1:250 @ A3)

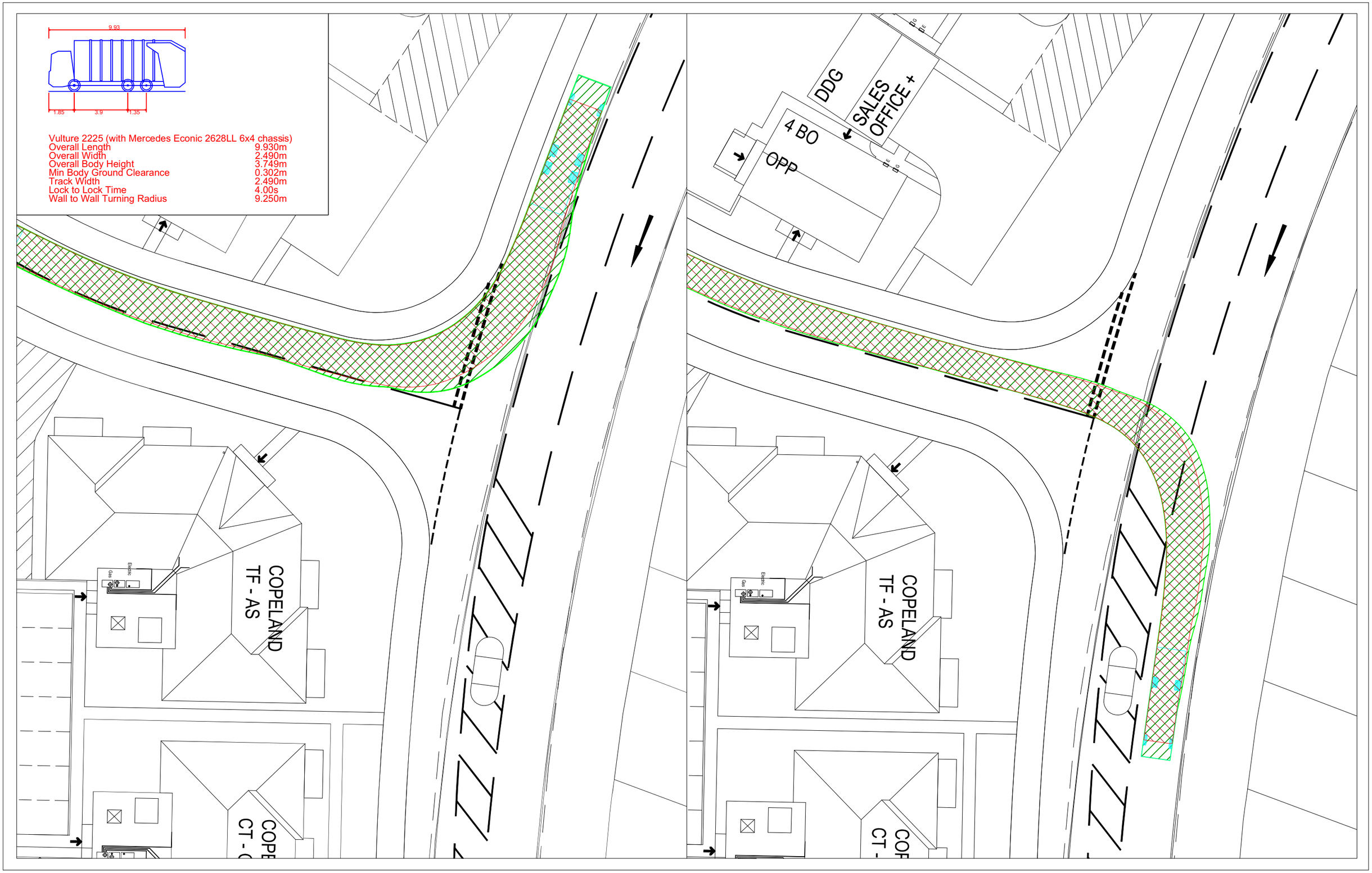


Figure 5.3 Swept Path Analysis: Large Refuse Vehicle Passing Through Site (Northern Section)
(1:1,000 @ A3)

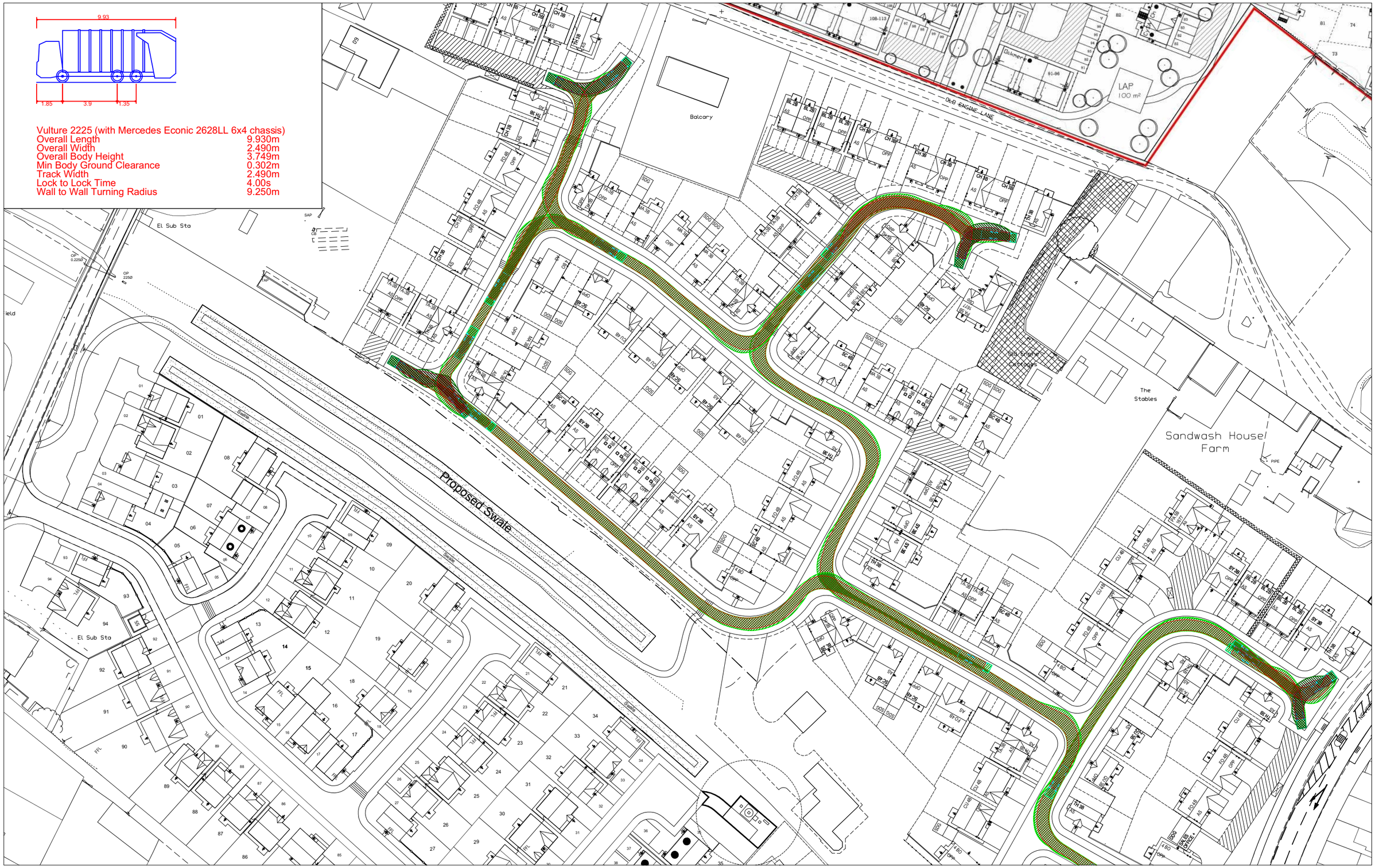


Figure 5.4 Swept Path Analysis: Large Refuse Vehicle Passing Through Site (Southern Section)
(1:1,000 @ A3)

Figure 5.5 Swept Path Analysis: Large Refuse Vehicle Turning in Turing Heads (Plots 60/64 & 76/82)
(1:250 @ A3)

Figure 5.6 Swept Path Analysis: Large Refuse Vehicle Turning in Turing Heads (Plots 120/123 & 190/194) (1:250 @ A3)

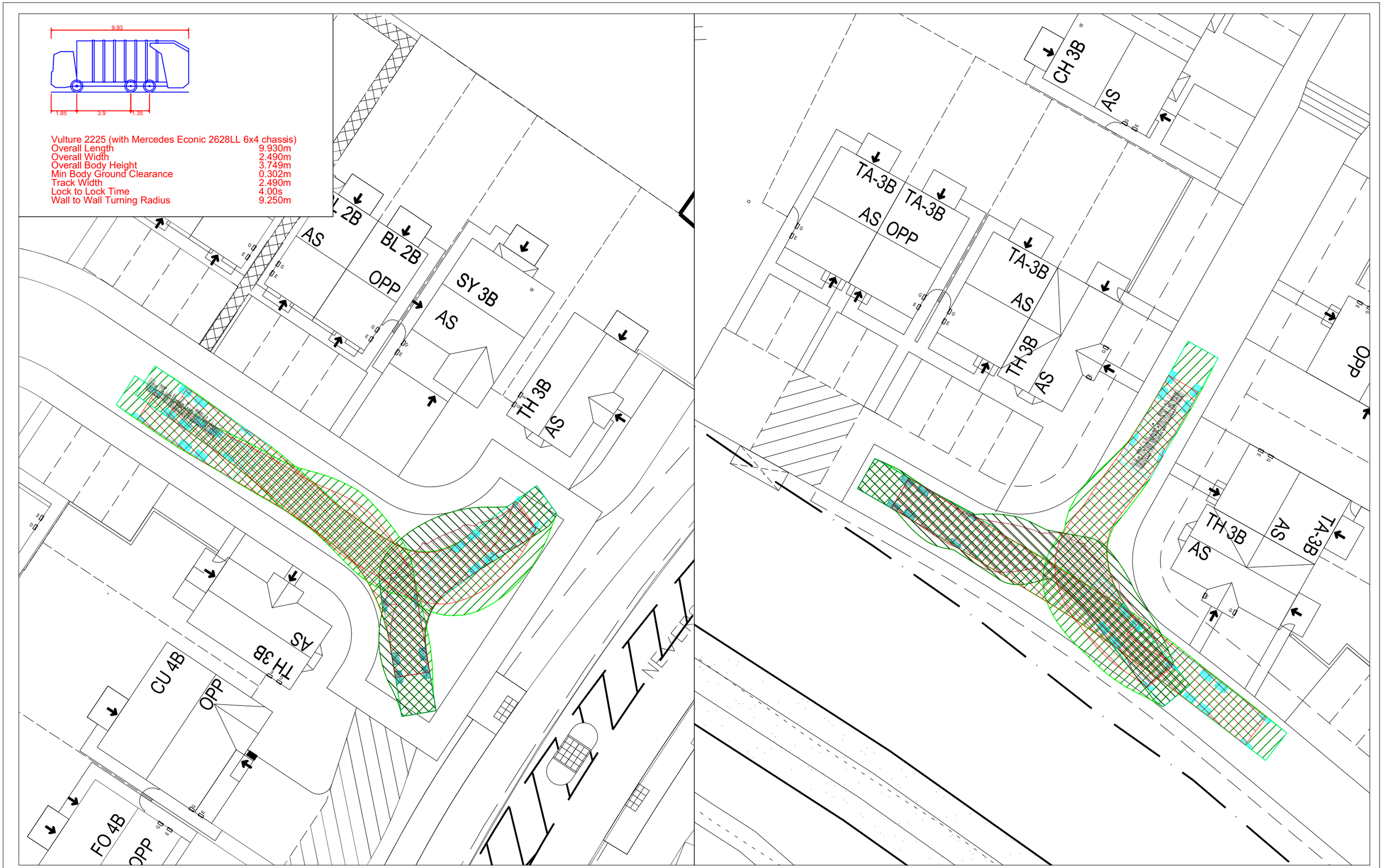


Figure 5.7 Swept Path Analysis: Large Refuse Vehicle Turning in Turing Heads (Plots 130/135 & 154/158) (1:250 @ A3)

