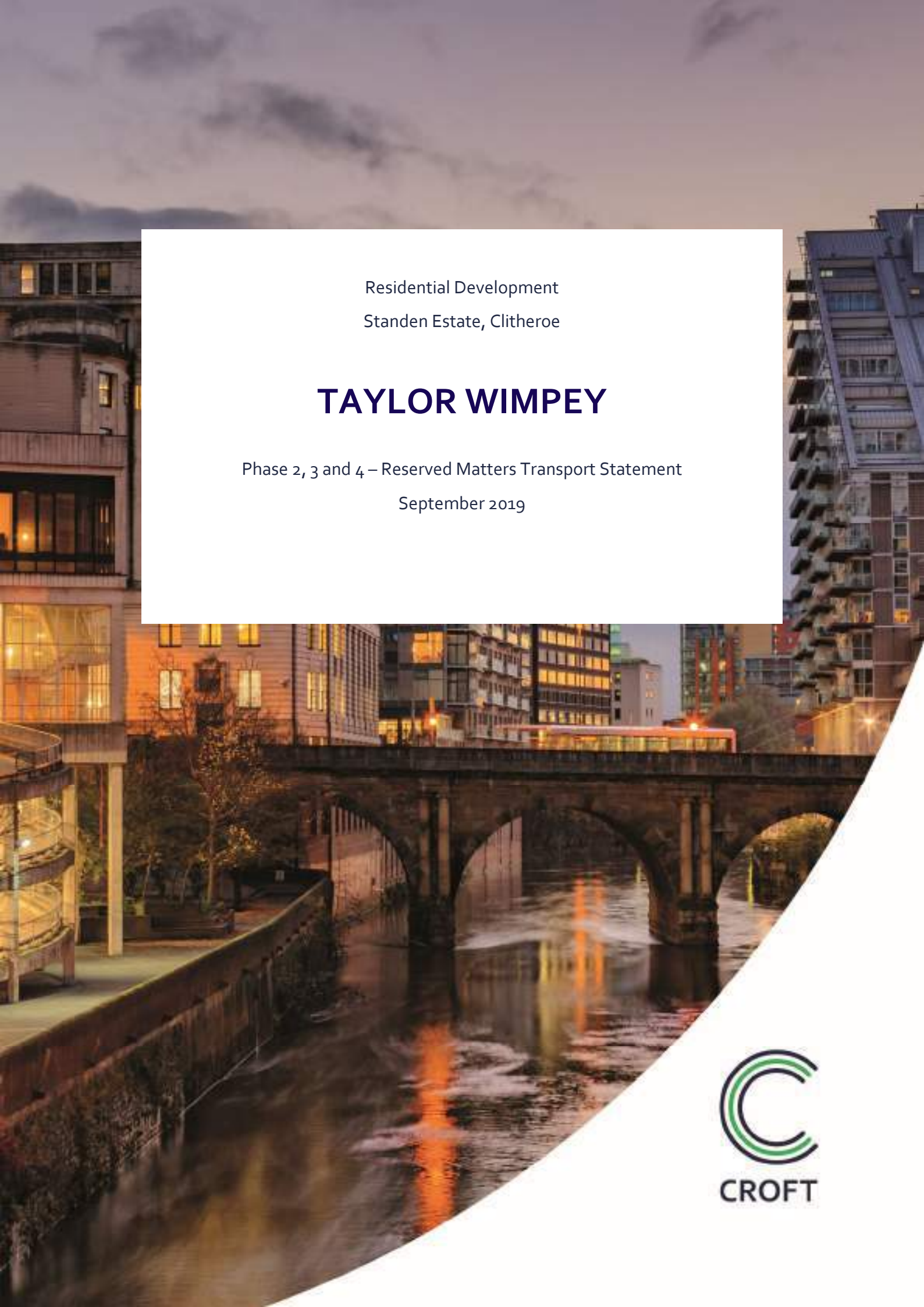

Residential Development

Standen Estate, Clitheroe

TAYLOR WIMPEY

Phase 2, 3 and 4 – Reserved Matters Transport Statement

September 2019

CROFT

REPORT

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Appendix 3	**Residential Travel Plan Framework**

1 INTRODUCTION

1.1 Introduction

1.1.1 Croft have been instructed by Taylor Wimpey to prepare a Transport Statement to accompany a reserved matters planning application for phases 2, 3 and 4 of a residential development on land at Higher Standen Farm off Pendle Road in Clitheroe.

1.1.2 The location of the site is shown on **Plan 1**.

1.1.3 The report provides information on the traffic and transport planning aspects of the development proposals and assist the local planning authority in the positive determination of the forthcoming planning application.

1.1.4 Following this introduction, Section 2 considers the relevant planning history of the site, while Section 3 provides a description of the existing site and the development proposals.

1.1.5 Section 4 discusses the traffic impact of the proposed development and Section 5 contains details of the Framework Travel Plan. Section 6 draws together the conclusions to this report.

2 RELEVANT PLANNING HISTORY

2.1.1 Outline planning permission (Ref No: 3/2012/0942) was granted on the 17th April 2014 for the following development:

'1040 residential dwellings comprising: 728 market homes, 312 affordable homes, 156 of the total (1040) would be for elderly people (i.e. over 55 years of age) of which 78 would be affordable, 0.8ha to be reserved for retirement living within the total of 1040 homes, 0.5ha for local retail, service and community facilities (Classes A1 to A4, B1 and D1), 2.25 ha for employment (Class B1) accommodating up to a maximum gross floorspace of 5,575m2, 2.1 ha of land for a primary school site, public open space including green corridors and areas for tree planting and landscaping, an improved (roundabout) junction between Pendle Road the A59, new vehicular, pedestrian and cycle accesses onto Pendle Road and Littlemoor, new pedestrian and cycle accesses onto Worston Old Road, New pedestrian and cycle access from the end of Shays Drive, Roads, sewers, footpaths, cycleways, services and infrastructure including: A sustainable urban drainage system,; New services such as gas, electricity, water and telecommunications'

2.1.2 The original outline application was subject to a Section 73 application to facilitate a phased development approach. The Section 73 application (LPA Ref. 3/2015/0895) was approved on 12th April and effectively issued a new planning permission.

2.1.3 The outline planning permission (as amended by the Section 73 application) contained the following planning condition in relation to off-site highway works:

2.1.4 Planning Condition 50 states;

'No development shall be commenced until a scheme of off-site works of highway improvement has first been submitted to, agreed in writing by the Local Planning Authority and delivered in line with agreed trigger points. To include A59/Whalley Road roundabout, junctions around and served by either Waterloo Road and Pendle Road'.

2.1.5 Having sought clarification from Ribble Valley Borough Council (RVBC) we understand that discussions were held between RVBC and the highways department at Lancashire County Council. Confirmation was subsequently received from RVBC that condition 50 could be partially discharged on a phased basis.

2.1.6 The Phase 1 reserved matters planning permission (LPA Ref 3/2016/0324) was for 228 dwellings. This application facilitated the partial discharge of condition 50, however, it was agreed with highways officers that in advance of the submission of a phase 2 planning application, a report would be prepared to consider the following:

'*The Waterloo Road and Shawbridge Street junction will be assessed again prior to the submission of the reserved matters application for Phase 2 of the Standen development. Any improvements required at that stage of the development could be implemented prior to first occupation of Phase 2. It must also be noted that with the new A59 roundabout improvement, which is being brought forward as part of Phase 1, traffic patterns are likely to alter which will also be considered at that time.'*

2.1.7 In addition, the following planning conditions are also relevant to the submission of the forthcoming reserved matters application.

2.1.8 Planning Condition 51 states;

'No part or phase of the development comprising the non-residential buildings hereby permitted shall begin until a Travel Plan Framework relating to such part or phase has been submitted to and approved in writing by the Local Planning Authority.'

2.1.9 Planning Condition 52 states;

'Prior to the occupation of the first dwelling within a phase (as approved under Condition 3) a Travel Plan based upon the submitted Framework Travel Plan to improve accessibility by sustainable modes for residents of dwellings within that phase shall have been submitted to and approved in writing by the Local Planning Authority. The Travel Plan shall include:

a) *appointment of a named Travel Plan Co-ordinator;*
b) *details of initiatives to encourage sustainable travel patterns and a mechanism to ensure they can be fully delivered/funded;*
c) *a scheme for the management and implementation of the Travel Plan;*
d) *targets for modal shift;*
e) *implementation timescales;*
f) *a strategy for marketing and proposed incentives;*
g) *arrangements for monitoring and review.*

The approved Travel Plan shall be implemented, monitored and reviewed in accordance with the approved Travel Plan for development within that phase for a period of time not less than 5 years following completion of the final parcel of development in that phase (as approved under Condition 3).'

2.1.10 Planning Condition 54 states;

'No part or phase of the development shall begin until full details of the footpath and cycle way accesses from beyond the site (including a timetable for implementation) relating to such part have been submitted to and approved in writing by the Local Planning Authority. The works shall thereafter be implemented in accordance with the approved details and timetable.'

2.1.11 Planning Condition 56 states;

'No part or phase of the development shall begin until full details of the vehicular access from Pendle Road up to such part or phase have been submitted to and approved by the LPA in writing and the access and road has been constructed to base course standard.'

3 DEVELOPMENT SITE AND PROPOSALS

3.1 Existing Site

3.1.1 The site is located to the south-east of Clitheroe town centre. The site is bounded by the existing built up area and Pendle Road to the north, to the east by Worston Old Road, to the south by Pendleton Brook Valley, woodland and the extensive grounds of Standen Hall and to the west by existing residential development at Littlemoor and Littlemoor Road.

3.1.2 Construction of Phase 1 has commenced and, at the time of writing, 30 dwellings on Phase 1 are currently occupied. Trips associated with these units are therefore already on the highway network.

3.1.3 As part of the Phase 1, the primary vehicular access off Pendle Road has also been implemented and consists of a 28 metre ICD roundabout junction onto Pendle Road.

3.1.4 The proposed site access arm consists of a 6.75 metre wide carriageway and footways of 2 metres in width on both sides of the carriageway. This site access also forms the main spine road through the development site.

3.1.5 The Phase 1 extant planning permission (LPA Ref 3/2016/0324) is for 228 dwellings.

3.2 Proposed Development

3.2.1 The forthcoming Phase 2, 3 and 4 reserved matters planning permission is for 426 dwellings, including 128 affordable dwellings.

3.2.2 The proposed site layout is provided in **Plan 2**.

3.3 Vehicular Access

3.3.1 Vehicular access will be taken via a continuation of the 'as built' spine road which is accessed via the existing 28 metre ICD roundabout junction onto Pendle Road, as implemented during Phase 1.

3.4 Parking Provision

3.4.1 The site layout provides the majority of private homes with a minimum of 2 spaces, excluding garages. Some apartments are provided with 1 space per dwelling plus visitor spaces which is considered appropriate for this type of development.

3.4.2 In addition, all driveways are located as close as possible to front doors in order to ensure they are well utilised.

3.5 Pedestrian and Cycle Access

3.5.1 It has previously been demonstrated that the site is accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

3.5.2 The site layout has been designed to encourage low traffic speeds which will enable pedestrian and cyclists to safely use the internal site roads.

3.5.3 A number of pedestrian footpaths and cycleways are to be provided across the open space surrounding the built up area of the site and these routes will link to the existing public right of way network.

3.6 Internal Site Layout

3.6.1 The main spine road consists of a 6.75 metre carriageway through the development site and provides a link through to the adjoining future development site to the south-west of the site. A 2.0 metre wide pedestrian footway is provided along the northern side of the main spine road and a 3.5 metre wide shared footway/cycleway is provided along the southern side.

3.6.2 The proposed carriageway width is reduced to 5.5 metres along the residential feeder roads and to 4.5 metres along cul-de-sacs to encourage lower vehicular speeds and an environment more conducive to pedestrian and cycle traffic in these areas. The majority of the minor residential roads have 2.0m footways and where footways are not present adjacent to the carriageway, pedestrian footpaths provide a continuous pedestrian route.

3.6.3 Private drives will serve a maximum of five residential units and parking courtyards are provided to the proposed apartment blocks.

3.6.4 A number of priority junctions and bends in the carriageway are formed within the highway layout. These features and the changes in surface treatment will act as traffic calming features complementing the overall Manual for Streets environment of the site ensuring that vehicle speeds are very low.

3.6.5 Any solid boundary treatments on the plot frontages/sides or adjacent to the driveways are not to be more that 0.6 metres in height to ensure highway visibility is not compromised for motorists emerging from accesses.

3.7 Swept Path Analysis

3.7.1 The internal highway layout can accommodate the manoeuvrings of a large 3 axle refuse vehicle which is 9.86 metres in length. Swept path analysis is included on **Plan 3** to demonstrate that the internal layout can accommodate these vehicles.

3.7.2 In addition, swept paths showing a single decker bus travelling along the spine road of the internal layout are provided at **Plan 4**. This shows that single decker bus can access the future wider development site to the south of the site.

3.8 Proposed Bus Access

3.8.1 For this phase of development, it is proposed that bus access will be gained via the existing bus stop located on Pendle Road, directly adjacent to the site. It is not anticipated that existing bus services will divert into the site until future phases of the proposals are brought forward and the remainder of the spine road is completed, linking through to Littlemoor Road where a proposed bus gate is to be implemented. This is considered appropriate given the reserved matters application site is within close proximity to Pendle Road.

4 TRAFFIC IMPACT ASSESSMENT

4.1.1 Having established that the proposed site layout is appropriate and in general accordance with the consented land use, the following section considers the traffic impact of the development proposals on the local highway network.

4.2 Traffic Surveys

4.2.1 As agreed with LCC, new traffic surveys have been commissioned at the junction of Shawbridge Street and Waterloo Road. These were carried out in both peak periods between 7.30am and 9.30am and 4.30pm and 6.30pm on Tuesday 26th February 2019. These results are contained in **Appendix 1** of this note.

4.3 Traffic Flows

4.3.1 The peak hours have been established as 8.15am to 9.15am and from 4.30pm to 5.30pm. These flows are shown in **Figures 1** and **2**.

4.3.2 The Phase 1 proposals consist of 160 open market units and 68 affordable houses in total. The build-out rate for the open market houses are likely to be around 40 to 50 units per year. This completion rate is evidenced by the recently completed Taylor Wimpey / Barratt development on Henthorn Road, Clitheroe. This development consisted of 270 homes with 189 open market units and 81 affordable homes. The development commenced in June 2013 and there are 3 units left to sell in May 2017. This represents an open market sales rate of 47 units per year. In the case of the Standen development even if we adjusted that figure down to 40 units per year the development will be completed in July 2021.

4.3.3 As such, the 2019 surveyed flows have been growthed up to 2021 which will be the year of completion of the proposed Phase 1 open market housing. The 68 affordable units will also have been constructed and the occupied by that time.

4.3.4 The growth factors are shown below:

- AM Peak – 2019 to 2021 – 1.0208
- PM Peak – 2019 to 2021 – 1.0200

4.3.5 These 2021 growthed flows are shown in **Figures 3** and **4**.

4.4 Committed Developments

4.4.1 LCC have requested several committed developments to be included in the junction assessment, these are as follows:

- 3/2013/0737 - 43 dwellings at Whalley Road, Barrow.
- 3/2012/0630 - 504 dwellings at Whalley Road, Barrow.
- 3/2015/0159 - 951sq B1 office, 2030sqm light industry, 7475 sqm Industrial at Lincoln Way, Clitheroe.
- 3/2014/0597 - 275 dwellings at Waddington Road, Clitheroe.
- 3/2016/1165 - 50 dwellings at Chatburn Road, Clitheroe.

4.4.2 These have been assigned to the local highway network as follows:

- 3/2013/0737 – the TA has been used to establish the flows through our network and an assumption has been made that all traffic travels through the junction of Shawbridge Street and Waterloo Road and there is no dispersal between that application site and our network for robustness. These have been assigned to the local highway network in **Figures 5** and **6**.

- 3/2012/0630 – the TA has been used to establish the flows through the Standen application network as above. Again, no dispersal was assumed for robustness and all traffic assumed to travel through this network. These have been assigned to the local highway network in **Figures 7** and **8**.

- 3/2015/0159 – there was no information on the Council's website and as such it is assumed that traffic impact was not an issue for this particular network of junctions which is a reasonable assumption given where the site is located.

- 3/2014/0597 – there is no information on the Council's website to establish what if any traffic travels through this network. However, given the location of the site on Waddington Road it is unlikely that much traffic would travel through the town centre and through the junction of Shawbridge Street and Waterloo Road.

- 3/2016/1165 – reference has been made to the associated TA and half of this traffic has been assumed to travel along Shawbridge Street which in this case can be assumed to be robust. These are shown in **Figures 9** and **10**.

4.5 Base Flows

4.5.1 The 2021 Base Flows have been calculated by adding the 2021 growthed flows to the committed development flows, described above, with the resultant 2021 Base Flows being shown in **Figures 11** and **12**.

4.6 Phase 1 Traffic Impact

4.6.1 To establish whether any additional off-site improvements are required prior to Phase 2, the traffic impact of the first phase of the development needs to be calculated based on the current traffic conditions.

4.6.2 At the time of writing, it is noted that 30 dwellings on Phase 1 are currently occupied. Trips associated with these units are therefore already on the highway network. As such, the trip generation associated with 30 dwellings has been removed from the forecast trip generation.

4.6.3 Table 4.1 of the Transport Assessment submitted with the outline planning application included the agreed traffic generation rates for the various uses on the whole Standen Estate site including the residential element. The trip rates and traffic generation for the Phase 1, minus the existing 30 occupied units, are summarised in **Table 4.1** below:

Mode	Period	Trip Rate		Trips	
		Arr	Dep	Arr	Dep
Vehicle	**AM Peak Hour**	0.148	0.453	29	90
	PM Peak Hour	0.417	0.214	83	42

Table 4.1 – Summary of Phase 1 Development Traffic Generation (198 dwellings)

4.6.4 As can be seen, the remaining 198 plots of Phase 1 are likely to generate 119 two-way trips during the AM peak hour period and 125 two-way trips in the PM peak period. These trips need then to be assigned to the local highway network.

4.7 Phase 1 'With Development' Flows

4.7.1 The proposed development generated flows for Phase 1, shown in Table 4.1 above, have been assigned to the local highway network and are shown in **Figures 13** and **14**. These flows have been added to the 2021 Base Flows to create the 2021 'with development flows and these are shown in **Figures 15** and **16**.

4.8 Phase 1 Junction Assessments

4.8.1 As the junction of Waterloo Road and Shawbridge Street is operating close to its theoretical capacity in the Base scenario, a Phase 1 junction assessment has been undertaken to establish the impact of Phase 1 and to demonstrate that the proposed improvements at this junction are not required until further progress has been made with the wider development.

4.8.2 It should be noted that the Base flow assessments indicate the junction of Waterloo Road and Shawbridge Street is currently operating with more reserve capacity than shown in the previous 2017 assessments, submitted in support of the Phase 1 Reserved Matters application.

4.8.3 The 2021 Base and 'With Development' Flows have been assessed using the ARCADY program and the results are shown below in **Tables 4.2** and **4.3**.

Arm	AM Peak		PM Peak	
	Max RFC	Queue	Max RFC	Queue
Waterloo Road (S)	0.75	3	0.56	1
Waterloo Road (N)	0.68	2	0.82	4
Shawbridge Street	0.78	3	0.84	5

Table 4.2 - Summary of ARCADY Assessments for Waterloo Road/Shawbridge Street (2021 Base Flows)

Arm	AM Peak		PM Peak	
	Max RFC	Queue	Max RFC	Queue
Waterloo Road (S)	0.77	3	0.58	1
Waterloo Road (N)	0.69	2	0.83	5
Shawbridge Street	0.82	4	0.87	6

Table 4.3 - Summary of ARCADY Assessments for Waterloo Road/Shawbridge Street (2021 With Development Flows)

4.8.4 As can be seen, Phase 1 of the Standen Estate site is likely to have a minimal impact on the operation of the junction of Waterloo Road and Shawbridge Street.

4.8.5 During the AM peak hour, the maximum RFC increases from a maximum of 0.78 to 0.82. The maximum queue length increases on the Shawbridge Street approach to the junction from 3 vehicles to 4 vehicles. The two other arms at the junction also have minimal queuing even at the busiest times of the peak hour period.

4.8.6 Slightly higher queuing levels are shown in the PM peak hour assessment. The maximum queue during the PM peak hour increases on the Shawbridge Street approach to the junction from 5 vehicles to 6 vehicles.

4.8.7 The assessments include a robust view of the impact of the committed developments, particularly as some of these committed developments are now under construction with associated traffic already on the highway network. Even with this, the operation of the junction will remain at similar levels when compared to the scenario without the Standen Estate Phase 1 development in place.

4.8.8 The ARCADY output in full is shown in **Appendix 2** to this note.

4.8.9 These assessments confirm that Phase 1 will result in a minimal impact in the operation of the Shawbridge Street/Waterloo Road mini-roundabout junction.

4.9 Phase 2, 3 and 4 Traffic Impact

4.9.1 An additional assessment has been undertaken to establish the potential impact of Phase 2, 3 and 4.

4.9.2 The reserved matters planning application is for 426 dwellings.

4.9.3 In order to establish a trigger point for the implementation of the off-site highway improvements at Waterloo Road/Shawbridge Road, the additional traffic impact of the development needs to be calculated and added to the traffic forecast to be generated by phase 1.

4.9.4 An assessment has, therefore, been undertaken to establish the impact of an additional 218 dwellings, which equates to just over half of the remaining dwellings proposed as part of Phases 2, 3 and 4.

4.9.5 The trip rates and traffic generation for an additional 218 dwellings are summarised in **Table 4.4** below:

Mode	Period	Trip Rate		Trips	
		Arr	Dep	Arr	Dep
Vehicle	AM Peak Hour	0.148	0.453	32	99
	PM Peak Hour	0.417	0.214	91	47

Table 4.4 – Summary of Phase 2 Development Traffic Generation (218 dwellings)

4.9.6 As can be seen, an additional 218 dwellings proposed as part of Phase 2, 3 and 4 is likely to generate 131 two-way trips during the AM peak hour period and 138 two-way trips in the PM peak period. These trips then need to be assigned to the local highway network.

4.9.7 The proposed development generated flows for the additional 218 dwellings, shown in Table 4.4 above, have been assigned to the local highway network and are shown in **Figures 17** and **18**. These flows have been added to the 2021 'with development' flows to create the 2021 Phase 2 'with development' flows and these are shown in **Figures 19** and **20**.