Figure 6.1 Proposed Development Traffic Assignment

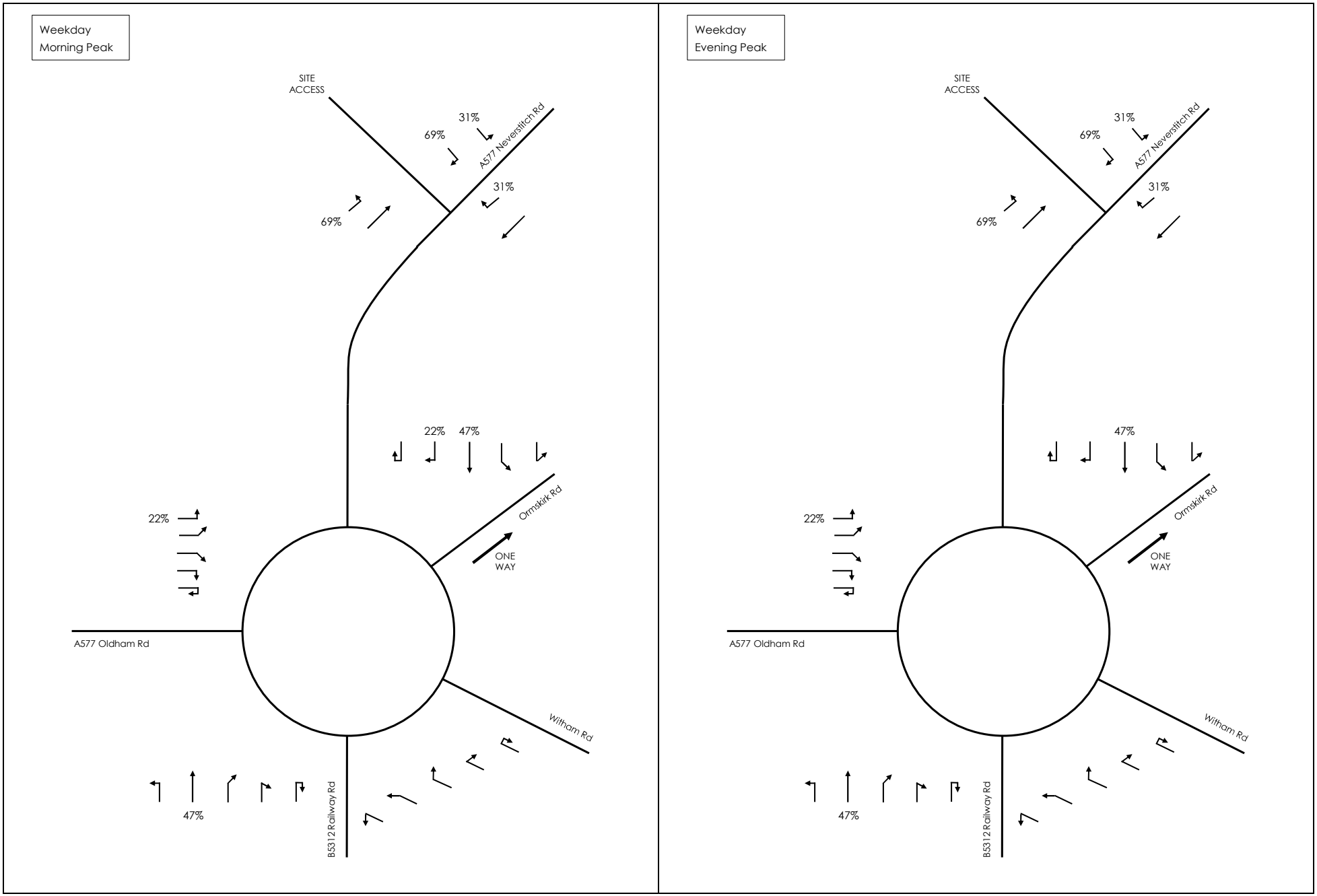


Figure 6.2 Proposed Development Traffic Flows

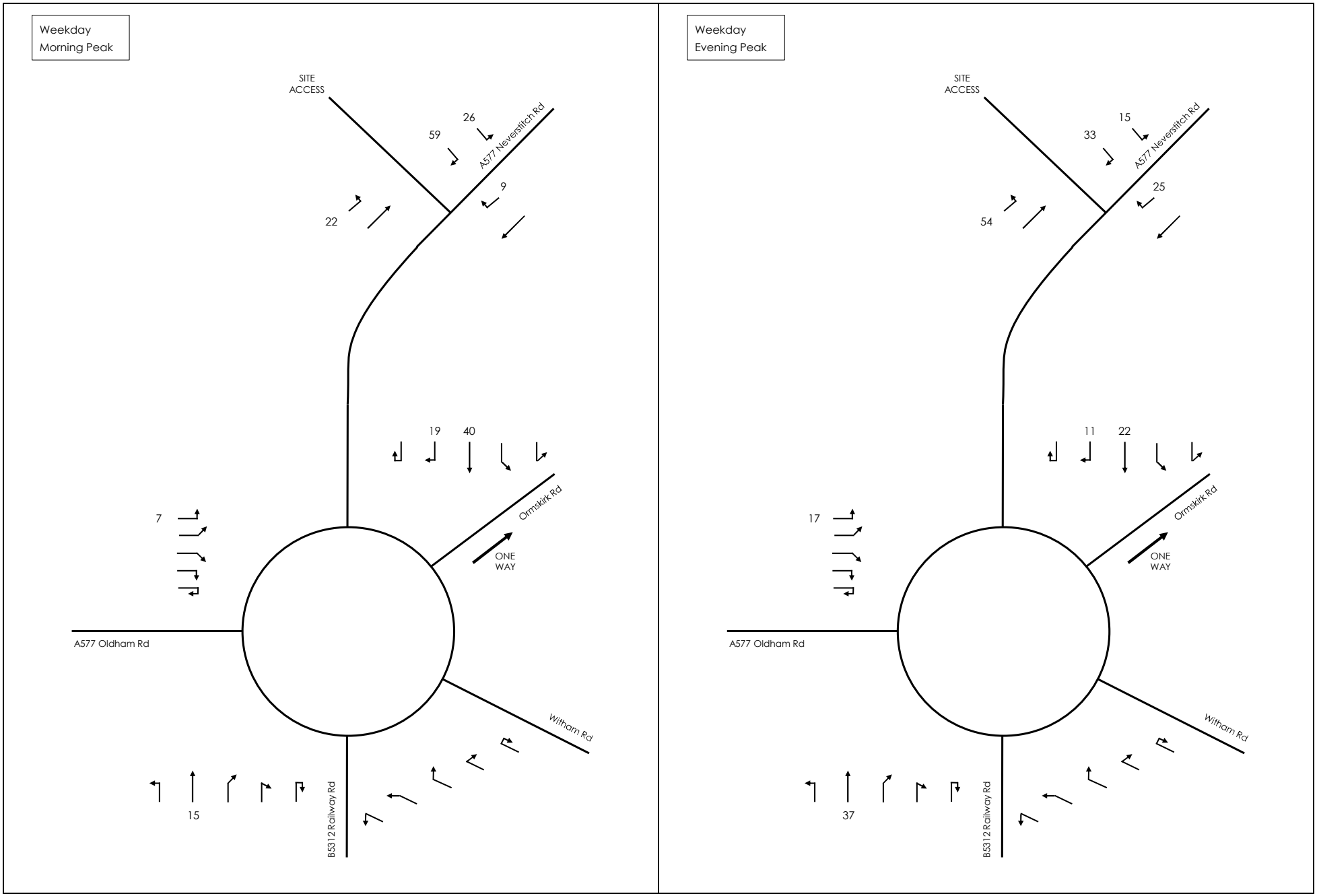


Figure 7.1 Proposed Development Traffic Impact

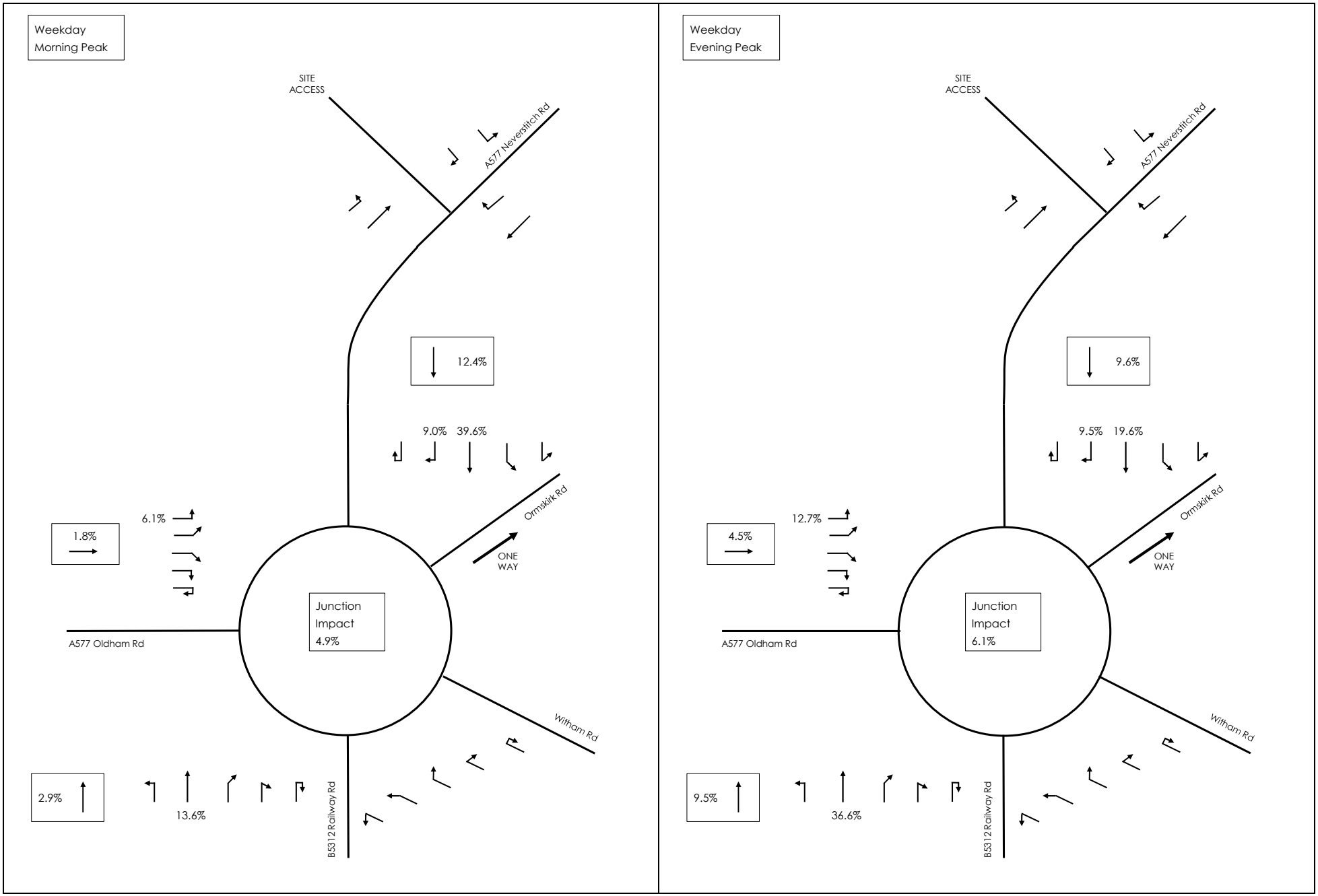


Figure 7.2 Committed Development Traffic Flows (Lathom Pastures Phase 1)

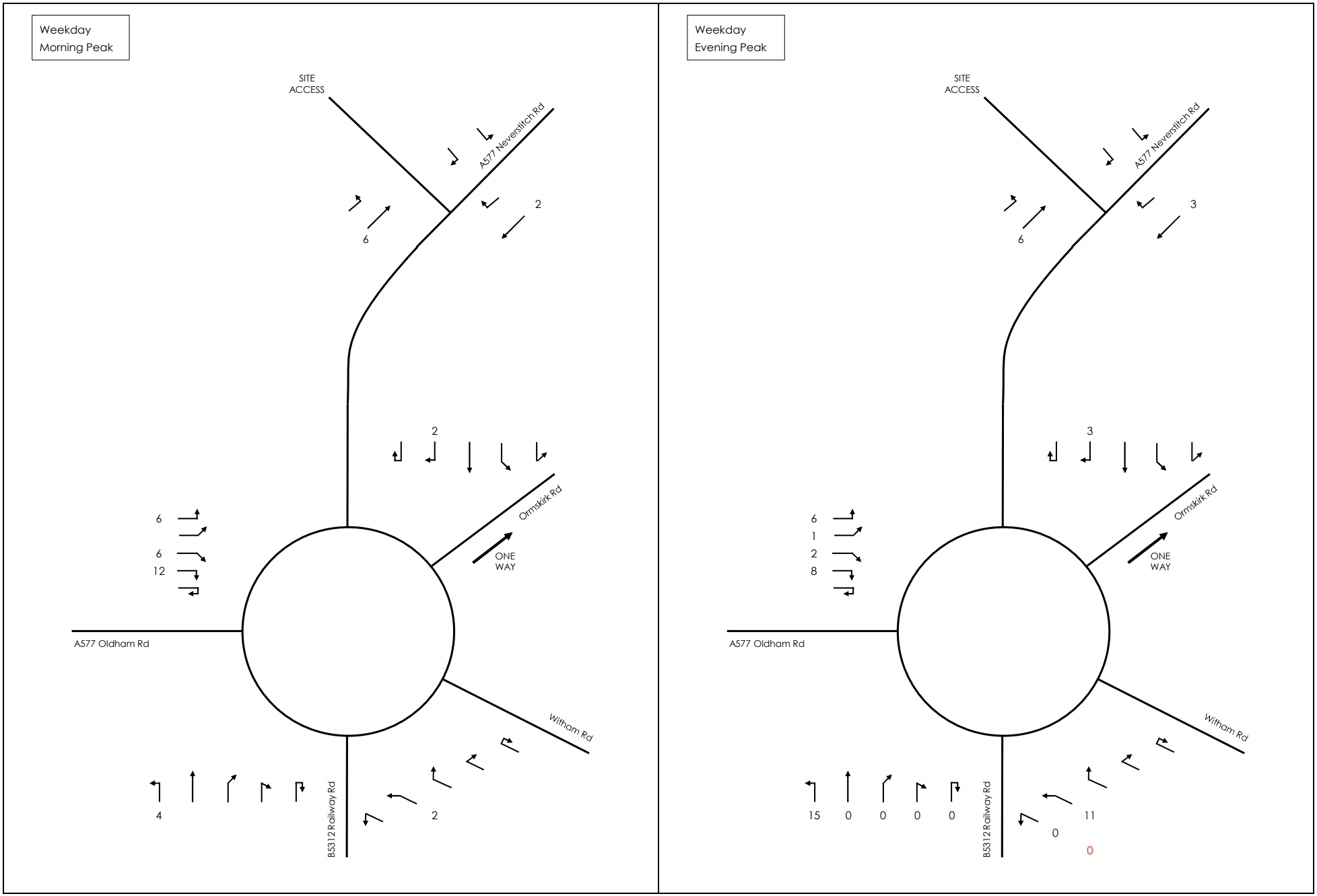


Figure 7.3 Committed Development Traffic Flows (Wain Homes)

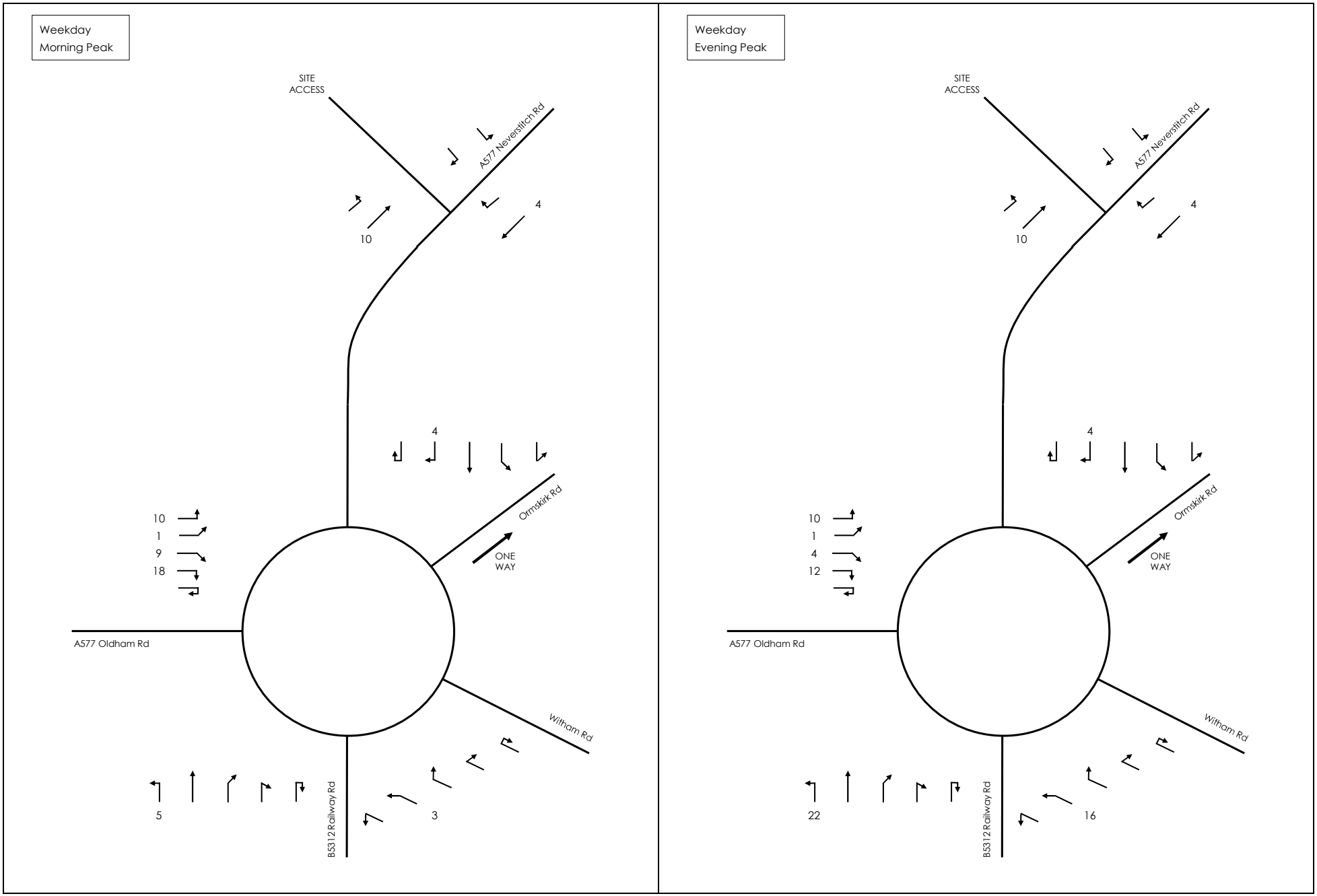


Figure 7.4 2025 Background Traffic Flows

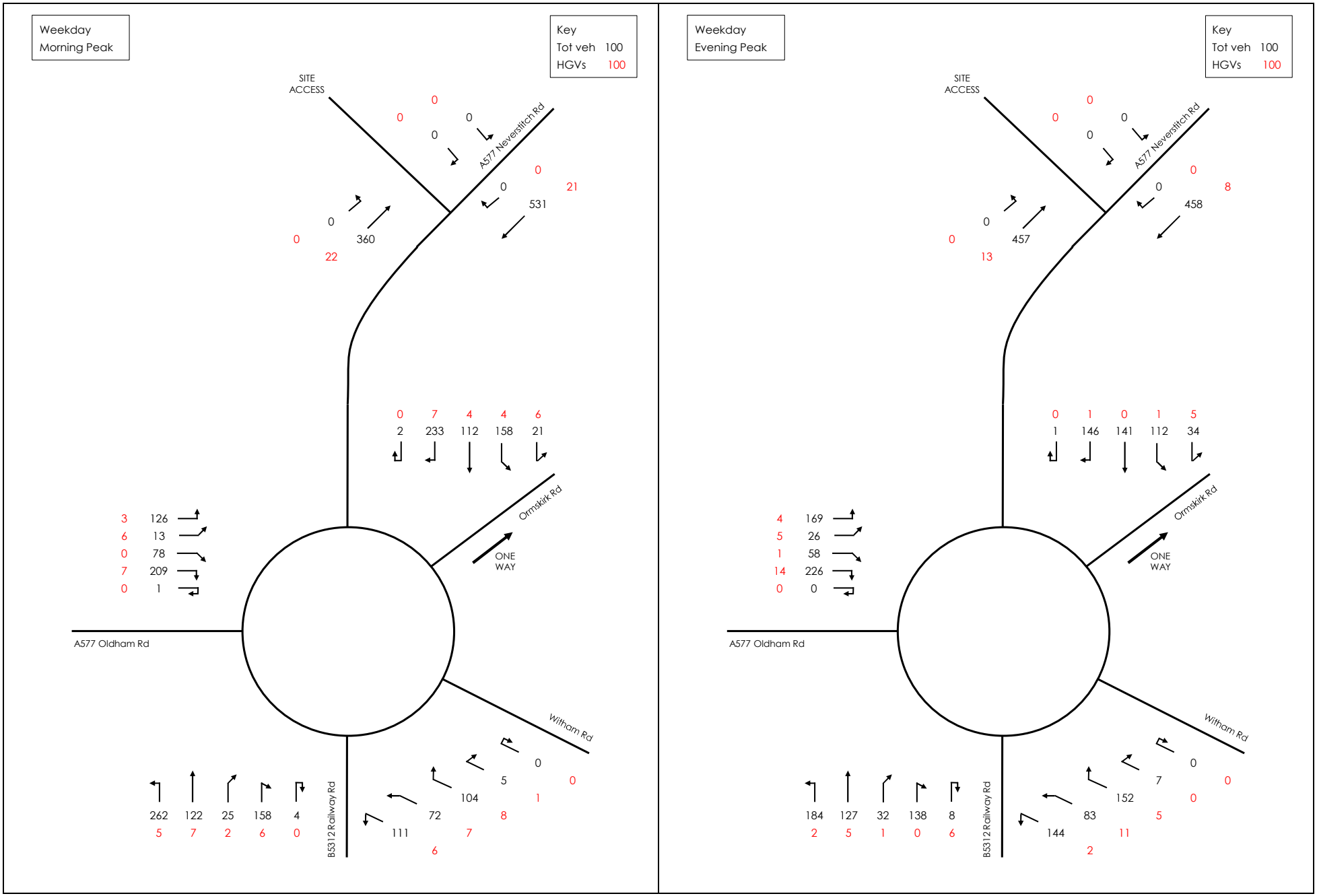


Figure 7.5 2025 Base Traffic Flows

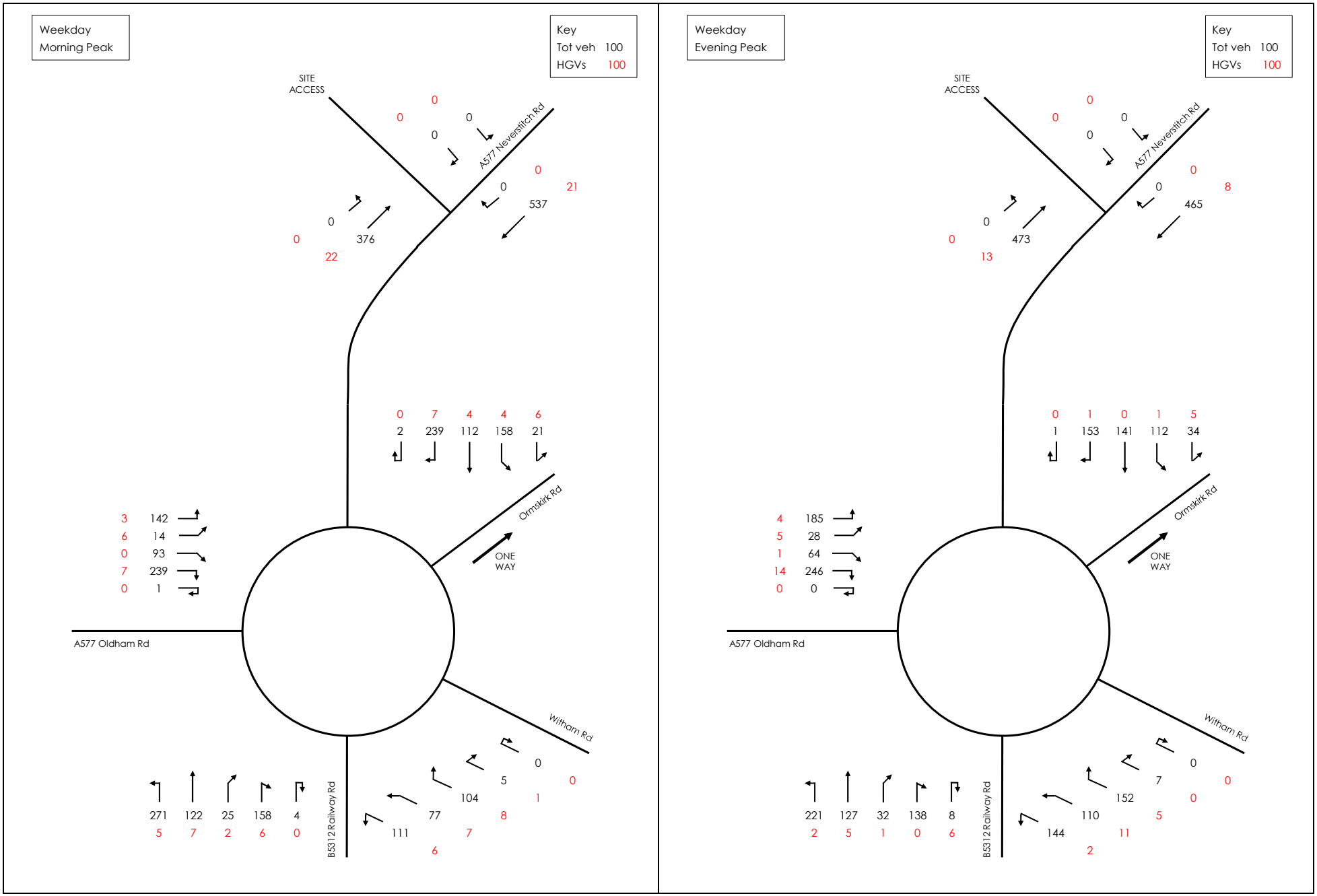
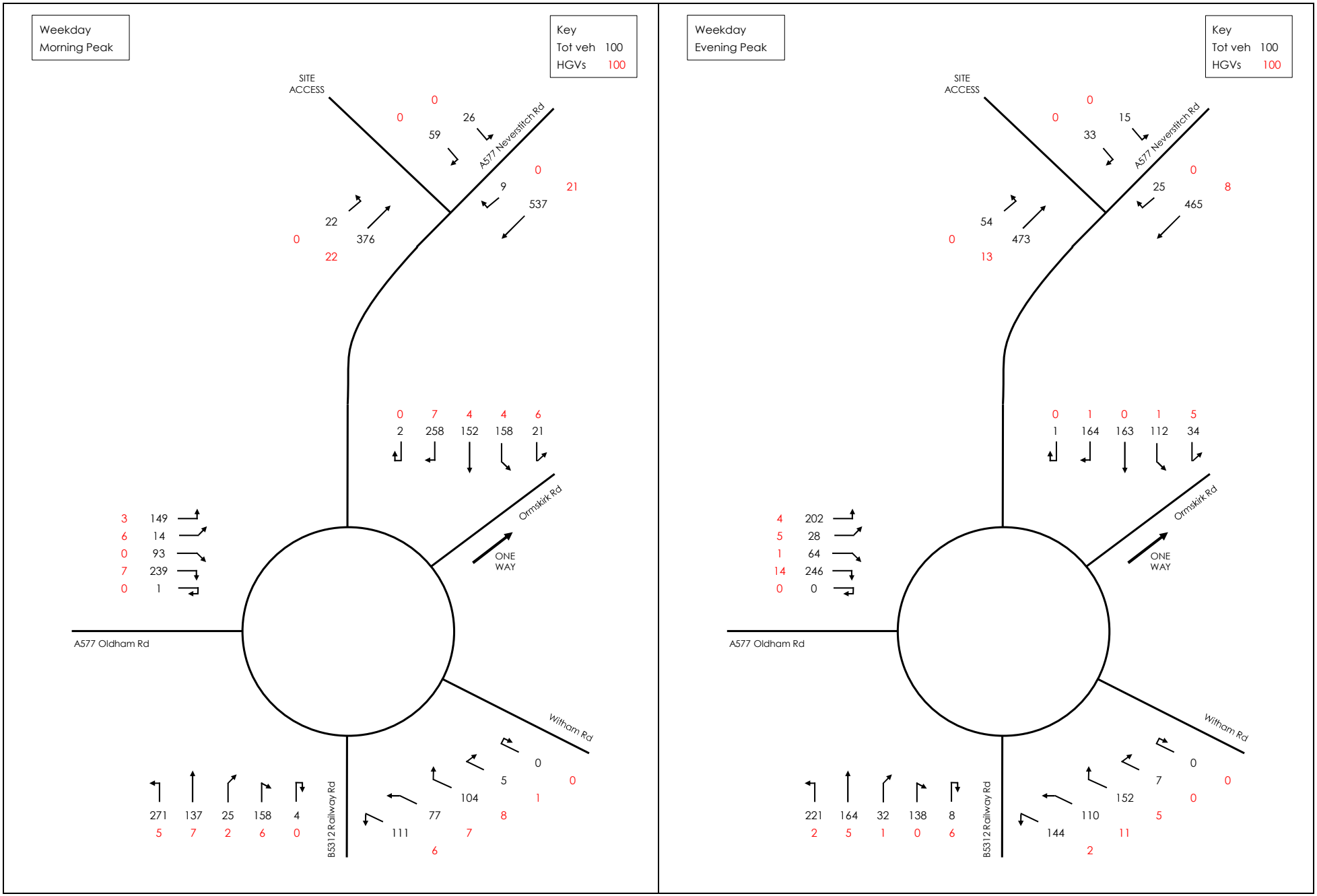


Figure 7.6 2025 Base Plus Proposed Development Traffic Flows



Appendix A: Speed Survey Results

Skelmersdale ATC 2, Neverswitch Road

Produced by Streetwise Services Ltd.