4.10 Phase 2, 3 and 4 Junction Assessments

4.10.1 The 2021 Phase 2 'with development' flows have been assessed using the ARCADY program and the results are shown below in **Table 4.5** below:

Arm	AM Peak		PM Peak	
	Max RFC	Queue	Max RFC	Queue
Waterloo Road (S)	0.79	4	0.61	2
Waterloo Road (N)	0.69	2	0.85	5
Shawbridge Street	0.87	6	0.89	7

Table 4.5 - Summary of ARCADY Assessments for Waterloo Road/Shawbridge Street (2021 With Development Flows) – Additional 218 dwellings.

4.10.2 As can be seen, an additional 218 dwellings will have a minimal impact on the operation of the junction of Waterloo Road and Shawbridge Street.

4.10.3 In comparison to the base flow assessments presented earlier in Table 4.2, the maximum RFC increases from a maximum of 0.78 to 0.87. The maximum queue length increases on the Shawbridge Street approach to the junction from 3 vehicles to 6 vehicles. The two other arms at the junction also have minimal queuing even at the busiest times of the peak hour period.

4.10.4 During the PM peak hour assessment., the maximum queue increases on the Shawbridge Street approach to the junction from 5 vehicles to 7 vehicles with a maximum RFC increase from 0.84 to 0.89.

4.10.5 As such, it is our view that the proposed off-site highway works are not required until an additional 218 dwellings have been built out on the site as part of Phases 2, 3 and 4.

4.10.6 A practical post development trigger point is, therefore, considered to be prior to the occupation of the 250th dwelling of Phase 2, 3 and 4.

5 PROMOTING SMARTER CHOICES VIA TRAVEL PLANS

5.1.1 In accordance with Planning Condition 51 and 52, a draft Framework Travel Plan has been prepared to support the Phase 2, 3 and 4 proposals. This Travel Plan has been submitted as a first draft document to ultimately be agreed with Lancashire County Council and will be updated to become a final Travel Plan within 3 months of occupation of the site.

5.2 Travel Plan

5.2.1 A Framework Travel Plan is included at **Appendix 3**. The objective of the Travel Plan is the delivery of the objectives of National Planning Policy, i.e. to encourage residents to travel by non-car modes of travel. The Travel Plan outlines physical and management measures that are designed to achieve this objective.

5.2.2 The effectiveness of Travel Plans in assisting the use of non-car modes for journeys is intrinsically linked to the accessibility of a given site by means other than the private car.

5.2.3 The proposed development has been demonstrated to benefit from good non-car accessibility and it should, therefore, be expected that the adoption of a Travel Plan would be effective.

6 CONCLUSIONS

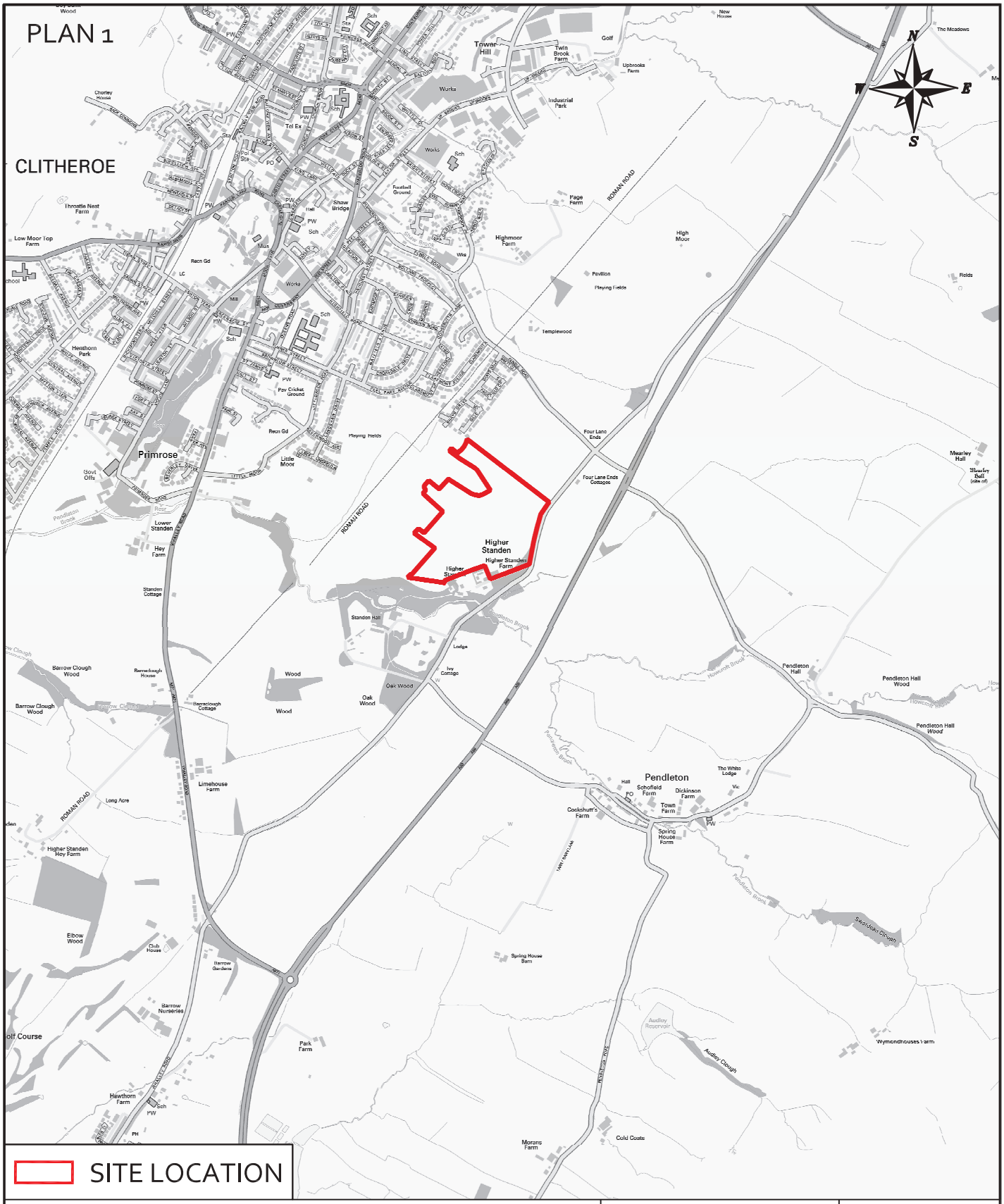
6.1.1 This Transport Statement has been prepared to support the reserved matters planning application for 426 dwellings at Higher Standen Farm in Clitheroe. There are a number of conclusions that can be drawn from this report:

- The proposed development complies with the outline planning consent to provide up to 1,014 residential dwellings on the site.
- The proposed development will be accessed by safe and efficient vehicular access arrangements.
- The proposed car parking provision, internal road layout, pedestrian and cycle access, and servicing arrangements are considered acceptable.
- Phase 1 of the outline consent for up to 228 dwellings will have a minimal impact on the operation of the Waterloo Road and Shawbridge Street junction.
- An additional 218 dwellings as part of Phases 2, 3, and 4 has a minimal impact on the operation of the Waterloo Road and Shawbridge Street junction.
- The applicant is willing to offer any works that might be required at the junction of Waterloo Road and Shawbridge Street before the occupation of the 250th dwelling of Phases 2, 3 and 4 of the Standen development.
- A Framework Travel Plan will be implemented to encourage the use of non-car modes.

6.1.2 In conclusion, the proposals for a residential development will provide a sustainable development in transport terms and planning permission should be granted in accordance with the Framework.

PLANS

PLAN 1



SITE LOCATION

TAYLOR WIMPEY UK LIMITED

PROPOSED RESIDENTIAL DEVELOPMENT
PENDLE ROAD, CLITHEROE
PHASE 2
SITE LOCATION PLAN

Croft Transport Planning & Design
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Tel: 0161 837 7380
Web: www.croftts.co.uk

CROFT

DRAWN:	DATE:	CHECKED:	DATE:	SCALES:	DRAWING NUMBER:	REVISION:
DG	26.09.19	GM	26.09.19	NTS @ A4	1070-01	-

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Taylor Wimpey

LEGEND

- Indicates existing trees
- BDC removed trees and hedges.
- I Affordables - Intermediate
- R Affordables - Rent
- Homes for elderly
- Proposed trees

House Type	Bed No.	Type	No.	Sqft	Total Sqft
Affordables - Rent					
Apartments (gf elderly)	1	Block	2	562	1124
Apartments (ff/sf)	1	Block	4	562	2248
PA24 / Beckford	2	Semi	2	602	1204
PA24 / Beckford	2	Mid	8	602	4816
PA24 / Beckford	2	End	10	602	6020
PA34 / Gosford	3	Semi	14	866	12124
PA34 / Gosford	3	Mid	3	865	2598
PA34 / Gosford	3	End	6	866	5196
PT36 / Easedale	3	Semi	0	931	0
Bungalow 3	2	Semi	12	721	8652
Bungalow 3	2	Mid	1	721	721
Bungalow 3	2	End	2	721	1442
		Total Affordables	**64**		**43982**
Affordables - Intermediate					
Apartments (gf elderly)	1	Block	2	562	1124
Apartments (ff/sf)	1	Block	4	562	2248
PA24 / Beckford	2	Semi	2	602	1204
PA24 / Beckford	2	Mid	9	602	5418
PA24 / Beckford	2	End	10	602	6020
PA34 / Gosford	3	Semi	18	866	15588
PA34 / Gosford	3	Mid	2	866	1732
PA34 / Gosford	3	End	4	866	3464
Bungalow 3	2	Semi	10	721	7210
Bungalow 3	2	Mid	1	721	721
Bungalow 3	2	End	2	721	1442
		Total Affordables	**64**		**46171**

Open Sale					
Apartments (gf elderly)	2	Block	4	655	2620
Apartments (ff/sf)	2	Block	8	655	5240
Bungalow 3 (Elderly)	2	Semi	22	721	15862
Bungalow 3 (Elderly)	2	Mid	2	721	1442
Bungalow 3 (Elderly)	2	End	4	721	2884
PA34 / Gosford	3	End	5	866	4330
PA34 / Gosford	3	Mid	5	866	4330
PA34 / Gosford	3	Semi Detached	23	866	19918
PT36 / Easedale	3	End	1	931	931
PT36 / Easedale	3	Semi Detached	13	931	12103
PD30 / Amersham	3	Detached	24	990	23760
PA42 / Lydford	4	Detached	26	1099	28574
NB31 / Braxton	4	Semi Detached	68	1091	74188
NT41/Trusdale	4	Detached	44	1243	54692
NO40 / Coltham	4	Detached	23	1259	28957
NT42 / Waysdale	4	Detached	8	1549	12392
PD51 / Lavenham	5	Detached	18	1646	29628
		Total Open Sale	**298**		**321851**
		Total	**426**		**412004**

Gross Site Area:	40.6	Acres	18.43	Hectares
POS / Green Space	9.702	Acres	3.95	Hectares
Undevelopable	1.804	Acres	0.73	Hectares
Nett Site Area:	**29.034**	**Acres**	**11.75**	**Hectares**
Gross Density:	10.49	Units/Acre	25.93	Units/Hectare
Nett Density:	**14.67**	**Units/Acre**	**36.26**	**Units/Hectare**
Gross Footage:	10147.88	SQFT/Acre	25.93	SQM/Hectare
Nett Footage:	**14190.40**	**SQFT/Acre**	**27392.11**	**SQM/Hectare**

Baldwin Design Consultancy Ltd

Revision:
- Rev A - Amended to client comments 11.06.19
- Rev B - Amended to client comments
- Rev C - Add path to client comments 24.06.19
- Rev D - Amend to client comments 01.07.19
- Rev E - Amend to client comments & update accommodation schedule 02.07.19
- Rev F - Amend red edge & accommodation schedule to client comments 03.07.19
- Rev G - Amend to clients comments 14.08.19
- Rev H - Amend to clients comments & update accommodation schedule 23.08.19
- Rev I - Amend to clients comments & update accommodation schedule 28.08.19
- Rev J - Amend affordable rent to client comments 29.08.19

Project Title:
Residential Development

Address:
Higher Standen Farm, Clitheroe

Drawing:
Colour Layout

Drawing No:
TW/HSF/CL/01

Drawn:	Ch'd:	Date:
KM	ST	Date 25/06/19
Scale: 1:1000		Paper Size: A1

www.baldwindesign.net e-mail: g.baldwin@baldwindesign.net Tel 01925 747515
4 Marina Walk, Pennington Wharf, Plank Lane, Leigh, WN7 4EZ

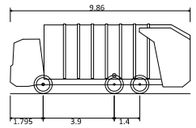
Higher Standen Farm (Phases 2, 3 & 4)

Retained Higher Standen Farm

114.

NOTES

PLAN 3



Large Refuse Vehicle (3 axle)	
Overall Length	9.860m
Overall Width	2.450m
Overall Body Height	3.814m
Min Body Ground Clearance	0.366m
Track Width	2.450m
Lock to lock time	4.00s
Kerb to Kerb Turning Radius	9.500m

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

STANDEN ESTATE, CLITHEROE

DRAWING TITLE:

SWEPT PATH ANALYSIS

SCALES:

1:1250 @ A1

DRAWN:	CHECKED:	DATE:
GM	MTC	SEP 19

Croft Transport Planning & Design
340 Deansgate
Manchester
M3 4LY

Email: Info@croftts.co.uk
Tel: 0161 837 7380
Web: www.croftts.co.uk

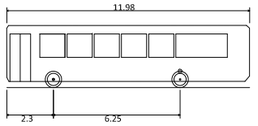
DRAWING NUMBER:	REVISION:
1070-SP01	A

CROFT

Z:\projects\1070 Standen Estate, Clitheroe\CAD\Croft Drawings\1070-SP01A.dwg

NOTES

PLAN 4



Single Deck Bus	
Overall Length	11.980m
Overall Width	2.440m
Overall Body Height	3.070m
Min Body Ground Clearance	0.306m
Track Width	2.322m
Lock to lock time	6.00s
Kerb to Kerb Turning Radius	10.368m

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

STANDEN ESTATE, CLITHEROE

DRAWING TITLE:

SWEPT PATH ANALYSIS

SCALES:

1:1250 @ A3

DRAWN:	CHECKED:	DATE:
GM	MTC	SEP 19

Croft Transport Planning & Design
340 Deansgate
Manchester
M3 4LY

Email: info@croftts.co.uk
Tel: 0161 837 7380
Web: www.croftts.co.uk

DRAWING NUMBER:	REVISION:
1070-SP02	A

CROFT

Z:\projects\1070 Standen Estate, Clitheroe\CAD\Croft Drawings\1070-SP02A.dwg

FIGURES

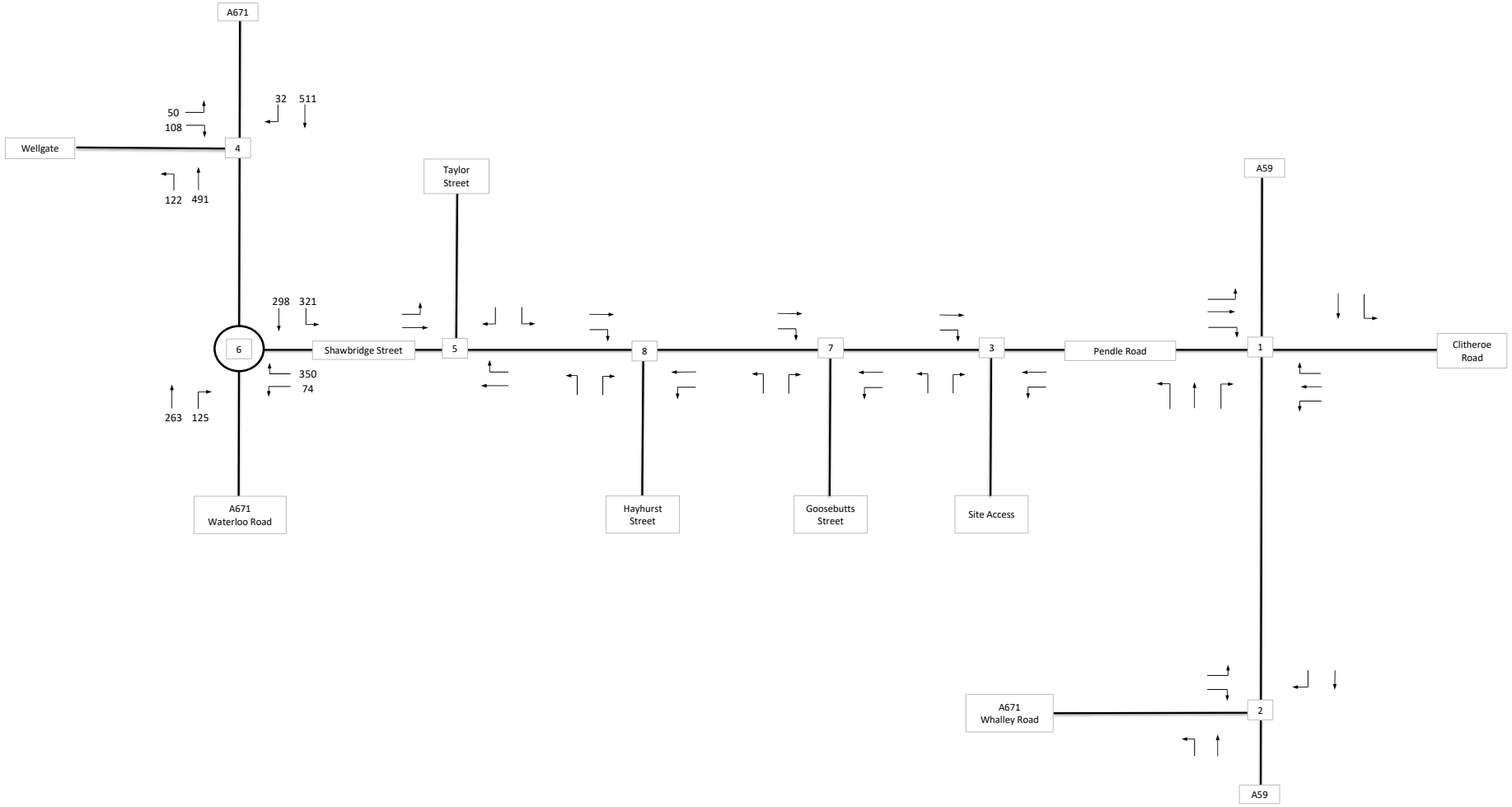


Figure 1 - 2017 Surveyed Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

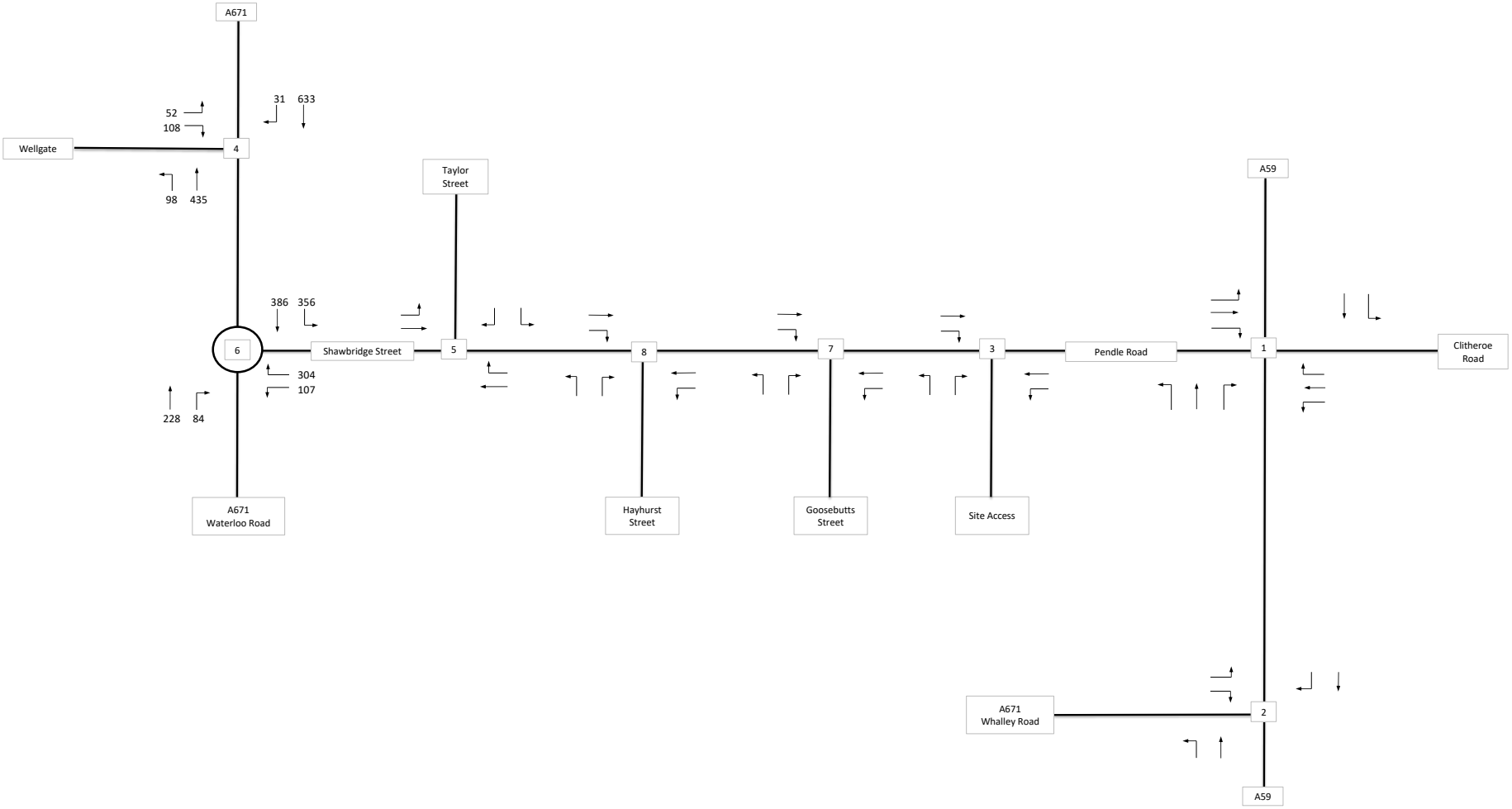
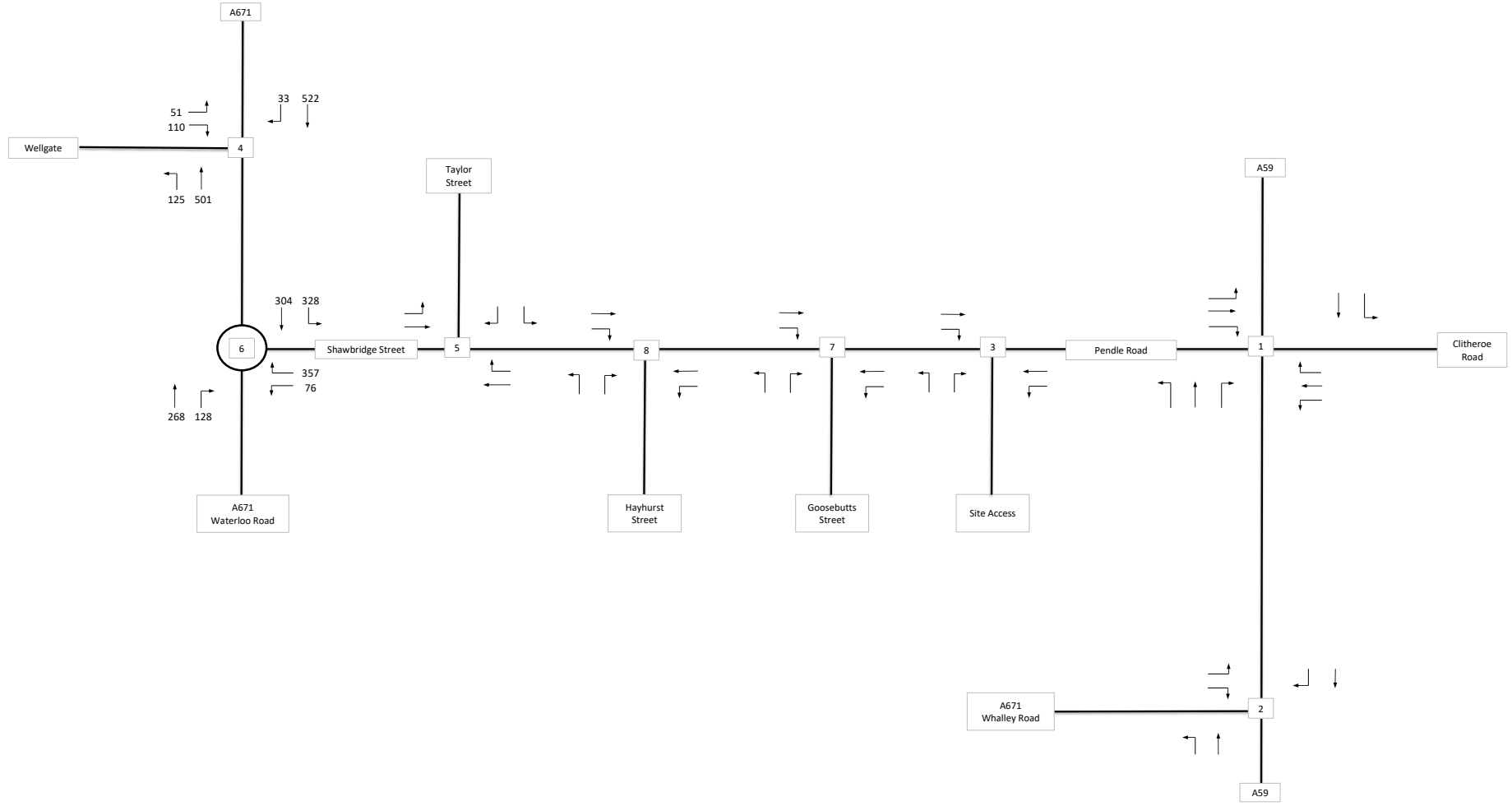


Figure 2 - 2017 Surveyed Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY



AM Peak 2019-2021 NTM Adjusted Growth Factor (MSOA Ribble Valley 02) = 1.0208

Figure 3 - 2021 Growthed Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

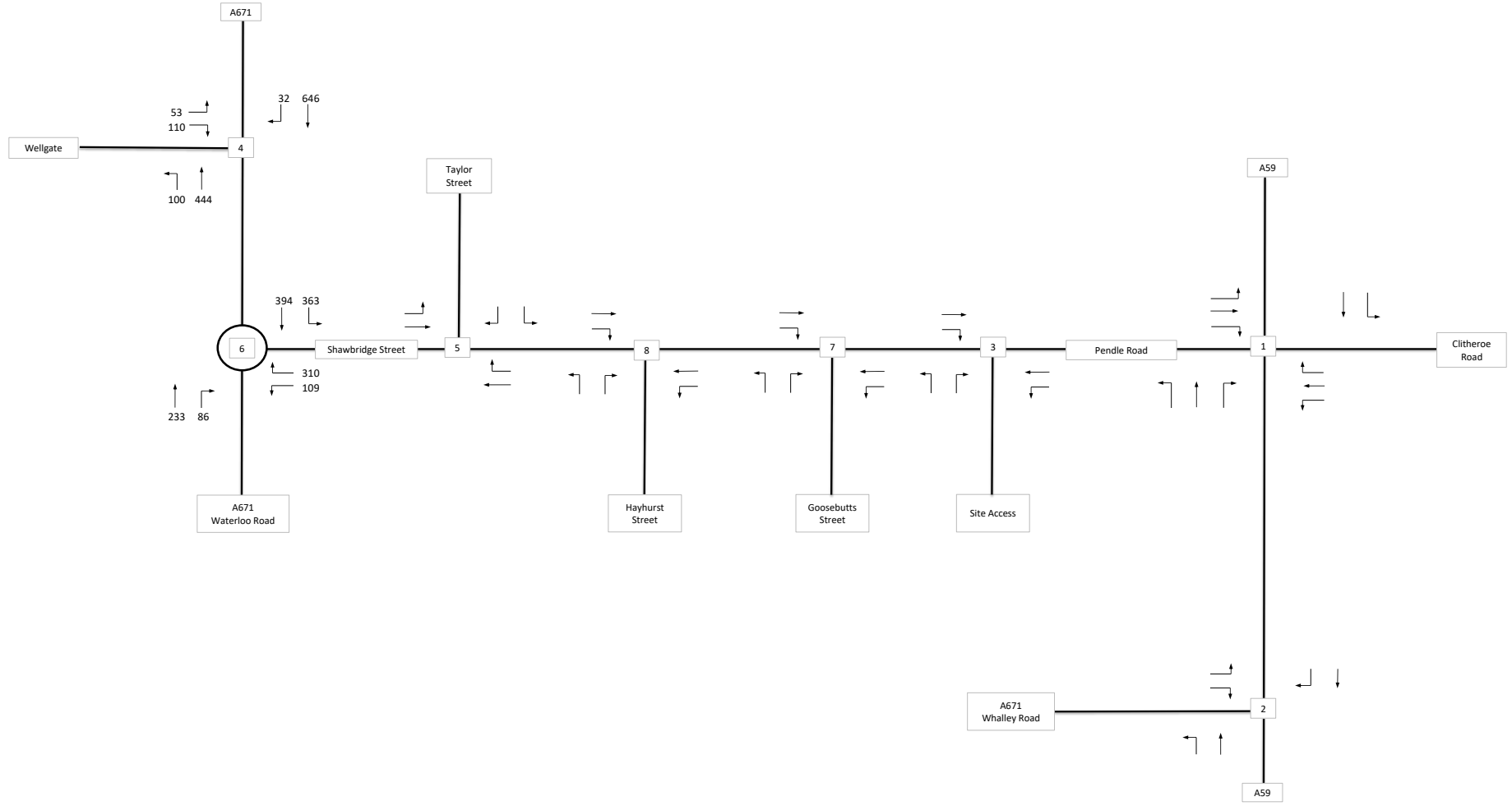


Figure 4 - 2021 Growthed Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

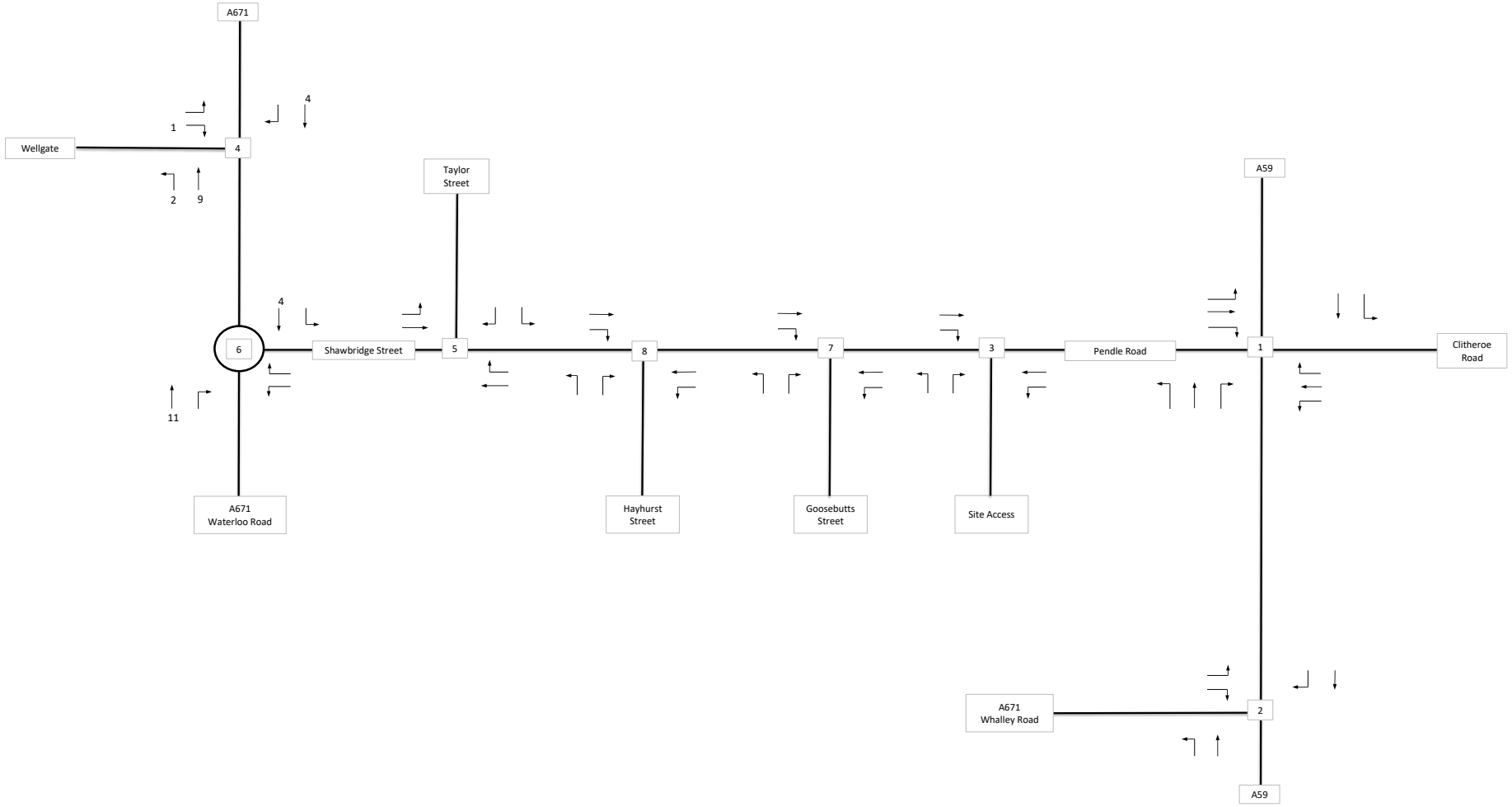


Figure 5 - Committed Development - 43 Dwellings off Whalley Road, Barrow (3/2013/0737)
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

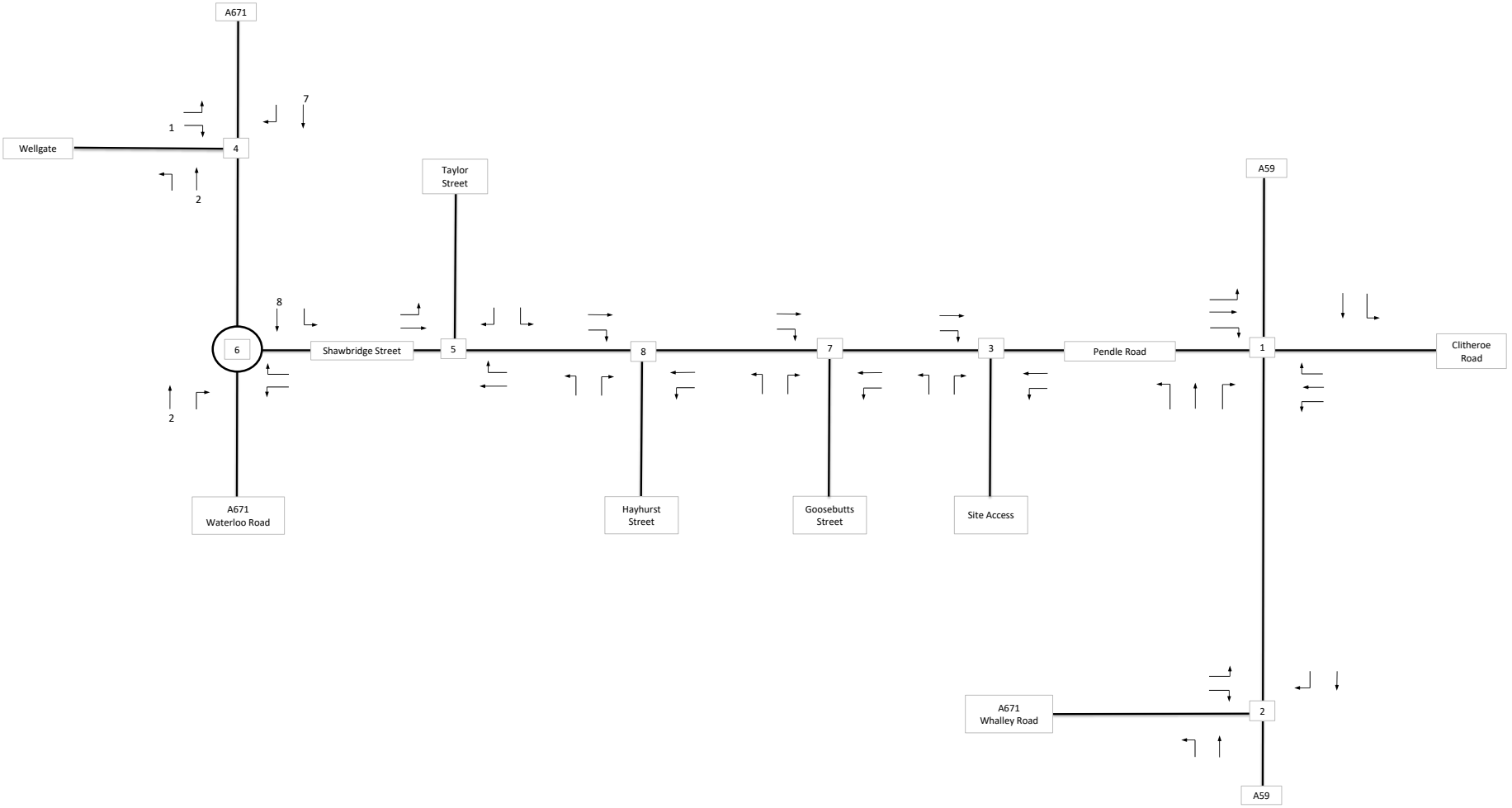


Figure 6 - Committed Development - 43 Dwellings off Whalley Road, Barrow (3/2013/0737)
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

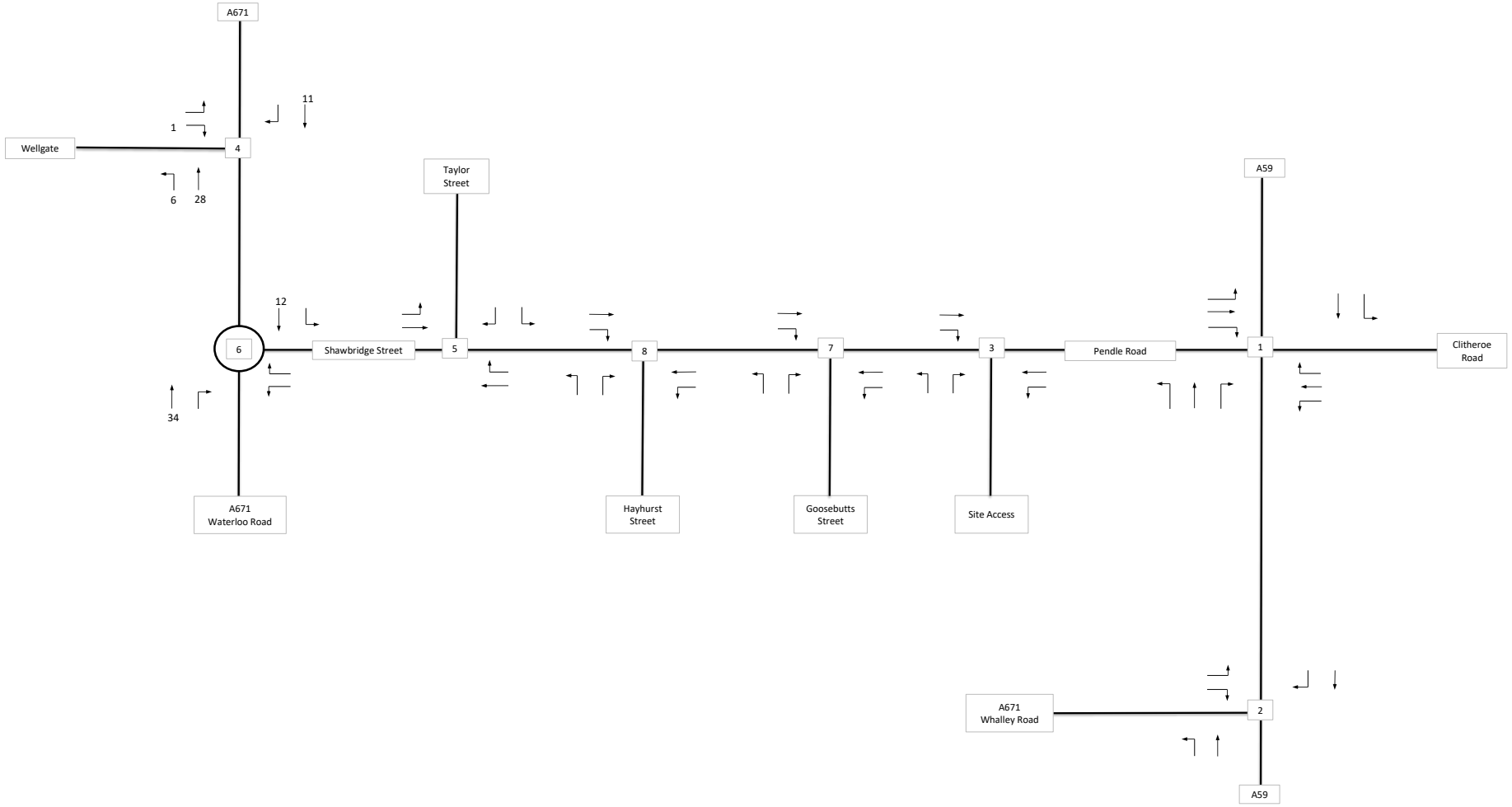


Figure 7 - Committed Development - 504 Dwellings off Whalley Road, Barrow (3/2012/0630)
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

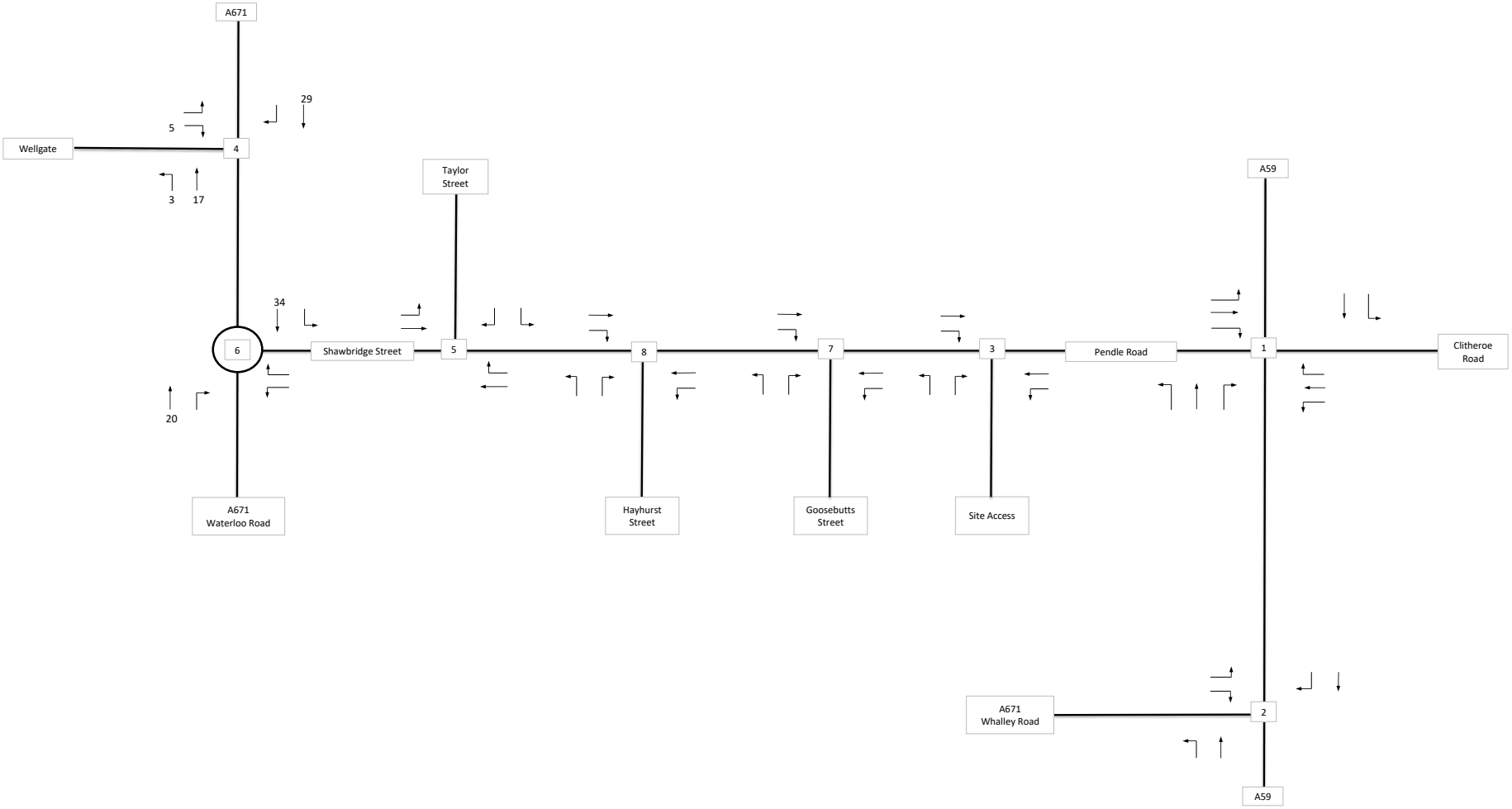


Figure 8 - Committed Development - 504 Dwellings off Whalley Road, Barrow (3/2012/0630)
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