Channel 1 - Northbound **Average Speed** **Week 1**

Hr Ending	19/01/2020 Sunday	20/01/2020 Monday	21/01/2020 Tuesday	22/01/2020 Wednesday	23/01/2020 Thursday	24/01/2020 Friday	25/01/2020 Saturday
1	39.5	37.8	43.8	36.1	38.9	38.2	39.5
2	38.8	38.6	36.3	37.6	41.9	40.1	41.1
3	39.1	39.7	43.0	40.0	36.8	38.6	39.3
4	40.8	41.1	38.0	42.6	40.2	42.5	42.2
5	40.5	36.8	39.0	38.4	36.9	44.1	43.3
6	39.2	37.8	40.0	38.5	39.4	38.7	39.0
7	36.6	38.1	38.7	38.0	37.8	39.8	39.6
8	38.6	37.5	38.0	38.4	37.2	37.0	38.7
9	36.0	37.7	37.7	37.7	37.5	37.2	39.0
10	38.3	37.5	37.5	36.4	37.7	37.4	38.8
11	38.1	38.0	37.5	37.4	37.9	37.6	38.5
12	39.1	38.4	36.9	37.5	37.2	37.0	38.8
13	39.0	38.2	-	37.7	37.7	37.6	39.0
14	39.7	38.5	37.5	37.6	38.0	38.3	39.2
15	39.7	37.7	37.0	37.6	36.9	37.4	38.7
16	39.2	38.3	37.3	37.3	37.9	37.9	38.4
17	38.8	36.5	37.5	36.7	38.2	37.1	38.7
18	39.0	38.0	38.5	37.1	37.9	37.8	38.1
19	39.5	38.3	38.0	38.1	38.2	39.1	38.9
20	39.1	39.4	38.0	38.5	38.1	38.2	38.6
21	38.7	38.9	39.5	37.8	39.2	39.0	39.4
22	39.0	40.0	38.8	37.5	39.0	39.0	39.3
23	40.0	39.4	39.7	36.6	38.6	38.6	39.7
24	39.0	40.8	38.4	38.3	39.0	39.7	39.1
10-12	38.7	38.2	37.2	37.4	37.5	37.3	38.7
14-16	39.4	38.0	37.1	37.4	37.5	37.7	38.5
0-24	39.0	38.1	37.8	37.5	37.9	37.9	38.8

7 Day Ave	38.1

85th Percentile

Hr Ending	19/01/2020 Sunday	20/01/2020 Monday	21/01/2020 Tuesday	22/01/2020 Wednesday	23/01/2020 Thursday	24/01/2020 Friday	25/01/2020 Saturday
1	43.7	43.6	56.5	38.6	43.2	43.1	43.3
2	43.5	43.3	43.4	56.2	48.9	43.7	43.2
3	43.6	48.3	43.3	48.9	38.7	43.9	43.5
4	48.3	56.3	48.2	66.3	43.5	56.0	48.3
5	48.3	43.8	43.2	43.0	43.4	55.6	48.3
6	43.8	43.6	43.6	43.5	43.1	48.8	43.0
7	43.0	44.0	43.4	43.9	43.8	43.4	43.5
8	43.8	43.9	43.4	43.4	43.5	43.5	43.2
9	38.8	43.2	43.7	43.7	43.8	43.5	43.9
10	43.7	43.7	43.3	43.5	43.6	43.2	43.6
11	43.0	44.0	43.6	43.5	43.8	43.3	43.8
12	43.4	43.2	43.2	43.5	43.0	43.1	43.9
13	43.9	43.5	-	43.4	43.2	43.6	43.3
14	43.8	43.1	43.2	43.4	43.1	43.2	43.5
15	43.4	44.0	43.6	43.3	43.1	43.9	43.1
16	44.0	43.7	43.1	43.1	43.3	43.1	43.6
17	43.9	43.0	43.5	43.2	43.1	43.4	43.4
18	43.1	43.6	43.9	44.0	43.0	43.3	44.0
19	43.9	43.1	43.3	43.1	43.5	43.9	43.1
20	43.4	43.1	43.8	43.4	43.7	43.8	43.9
21	43.5	43.8	43.4	43.4	43.5	43.3	43.6
22	43.8	43.3	43.3	43.5	43.8	43.7	43.3
23	43.1	43.0	43.9	43.2	43.1	43.3	43.1
24	48.6	48.3	43.6	43.5	43.2	48.1	43.5
10-12	43.5	43.4	43.6	43.3	43.7	43.0	43.2
14-16	43.3	43.3	43.4	43.6	43.5	43.3	44.0
0-24	43.6	43.9	43.1	43.5	43.4	43.8	43.1

7 Day Ave	43.5

Skelmersdale ATC 1, Neverswitch Road

Produced by Streetwise Services Ltd.

Channel 2 - Southbound **Average Speed** **Week 1**

Hr Ending	19/01/2020 Sunday	20/01/2020 Monday	21/01/2020 Tuesday	22/01/2020 Wednesday	23/01/2020 Thursday	24/01/2020 Friday	25/01/2020 Saturday
1	34.6	38.7	36.8	39.4	40.1	39.7	40.0
2	33.6	39.9	31.8	38.7	39.7	36.3	39.5
3	-	46.1	34.4	44.1	38.0	38.0	42.4
4	-	44.5	38.0	40.1	36.3	39.8	40.0
5	-	38.7	37.3	37.2	38.2	40.4	36.1
6	-	38.8	36.2	39.6	39.7	38.6	38.4
7	-	39.0	36.5	38.4	39.0	38.9	37.6
8	-	34.9	33.9	37.0	36.5	36.3	37.3
9	-	36.0	34.5	36.2	36.6	36.6	38.0
10	-	35.3	33.6	36.8	36.7	36.9	36.9
11	36.1	35.0	33.4	36.9	36.4	36.4	37.4
12	35.3	34.5	33.4	36.2	36.3	36.2	37.6
13	35.4	34.0	-	37.8	37.0	36.8	37.5
14	34.6	34.9	35.6	36.4	37.0	36.4	37.8
15	36.0	34.2	36.5	37.1	37.6	36.8	38.1
16	36.0	33.0	36.6	36.6	37.2	36.1	38.1
17	35.8	34.7	36.1	36.9	37.4	36.3	37.3
18	37.2	34.2	36.8	36.5	36.8	36.1	37.2
19	36.0	34.1	36.7	37.7	37.4	38.0	39.6
20	35.1	36.0	38.3	37.8	37.9	37.1	37.1
21	35.3	36.1	38.5	37.6	39.2	38.9	39.3
22	35.9	36.7	38.3	37.7	39.8	39.1	39.0
23	37.2	36.9	40.0	37.5	37.5	38.4	40.4
24	35.4	35.4	40.7	36.4	37.5	40.1	39.1
10-12	35.6	34.8	33.4	36.5	36.4	36.3	37.5
14-16	36.0	33.5	36.5	36.8	37.4	36.4	38.1
0-24	35.6	35.0	35.7	37.0	37.2	36.9	37.9

7 Day Ave	36.5

85th Percentile

Hr Ending	19/01/2020 Sunday	20/01/2020 Monday	21/01/2020 Tuesday	22/01/2020 Wednesday	23/01/2020 Thursday	24/01/2020 Friday	25/01/2020 Saturday
1	38.1	44.0	43.2	43.9	43.5	43.3	48.2
2	38.9	43.3	38.7	38.7	49.0	44.0	43.4
3	-	56.0	48.7	55.6	38.2	43.8	48.2
4	-	55.9	43.6	56.1	38.4	43.7	48.9
5	-	43.7	43.8	43.7	48.4	48.9	38.6
6	-	43.2	38.2	43.0	43.3	43.9	43.4
7	-	43.4	43.8	43.4	43.5	43.4	43.4
8	-	38.5	38.2	43.4	43.1	43.1	43.9
9	-	38.8	39.0	43.3	38.5	44.0	43.6
10	-	38.5	38.1	44.0	44.0	43.8	43.9
11	38.6	38.4	38.1	43.8	43.6	38.7	43.5
12	38.3	38.5	38.8	43.7	43.9	43.4	43.3
13	38.1	38.2	-	43.4	43.7	43.0	43.9
14	38.5	38.6	38.4	43.7	43.4	43.2	43.3
15	38.2	38.5	43.5	43.3	43.7	43.2	43.3
16	44.0	38.7	43.1	43.4	43.1	43.5	43.2
17	38.1	38.9	43.1	43.4	43.8	43.4	43.3
18	38.0	38.4	43.2	43.9	43.7	38.1	43.0
19	43.3	38.3	43.0	43.1	43.5	43.3	43.7
20	38.5	38.3	43.7	43.6	43.2	43.6	43.8
21	38.9	43.2	43.5	43.3	43.2	48.8	43.3
22	38.5	43.5	43.6	43.1	43.3	48.5	43.7
23	43.4	38.2	43.2	43.2	43.8	43.2	48.4
24	38.8	43.6	48.5	43.1	43.1	43.9	43.8
10-12	38.8	38.4	38.7	43.4	43.5	43.4	43.7
14-16	43.7	38.9	43.8	44.0	43.8	43.3	43.4
0-24	38.7	38.5	43.4	43.5	43.8	43.8	43.1

7 Day Ave	42.1

Appendix B: Proposed Site Layout

Disclaimer:
Do not scale from this drawing
All contractors must visit the site and be responsible for taking and checking dimensions.
All construction information should be taken from figured dimensions only.
Any discrepancies between drawings, specifications and site conditions must be brought to the attention of the supervising officer.

This drawing is for planning purposes only. It is not intended to be used for construction purposes. Whilst all reasonable efforts are used to ensure drawings are accurate, Astle Planning and Design Ltd accept no responsibility or liability for any reliance placed on, or use made of, this plan by anyone for purposes other than those stated above.

ACCOMMODATION SCHEDULE - BELLWAY

Code	Name	Bed & Type	Storey	Unit No's	Unit ft²	ft² Total
The Artisan Collection						
Private						
PA 5B 1677	The Parkman	4 Bed Detached	2	2	1677	3354
FO 4B 1528	The Forrester	4 Bed Detached	2	12	1528	18336
BO 4B 1356	The Bowyer	4 Bed Detached (with Garage)	2	9	1356	12204
CU 4B1335	The Cutler	4 Bed Detached (with garage)	2	13	1335	17355
SC 4B 1214	The Scrivener	4 Bed Detached (with Garage)	2	18	1214	21852
MA 3B 1059	The Mason	3 Bed Detached (with Garage)	2	11	1059	11649
SY 3B 1092	The Sawyer	3 Bed Detached (Integral Garage)	2	8	1083	8664
BS 3B 1057	The Ballister	3 Bed Semi Det	2.5	8	1057	8456
QU 3B 954	The Quilter	3 Bed Detached	2	6	954	5724
CH 3B 951	The Chandler	3 Bed Semi Det	2	10	951	9510
CH 3B 951	The Chandler	3 Bed Detached	2	4	951	3804
TH 3B 921	The Thespian	3 Bed Semi Det	2	15	921	13815
TH 3B 921	The Thespian	3 Bed Detached	2	17	921	15657
TA 3B 802	The Tailor	3 Bed Semi Det	2	36	802	28872
BL 2B 643	The Blacksmith	2 Bed Semi Det	2	9	643	5787
Copeland House Apartments						
COA 1B 520	The Stylus	1 Bed Apartment	3	10	520	5200
COA 2B 660	The Crimp	2 Bed Apartment	3	12	660	7920
Grand Total:				**200 Units**		**198159 ft²**
Gross Site Area:				**7.37**		**18.21 ac**
Site Statistics:						
Single Sided Road				0.13 ha		0.32 ac
Gifted Land				0.01 ha		0.01 ac
POS				1.37 ha		3.38 ac
Nett Site Area:				**5.87 ha**		**14.50 ac**
Gross Density:				27.14 Un/ha		10.98 Un/ac
Nett Density:				**34.09 Un/ha**		**13.79 Un/ac**
Gross Footage:				2497.91 m²/ha		10880.88 Un/ac
Nett Footage:				**3137.71 m²/ha**		**13667.87 ft²/ac**

*Note - All Areas Approx.
Abbreviations - ac = Acres | ha = Hectares | ft² = square Feet | m² = square | Un = units Metres | SSR = Single Sided Road | POS = Public Open Space | Det = Detached | Apt = Apartment

Gas easement

Pedestrian link through Phase 1 onto Firswood Road

Application by Wain Homes ref: 2020/0906/ARM

Drive to be resurfaced and land gifted to No 4 Old Engine Lane

This hedge to retained, trimmed and replanted in gaps and put in Manco

Electricity easement

Proposed Swale

Access to Firtree Nurseries. See Landscaping / Hard surfacing plans for details

Existing Phase 1 Development

Sub-Station to have dropped kerbs onto Neverstitch Road

Pedestrian Link onto Neverstitch Road

Pump - Station Position

Pedestrian link onto Ormskirk Road

Proposed Layout Key

- Development Boundary
- 154 Plot Number
- Proposed Shared Private Drives. For details refer to hardstanding layout for specification
- Proposd adoptable highway to approved LA specification. Refer to hardstanding layout and engineering drawings for specification
- Proposed landscaping & tree planting (refer to Enzygo's landscaping design for further details)
- Denotes Access Points (Front)
- Denotes Access Points (Rear)
- Pump Station
- Retained Access to existing Property
- Access details on to Neverstitch Road as per CBO Transport details

General Notes

This drawing needs to be read in conjunction with the following plans;

- Landscaping Layout
- Boundary Treatment Plan
- Materials Plan
- Hard Surfacing Plan

References.

Highways - Refer to CBO Transport details

OS Plan - Licence no. 100022432

Topographical Survey - Survey Operations drawing no. 20G140/001 dated August 2020

Red Edge Boundary - As per Title plans

Rev.	Date	Description	By	Chd
B	18.11.20	Minor Amends to clients comments including plots 124 / 125 shown detached	JNL	
A	11.11.20	Layout prepared for Planning application	JNL	-

Client: Bellway

Project: **Lathom Pastures 2**

Drawing Title: **Planning Layout**

Drawn by	Checked by	Date
JNL	-	Nov 2020

Status: **PLANNING** | Scale @ A0: 1:500

Job no. **BHNW118** | Dwg no. **PL01** | Rev. **B**

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LATHOM PASTURES 2

PLANNING LAYOUT

1:500 0 5 10 15 25m

Appendix C: CBO Drawings

Proposed 5.5m wide access with 10m radii

Magenta dotted lines show 107.5m forward visibility to vehicle waiting to turn right (equivalent to 41.15mph design speed)

Circa 120m length of 2m wide footway to be provided on an east side of Neverstitch Road

Green dotted lines show 2.4 x 120m visibility splay to the north based on 43.75mph design speed

Pedestrian crossing with refuge island, road widening and 3m wide lanes as proposed as part of Wain Homes scheme

Magenta dotted line shows 106.1m forward visibility to a point 1m from nearside kerbline, 116.5m to centreline and 122m to centre of northbound lane (equivalent to 40.9mph, 43.0mph and 44.3mph design speeds)

Green dotted lines show 2.4 x 122m visibility splay to the south based on 44.3mph 85th percentile approach speed

Roadsign to be lifted to over 1.5m clearance

New footway to be provided on A577 Neverstitch Road south from proposed access to link to existing footway at A577 Neverstitch Road / Ormskirk Road roundabout

Rev.	Date	Revision Details	Drawn	Check	App.
D	06.11.20	Addition of footway on A577 Neverstitch Road	SFB	SFB	PRC
C	23.04.20	General amendments to access	SFB	SFB	PRC
B	16.04.20	General amendments to access	SFB	SFB	PRC
A	15.04.20	General amendments to access	SFB	SFB	PRC

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53 Fountain Street
Manchester
M2 2AN
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F: 0161 235 6566
E: info@cbotransport.co.uk
W: www.cbotransport.co.uk

Client
Bellway

Project
Lathom Pastures Phase 2

Drawing Title
Proposed Access Arrangements

Drawn	Checked	Approved
SFB	SFB	PRC

Scale / Size	Date
1:500 @ A1	06.02.2020

Status	Drg No	Rev
Information	CBO-0603-002	D

Construction access location

Green dotted lines show 2.4 x 120m visibility splay to the north based on 43.75mph design speed

Magenta dotted line shows 114.5m forward visibility to centreline (equivalent to 42.6mph design speed)

Green dotted lines show 2.4 x 122m visibility splay to the south based on 44.3mph 85th percentile approach speed

Rev.	Date	Revision Details	Drawn	Check	App.
A	03.12.20	General amendment	SFB	SFB	PRC

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W: www.cbotransport.co.uk

Client	Bellway
Project	Lathom Pastures Phase 2
Drawing Title	Construction Access Location: Neverstitch Road

Drawn	Checked	Approved
SFB	SFB	PRC
Scale / Size		**Date**
1:500 @ A2		28.04.2020
Status	**Drg No**	**Rev**
Information	CBO-0603-003	A

Appendix D: TRICS Outputs

Calculation Reference: AUDIT-751701-200205-0204

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 03 - RESIDENTIAL
Category : A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES

Selected regions and areas:

02	SOUTH EAST		
	ES	EAST SUSSEX	1 days
	HF	HERTFORDSHIRE	1 days
	KC	KENT	3 days
	SC	SURREY	1 days
	WS	WEST SUSSEX	3 days
04	EAST ANGLIA		
	NF	NORFOLK	1 days
06	WEST MIDLANDS		
	SH	SHROPSHIRE	1 days
	ST	STAFFORDSHIRE	1 days

This section displays the number of survey days per TRICS® sub-region in the selected set

Secondary Filtering selection:

This data displays the chosen trip rate parameter and its selected range. Only sites that fall within the parameter range are included in the trip rate calculation.