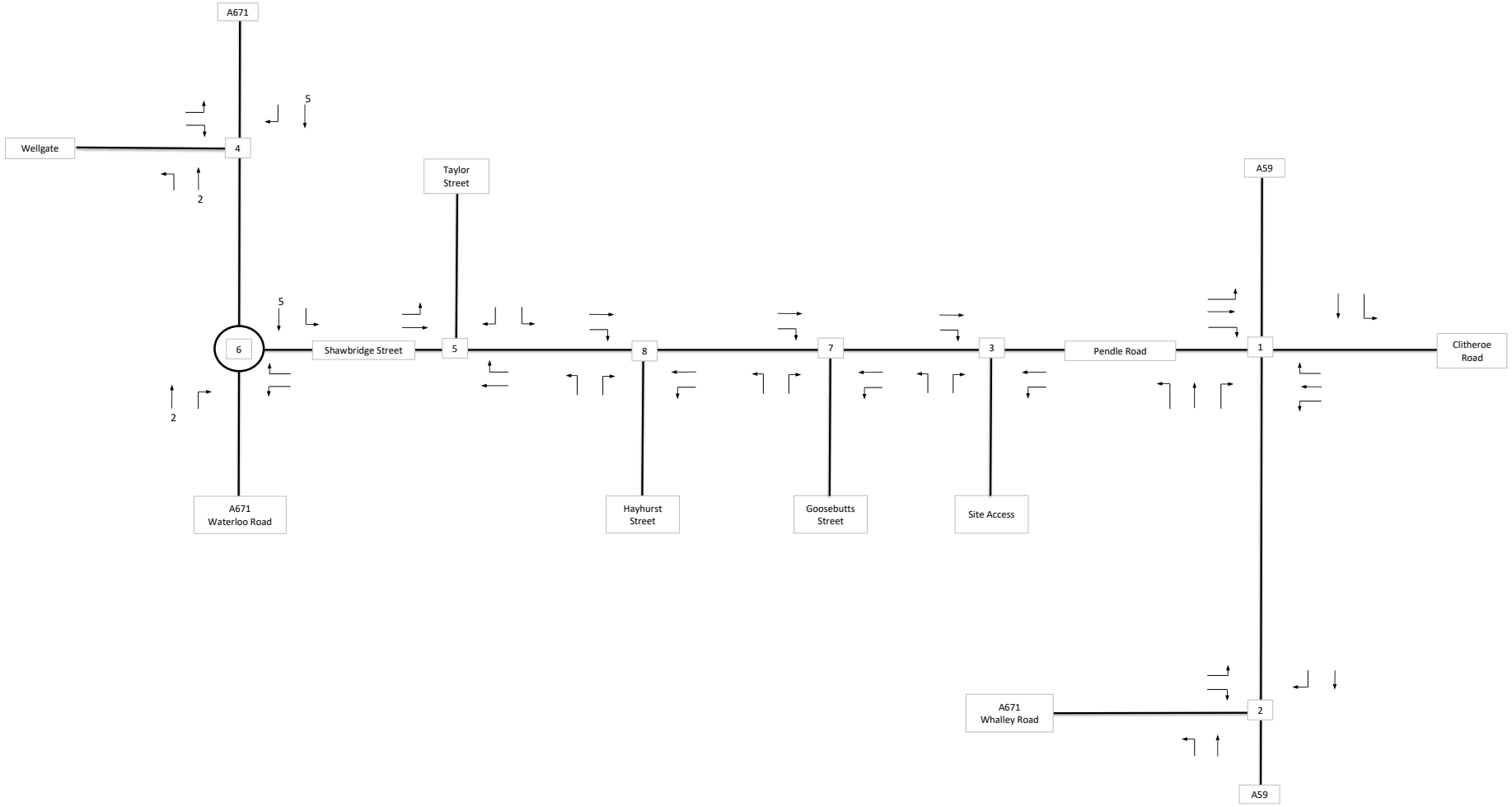


Figure 9 - Committed Development - 50 Dwellings Chatburn Road, Clitheroe (3/2016/1165)
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

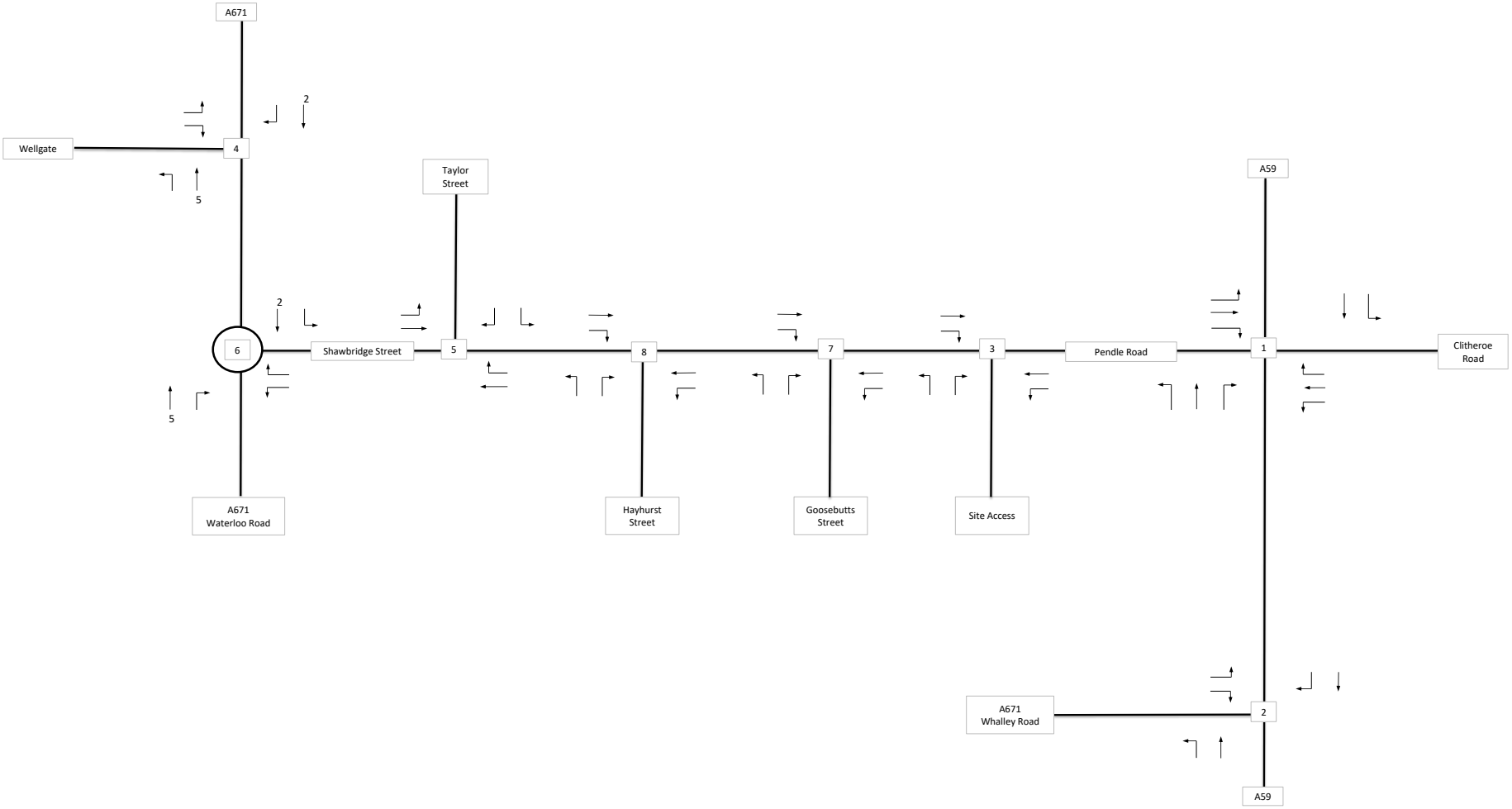


Figure 10 - Committed Development - 50 Dwellings off Chatburn Road, Clitheroe (3/2016/1165)
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

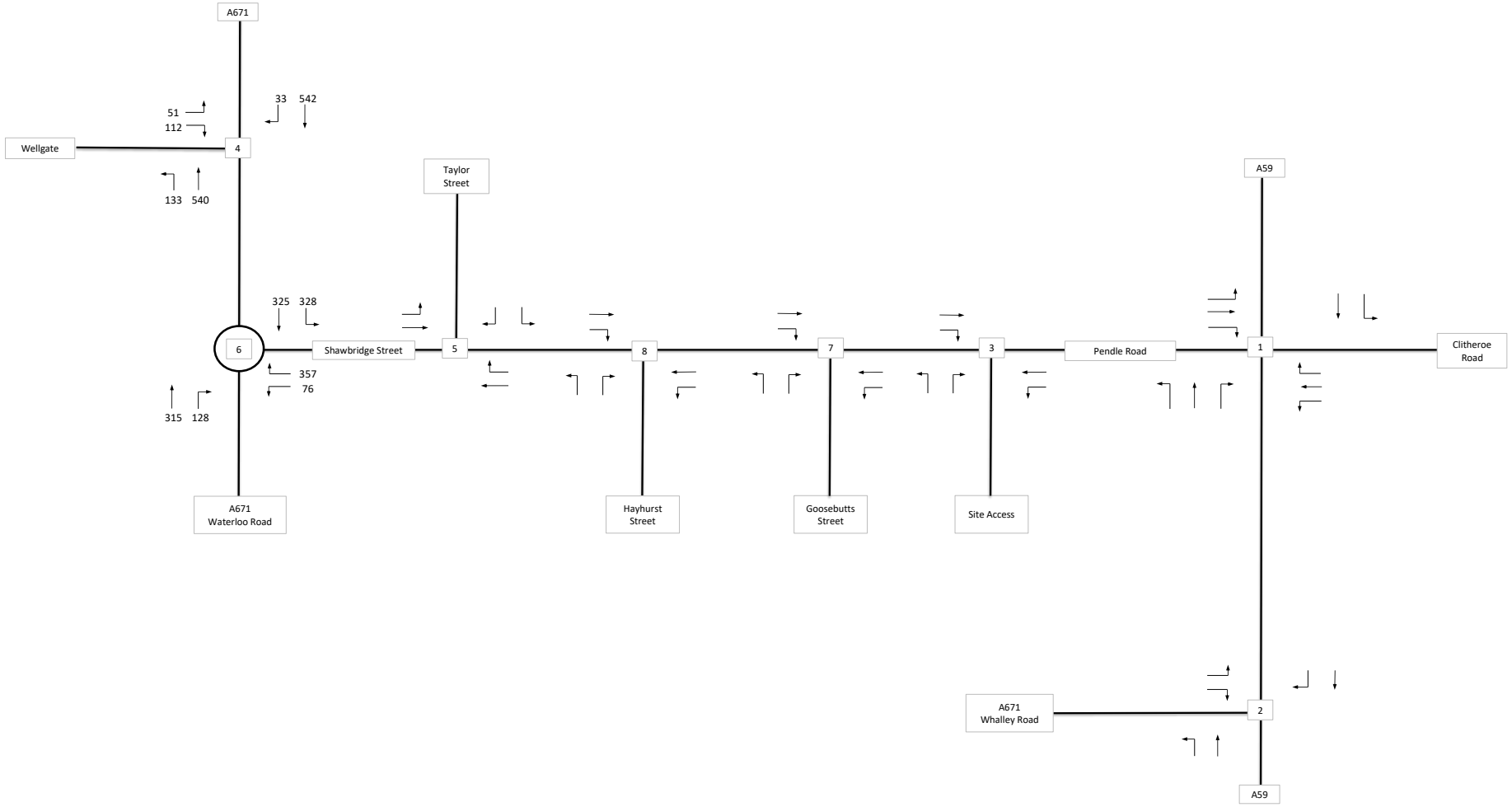


Figure 11 - 2021 Base Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

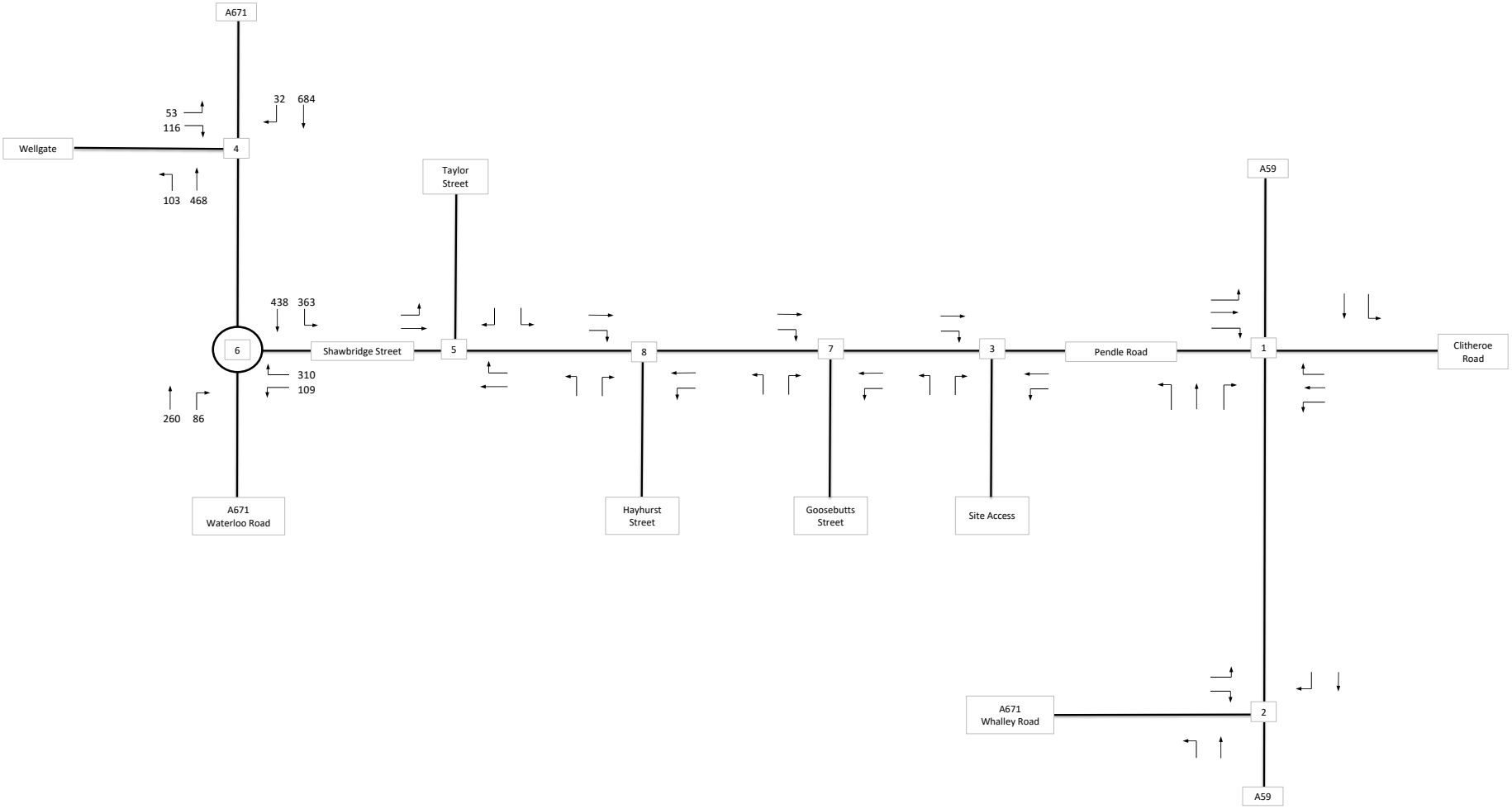


Figure 12 - 2021 Base Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

IN	29
OUT	90

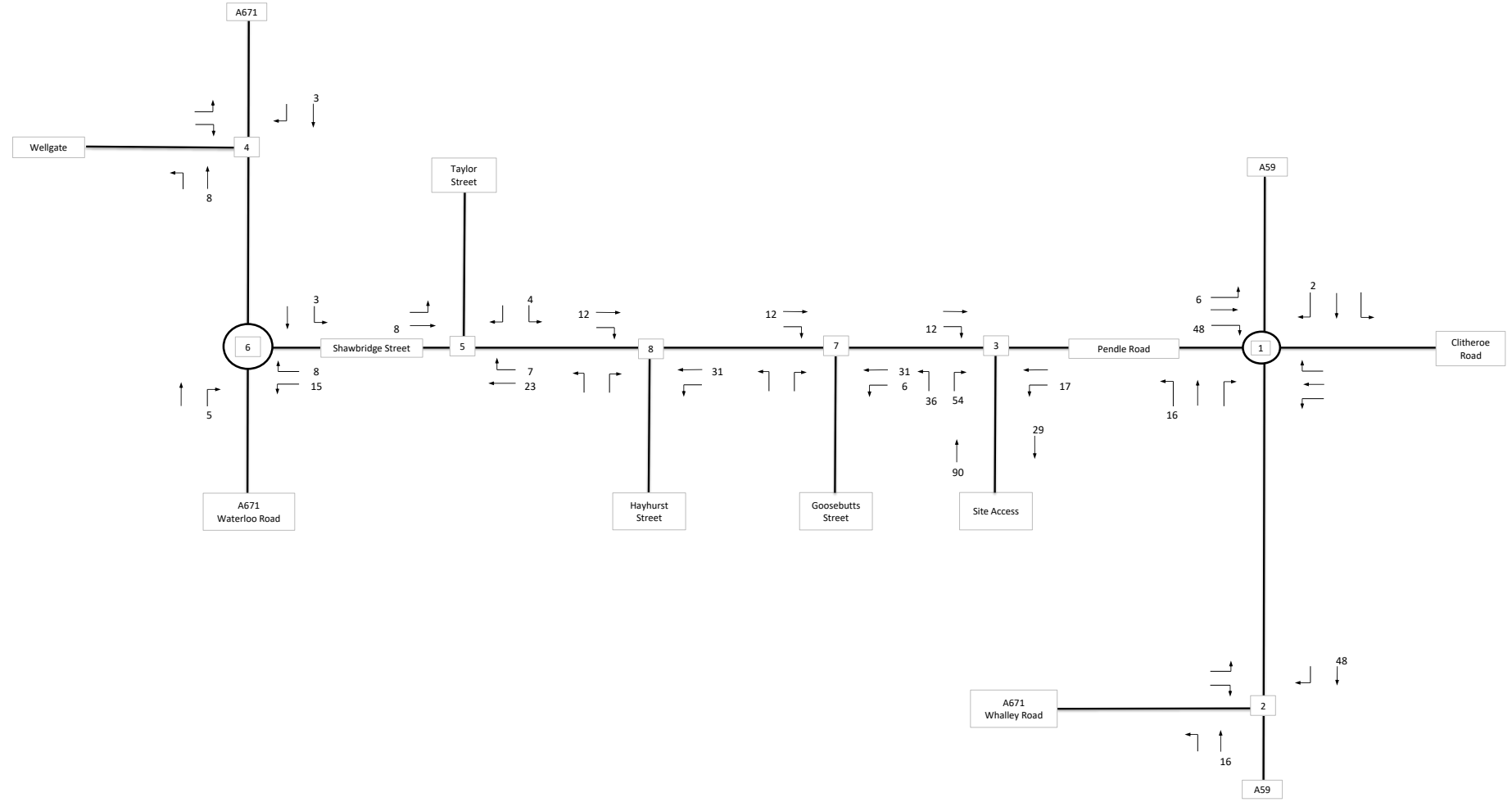


Figure 13 - Proposed Development Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