Parameter: Number of dwellings
Actual Range: 108 to 288 (units:)
Range Selected by User: 100 to 300 (units:)

Parking Spaces Range: All Surveys Included

Bedrooms per Dwelling Range: All Surveys Included

Percentage of dwellings privately owned: All Surveys Included

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/09 to 23/09/19

This data displays the range of survey dates selected. Only surveys that were conducted within this date range are included in the trip rate calculation.

Selected survey days:

Monday	4 days
Tuesday	1 days
Wednesday	2 days
Thursday	4 days
Friday	1 days

This data displays the number of selected surveys by day of the week.

Selected survey types:

Manual count	12 days
Directional ATC Count	0 days

This data displays the number of manual classified surveys and the number of unclassified ATC surveys, the total adding up to the overall number of surveys in the selected set. Manual surveys are undertaken using staff, whilst ATC surveys are undertaking using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	10
Neighbourhood Centre (PPS6 Local Centre)	1

This data displays the number of surveys per main location category within the selected set. The main location categories consist of Free Standing, Edge of Town, Suburban Area, Neighbourhood Centre, Edge of Town Centre, Town Centre and Not Known.

Selected Location Sub Categories:

Residential Zone	10
Village	1
No Sub Category	1

This data displays the number of surveys per location sub-category within the selected set. The location sub-categories consist of Commercial Zone, Industrial Zone, Development Zone, Residential Zone, Retail Zone, Built-Up Zone, Village, Out of Town, High Street and No Sub Category.

Secondary Filtering selection:

Use Class:

C3	12 days

This data displays the number of surveys per Use Class classification within the selected set. The Use Classes Order 2005 has been used for this purpose, which can be found within the Library module of TRICS®.

Population within 1 mile:

1,001 to 5,000	1 days
5,001 to 10,000	4 days
10,001 to 15,000	4 days
15,001 to 20,000	1 days
20,001 to 25,000	2 days

This data displays the number of selected surveys within stated 1-mile radii of population.

Population within 5 miles:

5,001 to 25,000	1 days
25,001 to 50,000	1 days
50,001 to 75,000	1 days
75,001 to 100,000	4 days
125,001 to 250,000	5 days

This data displays the number of selected surveys within stated 5-mile radii of population.

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	8 days
1.6 to 2.0	2 days

This data displays the number of selected surveys within stated ranges of average cars owned per residential dwelling, within a radius of 5-miles of selected survey sites.

Travel Plan:

Yes	6 days
No	6 days

This data displays the number of surveys within the selected set that were undertaken at sites with Travel Plans in place, and the number of surveys that were undertaken at sites without Travel Plans.

PTAL Rating:

No PTAL Present	12 days

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1 ES-03-A-03 MIXED HOUSES & FLATS EAST SUSSEX
SHEPHAM LANE
POLEGATE

Edge of Town
Residential Zone
Total Number of dwellings: 212
Survey date: MONDAY *11/07/16* *Survey Type: MANUAL*

2 HF-03-A-03 MIXED HOUSES HERTFORDSHIRE
HARE STREET ROAD
BUNTINGFORD

Edge of Town
Residential Zone
Total Number of dwellings: 160
Survey date: MONDAY *08/07/19* *Survey Type: MANUAL*

3 KC-03-A-04 SEMI-DETACHED & TERRACED KENT
KILN BARN ROAD
AYLESFORD
DITTON
Edge of Town
Residential Zone
Total Number of dwellings: 110
Survey date: FRIDAY *22/09/17* *Survey Type: MANUAL*

4 KC-03-A-07 MIXED HOUSES KENT
RECULVER ROAD
HERNE BAY

Edge of Town
Residential Zone
Total Number of dwellings: 288
Survey date: WEDNESDAY *27/09/17* *Survey Type: MANUAL*

5 KC-03-A-08 MIXED HOUSES KENT
MAIDSTONE ROAD
CHARING

Neighbourhood Centre (PPS6 Local Centre)
Village
Total Number of dwellings: 159
Survey date: TUESDAY *22/05/18* *Survey Type: MANUAL*

6 NF-03-A-06 MIXED HOUSES NORFOLK
BEAUFORT WAY
GREAT YARMOUTH
BRADWELL
Edge of Town
Residential Zone
Total Number of dwellings: 275
Survey date: MONDAY *23/09/19* *Survey Type: MANUAL*

7 SC-03-A-05 MIXED HOUSES SURREY
REIGATE ROAD
HORLEY

Edge of Town
Residential Zone
Total Number of dwellings: 207
Survey date: MONDAY *01/04/19* *Survey Type: MANUAL*

8 SH-03-A-04 TERRACED SHROPSHIRE
ST MICHAEL'S STREET
SHREWSBURY

Suburban Area (PPS6 Out of Centre)
No Sub Category
Total Number of dwellings: 108
Survey date: THURSDAY *11/06/09* *Survey Type: MANUAL*

LIST OF SITES relevant to selection parameters (Cont.)

9	ST-03-A-07	DETACHED & SEMI-DETACHED	STAFFORDSHIRE
	BEACONSIDE		
	STAFFORD		
	MARSTON GATE		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	248	
	Survey date: WEDNESDAY	*22/11/17*	*Survey Type: MANUAL*
10	WS-03-A-04	MIXED HOUSES	WEST SUSSEX
	HILLS FARM LANE		
	HORSHAM		
	BROADBRIDGE HEATH		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	151	
	Survey date: THURSDAY	*11/12/14*	*Survey Type: MANUAL*
11	WS-03-A-08	MIXED HOUSES	WEST SUSSEX
	ROUNDSTONE LANE		
	ANGMERING		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	180	
	Survey date: THURSDAY	*19/04/18*	*Survey Type: MANUAL*
12	WS-03-A-09	MIXED HOUSES & FLATS	WEST SUSSEX
	LITTLEHAMPTON ROAD		
	WORTHING		
	WEST DURRINGTON		
	Edge of Town		
	Residential Zone		
	Total Number of dwellings:	197	
	Survey date: THURSDAY	*05/07/18*	*Survey Type: MANUAL*

This section provides a list of all survey sites and days in the selected set. For each individual survey site, it displays a unique site reference code and site address, the selected trip rate calculation parameter and its value, the day of the week and date of each survey, and whether the survey was a manual classified count or an ATC count.

MANUALLY DESELECTED SITES

Site Ref	Reason for Deselection
DH-03-A-02	Low rates
DV-03-A-02	Bungalows
ES-03-A-04	Low rates
FA-03-A-02	Low ave beds
NY-03-A-06	Bungalows

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLES
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.088	12	191	0.302	12	191	0.390
08:00 - 09:00	12	191	0.152	12	191	0.387	12	191	0.539
09:00 - 10:00	12	191	0.149	12	191	0.182	12	191	0.331
10:00 - 11:00	12	191	0.125	12	191	0.151	12	191	0.276
11:00 - 12:00	12	191	0.131	12	191	0.153	12	191	0.284
12:00 - 13:00	12	191	0.156	12	191	0.148	12	191	0.304
13:00 - 14:00	12	191	0.165	12	191	0.148	12	191	0.313
14:00 - 15:00	12	191	0.174	12	191	0.201	12	191	0.375
15:00 - 16:00	12	191	0.271	12	191	0.174	12	191	0.445
16:00 - 17:00	12	191	0.273	12	191	0.167	12	191	0.440
17:00 - 18:00	12	191	0.352	12	191	0.154	12	191	0.506
18:00 - 19:00	12	191	0.301	12	191	0.179	12	191	0.480
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			2.337			2.346			4.683

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Parameter summary

Trip rate parameter range selected:	108 - 288 (units:)
Survey date date range:	01/01/09 - 23/09/19
Number of weekdays (Monday-Friday):	12
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	0
Surveys manually removed from selection:	5

This section displays a quick summary of some of the data filtering selections made by the TRICS® user. The trip rate calculation parameter range of all selected surveys is displayed first, followed by the range of minimum and maximum survey dates selected by the user. Then, the total number of selected weekdays and weekend days in the selected set of surveys are show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TAXIS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.003	12	191	0.003	12	191	0.006
08:00 - 09:00	12	191	0.004	12	191	0.003	12	191	0.007
09:00 - 10:00	12	191	0.002	12	191	0.002	12	191	0.004
10:00 - 11:00	12	191	0.001	12	191	0.001	12	191	0.002
11:00 - 12:00	12	191	0.001	12	191	0.001	12	191	0.002
12:00 - 13:00	12	191	0.001	12	191	0.001	12	191	0.002
13:00 - 14:00	12	191	0.002	12	191	0.002	12	191	0.004
14:00 - 15:00	12	191	0.003	12	191	0.002	12	191	0.005
15:00 - 16:00	12	191	0.006	12	191	0.007	12	191	0.013
16:00 - 17:00	12	191	0.004	12	191	0.005	12	191	0.009
17:00 - 18:00	12	191	0.003	12	191	0.002	12	191	0.005
18:00 - 19:00	12	191	0.002	12	191	0.002	12	191	0.004
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.032			0.031			0.063

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL OGVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.002	12	191	0.001	12	191	0.003
08:00 - 09:00	12	191	0.002	12	191	0.002	12	191	0.004
09:00 - 10:00	12	191	0.004	12	191	0.002	12	191	0.006
10:00 - 11:00	12	191	0.003	12	191	0.003	12	191	0.006
11:00 - 12:00	12	191	0.001	12	191	0.001	12	191	0.002
12:00 - 13:00	12	191	0.005	12	191	0.004	12	191	0.009
13:00 - 14:00	12	191	0.003	12	191	0.002	12	191	0.005
14:00 - 15:00	12	191	0.002	12	191	0.003	12	191	0.005
15:00 - 16:00	12	191	0.002	12	191	0.003	12	191	0.005
16:00 - 17:00	12	191	0.002	12	191	0.002	12	191	0.004
17:00 - 18:00	12	191	0.002	12	191	0.000	12	191	0.002
18:00 - 19:00	12	191	0.001	12	191	0.002	12	191	0.003
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.029			0.025			0.054

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PSVS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.001	12	191	0.001	12	191	0.002
08:00 - 09:00	12	191	0.000	12	191	0.000	12	191	0.000
09:00 - 10:00	12	191	0.001	12	191	0.001	12	191	0.002
10:00 - 11:00	12	191	0.001	12	191	0.001	12	191	0.002
11:00 - 12:00	12	191	0.001	12	191	0.001	12	191	0.002
12:00 - 13:00	12	191	0.001	12	191	0.001	12	191	0.002
13:00 - 14:00	12	191	0.001	12	191	0.001	12	191	0.002
14:00 - 15:00	12	191	0.001	12	191	0.001	12	191	0.002
15:00 - 16:00	12	191	0.001	12	191	0.001	12	191	0.002
16:00 - 17:00	12	191	0.001	12	191	0.001	12	191	0.002
17:00 - 18:00	12	191	0.001	12	191	0.001	12	191	0.002
18:00 - 19:00	12	191	0.000	12	191	0.000	12	191	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.010			0.010			0.020

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL CYCLISTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.006	12	191	0.008	12	191	0.014
08:00 - 09:00	12	191	0.011	12	191	0.018	12	191	0.029
09:00 - 10:00	12	191	0.000	12	191	0.003	12	191	0.003
10:00 - 11:00	12	191	0.003	12	191	0.004	12	191	0.007
11:00 - 12:00	12	191	0.003	12	191	0.005	12	191	0.008
12:00 - 13:00	12	191	0.005	12	191	0.005	12	191	0.010
13:00 - 14:00	12	191	0.001	12	191	0.001	12	191	0.002
14:00 - 15:00	12	191	0.004	12	191	0.004	12	191	0.008
15:00 - 16:00	12	191	0.007	12	191	0.007	12	191	0.014
16:00 - 17:00	12	191	0.014	12	191	0.012	12	191	0.026
17:00 - 18:00	12	191	0.016	12	191	0.008	12	191	0.024
18:00 - 19:00	12	191	0.011	12	191	0.010	12	191	0.021
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.081			0.085			0.166

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL VEHICLE OCCUPANTS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.108	12	191	0.498	12	191	0.606
08:00 - 09:00	12	191	0.200	12	191	0.734	12	191	0.934
09:00 - 10:00	12	191	0.203	12	191	0.288	12	191	0.491
10:00 - 11:00	12	191	0.170	12	191	0.241	12	191	0.411
11:00 - 12:00	12	191	0.184	12	191	0.238	12	191	0.422
12:00 - 13:00	12	191	0.237	12	191	0.221	12	191	0.458
13:00 - 14:00	12	191	0.256	12	191	0.224	12	191	0.480
14:00 - 15:00	12	191	0.258	12	191	0.293	12	191	0.551
15:00 - 16:00	12	191	0.502	12	191	0.268	12	191	0.770
16:00 - 17:00	12	191	0.495	12	191	0.268	12	191	0.763
17:00 - 18:00	12	191	0.602	12	191	0.225	12	191	0.827
18:00 - 19:00	12	191	0.508	12	191	0.291	12	191	0.799
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.723			3.789			7.512