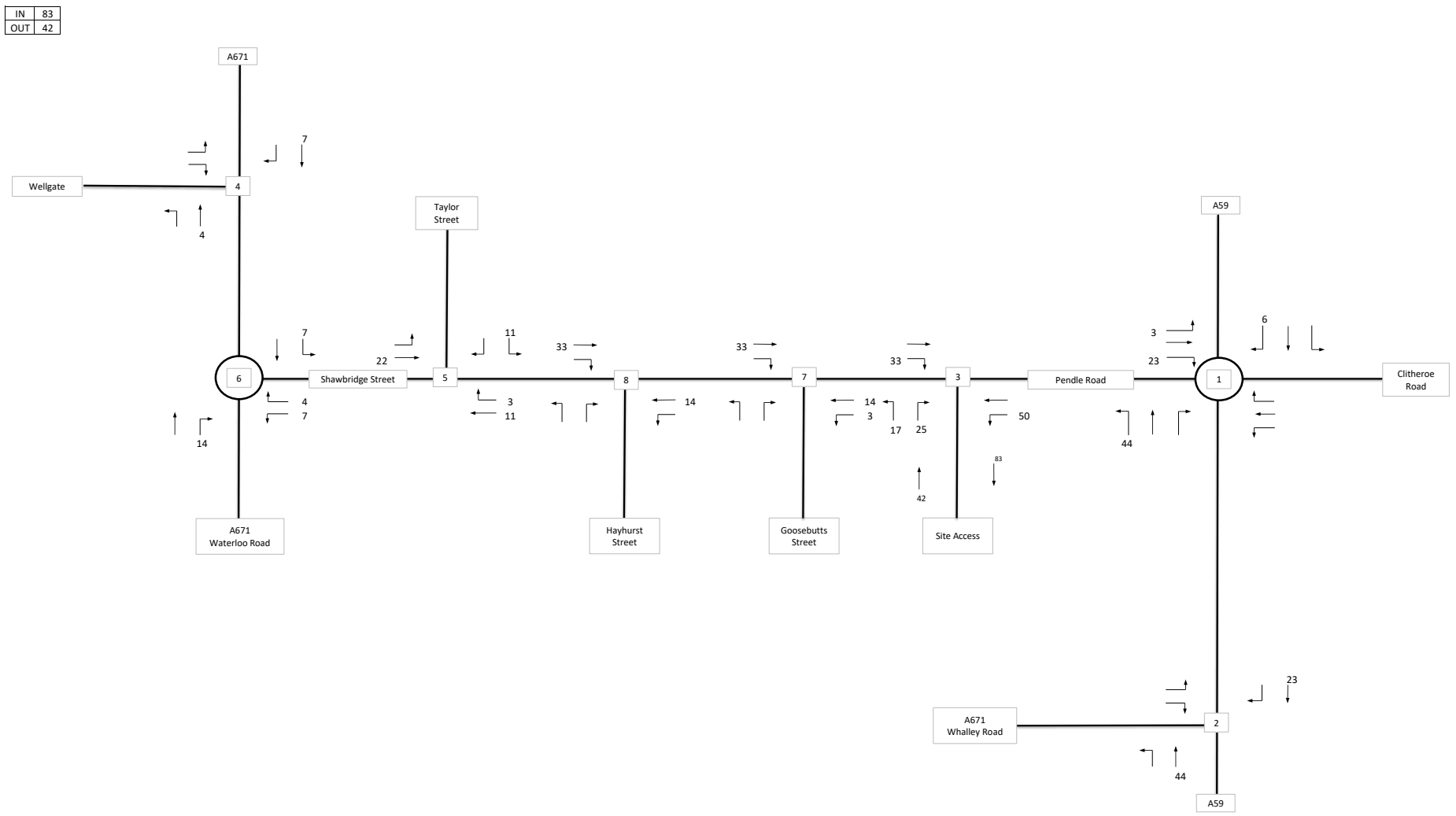


Figure 14 - Proposed Development Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

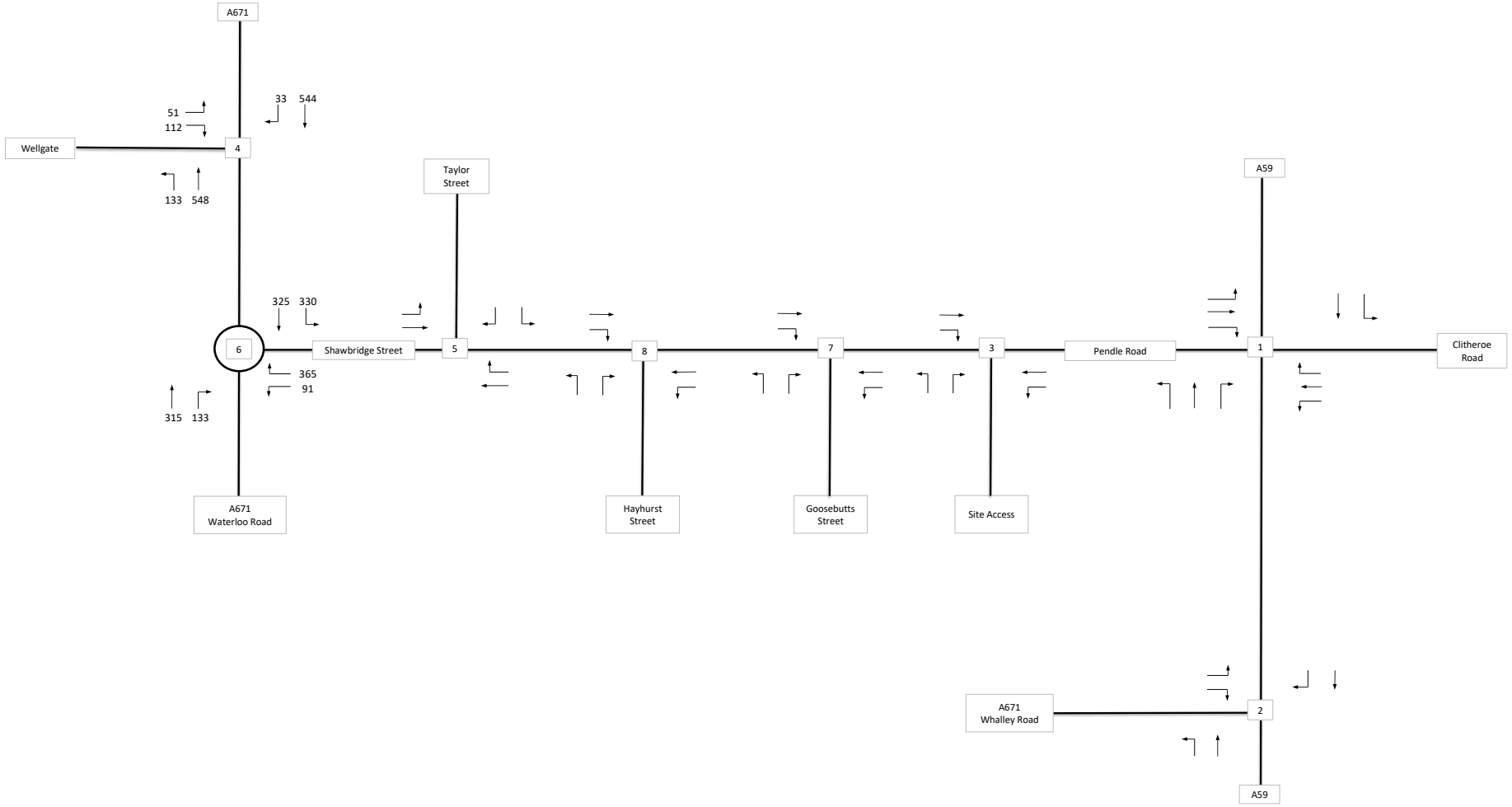


Figure 15 - 2021 With Development Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

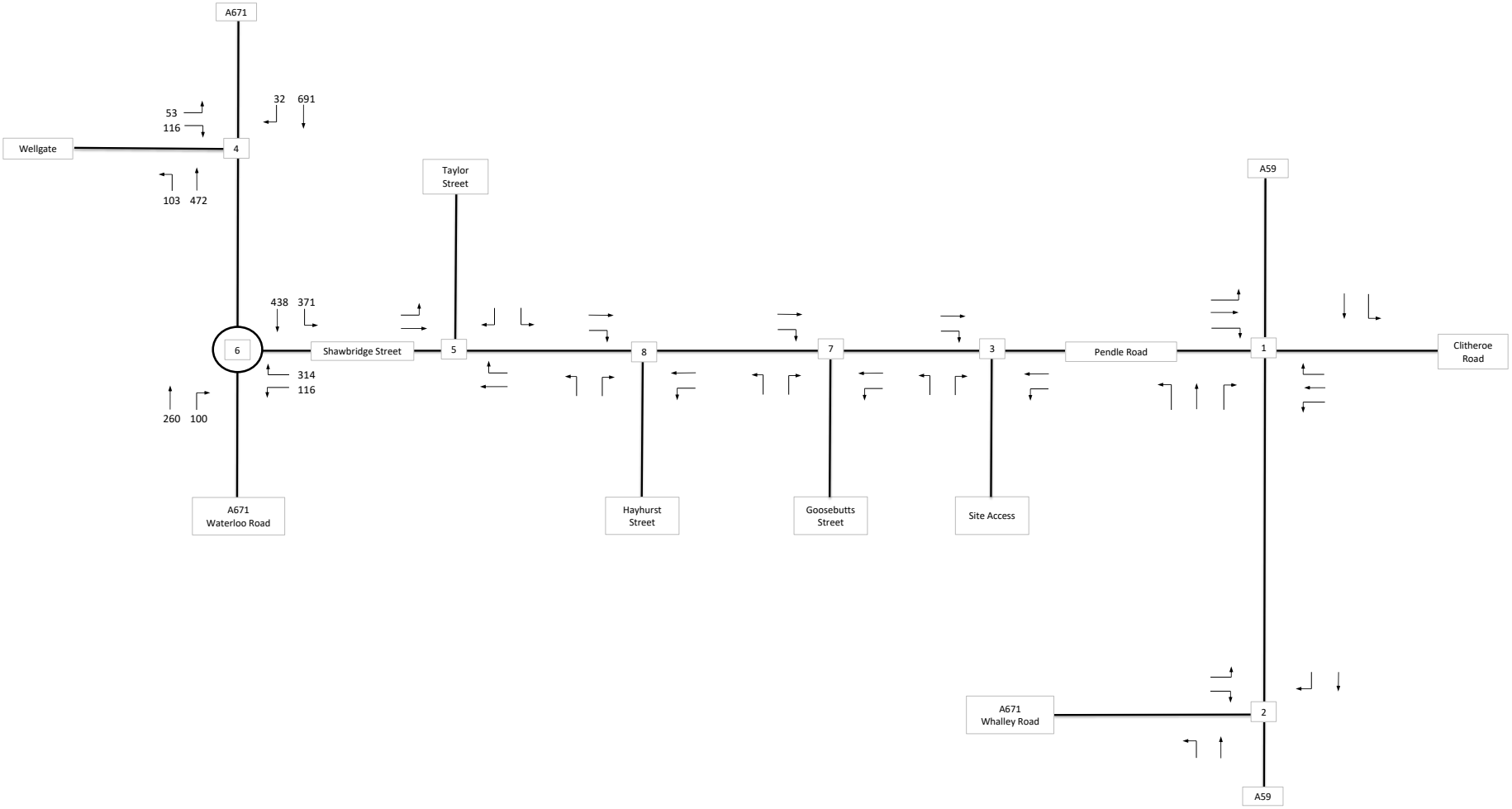


Figure 16 - 2021 With Development Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

IN	32
OUT	99

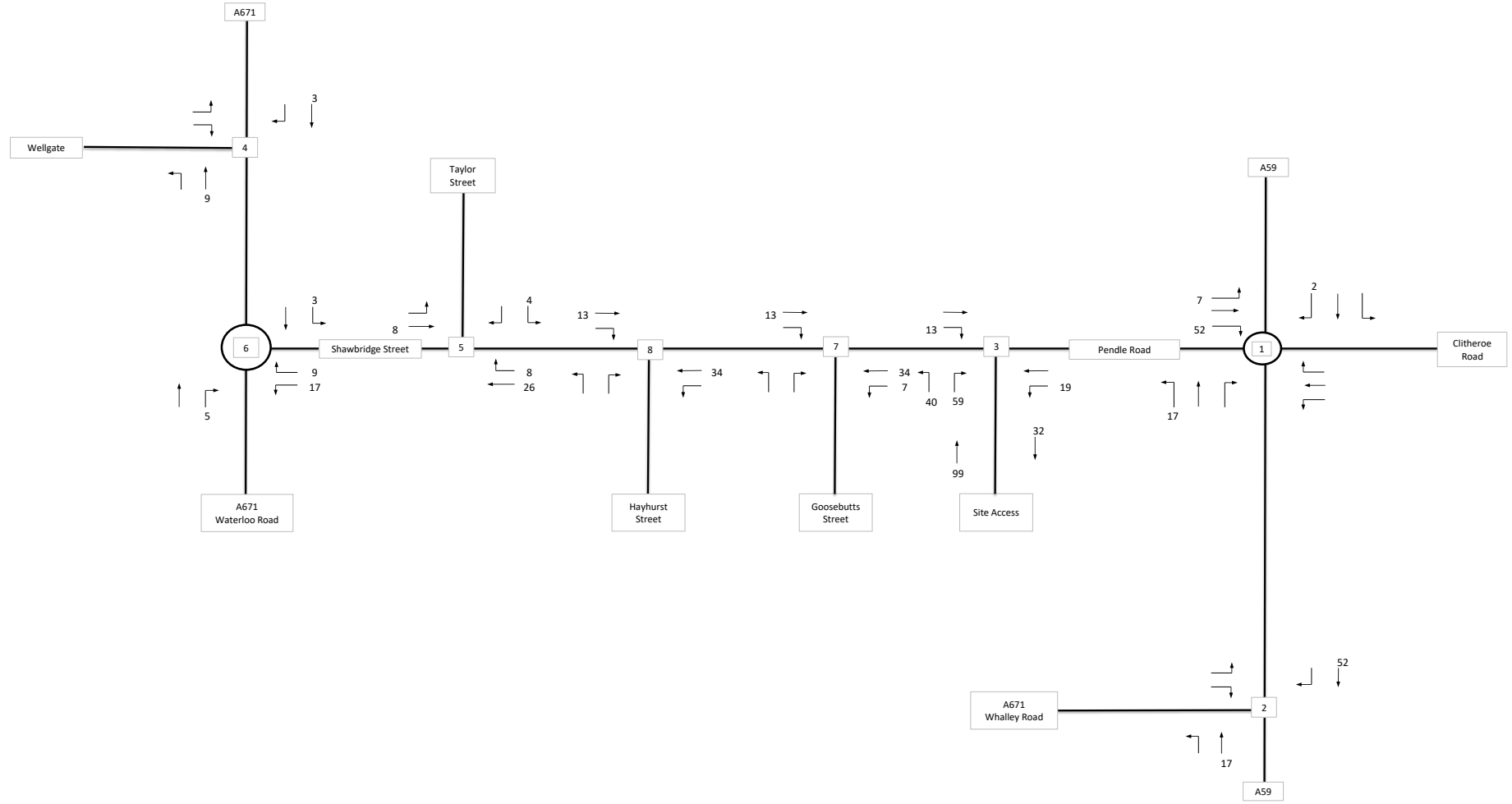


Figure 17 - Proposed Phase 2 Development Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

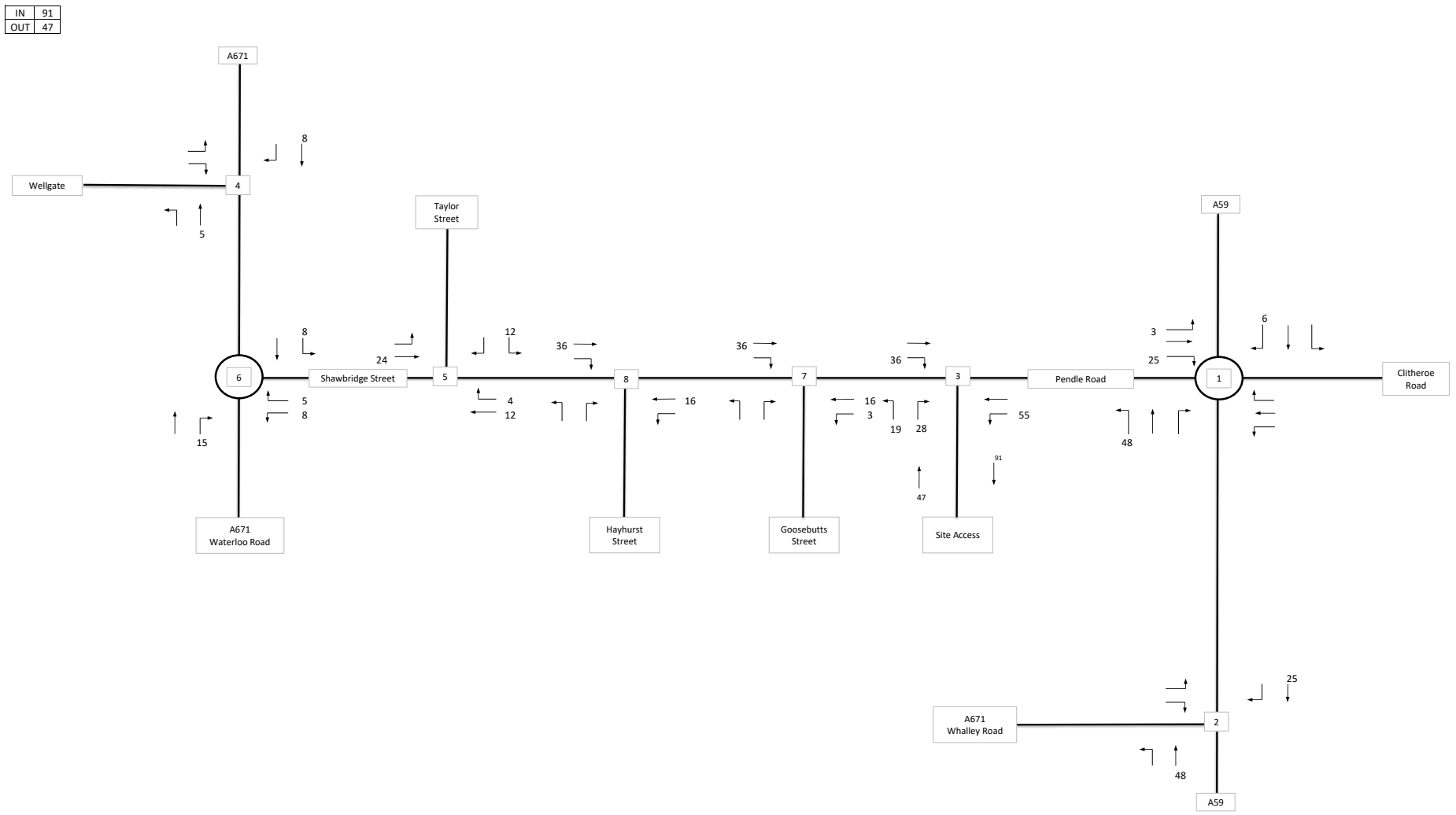


Figure 18 - Proposed Phase 2 Development Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

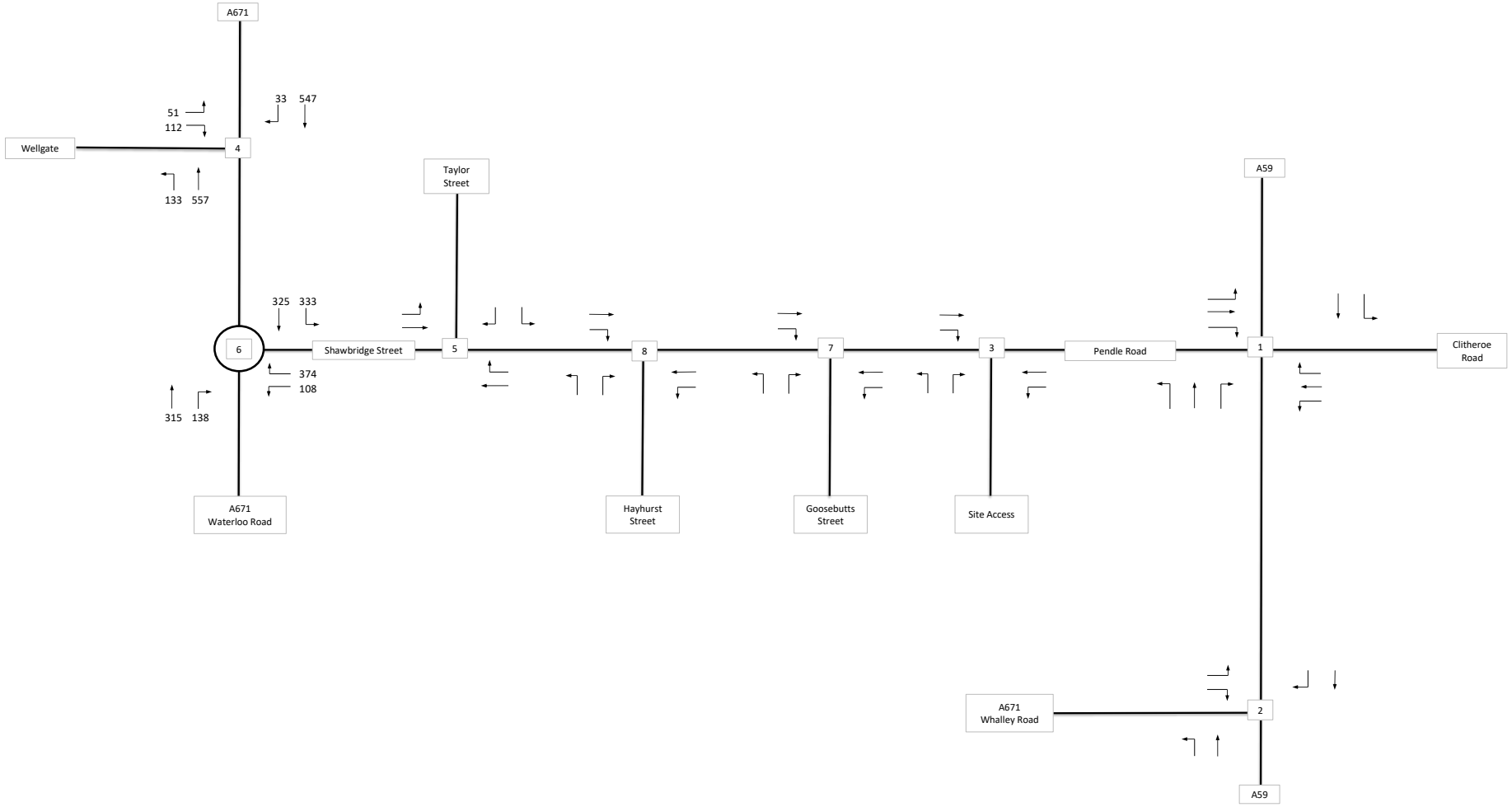


Figure 19 - 2021 Phase 2 'With Development' Flows
AM Peak Period (0815 - 0915)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