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PEDESTRIANS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.016	12	191	0.027	12	191	0.043
08:00 - 09:00	12	191	0.037	12	191	0.076	12	191	0.113
09:00 - 10:00	12	191	0.034	12	191	0.031	12	191	0.065
10:00 - 11:00	12	191	0.024	12	191	0.028	12	191	0.052
11:00 - 12:00	12	191	0.018	12	191	0.025	12	191	0.043
12:00 - 13:00	12	191	0.026	12	191	0.020	12	191	0.046
13:00 - 14:00	12	191	0.021	12	191	0.026	12	191	0.047
14:00 - 15:00	12	191	0.025	12	191	0.032	12	191	0.057
15:00 - 16:00	12	191	0.069	12	191	0.043	12	191	0.112
16:00 - 17:00	12	191	0.050	12	191	0.029	12	191	0.079
17:00 - 18:00	12	191	0.046	12	191	0.024	12	191	0.070
18:00 - 19:00	12	191	0.042	12	191	0.051	12	191	0.093
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.408			0.412			0.820

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL BUS/TRAM PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.000	12	191	0.013	12	191	0.013
08:00 - 09:00	12	191	0.002	12	191	0.025	12	191	0.027
09:00 - 10:00	12	191	0.002	12	191	0.009	12	191	0.011
10:00 - 11:00	12	191	0.005	12	191	0.004	12	191	0.009
11:00 - 12:00	12	191	0.003	12	191	0.003	12	191	0.006
12:00 - 13:00	12	191	0.003	12	191	0.003	12	191	0.006
13:00 - 14:00	12	191	0.003	12	191	0.004	12	191	0.007
14:00 - 15:00	12	191	0.004	12	191	0.003	12	191	0.007
15:00 - 16:00	12	191	0.020	12	191	0.009	12	191	0.029
16:00 - 17:00	12	191	0.012	12	191	0.006	12	191	0.018
17:00 - 18:00	12	191	0.012	12	191	0.003	12	191	0.015
18:00 - 19:00	12	191	0.018	12	191	0.006	12	191	0.024
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.084			0.088			0.172

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL RAIL PASSENGERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.002	12	191	0.007	12	191	0.009
08:00 - 09:00	12	191	0.000	12	191	0.010	12	191	0.010
09:00 - 10:00	12	191	0.000	12	191	0.005	12	191	0.005
10:00 - 11:00	12	191	0.000	12	191	0.003	12	191	0.003
11:00 - 12:00	12	191	0.000	12	191	0.001	12	191	0.001
12:00 - 13:00	12	191	0.000	12	191	0.002	12	191	0.002
13:00 - 14:00	12	191	0.001	12	191	0.001	12	191	0.002
14:00 - 15:00	12	191	0.001	12	191	0.000	12	191	0.001
15:00 - 16:00	12	191	0.005	12	191	0.003	12	191	0.008
16:00 - 17:00	12	191	0.003	12	191	0.001	12	191	0.004
17:00 - 18:00	12	191	0.005	12	191	0.002	12	191	0.007
18:00 - 19:00	12	191	0.008	12	191	0.001	12	191	0.009
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.025			0.036			0.061

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL PUBLIC TRANSPORT USERS
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.003	12	191	0.020	12	191	0.023
08:00 - 09:00	12	191	0.002	12	191	0.036	12	191	0.038
09:00 - 10:00	12	191	0.003	12	191	0.014	12	191	0.017
10:00 - 11:00	12	191	0.005	12	191	0.007	12	191	0.012
11:00 - 12:00	12	191	0.003	12	191	0.005	12	191	0.008
12:00 - 13:00	12	191	0.003	12	191	0.005	12	191	0.008
13:00 - 14:00	12	191	0.003	12	191	0.005	12	191	0.008
14:00 - 15:00	12	191	0.005	12	191	0.003	12	191	0.008
15:00 - 16:00	12	191	0.025	12	191	0.012	12	191	0.037
16:00 - 17:00	12	191	0.015	12	191	0.007	12	191	0.022
17:00 - 18:00	12	191	0.017	12	191	0.005	12	191	0.022
18:00 - 19:00	12	191	0.026	12	191	0.007	12	191	0.033
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.110			0.126			0.236

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

TRIP RATE for Land Use 03 - RESIDENTIAL/A - HOUSES PRIVATELY OWNED
MULTI-MODAL TOTAL PEOPLE
Calculation factor: 1 DWELLS
BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate	No. Days	Ave. DWELLS	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	12	191	0.132	12	191	0.552	12	191	0.684
08:00 - 09:00	12	191	0.249	12	191	0.864	12	191	1.113
09:00 - 10:00	12	191	0.240	12	191	0.337	12	191	0.577
10:00 - 11:00	12	191	0.202	12	191	0.281	12	191	0.483
11:00 - 12:00	12	191	0.207	12	191	0.273	12	191	0.480
12:00 - 13:00	12	191	0.272	12	191	0.251	12	191	0.523
13:00 - 14:00	12	191	0.282	12	191	0.256	12	191	0.538
14:00 - 15:00	12	191	0.293	12	191	0.332	12	191	0.625
15:00 - 16:00	12	191	0.604	12	191	0.329	12	191	0.933
16:00 - 17:00	12	191	0.574	12	191	0.316	12	191	0.890
17:00 - 18:00	12	191	0.681	12	191	0.261	12	191	0.942
18:00 - 19:00	12	191	0.586	12	191	0.359	12	191	0.945
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.322			4.411			8.733

This section displays the trip rate results based on the selected set of surveys and the selected count type (shown just above the table). It is split by three main columns, representing arrivals trips, departures trips, and total trips (arrivals plus departures). Within each of these main columns are three sub-columns. These display the number of survey days where count data is included (per time period), the average value of the selected trip rate calculation parameter (per time period), and the trip rate result (per time period). Total trip rates (the sum of the column) are also displayed at the foot of the table.

*To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected survey days that have count data available for the stated time period. Then, the average count is divided by the average trip rate parameter value, and multiplied by the stated calculation factor (shown just above the table and abbreviated here as FACT). So, the method is: COUNT/TRP*FACT. Trip rates are then rounded to 3 decimal places.*

Appendix E: Traffic Distribution Data

Selection of areas

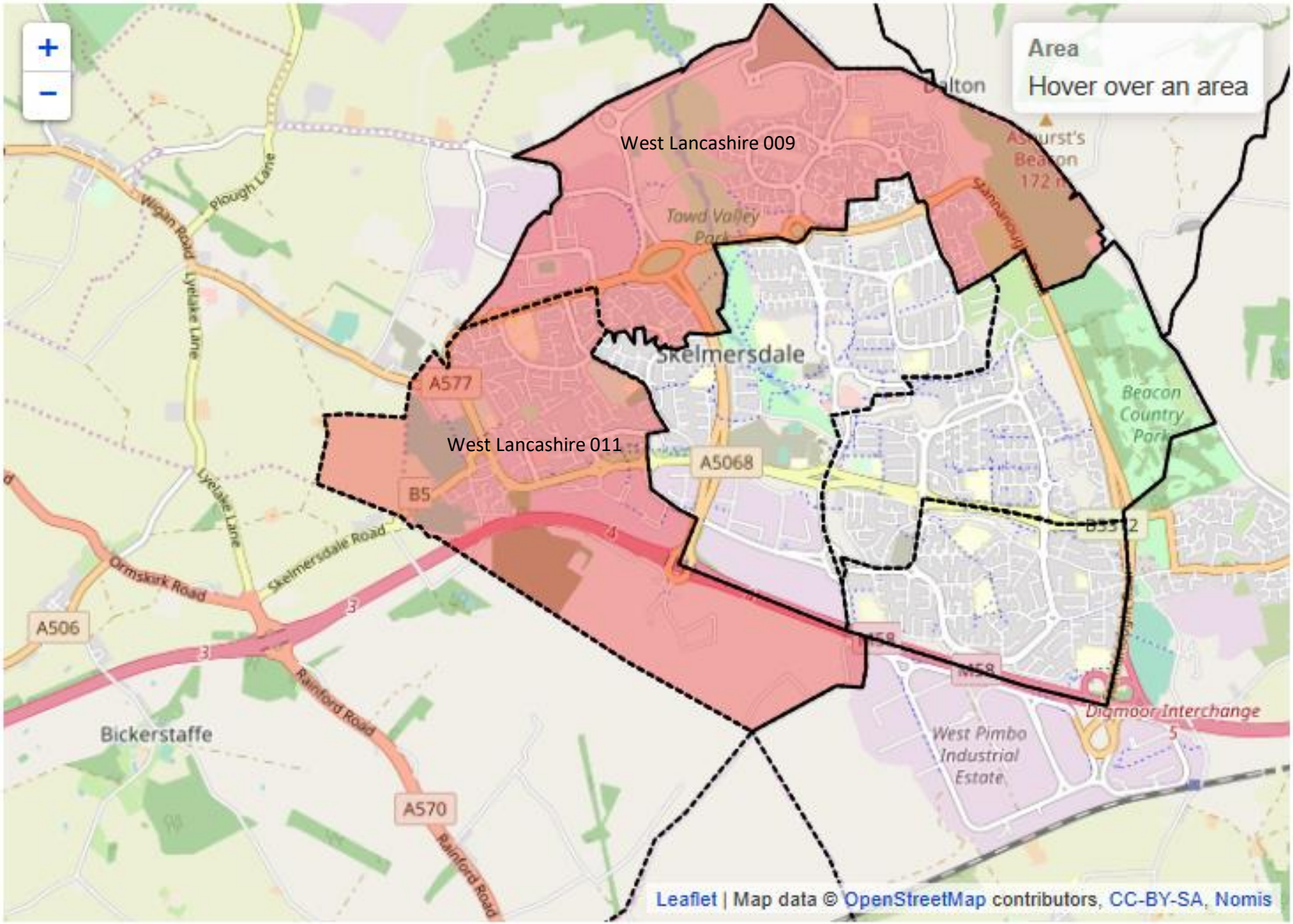

Table E1: Workplace Destinations

Location	Car Driver	Outside Peak	Route 1	2	3	4	5	6
E02005304 : West Lancashire 001	10		5			5		
E02005305 : West Lancashire 002	21		11			10		
E02005306 : West Lancashire 003	42		42					
E02005307 : West Lancashire 004	116		116					
E02005308 : West Lancashire 005	63					63		
E02005309 : West Lancashire 006	25		25					
E02005310 : West Lancashire 007	329		329					
E02005311 : West Lancashire 008	87		30	30	27			
E02005312 : West Lancashire 009	230						230	
E02005313 : West Lancashire 010	435			217			218	
E02005314 : West Lancashire 011	268			268				
E02005315 : West Lancashire 012	17		17					
E02005316 : West Lancashire 013	140			70			70	
E02005317 : West Lancashire 014	53			26			27	
E02005318 : West Lancashire 015	334			222				112
Blackburn with Darwen	8			4		4		
Blackpool	9			5		4		
Bolton	26			13				13
Burnley	1			1				
Bury	8			4				4
Cheshire East	13			7				6
Cheshire West and Chester	9			5				4
Chorley	58					58		
Fylde	9		4			5		
Halton	25				25			
Hyndburn	6			3		3		
Knowsley	131				131			
Liverpool	187				187			
Manchester	42			21				21
Oldham	4	4						
Pendle	1			1				
Preston	78		12	33		33		
Ribble Valley	8	8						
Rochdale	4	4						
Salford	18			9				9
Stockport	11			6				5
Tameside	1	1						
Trafford	18			9				9
Warrington	68			34				34
Wirral	17				17			
Wyre	2		2					
E02001429 : Sefton 001	5		5					
E02001430 : Sefton 002	6		6					
E02001431 : Sefton 003	4		4					
E02001432 : Sefton 004	39		39					
E02001433 : Sefton 005	6		6					
E02001434 : Sefton 006	10		10					
E02001435 : Sefton 007	8		8					
E02001436 : Sefton 008	45		45					
E02001437 : Sefton 009	5		5					
E02001438 : Sefton 010	9		9					
E02001439 : Sefton 011	4		4					
E02001440 : Sefton 012	1		1					
E02001441 : Sefton 013	2		2					
E02001442 : Sefton 014	5		5					
E02001443 : Sefton 015	2		2					
E02001444 : Sefton 016	5		5					
E02001445 : Sefton 017	7		3		4			
E02001446 : Sefton 018	20		10		10			
E02001447 : Sefton 019	5		3		2			
E02001448 : Sefton 020	9		5		4			
E02001449 : Sefton 021	7				7			
E02001450 : Sefton 022	2				2			
E02001452 : Sefton 024	2				2			
E02001453 : Sefton 025	2				2			
E02001454 : Sefton 026	10				10			
E02001455 : Sefton 027	8				8			
E02001457 : Sefton 029	10				10			
E02001458 : Sefton 030	2				2			
E02001459 : Sefton 031	1				1			
E02001460 : Sefton 032	6				6			
E02001461 : Sefton 033	9				9			
E02001462 : Sefton 034	4				4			
E02001463 : Sefton 035	4				4			
E02001464 : Sefton 036	2				2			
E02001465 : Sefton 037	24				24			
E02001466 : Sefton 038	2				2			
E02005287 : South Ribble 001	2			1		1		
E02005288 : South Ribble 002	1			1				
E02005290 : South Ribble 004	7			3		4		
E02005291 : South Ribble 005	1					1		
E02005293 : South Ribble 007	3			1		2		
E02005294 : South Ribble 008	14			7		7		
E02005295 : South Ribble 009	1					1		
E02005296 : South Ribble 010	4		4					
E02005297 : South Ribble 011	3		3					
E02005298 : South Ribble 012	6			3		3		
E02005299 : South Ribble 013	9			4		5		
E02005300 : South Ribble 014	4		2			2		
E02005301 : South Ribble 015	7			3		4		
E02005302 : South Ribble 016	5			2		3		
E02005303 : South Ribble 017	2		1			1		
E02001406 : St. Helens 001	29				29			
E02001407 : St. Helens 002	1				1			
E02001409 : St. Helens 004	3				3			
E02001410 : St. Helens 005	26			13				13
E02001412 : St. Helens 007	1				1			
E02001413 : St. Helens 008	1				1			
E02001414 : St. Helens 009	1				1			
E02001416 : St. Helens 011	1				1			
E02001417 : St. Helens 012	14				14			
E02001418 : St. Helens 013	2			1				1
E02001419 : St. Helens 014	17				17			
E02001420 : St. Helens 015	2			1				1
E02001421 : St. Helens 016	3				3			
E02001422 : St. Helens 017	2				2			
E02001423 : St. Helens 018	1				1			
E02001424 : St. Helens 019	9				9			
E02001426 : St. Helens 021	1			1				
E02001427 : St. Helens 022	5				5			
E02001287 : Wigan 001	5					5		
E02001288 : Wigan 002	5					5		
E02001289 : Wigan 003	5			3			2	
E02001290 : Wigan 004	1						1	
E02001291 : Wigan 005	1			1				
E02001292 : Wigan 006	6			3			3	
E02001294 : Wigan 008	20			10			10	
E02001295 : Wigan 009	8			4			4	
E02001296 : Wigan 010	12			6			6	
E02001297 : Wigan 011	12			6			6	
E02001298 : Wigan 012	8			4			4	
E02001299 : Wigan 013	1			1				
E02001300 : Wigan 014	9			5			4	
E02001301 : Wigan 015	32			16			16	
E02001302 : Wigan 016	3			2			1	
E02001303 : Wigan 017	1						1	
E02001304 : Wigan 018	7			4			3	
E02001305 : Wigan 019	1			1				
E02001306 : Wigan 020	3			2			1	
E02001307 : Wigan 021	2			1			1	
E02001308 : Wigan 022	1						1	
E02001310 : Wigan 024	2			1			1	
E02001312 : Wigan 026	3			2			1	
E02001315 : Wigan 029	3			1			2	
E02001316 : Wigan 030	3			2			1	
E02001317 : Wigan 031	2			1			1	
E02001318 : Wigan 032	20			10			10	
E02001319 : Wigan 033	1			1				
E02001320 : Wigan 034	1						1	
E02001321 : Wigan 035	2			1			1	
E02001322 : Wigan 036	6			3			3	
E02001323 : Wigan 037	1			1				
E02001324 : Wigan 038	4			2			2	
E02001325 : Wigan 039	1			1				
E02001326 : Wigan 040	3			2			1	
	3,607	17	780	1,126	590	229	633	232
		3590	21.73%	31.36%	16.43%	6.38%	17.63%	6.46%
			22.00%	31.00%	16.00%	6.00%	18.00%	7.00%

Appendix F: Junctions 9 Outputs:
Proposed A577 Neverstitch Road Site Access

Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: Site access TA.j9
Path: L:\Projects\CBO-0603 Lathom Pastures Phase 2\Modelling
Report generation date: 16/11/2020 11:23:25

»Proposed Access - 2025 Base Plus Dev, AM
»Proposed Access - 2025 Base Plus Dev, PM

Summary of junction performance

	AM							PM						
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap
	Proposed Access - 2025 Base Plus Dev													
Stream B-C	D1	0.1	7.43	0.06	A	0.97	59 % [Stream B-A]	D2	0.0	7.50	0.03	A	0.65	63 % [Stream B-A]
Stream B-A		0.3	14.14	0.20	B				0.1	13.75	0.12	B		
Stream C-B		0.0	6.11	0.02	A				0.1	6.79	0.05	A		

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	Proposed Site access
Location	
Site number	
Date	13/11/2020
Version	
Status	
Identifier	
Client	
Jobnumber	
Enumerator	CBO
Description	

Units

Distance	Speed	Traffic units	Traffic units	Flow	Av. delay	Total delay	Rate of delay

units	units	input	results	units	units	units	units
m	mph	Veh	Veh	perMin	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025 Base Plus Dev	AM	ONE HOUR	07:45	09:15	15
D2	2025 Base Plus Dev	PM	ONE HOUR	16:45	18:15	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Proposed Access	100.000

Proposed Access - 2025 Base Plus Dev, AM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.97	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	59	Stream B-A

Arms

Arms

Arm	Name	Description	Arm type
A	Neverstitch Rd (SW)		Major
B	Site Access		Minor
C	Neverstitch Rd (NE)		Major

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
C	7.30		✓	3.50	100.0		-

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B	One lane plus flare	10.00	4.90	3.10	2.75	2.75	✓	1.00	26	20

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (Veh/min)	Slope for A-B	Slope for A-C	Slope for C-A	Slope for C-B
B-A	8.595	0.089	0.224	0.141	0.320
B-C	10.874	0.094	0.238	-	-
C-B	12.021	0.264	0.264	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D1	2025 Base Plus Dev	AM	ONE HOUR	07:45	09:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/min)	Scaling Factor (%)
A		✓	6.63	100.000
B		✓	1.42	100.000
C		✓	9.10	100.000

Origin-Destination Data

Demand (Veh/min)

		To		
		A	B	C
From	A	0.00	0.37	6.27
	B	0.98	0.00	0.43
	C	8.95	0.15	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	6
	B	0	0	0
	C	11	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/min)	Demand in PCU (PCU/min)
07:45-08:00	A	4.99	5.28
	B	1.07	1.07
	C	6.85	7.59
08:00-08:15	A	5.96	6.30
	B	1.27	1.27
	C	8.18	9.07
08:15-08:30	A	7.30	7.72
	B	1.56	1.56
	C	10.02	11.10
08:30-08:45	A	7.30	7.72
	B	1.56	1.56
	C	10.02	11.10
08:45-09:00	A	5.96	6.30
	B	1.27	1.27
	C	8.18	9.07
09:00-09:15	A	4.99	5.28
	B	1.07	1.07
	C	6.85	7.59

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.06	7.43	0.1	A
B-A	0.20	14.14	0.3	B
C-A				
C-B	0.02	6.11	0.0	A
A-B				
A-C				

Main Results for each time segment

07:45 - 08:00

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.33	9.36	0.035	0.32	0.0	6.637	A
B-A	0.74	6.36	0.116	0.73	0.1	10.645	B
C-A	6.74			6.74			
C-B	0.11	10.63	0.011	0.11	0.0	5.704	A
A-B	0.28			0.28			
A-C	4.72			4.72			

08:00 - 08:15

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.39	9.03	0.043	0.39	0.0	6.939	A
B-A	0.88	5.93	0.149	0.88	0.2	11.889	B
C-A	8.05			8.05			
C-B	0.13	10.36	0.013	0.13	0.0	5.867	A
A-B	0.33			0.33			
A-C	5.63			5.63			

08:15 - 08:30

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.48	8.56	0.056	0.48	0.1	7.425	A
B-A	1.08	5.32	0.203	1.08	0.3	14.111	B
C-A	9.85			9.85			
C-B	0.17	9.99	0.017	0.16	0.0	6.108	A
A-B	0.40			0.40			
A-C	6.90			6.90			

08:30 - 08:45

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.48	8.55	0.056	0.48	0.1	7.428	A
B-A	1.08	5.32	0.203	1.08	0.3	14.143	B
C-A	9.85			9.85			
C-B	0.17	9.99	0.017	0.17	0.0	6.108	A
A-B	0.40			0.40			
A-C	6.90			6.90			

08:45 - 09:00

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.39	9.03	0.043	0.39	0.0	6.945	A
B-A	0.88	5.93	0.149	0.89	0.2	11.925	B
C-A	8.05			8.05			
C-B	0.13	10.36	0.013	0.14	0.0	5.867	A
A-B	0.33			0.33			
A-C	5.63			5.63			

09:00 - 09:15

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.33	9.35	0.035	0.33	0.0	6.649	A
B-A	0.74	6.36	0.116	0.74	0.1	10.689	B
C-A	6.74			6.74			
C-B	0.11	10.63	0.011	0.11	0.0	5.706	A
A-B	0.28			0.28			
A-C	4.72			4.72			

Proposed Access - 2025 Base Plus Dev, PM

Data Errors and Warnings

No errors or warnings

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	T-Junction	Two-way		0.65	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	63	Stream B-A

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)
D2	2025 Base Plus Dev	PM	ONE HOUR	16:45	18:15	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Av. Demand (Veh/min)	Scaling Factor (%)
A		✓	8.78	100.000
B		✓	0.80	100.000
C		✓	8.17	100.000

Origin-Destination Data

Demand (Veh/min)

		To		
		A	B	C
From	A	0.00	0.90	7.88
	B	0.55	0.00	0.25
	C	7.75	0.42	0.00

Vehicle Mix

HV %s

		To		
		A	B	C
From	A	0	0	8
	B	0	0	0
	C	7	0	0

Detailed Demand Data

Demand for each time segment

Time Segment	Arm	Demand (Veh/min)	Demand in PCU (PCU/min)
16:45-17:00	A	6.61	7.09
	B	0.60	0.60
	C	6.15	6.56
17:00-17:15	A	7.90	8.46
	B	0.72	0.72
	C	7.34	7.83
17:15-17:30	A	9.67	10.37
	B	0.88	0.88
	C	8.99	9.59
17:30-17:45	A	9.67	10.37
	B	0.88	0.88
	C	8.99	9.59
17:45-18:00	A	7.90	8.46
	B	0.72	0.72
	C	7.34	7.83
18:00-18:15	A	6.61	7.09
	B	0.60	0.60
	C	6.15	6.56

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
B-C	0.03	7.50	0.0	A

B-A	0.12	13.75	0.1	B
C-A				
C-B	0.05	6.79	0.1	A
A-B				
A-C				

Main Results for each time segment

16:45 - 17:00

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.19	9.14	0.021	0.19	0.0	6.704	A
B-A	0.41	6.12	0.068	0.41	0.1	10.506	B
C-A	5.83			5.83			
C-B	0.31	10.15	0.031	0.31	0.0	6.095	A
A-B	0.68			0.68			
A-C	5.93			5.93			

17:00 - 17:15

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.22	8.78	0.026	0.22	0.0	7.012	A
B-A	0.49	5.63	0.088	0.49	0.1	11.665	B
C-A	6.97			6.97			
C-B	0.37	9.79	0.038	0.37	0.0	6.371	A
A-B	0.81			0.81			
A-C	7.09			7.09			

17:15 - 17:30

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.28	8.28	0.033	0.27	0.0	7.495	A
B-A	0.61	4.97	0.122	0.60	0.1	13.729	B
C-A	8.53			8.53			
C-B	0.46	9.29	0.049	0.46	0.1	6.794	A
A-B	0.99			0.99			
A-C	8.68			8.68			

17:30 - 17:45

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.28	8.28	0.033	0.28	0.0	7.497	A
B-A	0.61	4.97	0.122	0.61	0.1	13.745	B
C-A	8.53			8.53			
C-B	0.46	9.29	0.049	0.46	0.1	6.794	A

A-B	0.99			0.99			
A-C	8.68			8.68			

17:45 - 18:00

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.22	8.78	0.026	0.23	0.0	7.019	A
B-A	0.49	5.63	0.088	0.50	0.1	11.683	B
C-A	6.97			6.97			
C-B	0.37	9.79	0.038	0.38	0.0	6.375	A
A-B	0.81			0.81			
A-C	7.09			7.09			

18:00 - 18:15

Stream	Total Demand (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
B-C	0.19	9.13	0.021	0.19	0.0	6.709	A
B-A	0.41	6.12	0.068	0.42	0.1	10.531	B
C-A	5.83			5.83			
C-B	0.31	10.15	0.031	0.31	0.0	6.100	A
A-B	0.68			0.68			
A-C	5.93			5.93			

Appendix G: Junctions 9 Outputs: A577 Neverstitch Road / A577 Ormskirk Road / B5312 Railway Road / Witham Road / Ormskirk Road

Junctions 9

ARCADY 9 - Roundabout Module

Version: 9.5.1.7462

For sales and distribution information, program advice and maintenance, contact TRL:
+44 (0)1344 379777 software@trl.co.uk www.trlsoftware.co.uk

Filename: A577 Neverstitch Rd_A577 Ormskirk Rd_B5312 Railway Rd.j9
Path: L:\Projects\CBO-0603 Lathom Pastures Phase 2\Modelling
Report generation date: 16/11/2020 11:39:31

Summary of junction performance

	AM							PM						
	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap	Set ID	Q (Veh)	Delay (s)	RFC	LOS	Junction Delay (s)	Res Cap
Existing Layout - 2020 Adjusted														
Arm A	D1	0.6	3.88	0.37	A	3.90	98 % [Arm E]	D2	0.4	3.34	0.28	A	4.15	72 % [Arm E]
Arm C		0.4	4.71	0.30	A				0.5	4.77	0.35	A		
Arm D		0.4	2.51	0.29	A				0.3	2.33	0.25	A		
Arm E		0.7	5.21	0.40	A				0.9	6.17	0.46	A		
Existing Layout - 2025 Base														
Arm A	D3	0.7	4.21	0.41	A	4.33	72 % [Arm E]	D4	0.4	3.52	0.31	A	4.64	55 % [Arm E]
Arm C		0.5	5.06	0.33	A				0.7	5.32	0.40	A		
Arm D		0.5	2.62	0.32	A				0.4	2.48	0.28	A		
Arm E		0.9	6.03	0.47	A				1.1	7.14	0.53	A		
Existing Layout - 2025 Base Plus Dev														
Arm A	D5	0.8	4.51	0.45	A	4.49	68 % [Arm E]	D6	0.5	3.63	0.33	A	4.81	48 % [Arm E]
Arm C		0.5	5.26	0.34	A				0.7	5.44	0.41	A		
Arm D		0.5	2.67	0.33	A				0.4	2.56	0.30	A		
Arm E		0.9	6.16	0.48	A				1.2	7.64	0.56	A		

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of Av. delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted Av.s. Res Cap indicates the amount by which network flow could be increased before a user-definable threshold (see Analysis Options) is met.