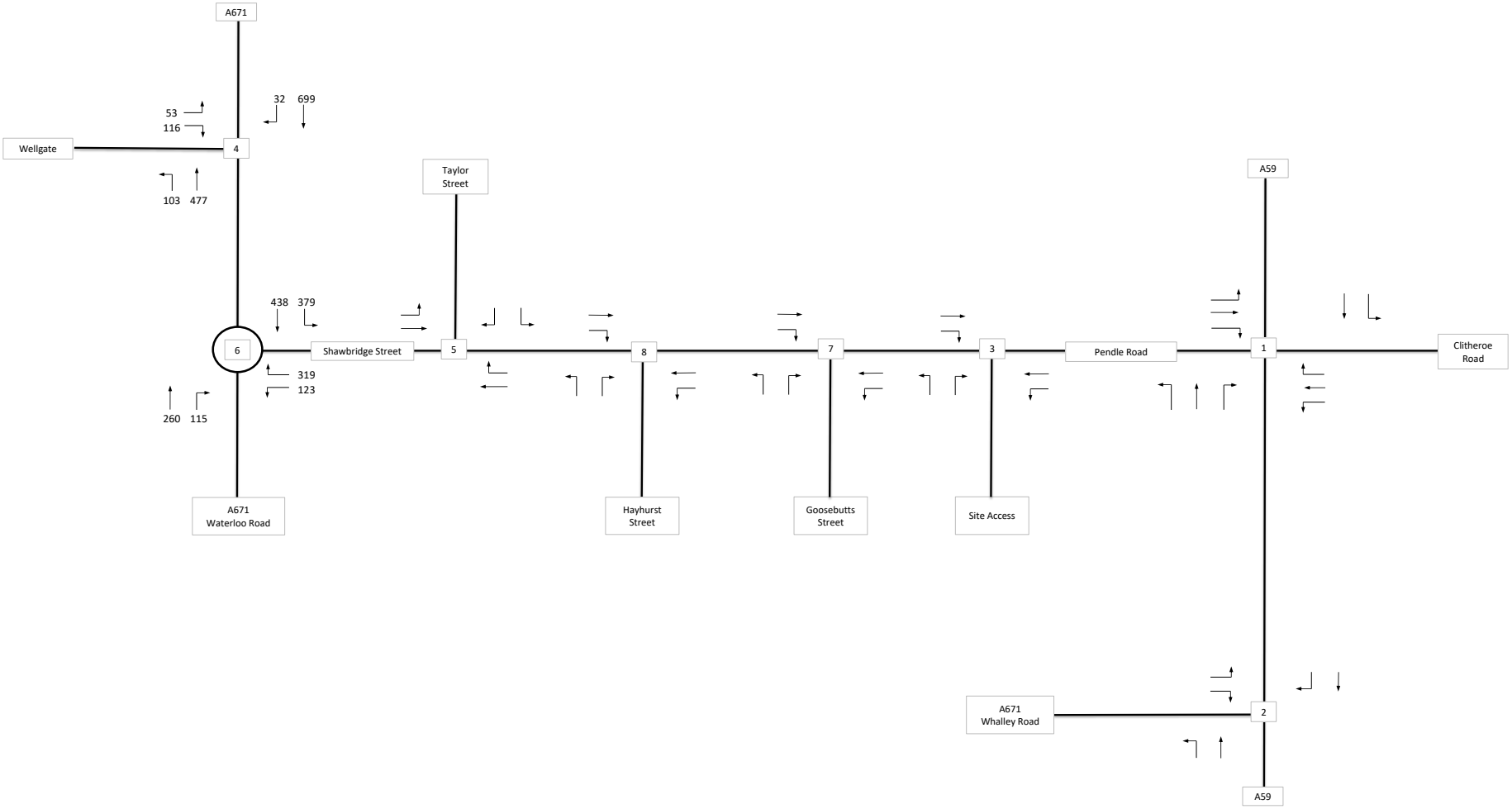


Figure 20 - 2021 Phase 2 'With Development' Flows
PM Peak Period (1630 -1730)

Croft Transport Planning & Design
Hill Quays
9 Jordan Street
Manchester
M15 4PY

APPENDICES

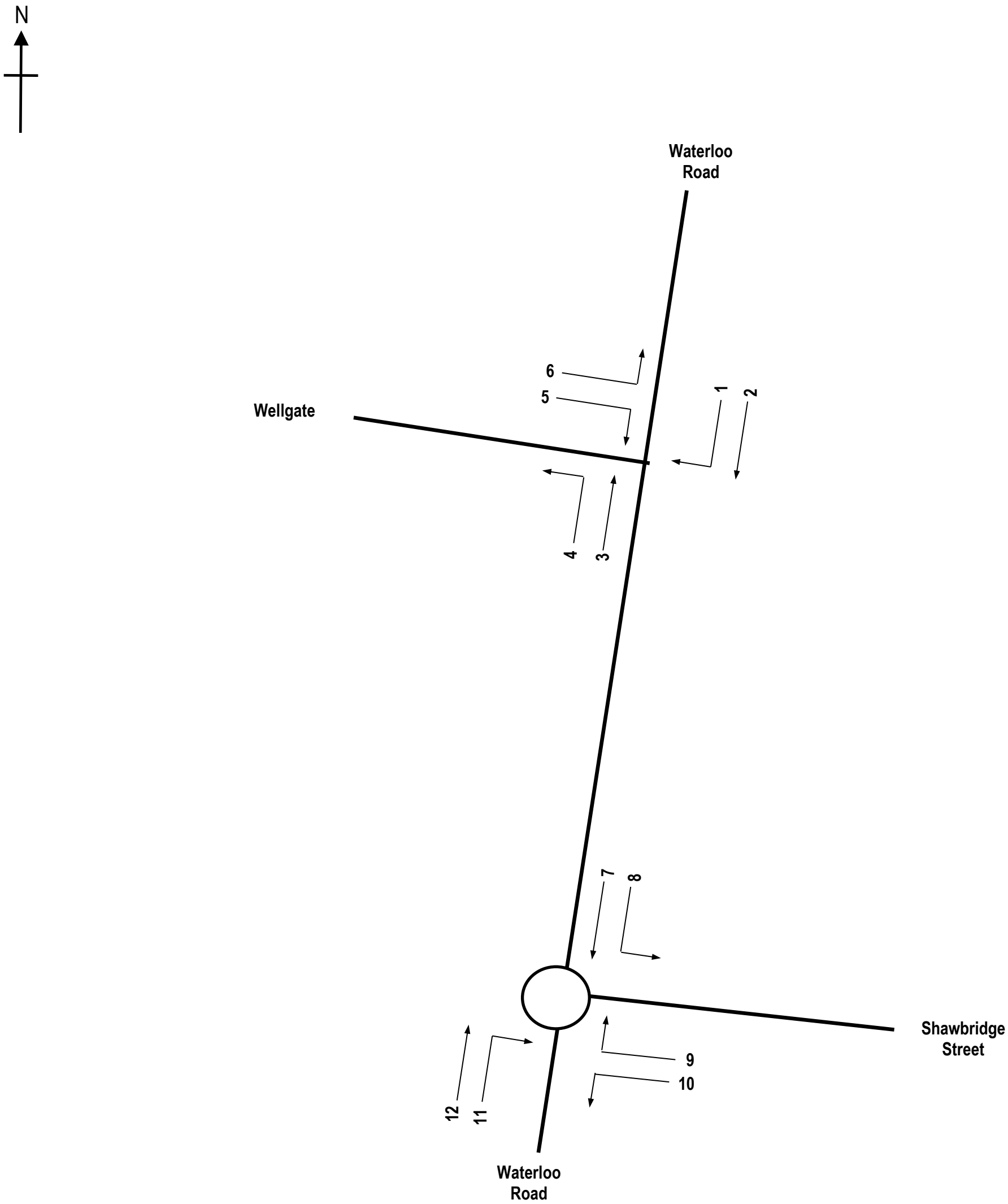
APPENDIX 1

2019 Traffic Survey Data

SURVEY CONTROL

Client:	Croft Transport Solutions
Client Contact:	Phil Wooliscroft
Survey Location:	Clitheroe
Date(s) of Survey:	Tuesday 26 February 2019
Notes:	
On Site Supervisor:	David Cheng
Data Checking:	David Cheng
Survey Reference:	2019.036 Clitheroe Junctions
Status:	Final
Date of Issue:	27 February 2019

JUNCTION 1



DRAWING TITLE: **TRAFFIC MOVEMENT REFERENCE**			
JOB TITLE: **2019.036 CLITHEROE JUNCTIONS**			
DRAWN BY: DC	DATE: FEB 2019	SCALE: NTS	REF: FIGURE 1

signal surveys
Traffic Counts and Car Park Surveys
Parkway House, Palatine Road, Northenden, Manchester, M22 4DB
Tel 0161 998 4226

Time Beginning	Wellgate/Waterloo Road/Shawbridge Street, Clitheroe - Tuesday 26 February 2019																							
	1		2		3		4		5		6		7		8		9		10		11		12	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
0730	2	0	91	9	55	3	6	0	17	0	3	0	47	8	66	1	27	0	9	2	26	1	33	4
0745	3	0	96	5	82	4	11	0	17	0	4	0	57	4	55	1	47	1	10	0	33	1	47	3
0800	5	0	123	5	64	4	18	1	13	0	11	0	62	2	75	1	38	1	13	0	24	0	44	3
0815	7	0	126	7	101	3	28	3	36	1	11	0	62	4	99	4	71	2	12	0	22	0	61	3
0830	8	0	107	6	147	13	30	1	19	0	14	0	57	5	69	1	119	6	16	0	24	1	58	8
0845	8	0	120	5	122	5	34	0	28	2	9	1	69	5	80	2	78	2	16	0	51	1	78	2
0900	9	0	110	6	69	5	22	0	17	1	14	0	70	6	55	2	54	4	28	1	24	0	38	1
0915	4	1	97	3	68	8	24	1	21	1	10	0	65	3	55	1	54	2	19	0	18	0	38	7

Time Beginning	Wellgate/Waterloo Road/Shawbridge Street, Clitheroe - Tuesday 26 February 2019																							
	1		2		3		4		5		6		7		8		9		10		11		12	
	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV	LV	HV
1630	5	0	148	4	91	2	20	0	27	1	12	0	85	4	89	1	66	1	32	0	23	0	46	1
1645	6	0	141	3	110	0	27	1	28	0	16	0	87	3	81	0	79	0	27	0	21	0	56	1
1700	11	0	177	3	121	2	25	0	28	1	14	0	111	2	96	2	77	1	25	0	18	0	70	1
1715	9	0	145	1	105	0	24	0	21	0	10	0	83	1	84	0	78	0	23	0	22	0	50	0
1730	8	0	153	1	90	2	13	0	23	0	11	0	99	1	77	0	54	1	33	0	22	0	48	1
1745	4	0	146	0	98	1	27	0	17	2	6	1	88	1	74	0	67	1	26	0	14	1	58	0
1800	7	0	131	4	78	0	23	0	18	0	7	0	90	2	59	2	52	0	28	0	18	0	50	0
1815	4	0	106	0	94	1	15	0	18	0	10	0	71	1	53	0	50	1	9	0	18	0	59	0

APPENDIX 2

ARCADY Output

Junctions 8

ARCADY 8 - Roundabout Module

Version: 8.0.6.541 [19821,26/11/2015]

Filename: Waterloo Road_Shawbridge Rd (Based on existing validated model)_April 2019.arc8
Path: Z:\projects\1070 Standen Estate, Clitheroe\Arcady
Report generation date: 04/04/2019 18:17:22

Summary of junction performance

	AM						PM					
	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS	Queue (PCU)	Delay (s)	RFC	LOS	Junction Delay (s)	Junction LOS
Existing Layout - 2021 Base Flows												
Arm 1	2.98	24.85	0.75	C	20.46	C	1.24	13.02	0.56	B	25.27	D
Arm 2	2.13	11.83	0.68	B			4.37	20.12	0.82	C		
Arm 3	3.39	29.00	0.78	D			5.03	45.24	0.84	E		
Existing Layout - 2021 Phase 2 With Development Flows												
Arm 1	3.57	29.28	0.79	D	27.45	D	1.54	14.93	0.61	B	32.05	D
Arm 2	2.21	12.24	0.69	B			5.33	24.23	0.85	C		
Arm 3	5.93	46.51	0.87	E			7.07	61.03	0.89	F		
Existing Layout - 2021 With Development Flows												
Arm 1	3.25	26.83	0.77	D	23.10	C	1.37	13.86	0.58	B	28.15	D
Arm 2	2.16	12.01	0.69	B			4.80	21.96	0.83	C		
Arm 3	4.32	35.35	0.82	E			5.87	51.78	0.87	F		

Values shown are the maximum values over all time segments. Delay is the maximum value of average delay per arriving vehicle. Junction LOS and Junction Delay are demand-weighted averages.

"D1 - 2021 Base Flows, AM " model duration: 08:00 - 09:00
"D2 - 2021 Base Flows, PM" model duration: 16:30 - 17:30
"D3 - 2021 With Development Flows, AM" model duration: 08:00 - 09:00
"D4 - 2021 With Development Flows, PM" model duration: 16:30 - 17:30
"D5 - 2021 Phase 2 With Development Flows, AM" model duration: 08:00 - 09:00
"D6 - 2021 Phase 2 With Development Flows, PM" model duration: 16:30 - 17:30

Run using Junctions 8.0.6.541 at 04/04/2019 18:17:20

File summary

Title	Waterloo Road/Shawbridge Street
Location	Clitheroe
Site Number	
Date	05/05/2017
Version	
Status	TIA
Identifier	
Client	
Jobnumber	1070
Enumerator	
Description	

Analysis Options

Vehicle Length (m)	Do Queue Variations	Calculate Residual Capacity	Residual Capacity Criteria Type	RFC Threshold	Average Delay Threshold (s)	Queue Threshold (PCU)
5.75			N/A	0.85	36.00	20.00

Units

Distance Units	Speed Units	Traffic Units Input	Traffic Units Results	Flow Units	Average Delay Units	Total Delay Units	Rate Of Delay Units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Existing Layout - 2021 Base Flows, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base Flows, AM	2021 Base Flows	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	20.46	C

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	
2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502

3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	443.00	100.000
2	FLAT	✓	653.00	100.000
3	FLAT	✓	433.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	315.000	128.000
	2	325.000	0.000	328.000
	3	76.000	357.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.71	0.29
	2	0.50	0.00	0.50
	3	0.18	0.82	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.0	0.0	0.0
	2	0.0	0.0	0.0
	3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.75	24.85	2.98	C	443.00	443.00	164.84	22.33	2.75	165.30	22.39
2	0.68	11.83	2.13	B	653.00	653.00	122.95	11.30	2.05	123.09	11.31
3	0.78	29.00	3.39	D	433.00	433.00	186.91	25.90	3.12	187.53	25.99

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	443.00	110.75	432.34	394.76	346.91	20.00	594.51	557.97	0.745	0.00	2.67	21.019	C
2	653.00	163.25	644.78	654.33	124.92	0.00	958.62	939.76	0.681	0.00	2.05	11.199	B
3	433.00	108.25	420.76	448.79	320.91	0.00	558.30	480.07	0.776	0.00	3.06	24.396	C

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	443.00	110.75	442.14	400.76	356.29	20.00	587.50	557.97	0.754	2.67	2.88	24.469	C
2	653.00	163.25	652.81	670.68	127.75	0.00	957.15	939.76	0.682	2.05	2.10	11.810	B
3	433.00	108.25	432.14	455.66	324.91	0.00	556.17	480.07	0.779	3.06	3.27	28.571	D

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	443.00	110.75	442.73	400.91	356.74	20.00	587.16	557.97	0.754	2.88	2.95	24.756	C
2	653.00	163.25	652.94	671.55	127.92	0.00	957.06	939.76	0.682	2.10	2.12	11.827	B
3	433.00	108.25	432.69	455.89	324.97	0.00	556.13	480.07	0.779	3.27	3.35	28.884	D

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	443.00	110.75	442.87	400.96	356.87	20.00	587.07	557.97	0.755	2.95	2.98	24.847	C
2	653.00	163.25	652.97	671.77	127.96	0.00	957.04	939.76	0.682	2.12	2.13	11.833	B
3	433.00	108.25	432.84	455.95	324.98	0.00	556.12	480.07	0.779	3.35	3.39	28.997	D

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	34.51	2.30	21.019	C	C
2	28.21	1.88	11.199	B	B
3	38.69	2.58	24.396	C	C

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	42.01	2.80	24.469	C	C
2	31.25	2.08	11.810	B	B
3	47.84	3.19	28.571	D	C

Queueing Delay results: (08:30-08:45)

	Queueing Total Delay (PCU-	Queueing Rate Of Delay (PCU-	Average Delay Per Arriving Vehicle	Unsignalised Level Of	Signalised Level Of

Arm	min)	min/min)	(s)	Service	Service
1	43.80	2.92	24.756	C	C
2	31.66	2.11	11.827	B	B
3	49.77	3.32	28.884	D	C

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	44.52	2.97	24.847	C	C
2	31.82	2.12	11.833	B	B
3	50.61	3.37	28.997	D	C

Existing Layout - 2021 Base Flows, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Base Flows, PM	2021 Base Flows	PM		FLAT	16:30	17:30	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	25.27	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	
2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502
3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	346.00	100.000
2	FLAT	✓	801.00	100.000
3	FLAT	✓	419.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	260.000	86.000
	2	438.000	0.000	363.000
	3	109.000	310.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.75	0.25
	2	0.55	0.00	0.45
	3	0.26	0.74	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.0	0.0	0.0
	2	0.0	0.0	0.0
	3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.56	13.02	1.24	B	346.00	346.00	72.11	12.51	1.20	72.19	12.52
2	0.82	20.12	4.37	C	801.00	801.00	243.87	18.27	4.06	244.45	18.31
3	0.84	45.24	5.03	E	419.00	419.00	262.36	37.57	4.37	263.89	37.79

Main Results for each time segment

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	346.00	86.50	341.17	533.90	297.85	20.00	623.68	602.87	0.555	0.00	1.21	12.540	B
2	801.00	200.25	784.87	554.22	84.80	0.00	979.46	945.67	0.818	0.00	4.03	17.298	C
3	419.00	104.75	402.57	440.49	429.18	0.00	500.61	453.76	0.837	0.00	4.11	32.723	D

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	346.00	86.50	345.92	545.94	308.32	20.00	623.35	602.87	0.555	1.21	1.23	12.966	B
2	801.00	200.25	800.14	568.26	85.98	0.00	978.84	945.67	0.818	4.03	4.25	19.904	C
3	419.00	104.75	416.73	448.59	437.53	0.00	496.16	453.76	0.844	4.11	4.67	43.000	E

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	346.00	86.50	345.97	546.59	309.32	20.00	622.60	602.87	0.556	1.23	1.24	13.006	B
2	801.00	200.25	800.68	569.30	85.99	0.00	978.84	945.67	0.818	4.25	4.33	20.058	C
3	419.00	104.75	418.08	448.85	437.83	0.00	496.00	453.76	0.845	4.67	4.90	44.584	E

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	346.00	86.50	345.98	546.78	309.63	20.00	622.37	602.87	0.556	1.24	1.24	13.020	B
2	801.00	200.25	800.83	569.62	86.00	0.00	978.83	945.67	0.818	4.33	4.37	20.116	C
3	419.00	104.75	418.50	448.92	437.91	0.00	495.96	453.76	0.845	4.90	5.03	45.235	E

Queueing Delay Results for each time segment

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	16.75	1.12	12.540	B	B
2	51.72	3.45	17.298	C	B
3	49.07	3.27	32.723	D	C

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.30	1.22	12.966	B	B
2	62.45	4.16	19.904	C	B
3	66.67	4.44	43.000	E	D

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.49	1.23	13.006	B	B
2	64.42	4.29	20.058	C	C
3	72.05	4.80	44.584	E	D

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.58	1.24	13.020	B	B
2	65.28	4.35	20.116	C	C
3	74.57	4.97	45.235	E	D

Existing Layout - 2021 With Development Flows, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 With Development Flows, AM	2021 With Development Flows	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	23.10	C

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	

2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502
3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	448.00	100.000
2	FLAT	✓	655.00	100.000
3	FLAT	✓	456.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)

1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	315.000	133.000
	2	325.000	0.000	330.000
	3	91.000	365.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.70	0.30
	2	0.50	0.00	0.50
	3	0.20	0.80	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.0	0.0	0.0
	2	0.0	0.0	0.0
	3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.77	26.83	3.25	D	448.00	448.00	177.65	23.79	2.96	178.20	23.87
2	0.69	12.01	2.16	B	655.00	655.00	125.06	11.46	2.08	125.21	11.47
3	0.82	35.35	4.32	E	456.00	456.00	232.72	30.62	3.88	233.73	30.75

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	448.00	112.00	436.61	408.85	352.97	20.00	589.98	565.59	0.759	0.00	2.85	22.093	C
2	655.00	163.75	646.64	659.96	129.62	0.00	956.18	936.29	0.685	0.00	2.09	11.347	B
3	456.00	114.00	440.97	455.41	320.85	0.00	558.33	481.75	0.817	0.00	3.76	27.916	D

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	448.00	112.00	446.92	415.62	363.87	20.00	581.84	565.59	0.770	2.85	3.12	26.272	D
2	655.00	163.75	654.80	678.11	132.68	0.00	954.59	936.29	0.686	2.09	2.14	11.987	B

3	456.00	114.00	454.59	462.58	324.90	0.00	556.17	481.75	0.820	3.76	4.11	34.406	D

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	448.00	112.00	447.65	415.86	364.57	20.00	581.32	565.59	0.771	3.12	3.20	26.690	D
2	655.00	163.75	654.93	679.32	132.90	0.00	954.47	936.29	0.686	2.14	2.16	12.006	B
3	456.00	114.00	455.46	462.86	324.97	0.00	556.13	481.75	0.820	4.11	4.25	35.084	E

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	448.00	112.00	447.83	415.93	364.77	20.00	581.17	565.59	0.771	3.20	3.25	26.829	D
2	655.00	163.75	654.97	679.65	132.95	0.00	954.45	936.29	0.686	2.16	2.16	12.012	B
3	456.00	114.00	455.71	462.93	324.98	0.00	556.13	481.75	0.820	4.25	4.32	35.348	E

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	36.53	2.44	22.093	C	C
2	28.64	1.91	11.347	B	B
3	46.11	3.07	27.916	D	C

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	45.23	3.02	26.272	D	C
2	31.80	2.12	11.987	B	B
3	59.53	3.97	34.406	D	C

Queueing Delay results: (08:30-08:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	47.49	3.17	26.690	D	C
2	32.22	2.15	12.006	B	B
3	62.80	4.19	35.084	E	D

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	48.41	3.23	26.829	D	C
2	32.40	2.16	12.012	B	B
3	64.28	4.29	35.348	E	D

Existing Layout - 2021 With Development Flows, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 With Development Flows, PM	2021 With Development Flows	PM		FLAT	16:30	17:30	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	28.15	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	
2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502
3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	360.00	100.000
2	FLAT	✓	809.00	100.000
3	FLAT	✓	430.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	260.000	100.000
	2	438.000	0.000	371.000
	3	116.000	314.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.72	0.28
	2	0.54	0.00	0.46
	3	0.27	0.73	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.0	0.0	0.0
	2	0.0	0.0	0.0
	3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.58	13.86	1.37	B	360.00	360.00	79.35	13.23	1.32	79.44	13.24
2	0.83	21.96	4.80	C	809.00	809.00	265.79	19.71	4.43	266.50	19.77
3	0.87	51.78	5.87	F	430.00	430.00	299.68	41.82	4.99	301.77	42.11

Main Results for each time segment

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	360.00	90.00	354.71	539.55	300.55	20.00	622.76	603.20	0.578	0.00	1.32	13.186	B
2	809.00	202.25	791.49	556.73	98.53	0.00	972.32	936.47	0.832	0.00	4.38	18.444	C
3	430.00	107.50	411.58	461.50	428.52	0.00	500.96	459.14	0.858	0.00	4.60	35.232	E

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	360.00	90.00	359.88	552.59	311.78	20.00	620.76	603.20	0.580	1.32	1.35	13.783	B
2	809.00	202.25	807.92	571.69	99.97	0.00	971.58	936.47	0.833	4.38	4.65	21.647	C
3	430.00	107.50	426.96	470.47	437.41	0.00	496.22	459.14	0.867	4.60	5.36	48.259	E

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	360.00	90.00	359.95	553.43	313.05	20.00	619.81	603.20	0.581	1.35	1.37	13.844	B
2	809.00	202.25	808.59	573.01	99.99	0.00	971.57	936.47	0.833	4.65	4.75	21.871	C
3	430.00	107.50	428.70	470.80	437.78	0.00	496.03	459.14	0.867	5.36	5.69	50.701	F

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	360.00	90.00	359.98	553.69	313.47	20.00	619.50	603.20	0.581	1.37	1.37	13.863	B
2	809.00	202.25	808.79	573.45	99.99	0.00	971.56	936.47	0.833	4.75	4.80	21.956	C
3	430.00	107.50	429.27	470.89	437.88	0.00	495.97	459.14	0.867	5.69	5.87	51.778	F

Queueing Delay Results for each time segment

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	18.26	1.22	13.186	B	B
2	55.44	3.70	18.444	C	B
3	53.92	3.59	35.232	E	D

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.13	1.34	13.783	B	B
2	68.09	4.54	21.647	C	C
3	75.78	5.05	48.259	E	D

Queueing Delay results: (17:00-17:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.41	1.36	13.844	B	B
2	70.58	4.71	21.871	C	C
3	83.17	5.54	50.701	F	D

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.54	1.37	13.863	B	B
2	71.68	4.78	21.956	C	C
3	86.82	5.79	51.778	F	D

Existing Layout - 2021 Phase 2 With Development Flows, AM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Phase 2 With Development Flows, AM	2021 Phase 2 With Development Flows	AM		FLAT	08:00	09:00	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	27.45	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	
2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502

3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	453.00	100.000
2	FLAT	✓	658.00	100.000
3	FLAT	✓	482.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	315.000	138.000
	2	325.000	0.000	333.000
	3	108.000	374.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.70	0.30
	2	0.49	0.00	0.51
	3	0.22	0.78	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

From	To 1	To 2	To 3
1	0.0	0.0	0.0
2	0.0	0.0	0.0
3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.79	29.28	3.57	D	453.00	453.00	192.65	25.52	3.21	193.32	25.60
2	0.69	12.24	2.21	B	658.00	658.00	127.83	11.66	2.13	127.98	11.67
3	0.87	46.51	5.93	E	482.00	482.00	307.80	38.32	5.13	309.70	38.55

Main Results for each time segment

Main results: (08:00-08:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	453.00	113.25	440.81	424.45	359.00	20.00	585.48	573.23	0.774	0.00	3.05	23.264	C
2	658.00	164.50	649.46	665.52	134.29	0.00	953.75	932.80	0.690	0.00	2.13	11.532	B
3	482.00	120.50	462.66	462.97	320.78	0.00	558.36	483.80	0.863	0.00	4.83	32.953	D

Main results: (08:15-08:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	453.00	113.25	451.63	432.30	371.95	20.00	575.80	573.23	0.787	3.05	3.39	28.399	D
2	658.00	164.50	657.79	686.00	137.58	0.00	952.04	932.80	0.691	2.13	2.19	12.211	B
3	482.00	120.50	479.36	470.47	324.90	0.00	556.17	483.80	0.867	4.83	5.49	43.978	E

Main results: (08:30-08:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	453.00	113.25	452.53	432.71	373.12	20.00	574.92	573.23	0.788	3.39	3.51	29.052	D
2	658.00	164.50	657.93	687.80	137.86	0.00	951.90	932.80	0.691	2.19	2.21	12.234	B
3	482.00	120.50	480.87	470.82	324.97	0.00	556.13	483.80	0.867	5.49	5.78	45.737	E

Main results: (08:45-09:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	453.00	113.25	452.76	432.84	373.51	20.00	574.64	573.23	0.788	3.51	3.57	29.277	D
2	658.00	164.50	657.96	688.35	137.93	0.00	951.86	932.80	0.691	2.21	2.21	12.240	B
3	482.00	120.50	481.37	470.91	324.98	0.00	556.13	483.80	0.867	5.78	5.93	46.511	E

Queueing Delay Results for each time segment

Queueing Delay results: (08:00-08:15)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	38.73	2.58	23.264	C	C
2	29.21	1.95	11.532	B	B
3	56.82	3.79	32.953	D	C

Queueing Delay results: (08:15-08:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	48.94	3.26	28.399	D	C
2	32.51	2.17	12.211	B	B
3	78.31	5.22	43.978	E	D

Queueing Delay results: (08:30-08:45)

	Queueing Total Delay (PCU-	Queueing Rate Of Delay (PCU-	Average Delay Per Arriving Vehicle	Unsignalised Level Of	Signalised Level Of

Arm	min)	min/min)	(s)	Service	Service
1	51.87	3.46	29.052	D	C
2	32.96	2.20	12.234	B	B
3	84.75	5.65	45.737	E	D

Queueing Delay results: (08:45-09:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	53.11	3.54	29.277	D	C
2	33.15	2.21	12.240	B	B
3	87.92	5.86	46.511	E	D

Existing Layout - 2021 Phase 2 With Development Flows, PM

Data Errors and Warnings

No errors or warnings

Analysis Set Details

Name	Roundabout Capacity Model	Description	Include In Report	Use Specific Demand Set(s)	Specific Demand Set(s)	Locked	Network Flow Scaling Factor (%)	Network Capacity Scaling Factor (%)	Reason For Scaling Factors
Existing Layout	ARCADY		✓				100.000	100.000	

Demand Set Details

Name	Scenario Name	Time Period Name	Description	Traffic Profile Type	Model Start Time (HH:mm)	Model Finish Time (HH:mm)	Model Time Period Length (min)	Time Segment Length (min)	Results For Central Hour Only	Single Time Segment Only	Locked	Run Automatically	Use Relationship	Relationship
2021 Phase 2 With Development Flows, PM	2021 Phase 2 With Development Flows	PM		FLAT	16:30	17:30	60	15				✓		

Junction Network

Junctions

Junction	Name	Junction Type	Arm Order	Junction Delay (s)	Junction LOS
1	Waterloo Road/Shawbridge Street	Mini-roundabout	1,2,3	32.05	D

Junction Network Options

Driving Side	Lighting	Road Surface	In London
Left	Normal/unknown	Normal/unknown	

Arms

Arms

Arm	Arm	Name	Description
1	1	Waterloo Road NB	
2	2	Waterloo Road SB	
3	3	Shawbridge Street	

Capacity Options

Arm	Minimum Capacity (PCU/hr)	Maximum Capacity (PCU/hr)	Assume Flat Start Profile	Initial Queue (PCU)
1	0.00	99999.00		0.00
2	0.00	99999.00		0.00
3	0.00	99999.00		0.00

Mini Roundabout Geometry

Arm	Approach road half-width (m)	Minimum approach road half-width (m)	Entry width (m)	Effective flare length (m)	Distance to next arm (m)	Entry corner kerb line distance (m)	Gradient over 50m (%)	Kerbed central island
1	3.00	3.00	3.00	0.00	19.35	18.50	0.00	
2	3.30	3.30	3.30	0.00	13.20	5.50	0.00	
3	3.22	3.22	4.10	1.90	9.35	2.00	0.00	

Pedestrian Crossings

Arm	Crossing Type
1	Pelican
2	None
3	None

Pelican/ Puffin Crossings

Arm	Amber time preceding red (s)	Amber time regarded as green (s)	Time from traffic red start to green man start (s)	Time period green man shown (s)	Clearance Period (s)	Traffic minimum green (s)	Space between crossing and junction entry (PCU)
1	3.00	2.90	1.00	6.00	6.00	7.00	1.00

Slope / Intercept / Capacity

Roundabout Slope and Intercept used in model

Arm	Enter slope and intercept directly	Entered slope	Entered intercept (PCU/hr)	Final Slope	Final Intercept (PCU/hr)
1		(calculated)	(calculated)	0.777	971.545
2		(calculated)	(calculated)	0.519	803.502
3		(calculated)	(calculated)	0.533	654.276

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

Arm Capacity Adjustments

Arm	Type	Reason	Direct Capacity Adjustment (PCU/hr)	Percentage Capacity Adjustment (%)
1	Direct		-100.00	
2	Direct		220.00	
3	Direct		75.00	

Traffic Flows

Demand Set Data Options

Default Vehicle Mix	Vehicle Mix Varies Over Time	Vehicle Mix Varies Over Turn	Vehicle Mix Varies Over Entry	Vehicle Mix Source	PCU Factor for a HV (PCU)	Default Turning Proportions	Estimate from entry/exit counts	Turning Proportions Vary Over Time	Turning Proportions Vary Over Turn	Turning Proportions Vary Over Entry
		✓	✓	HV Percentages	2.00				✓	✓

Entry Flows

General Flows Data

Arm	Profile Type	Use Turning Counts	Average Demand Flow (PCU/hr)	Flow Scaling Factor (%)
1	FLAT	✓	375.00	100.000
2	FLAT	✓	817.00	100.000
3	FLAT	✓	442.00	100.000

Pedestrian Flows

General Flows Data

Arm	Profile Type	Average Pedestrian Flow (Ped/hr)
1	FLAT	20.00
2	-	-
3	-	-

Turning Proportions

Turning Counts / Proportions (PCU/hr) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.000	260.000	115.000
	2	438.000	0.000	379.000
	3	123.000	319.000	0.000

Turning Proportions (PCU) - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.00	0.69	0.31
	2	0.54	0.00	0.46
	3	0.28	0.72	0.00

Vehicle Mix

Average PCU Per Vehicle - Junction 1 (for whole period)

		To		
		1	2	3
From	1	1.000	1.000	1.000
	2	1.000	1.000	1.000
	3	1.000	1.000	1.000

Heavy Vehicle Percentages - Junction 1 (for whole period)

		To		
		1	2	3
From	1	0.0	0.0	0.0
	2	0.0	0.0	0.0
	3	0.0	0.0	0.0

Results

Results Summary for whole modelled period

Arm	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)	Total Queueing Delay (PCU-min)	Average Queueing Delay (s)	Rate Of Queueing Delay (PCU-min/min)	Inclusive Total Queueing Delay (PCU-min)	Inclusive Average Queueing Delay (s)
1	0.61	14.93	1.54	B	375.00	375.00	88.20	14.11	1.47	88.32	14.13
2	0.85	24.23	5.33	C	817.00	817.00	292.15	21.46	4.87	293.03	21.52
3	0.89	61.03	7.07	F	442.00	442.00	350.16	47.53	5.84	353.19	47.94

Main Results for each time segment

Main results: (16:30-16:45)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	375.00	93.75	369.15	544.91	303.87	20.00	621.59	603.30	0.603	0.00	1.46	13.915	B
2	817.00	204.25	797.87	559.81	113.21	0.00	964.70	927.40	0.847	0.00	4.78	19.771	C
3	442.00	110.50	421.04	483.33	427.74	0.00	501.37	464.37	0.882	0.00	5.24	38.285	E

Main results: (16:45-17:00)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	375.00	93.75	374.81	559.09	315.96	20.00	617.64	603.30	0.607	1.46	1.51	14.801	B
2	817.00	204.25	815.61	575.83	114.94	0.00	963.80	927.40	0.848	4.78	5.13	23.770	C
3	442.00	110.50	437.79	493.30	437.26	0.00	496.31	464.37	0.891	5.24	6.29	55.181	F

Main results: (17:00-17:15)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	375.00	93.75	374.93	560.17	317.59	20.00	616.42	603.30	0.608	1.51	1.53	14.893	B
2	817.00	204.25	816.47	577.54	114.98	0.00	963.78	927.40	0.848	5.13	5.26	24.101	C
3	442.00	110.50	440.04	493.73	437.71	0.00	496.06	464.37	0.891	6.29	6.78	59.122	F

Main results: (17:15-17:30)

Arm	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Entry Flow (PCU/hr)	Exit Flow (PCU/hr)	Circulating Flow (PCU/hr)	Pedestrian Demand (Ped/hr)	Capacity (PCU/hr)	Saturation Capacity (PCU/hr)	RFC	Start Queue (PCU)	End Queue (PCU)	Delay (s)	LOS
1	375.00	93.75	374.96	560.53	318.17	20.00	615.99	603.30	0.609	1.53	1.54	14.926	B
2	817.00	204.25	816.72	578.15	114.99	0.00	963.78	927.40	0.848	5.26	5.33	24.231	C
3	442.00	110.50	440.85	493.86	437.85	0.00	495.99	464.37	0.891	6.78	7.07	61.025	F

Queueing Delay Results for each time segment

Queueing Delay results: (16:30-16:45)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	20.05	1.34	13.915	B	B
2	59.73	3.98	19.771	C	B
3	59.88	3.99	38.285	E	D

Queueing Delay results: (16:45-17:00)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	22.38	1.49	14.801	B	B
2	74.84	4.99	23.770	C	C
3	87.77	5.85	55.181	F	E

Queueing Delay results: (17:00-17:15)

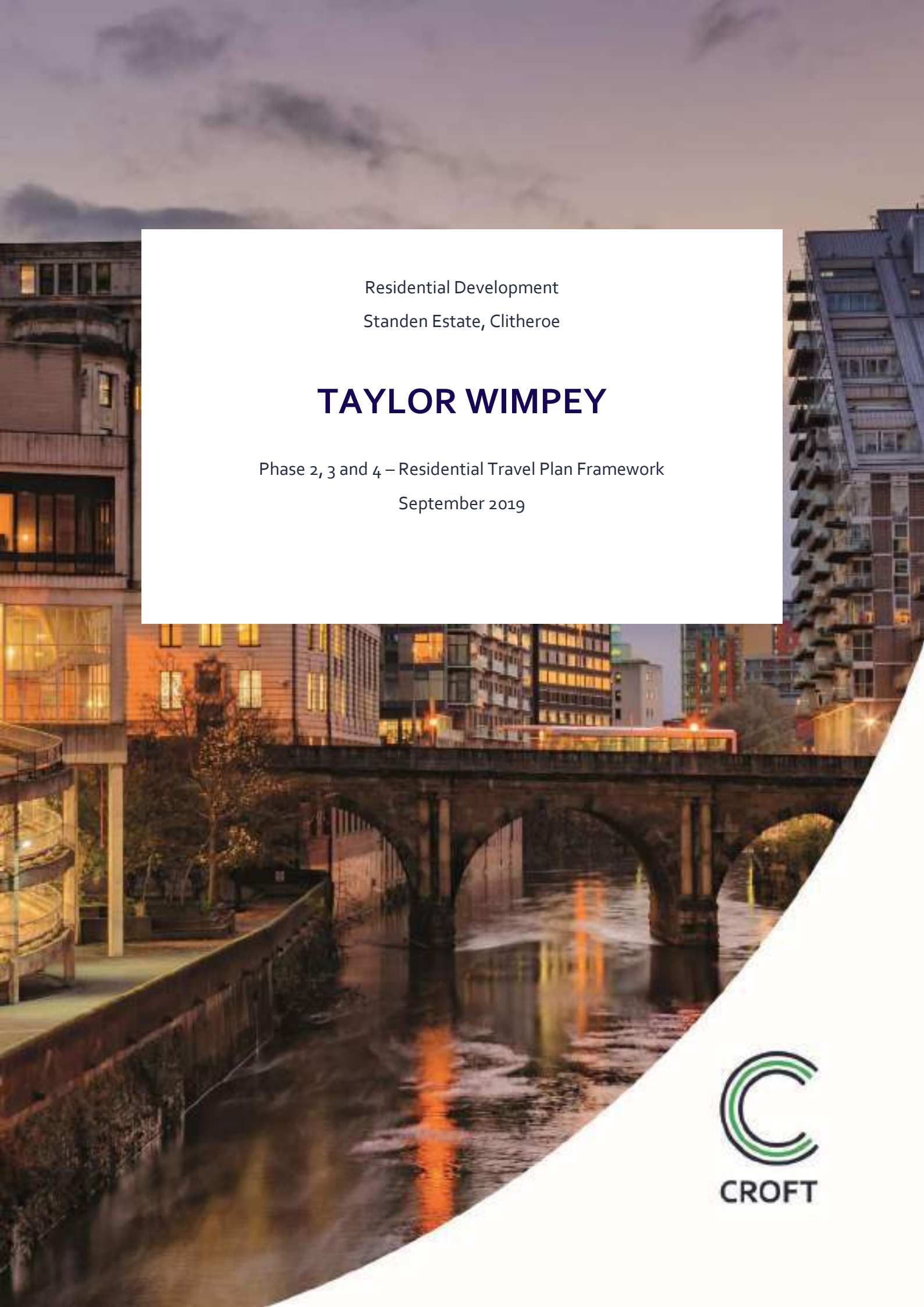
Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	22.79	1.52	14.893	B	B
2	78.06	5.20	24.101	C	C
3	98.45	6.56	59.122	F	E

Queueing Delay results: (17:15-17:30)

Arm	Queueing Total Delay (PCU-min)	Queueing Rate Of Delay (PCU-min/min)	Average Delay Per Arriving Vehicle (s)	Unsignalised Level Of Service	Signalised Level Of Service
1	22.98	1.53	14.926	B	B
2	79.52	5.30	24.231	C	C
3	104.06	6.94	61.025	F	E

APPENDIX 3

Residential Travel Plan Framework



Residential Development

Standen Estate, Clitheroe

TAYLOR WIMPEY

Phase 2, 3 and 4 – Residential Travel Plan Framework

September 2019

CROFT

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REPORT

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Appendix 1 **Residents Travel Questionnaire**

1 INTRODUCTION

1.1.1 Croft have been commissioned by Taylor Wimpey UK Limited to produce a Transport Statement to assist the Local Planning Authority's determination of a reserved matters planning application for a residential development at Higher Standen Farm off Pendle Road in Clitheroe.

1.1.2 This document will set out the principal strategies that will be put in place once the development is open and residents are occupying the dwellings, to encourage sustainable travel to the development.

1.1.3 The Department for Transport has issued two separate guides on the preparation of travel plans which are of relevance to this proposed development, these documents are as follows;

- Making Residential Travel Plans Work - Published in September 2005.
- Good Practice Guidelines: Delivering Travel Plans through the Planning Process – Published in April 2009.

1.2 Development Site and its Location

1.2.1 The application site is located to the south-east of Clitheroe town centre. Its location is shown within **Plan 1**.

1.2.2 The site has the benefit of outline planning permission for 1,040 residential units, 25,000 square feet of B1 office use, a new primary school and 0.5 hectares of retail.

1.2.3 This particular reserved matters planning application will consider Phase 2, 3 and 4 of the wider consented site and will contain 426 residential dwellings.

1.2.4 The site is bound by the existing built up area of Clitheroe and Pendle Road to the north, Worston Old Road to the east, existing residential areas on Littlemoor Road to the west and Pendleton Brook Valley and Standen Hall to the south.

1.2.5 Construction of Phase 1 has commenced and, at the time of writing, 30 dwellings on Phase 1 are currently occupied. Residents Travel Surveys have been issued to the new residents of Phase 1.

1.3 Development Proposals

1.3.1 The forthcoming Phase 2, 3 and 4 reserved matters planning permission is for 426 dwellings. The residential development will comprise a mix of house types including affordable housing.

1.3.2 Vehicular access will be taken via a continuation of the 'as built' spine road which is accessed via the existing 28 metre ICD roundabout junction onto Pendle Road, as implemented during Phase 1.

1.4 The Travel Plan

1.4.1 The aims of the Travel Plan are as follows:

- To encourage residents and visitors to use alternatives to the private car;
- To increase the awareness of the advantages and potential for travel by more environmentally friendly modes, and
- To introduce a package of management measures that will facilitate travel by modes of transport other than the private car;

1.4.2 This document provides a framework for the preparation of a full Travel Plan, which will be submitted to the local authorities within 3 months of the 1st Travel Survey

1.4.3 The Travel Plan will demonstrate the strategy that the developer is taking to assist the wider aims of sustainable transport and should include the following as a minimum as detailed in Planning Condition 53 attached to the outline planning consent:

'a) appointment of a named Travel Plan Co-ordinator;

b) details of initiatives to encourage sustainable travel patterns and a mechanism to ensure they can be fully delivered/funded;

c) a scheme for the management and implementation of the Travel Plan;

d) targets for modal shift;

e) implementation timescales;

f) a strategy for marketing and proposed incentives;

g) arrangements for monitoring and review.

The approved Travel Plan shall be implemented, monitored and reviewed in accordance with the approved Travel Plan for development within that phase for a period of time not less than 5 years following completion of the final parcel of development in that phase (as approved under Condition 3).' A Travel Plan is effectively a combination of information, proposals and incentives designed to use most effectively the different means of travel available to residents.'

1.4.4 This document will set out the principle strategies of the Travel Plan which will evolve into a formally agreed document once the development is open and the residents are occupying dwellings.

1.5 Residents Travel Pack

1.5.1 The principal measure will consist of a Residents Travel Pack containing relevant material to promote non-car modes of travel and the provision of certain physical measures. This will be discussed further in Section 4.

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2 PLAN ADMINSTRATION

2.1.1 The administration of the Travel Plan (once implemented) will be the responsibility of the developer.

2.1.2 The developer will be required to designate a Travel Plan Co-ordinator (TPC) for the development. Essentially this TPC will provide a liaison in implementing the plan with the residents and the local authority.