File summary

File Description

Title	A577 Neverstitch Rd / A577 Ormskirk Rd / B5312 Railway Rd / Witham Rd / Ormskirk Rd
Location	
Site number	
Date	16/11/2020
Version	
Status	
Identifier	
Client	
Jobnumber	CBO-0603
Enumerator	CBO
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Av. delay units	Total delay units	Rate of delay units
m	kph	Veh	Veh	perMin	s	-Min	perMin

Analysis Options

Calculate Q Percentiles	Calculate residual capacity	Residual capacity criteria type	RFC Threshold	Av. Delay threshold (s)	Q threshold (PCU)
	✓	Delay	0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2020 Adjusted	AM	DIRECT	08:00	09:00	60	15
D2	2020 Adjusted	PM	DIRECT	16:15	17:15	60	15
D3	2025 Base	AM	DIRECT	08:00	09:00	60	15
D4	2025 Base	PM	DIRECT	16:15	17:15	60	15
D5	2025 Base Plus Dev	AM	DIRECT	08:00	09:00	60	15
D6	2025 Base Plus Dev	PM	DIRECT	16:15	17:15	60	15

Analysis Set Details

ID	Name	Network flow scaling factor (%)
A1	Existing Layout	100.000

Existing Layout - 2020 Adjusted, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D1 - 2020 Adjusted, AM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	3.90	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	98	Arm E

Arms

Arms

Arm	Name	Description
A	A577 Neverstitch Rd	
B	Clayton St	
C	Witham Rd	
D	B5312 Railway Rd	
E	A577 Ormskirk Rd	

Roundabout Geometry

Arm	V (m)	E (m)	l' (m)	R (m)	D (m)	PHI (deg)	Exit only
A	3.65	7.40	19.0	40.0	70.0	38.0	
B							✓
C	3.95	4.90	12.0	28.0	70.0	25.0	
D	6.85	7.40	26.0	70.0	70.0	22.0	
E	3.21	4.55	40.0	24.0	70.0	26.0	

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Final slope	Final intercept (PCU/min)
A	0.520	29.940
B		
C	0.477	24.520
D	0.626	39.526
E	0.459	22.814

The slope and intercept shown above include any corrections and adjustments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D1	2020 Adjusted	AM	DIRECT	08:00	09:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			

C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.03	0.33	2.50	1.77	3.68
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	1.65	0.08	0.00	1.75	1.13
	D	1.93	0.40	2.50	0.07	4.15
	E	2.00	0.20	1.23	3.30	0.02

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	32	3	4	3
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	9	20	0	6	11
	D	6	9	4	0	2
	E	3	55	0	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.37	3.88	0.6	A
B				
C	0.30	4.71	0.4	A
D	0.29	2.51	0.4	A
E	0.40	5.21	0.7	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.35	7.72	24.65	0.298	7.32	0.4	3.457	A
B		14.06						
C	3.78	7.95	18.97	0.199	3.76	0.2	3.941	A
D	10.08	5.62	34.52	0.292	10.05	0.4	2.450	A

E	6.23	6.89	18.63	0.334	6.20	0.5	4.813	A

08:15 - 08:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	8.05	7.63	24.69	0.326	8.05	0.5	3.603	A
B		14.65						
C	4.83	8.37	18.78	0.257	4.82	0.3	4.297	A
D	9.94	6.61	33.88	0.293	9.94	0.4	2.505	A
E	6.09	7.23	18.47	0.330	6.09	0.5	4.849	A

08:30 - 08:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	8.68	8.04	24.48	0.355	8.68	0.5	3.795	A
B		15.67						
C	4.48	9.26	18.38	0.244	4.48	0.3	4.320	A
D	9.10	6.68	33.84	0.269	9.10	0.4	2.426	A
E	7.07	6.65	18.74	0.377	7.06	0.6	5.136	A

08:45 - 09:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	9.17	7.73	24.64	0.372	9.17	0.6	3.877	A
B		15.90						
C	5.39	9.81	18.12	0.297	5.38	0.4	4.707	A
D	7.07	7.46	33.33	0.212	7.08	0.3	2.285	A
E	7.56	5.89	19.08	0.396	7.56	0.7	5.205	A

Existing Layout - 2020 Adjusted, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D2 - 2020 Adjusted, PM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	4.15	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	72	Arm E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D2	2020 Adjusted	PM	DIRECT	16:15	17:15	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			
C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.02	0.53	1.77	2.23	2.32
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	2.40	0.12	0.00	2.28	1.32
	D	2.02	0.50	2.18	0.13	2.92
	E	2.68	0.42	0.92	3.58	0.00

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	15	1	0	1
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	3	0	0	2	12
	D	4	4	0	71	1
	E	2	20	2	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.28	3.34	0.4	A
B				
C	0.35	4.77	0.5	A
D	0.25	2.33	0.3	A
E	0.46	6.17	0.9	A

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.12	7.71	25.26	0.282	7.09	0.4	3.298	A
B		13.28						
C	5.44	8.62	19.38	0.281	5.41	0.4	4.289	A
D	6.64	5.80	34.74	0.191	6.62	0.2	2.133	A
E	8.08	6.38	18.86	0.428	8.03	0.7	5.513	A

16:30 - 16:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	6.96	7.64	25.31	0.275	6.96	0.4	3.269	A
B		13.03						
C	6.40	8.13	19.61	0.326	6.39	0.5	4.539	A
D	8.00	6.37	34.37	0.233	8.00	0.3	2.274	A
E	7.12	7.63	18.29	0.389	7.13	0.6	5.377	A

16:45 - 17:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	6.64	7.39	25.44	0.261	6.64	0.4	3.191	A
B		12.52						
C	5.84	7.76	19.78	0.295	5.84	0.4	4.308	A
D	7.92	5.92	34.66	0.228	7.92	0.3	2.244	A
E	6.80	7.36	18.42	0.369	6.80	0.6	5.167	A

17:00 - 17:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	6.80	8.63	24.77	0.275	6.80	0.4	3.338	A
B		13.77						
C	6.80	8.62	19.36	0.351	6.79	0.5	4.770	A
D	8.48	6.57	34.25	0.248	8.48	0.3	2.328	A
E	8.40	8.10	18.08	0.465	8.38	0.9	6.173	A

Existing Layout - 2025 Base, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D3 - 2025 Base, AM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	4.33	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	72	Arm E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D3	2025 Base	AM	DIRECT	08:00	09:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			
C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.03	0.35	2.63	1.87	3.98
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	1.73	0.08	0.00	1.85	1.28
	D	2.03	0.42	2.63	0.07	4.52
	E	2.37	0.23	1.55	3.98	0.02

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	32	3	4	3
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	9	20	0	6	11
	D	6	9	4	0	2
	E	3	55	0	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.41	4.21	0.7	A
B				
C	0.33	5.06	0.5	A
D	0.32	2.62	0.5	A
E	0.47	6.03	0.9	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.85	8.89	24.04	0.326	7.82	0.5	3.689	A
B		15.65						
C	4.06	8.97	18.50	0.219	4.04	0.3	4.144	A
D	10.77	6.09	34.23	0.315	10.74	0.5	2.551	A
E	7.60	7.23	18.48	0.411	7.55	0.7	5.467	A

08:15 - 08:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	8.58	8.80	24.09	0.356	8.58	0.5	3.866	A
B		16.28						
C	5.17	9.42	18.30	0.283	5.16	0.4	4.566	A
D	10.63	7.13	33.55	0.317	10.63	0.5	2.617	A
E	7.45	7.59	18.31	0.407	7.45	0.7	5.524	A

08:30 - 08:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	9.25	9.23	23.86	0.388	9.24	0.6	4.103	A
B		17.37						
C	4.80	10.36	17.87	0.269	4.80	0.4	4.593	A
D	9.74	7.21	33.51	0.291	9.74	0.4	2.524	A
E	8.48	6.99	18.59	0.456	8.47	0.8	5.924	A

08:45 - 09:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	9.76	8.93	24.02	0.406	9.76	0.7	4.206	A
B		17.62						
C	5.76	10.94	17.60	0.327	5.75	0.5	5.059	A
D	7.60	8.04	32.97	0.231	7.61	0.3	2.366	A
E	9.00	6.20	18.95	0.475	9.00	0.9	6.025	A

Existing Layout - 2025 Base, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D4 - 2025 Base, PM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	4.64	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	55	Arm E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D4	2025 Base	PM	DIRECT	16:15	17:15	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			
C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.02	0.57	1.87	2.35	2.55
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	2.53	0.12	0.00	2.40	1.83
	D	2.12	0.53	2.30	0.13	3.68
	E	3.08	0.47	1.07	4.10	0.00

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	15	1	0	1
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	3	0	0	2	12
	D	4	4	0	71	1
	E	2	20	2	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.31	3.52	0.4	A
B				
C	0.40	5.32	0.7	A
D	0.28	2.48	0.4	A
E	0.53	7.14	1.1	A

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.61	8.60	24.79	0.307	7.58	0.4	3.481	A
B		14.54						
C	6.17	9.50	18.87	0.327	6.14	0.5	4.701	A
D	7.61	6.64	34.26	0.222	7.59	0.3	2.249	A
E	9.23	6.78	18.69	0.494	9.17	1.0	6.262	A

16:30 - 16:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.44	8.50	24.85	0.299	7.44	0.4	3.446	A
B		14.25						
C	7.18	8.99	19.11	0.376	7.17	0.6	5.023	A
D	9.04	7.27	33.85	0.267	9.03	0.4	2.418	A
E	8.22	8.02	18.13	0.453	8.23	0.8	6.068	A

16:45 - 17:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.11	8.24	24.99	0.285	7.11	0.4	3.356	A
B		13.72						
C	6.59	8.60	19.29	0.342	6.59	0.5	4.728	A
D	8.95	6.78	34.16	0.262	8.95	0.4	2.379	A
E	7.88	7.75	18.25	0.432	7.88	0.8	5.791	A

17:00 - 17:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.27	9.53	24.29	0.299	7.27	0.4	3.524	A
B		15.01						
C	7.60	9.50	18.86	0.403	7.59	0.7	5.321	A
D	9.54	7.48	33.71	0.283	9.54	0.4	2.482	A
E	9.57	8.47	17.92	0.534	9.55	1.1	7.143	A

Existing Layout - 2025 Base Plus Dev, AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D5 - 2025 Base Plus Dev, AM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	4.49	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	68	Arm E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D5	2025 Base Plus Dev	AM	DIRECT	08:00	09:00	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			
C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.03	0.35	2.63	2.53	4.30
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	1.73	0.08	0.00	1.85	1.28
	D	2.28	0.42	2.63	0.07	4.52
	E	2.48	0.23	1.55	3.98	0.02

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	32	3	4	3
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	9	20	0	6	11
	D	6	9	4	0	2
	E	3	55	0	4	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.45	4.51	0.8	A
B				
C	0.34	5.26	0.5	A
D	0.33	2.67	0.5	A
E	0.48	6.16	0.9	A

Main Results for each time segment

08:00 - 08:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	8.83	8.89	24.06	0.367	8.79	0.6	3.920	A
B		16.62						
C	4.06	9.92	18.07	0.225	4.04	0.3	4.272	A
D	11.02	6.41	34.01	0.324	10.99	0.5	2.603	A
E	7.72	7.50	18.36	0.420	7.67	0.7	5.588	A

08:15 - 08:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	9.56	8.80	24.10	0.397	9.55	0.7	4.123	A

B		17.26						
C	5.17	10.40	17.85	0.290	5.16	0.4	4.725	A
D	10.88	7.45	33.33	0.326	10.88	0.5	2.671	A
E	7.57	7.85	18.19	0.416	7.57	0.7	5.650	A

08:30 - 08:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	10.23	9.23	23.88	0.428	10.22	0.7	4.391	A
B		18.35						
C	4.80	11.35	17.42	0.276	4.80	0.4	4.756	A
D	9.99	7.52	33.30	0.300	9.99	0.4	2.574	A
E	8.60	7.24	18.48	0.465	8.59	0.9	6.061	A

08:45 - 09:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	10.74	8.94	24.03	0.447	10.74	0.8	4.513	A
B		18.61						
C	5.76	11.95	17.15	0.336	5.75	0.5	5.263	A
D	7.85	8.34	32.76	0.240	7.86	0.3	2.409	A
E	9.12	6.43	18.85	0.484	9.12	0.9	6.163	A

Existing Layout - 2025 Base Plus Dev, PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Geometry	Arm E - Roundabout Geometry	Effective flare length is over 30m, which is outside the normal range. Treat capacities with increasing caution.
Warning	Profile Type	D6 - 2025 Base Plus Dev, PM	The DIRECT profile type is intended to be used for demand that varies over time. You are using it with the 'Use O-D data' option, but your O-D data does not vary over time. Are you sure this is correct?

Junction Network

Junctions

Junction	Name	Junction type	Use circulating lanes	Arm order	Junction Delay (s)	Junction LOS
1	untitled	Standard Roundabout		A, B, C, D, E	4.81	A

Junction Network Options

Driving side	Lighting	Res Cap (%)	First arm reaching threshold
Left	Normal/unknown	48	Arm E

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time period length (min)	Time segment length (min)
D6	2025 Base Plus Dev	PM	DIRECT	16:15	17:15	60	15

Vehicle mix source	PCU Factor for a HV (PCU)
HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Use O-D data	Scaling Factor (%)
A			100.000
B			
C			100.000
D			100.000
E			100.000

Origin-Destination Data

Demand (Veh/min)

		To				
		A	B	C	D	E
From	A	0.02	0.57	1.87	2.72	2.73
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	2.53	0.12	0.00	2.40	1.83
	D	2.73	0.53	2.30	0.13	3.68
	E	3.37	0.47	1.07	4.10	0.00

Vehicle Mix

HV %s

		To				
		A	B	C	D	E
From	A	0	15	1	0	1
	B	Exit-only	Exit-only	Exit-only	Exit-only	Exit-only
	C	3	0	0	2	12
	D	4	4	0	71	1
	E	2	20	2	6	0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Q (Veh)	Max LOS
A	0.33	3.63	0.5	A
B				
C	0.41	5.44	0.7	A
D	0.30	2.56	0.4	A
E	0.56	7.64	1.2	A

Main Results for each time segment

16:15 - 16:30

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	8.16	8.61	24.80	0.329	8.13	0.5	3.592	A
B		15.09						
C	6.17	10.04	18.62	0.331	6.14	0.5	4.793	A
D	8.23	6.83	34.12	0.241	8.21	0.3	2.313	A
E	9.51	7.37	18.44	0.516	9.44	1.0	6.620	A

16:30 - 16:45

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.99	8.50	24.87	0.321	7.99	0.5	3.557	A
B		14.81						
C	7.18	9.54	18.85	0.381	7.17	0.6	5.132	A
D	9.66	7.45	33.71	0.287	9.65	0.4	2.494	A
E	8.50	8.64	17.86	0.476	8.51	0.9	6.423	A

16:45 - 17:00

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.66	8.25	25.00	0.306	7.66	0.4	3.459	A
B		14.28						
C	6.59	9.16	19.03	0.346	6.60	0.5	4.826	A
D	9.57	6.96	34.02	0.281	9.57	0.4	2.455	A
E	8.16	8.37	17.98	0.454	8.17	0.8	6.118	A

17:00 - 17:15

Arm	Total Demand (Veh/min)	Circulating flow (Veh/min)	Capacity (Veh/min)	RFC	Throughput (Veh/min)	End queue (Veh)	Delay (s)	Unsignalised level of service
A	7.82	9.49	24.33	0.321	7.82	0.5	3.632	A
B		15.53						
C	7.60	10.03	18.62	0.408	7.59	0.7	5.437	A
D	10.16	7.67	33.57	0.303	10.16	0.4	2.562	A
E	9.85	9.11	17.65	0.558	9.82	1.2	7.643	A