2.1.3 Details of the appointed TPC will be submitted to the local authority at least 1 month prior to the first occupation. Similarly, the TPC will be advised of appropriate contact personnel at the development.

2.1.4 The TPC will be the first point of contact for residents and other outside organisations in all matters regarding travel.

2.1.5 The post of the TPC of the residential development will be overseen by the housing management company or developer.

2.1.6 Prospective buyers will be made aware of the Travel Plan and its aims when viewing properties. For example, a Residents Travel Pack will form part of a Prospective Buyers Information Pack.

2.1.7 In addition, the Travel Plan will form part of the terms of the lease or sale of the dwellings and as such any future occupier will be aware in advance of what is required of them within the Travel Plan framework. This will ensure the long term continuation of the Travel Plan and on-going commitment, even when a new resident moves into a dwelling at the development.

2.1.8 The role of the Travel Plan Co-ordinator will also be to develop and manage the Travel Plan for the site. The duties will include monitoring, reviewing targets and forming action plans to remedy areas where the Travel Plan is not performing.

3 ACCESSIBILITY BY NON CAR MODES

3.1 Introduction

3.1.1 In order to accord with the aspirations of the National Planning Policy Framework (NPPF), any new proposals should extend the choice in transport and secure mobility in a way that supports sustainable development.

3.1.2 One of the core principles of the NPPF is to *'actively manage patterns of growth to make the fullest use of public transport, walking and cycling and focus significant development in locations which are or can be made sustainable'.*

3.1.3 New proposals should therefore attempt to influence the mode of travel to the development in terms of gaining a shift in modal split towards non-car modes, thus assisting in meeting the aspirations of current national and local planning policy.

3.1.4 The accessibility of the proposed development has therefore been considered by the following modes of transport:

- Accessibility on foot;
- Accessibility by cycle;
- Accessibility by bus;
- Accessibility by rail.

3.2 Access by Foot

3.2.1 It is important to create a choice of direct, safe and attractive routes between where people live and where they need to travel in their day-to-day life. This philosophy clearly encourages the opportunity to walk whatever the journey purpose and also helps to create more active streets and a more vibrant neighbourhood.

3.2.2 An existing pedestrian footway of around 2 metres in width is located immediately north of the site on Pendle Road. This footway provides pedestrian linkages to the wider footpath network.

3.2.3 Proposals will include the provision of a number of pedestrian footpaths across the open space surrounding the built up area of the site and these routes will link to the existing surrounding footway network.

3.2.4 Within the Institution of Highways and Transportation (IHT) document, entitled "Guidelines for Providing for Journeys on Foot", a distance of 800 metres is identified as the preferred maximum distance for town centres, whilst a distance of 2 kilometres is defined as a preferred maximum for commuting.

3.2.5 Walking is the most important mode of travel at the local level and offers the greatest potential to replace short car journeys, particularly those under 2 kilometres. The DfT National Travel Survey of 2006 confirms that 78% of all trips less than a mile (1.6km) are carried out on foot.

3.2.6 **Plan 2** shows the pedestrian catchment for 800 metres and 2 kilometres from the centre of the site and provides an illustrative indication of the areas that can be reached based on a leisurely walk from the site.

3.2.7 In addition to the pedestrian catchment plan, a review of the proximity of local facilities such as pharmacies/doctor's surgeries, schools (both primary and secondary) local shops/retail outlets and leisure facilities has been undertaken. The locations of such facilities in relation to the site are also identified in Plan 2.

3.2.8 As can be seen, the 800 metre catchment includes the residential areas of south east Clitheroe.

3.2.9 The 2,000 metre catchment illustrates that the majority of Clitheroe can be accessed, including Clitheroe town centre and its associated local amenities.

3.2.10 Included within the 2,000 metre catchment are a number of schools, such as Pendle Primary School, Clitheroe Brookside Primary School, Ribbleside High School, St Michael and St John's RC Primary School and St James' Church of England Primary School.

3.2.11 In addition, there are a variety of retail, leisure, healthcare and community facilities located within the catchment; these include a Sainsbury's store, a Booth's store, Clitheroe Library, Boots Pharmacy, St James Church, Tesco, Clitheroe Football Club, The White Lion Public House, Clitheroe Health Centre and Lidl.

3.2.12 **Table 3.1** below, shows the walking distance from the centre of the site to the local retail stores and other nearby key amenities in the vicinity of the site:

Local Amenity	Distance (metres)
Lidl	1100
Clitheroe Football Club	1140
Tesco supermarket	1300
Sainsbury's store	1400
Clitheroe Library	1400
Boots Pharmacy	1510
Clitheroe Health Centre	1590

Table 3.1 - Distance from Site to Local Facilities

3.2.13 As can be seen in the above table, the site is located within close proximity to a number of key local amenities including healthcare services, as well as retail and leisure facilities.

3.2.14 It is therefore considered that the existing and proposed pedestrian infrastructure will facilitate safe and direct pedestrian linkages between the site and local destinations.

3.3 Access by Cycle

3.3.1 An alternative mode of travel to the site could be achieved by bicycle.

3.3.2 A distance of 5 kilometres is generally accepted as a distance where cycling has the potential to replace short car journeys. This distance equates to a journey of around 25 minutes based on a leisurely cycle speed of 12 kilometres per hour and would encompass Clitheroe, Worston, Pendleton, Barrow and Chatburn.

3.3.3 Regional Cycle route 91 is located around 250 metres east from the centre of the site; this cycle route travels around the outskirts of Clitheroe and through Blackburn, Burnley, Rawtenstall, Adlington, Skelmersdale and Ormskirk.

3.3.4 The site can therefore be considered as being accessible by cycle.

3.4 Access by Bus

3.4.1 The nearest bus stop to the site is located on Pendle Road, approximately 240 metres east of the site. Further bus stops are located to the north west of the side on Pendle Road and west of the site on Claremont Avenue. The location of the nearest bus stops is shown on **Plan 2.**

3.4.2 Safe pedestrian access to the nearest bus stops to the site is provided for via the existing pedestrian footways on Pendle Road.

3.4.3 A summary of the services available from the nearest bus stops of the development site is provided in **Table 3.2** below.

Service No	Route	Monday – Friday Frequency per hour				Sat	Sun
		AM Peak	Midday	PM Peak	Eve		
5	Chipping - Clitheroe	1	1	1	0	0.5	0
25	Clitheroe - Blackburn	1	1	0	0	0.5	0
8	Burnley - Clitheroe	0	0	1	0	1	0

Table 3.2 - Existing Bus Services Operating Past the Site

3.4.4 As can be seen from Table 3.2, the nearest bus stops to the centre of the site offer up to 2 services per hour, providing direct access into Clitheroe and Clitheroe Interchange, which increases the opportunity for residents to travel further afield.

3.4.5 This service operates from 0756 hours in the morning until 1825 hours in the evening, providing the opportunity for residents to travel by public transport for commuting and leisure trips.

3.4.6 It is therefore concluded that the proposed development site is accessible by bus.

3.5 Accessibility by Rail

3.5.1 The nearest train station to the site is Clitheroe Railway Station, which is situated around 1.7 kilometres north west from the centre of the site, equating to a walking time of around 18 minutes.

3.5.2 Clitheroe station is managed by Northern and has 2 platforms, offering 1 service per hour to Manchester Victoria.

3.5.3 These services increase the opportunity for residents to travel further afield by public transport, with access to Manchester Victoria, which in turn provide frequent services to destinations such as Liverpool, Wigan, Newcastle and Huddersfield.

3.5.4 It is also worth noting that Clitheroe station offers 5 bicycle storage spaces along with a ticket office which is open Monday-Saturday.

3.5.5 In conclusion, the proposed site can be considered as being accessible in terms of travel by rail.

3.6 Accessibility Summary

3.6.1 The proposals have been considered in terms of accessibility by non-car modes for the proposed residential development.

3.6.2 The following conclusions can be drawn from this section of the report:

- The site is accessible on foot and these provisions will be improved as part of the works on the development site.
- The site is well located to generate trips on foot and provides potential for a high degree of linked walk trips between the development and the surrounding area, especially to Clitheroe town centre.
- It has been demonstrated that the site is accessible by cycle; Regional cycle route 91 situated around 250 metres from the site, travelling throughout Lancashire.

- The close proximity of bus stops on Pendle Road, offering a service to Clitheroe and Clitheroe interchange, demonstrates that the proposed development can be accessed by bus.

- The development site is accessible by rail with Clitheroe train station located around 1.7 kilometres from the centre of the site, offering 1 service per hour to Manchester Victoria.

3.6.3 In light of the above, it is considered the site is accessible by non-car modes and will cater for needs of the development's residents and assist in promoting a choice of travel modes other than the private car.

4 MANAGEMENT MEASURES

4.1 Introduction

4.1.1 The following Travel Plan measures will be considered:

- Travel Plan Co-ordinator
- Residents Travel Pack
- Travel Awareness
- Travel Information
- Promotion of Lift Share Scheme
- Encouraging Walking/Cycling
- Cycle User Group

4.2 Management Measures

Travel Plan Co-ordinator

4.2.1 A Travel Plan Co-ordinator (TPC) is to be appointed prior to the site being occupied, although until all of the units are occupied this role is likely to be undertaken by a person employed by Taylor Wimpey UK Limited, as this will show a commitment to the Travel Plan from an early stage.

4.2.2 The name and contact details of the appointed Travel Plan Co-ordinator will be provided to LCC's Travel Plan team at least 1 month prior to the site being occupied.

Residents Travel Pack

4.2.3 It is an important principle in residential developments that where appropriate the implementation of travel plan type measures can establish a pattern of travel behaviour favouring sustainable modes from the inception of the development.

4.2.4 The development is very well placed for encouraging access on foot or by cycle to a wide range of facilities. Similarly the existence of a local bus service will encourage choice of public transport as a primary means of travel for the development.

4.2.5 However in order to build on these locational advantages it is recommended that a Residents Travel Pack is provided for the occupants of each new residential unit, on occupation of the first unit.

4.2.6 The contents of such a travel pack would include information relating to walking and cycling routes in the area and the provision of up to date bus and rail timetable information in addition to an identification of the location of nearby amenity facilities as part of the information supplied to purchasers.

4.2.7 The adoption of such travel packs is recognised as being an important element in ensuring that access by non-car modes is promoted from the earliest occupation of a residential development.

4.2.8 Within the Residents Travel Pack, residents will be encouraged to consider ways in which to reduce their need to travel such as Home delivery for shopping and working from home. The first issue of the Residents Travel Pack will be the responsibility of the developer.

4.2.9 The provision of a Residents Travel Pack will form part of the terms of the sale or occupancy of the dwellings and therefore they are aware in advance of what is required of them within the Travel Plan framework.

Travel Awareness

4.2.10 Marketing and sales staff for the development need to be aware of the requirements of the Travel Plan so that prospective tenants are aware of the choices for sustainable travel, such as bus services walking and cycling routes.

4.2.11 Targets for achieving a lower model share by car and reducing the level of car usage by a given extent over a certain period will be established.

Travel Information

4.2.12 Travel Information for residents will be provided for in numerous ways, such as websites, cycle and walking maps for the surrounding areas.

4.2.13 As part of the Travel Information, residents will also be offered personalised journey planners, which is a free service offered by Traveline.

4.2.14 To cater for this, a form will be included within the 'Travel Pack' for residents to request a journey planner. The residents will complete the form including a start and end point of their journey and this can be either sent to Traveline or some residents will of course be able to do this for themselves providing they have access to a computer.

Promotion of Car Share Scheme

4.2.15 The TPC will promote the use of car sharing via registering on the Liftshare website. It allows users to register their details, where they are travelling to in the Lancashire area and if they are offering a lift or need a lift to their destination.

4.2.16 The website can be found at the following location www.liftshare.com.

Encouraging Walking/Cycling

4.2.17 Residents will be provided with information and advice concerning safe pedestrian and cycle routes to the site through the WalkBUDi/BikeBUDi schemes. Information on these schemes is available on the following websites www.walkbudi.com/www.bikebudi.com.

4.2.18 The WalkBUDi/BikeBUDi schemes are part of the National Lift Share Network and are simple and free to use. They simply match individuals with others walking or cycling the same way so they can walk or cycle together. The matches are displayed in both table and map format, allowing the user to easily find the most suitable people.

4.2.19 The WalkBUDi/BikeBUDi schemes aim to help individuals to meet others wanting to travel the same way. They can be used for regular trips such as walking or cycling to the office or going to the station as well as making a journey safer.

Cycle User Group

4.2.20 The Travel Co-ordinator will establish contact with the cycling officers at the Local Authority to ensure input to the further development of their future cycling strategy.

5 TRAVEL PLAN MONITORING

5.1.1 It is important that monitoring data gathered through the travel plan is collected in such a way as to provide a clear indication of how successful the travel plan has been in minimising single occupancy car journeys and encouraging sustainable travel patterns. Therefore, the following monitoring will be provided as part of the Travel Plan for the site which is in line with DfT best practice;

- A full Residents' travel survey: A travel survey will be distributed to all residents. This will ask questions about how they currently travel to and from the site, how they would prefer to travel to and from the site, any travel or transport issues they are encountering, and their attitudes towards sustainable travel. A copy of the draft Travel Survey form is contained in **Appendix 1**.

- Snap Shot Residents travel survey: The snap-shot survey will solely provide modal split data for the development site and will enable the TPC to gauge whether the objectives of the Travel Plan are being achieved.

5.2 Frequency of Monitoring

5.2.1 The full residential travel survey will be conducted once every two years for at least 5 years and the snap-shot survey will be undertaken annually, with the results reported to LCC in the form of a monitoring statement. The initial survey will be undertaken within 3 months of the occupation of the 100th unit.

5.2.2 The TPC will endeavour to undertake the surveys at the same time every year to allow for comparison without seasonal influences on travel patterns.

5.3 Monitoring Reporting and Review

5.3.1 Information gathered as part of the continuous monitoring process will be made available to the local authority to assist the assessment of on-going modal split.

5.3.2 Future strategies for further delivering plan objectives can be considered in partnership between occupiers and LCC.

5.3.3 The monitoring and assessment of the plan will include the submission of annual progress reports detailing the results of the travel surveys with regards to targets, budgets general effectiveness and current initiatives.

5.3.4 This will allow effective measures to be promoted and increased while ineffective measures can be revised and rectified. New initiatives for the coming year will also be contained within the report and submitted to officers at LCC.

5.3.5 The monitoring measures outlined below incorporate both the collection of 'hard' analytical data and 'soft' data in the form of general feedback and correspondence following the opening of the development.

5.3.6 Actions are:

- Monitor demand for additional cycle parking;
- Seek regular feedback from bus operators to establish the perceived level of demand for local bus services;
- Monitor the take-up of the lift share scheme; and
- Record comments received from residents relating to the operation and implications of the Plan.

5.3.7 Information gathered through the monitoring process will be recorded for the input to the Annual Review, outlined below. The information will be sent to the planning authority at regular intervals.

5.4 Action Plan

5.4.1 **Table 5.1** below provides a Draft Action Plan to timescales for the Travel Plan;

Action	Target Date	Indicator/Measured by	Responsibility
Appointment of TPC	TPC appointed at least 1 month prior to first occupation of site	Appointment of TPC by target date	Developer
Production of Welcome Pack	Upon Occupation	Resident travel survey	Developer
Undertake initial travel surveys	Within 3 months of the occupation of the 100th unit.	Receipt of survey results	TPC
Agree Travel Plan Targets	Within 3 months of the 1st travel survey.	Receipt of Written agreements of target	TPC
Achieve target car driver travel to work mode split	5 years after initial travel survey	Resident travel surveys conducted in years 1, 3 and 5	TPC

Table 5.1 – Travel Plan Framework Timescales

5.4.2 The table above sets out the key tasks that will need to be undertaken by the Travel Plan Co-ordinator as part of the Travel Plan including guidance as to timescales for the tasks to be undertaken. The action plan is to be agreed with LCC prior to the submission of the final Travel Plan.

6 TRAVEL PLAN TARGETS

6.1 Introduction

6.1.1 This section of the Travel Plan will provide details of the targets against which the success of the Plan in achieving its objectives will be measured.

6.1.2 The targets are designed to be quantifiable, be relevant to both measures and objectives identified in the Plan and to include timescale.

6.1.3 Suitable targets for reducing the need to travel by private car will be set and agreed with Lancashire County Council and included in the final Travel Plan for the development.

6.2 Potential Targets

6.2.1 Targets which according to the DfT may potentially be included in the Travel Plan include the following:

- Car trips per household - targets set on the basis of predicted trip rates for the development.
- Uptake of alternatives - Targets for bus patronage, membership and use of car clubs, registration and participation in car share scheme, cycle counts and pedestrian counts.
- Car ownership and mode of travel - trip based targets may be supplemented by targets related to car ownership, travel to work by mode of transport and travel to school by mode of transport.
- Travel Plan awareness targets - for example, a target can be established to ensure a significant percentage of residents are aware of the travel plan and its purpose.

7 CONCLUSIONS

7.1.1 This Travel Plan has detailed the proposals associated with the development site to promote sustainable modes of travel and reduce the dependency of the private car.

7.1.2 Additionally, the Travel Plan has presented a series of measures to be implemented to reduce the number of single car occupancy trips.

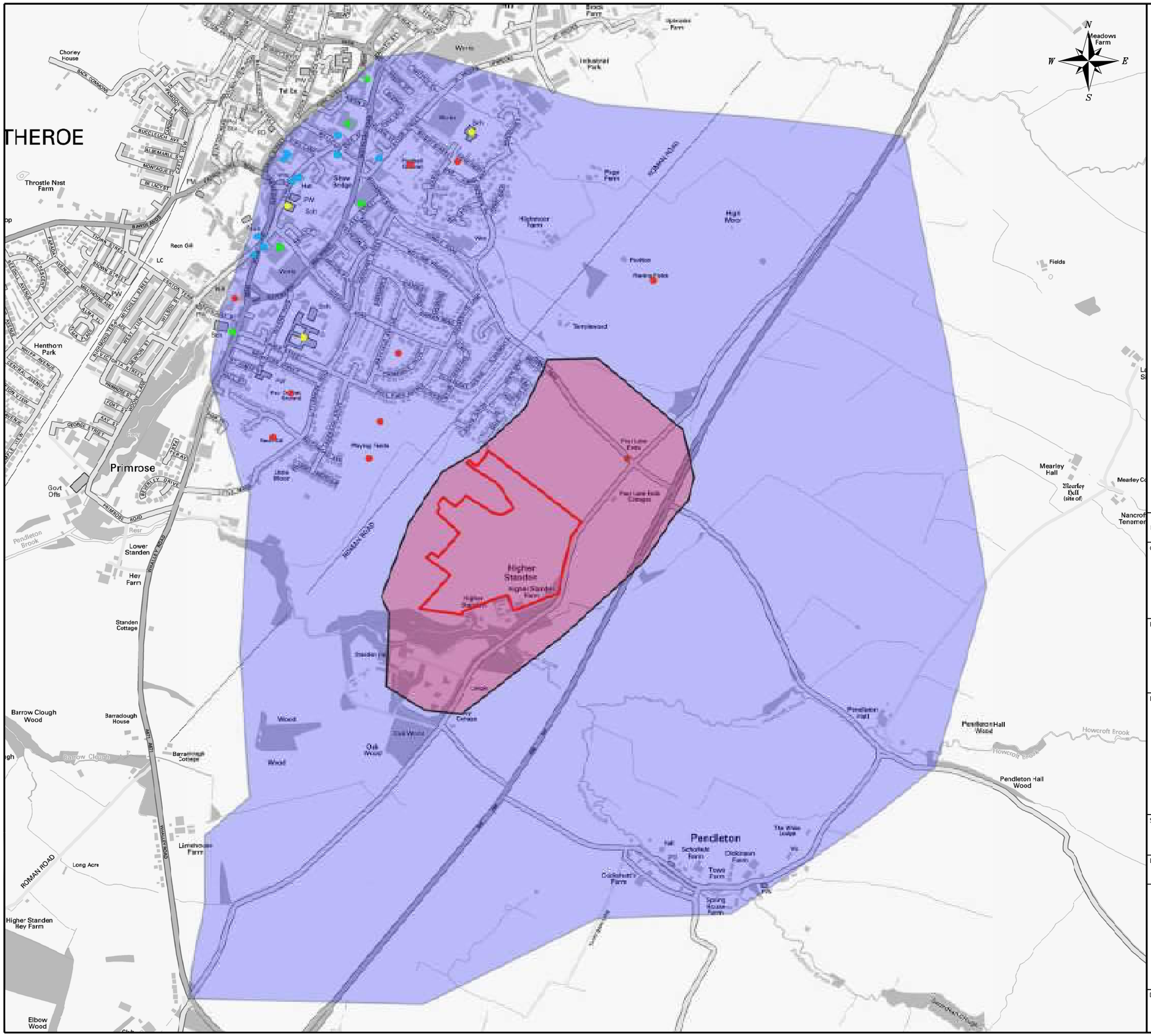
7.1.3 The information contained within the Travel Plan and details of sustainable modes of transport will be accessible to residents and visitors to the development.

7.1.4 The aim of the Travel Plan is:

- to encourage residents to use sustainable modes of transport to access the site;
- reduce the reliance on single car occupancy journeys; and
- generally reduce traffic related pollution and noise.
- A wide range of measures and actions will be used to encourage car sharing, public transport use, cycling and walking.
- The Travel Plan Co-ordinator will ensure the Travel Plan is implemented and is operating effectively.
- A detailed resident Travel Survey will be undertaken to establish travel modes of residents and following this, specific targets will be set and agreed with the Travel Plan team at LCC.

7.1.5 The Travel Plan Co-ordinator will be responsible for monitoring the success of the plan.

PLANS



NOTES

PLAN 2

- Site Location
- 800m Pedestrian Catchment
- 2km Pedestrian Catchment
- Nearest Bus Stop
- Cafe/Takeaway/Public House
- Education
- Leisure/Sport
- Retail

REV	DETAILS	DRAWN	CHECKED	DATE
-	-	-	-	-

CLIENT:

TAYLOR WIMPEY

PROJECT:

STANDEDN ESTATE, CLITHEROE

DRAWING TITLE:

800M & 2KM PEDESTRIAN CATCHMENTS WITH AMENITIES

SCALES:

NTS @ A3

DRAWN:	CHECKED:	DATE:
GM	MTC	SEP 19

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CROFT

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