Transport Assessment
Proposed Foodstore, Barnsley

For Peel Land and Property

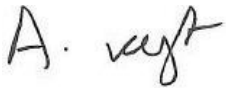
By Curtins Consulting Ltd
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Curtins Consulting
10 Oxford Court
Bishopsgate
ManchesterM2 3WQ
T. 0161 236 2394
www.curtins.com

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Report Author(s)	**Signature**	**Date**
Ben Dawson Engineer		28 May 2012

Checked	**Signature**	**Date**
Alex Vogt Senior Engineer		28 May 2012

Authorised	**Signature**	**Date**
Keith York Associate		28 May 2012

For and on behalf of **Curtins Consulting Ltd**

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1.0 Introduction

Introduction

1.1 Curtins Consulting has been appointed on behalf of Peel Land and Property to provide traffic and transportation advice in relation to a proposed foodstore on land adjacent to the A61 Old Mill Lane in Barnsley.

1.2 The proposals involve the construction of a 15,236sqm foodstore, a petrol filling station and associated car park.

Purpose of this Report

1.3 This Transport Assessment (TA) has been prepared to inform Highways Officers at Barnsley Metropolitan Borough Council (BMBC) on all traffic and transportation matters associated with the development proposals.

Scope of the Report

1.4 In order to form the structure and content of this report, a number of meetings and discussions have been held with Highways Officers at BMBC. As a result of this meeting it was agreed that his report should include the following:

- A description of the highway network in the vicinity of the site;
- A description of walking, cycling and public transport infrastructure in the vicinity of the site;
- A review of the accident record in the vicinity of the site;
- A summary of the development proposals including the development mix, access strategy, parking provision and access by sustainable modes of transport;
- A summary of all relevant transportation policy;
- A drawing showing proposed access arrangements and connections to the wider area;
- A review of accessibility by all sustainable modes of travel;
- Information regarding traffic generation using the TRICS database;
- Information regarding the distribution of the development traffic;
- Consideration of committed development within the area; and
- An assessment of the likely impact on the surrounding highway network.

1.0 Introduction

Structure of the Report

1.5 Following this introduction, Section 2 of the report provides a comprehensive description of the existing site and its location. This includes the local highway network and facilities for pedestrians, cyclists and public transport users.

1.6 Section 3 contains an analysis of the local area in terms of highway safety.

1.7 The development proposals are described in Section 4. This includes a description of the access arrangements, parking provision, internal layout and servicing strategy.

1.8 Section 5 assesses the suitability of the site within the context of national, regional and local transport planning policy. The accessibility of the site by modes other than private car is assessed in Section 6.

1.9 Section 7 will outline the likely traffic generation associated with the development proposals with the impact of the scheme on the highway network being described in Section 8.

1.10 The report is summarised and concluded in Section 9.

2.0 Existing Situation

Site Location

2.1 The application site is located approximately 1km to the north east of Barnsley town centre. To the north, the site is bounded by the existing Wickes warehouse and associated car parking. To the east, the site is bounded by the River Dearne. To the south, the site is bounded by Twibell Street which currently provides access to a number of residential properties and Booker Cash and Carry. Finally, to the west the site is bounded by the A61 Old Mill Lane, this provides access, via the A61 Harborough Hill Road/Old Mill Lane gyratory, to Barnsley town centre to the south west and conurbations to the north including New Lodge, Staincross and ultimately Wakefield.

2.2 The site is shown from a regional perspective in Plan 001 and a local perspective in Plan 002.

Existing Use

2.3 The application site is split in two by the River Dearne. To the north of the River Dearne the site is occupied by a disused National Grid gas holder. This is to be demolished by National Grid as part of the redevelopment of this site. It should also be noted that National Grid have planning consent for a 1,906sqm retail warehouse on part of the land to the north of the River Dearne.

2.4 To the south of the River Dearne and to the west, the site is occupied by a number of retail warehouses. These include a Comet and a Plumb Centre which are still trading and a Power House and an MFI which have been closed. To the south of the River Dearne and to the east, the site used to be occupied by a Council depot which has subsequently been demolished.

Surrounding Highway Network

2.5 The following is a brief description of the highway network that surrounds the proposed foodstore site.

A61 Old Mill Lane

2.6 Old Mill Lane extends from its junction with the Harborough Hill Road gyratory in a northerly direction for approximately 500m where it forms a signalised junction which facilitates access to Burton Road. Old Mill Lane consists of two lanes in a northbound direction and one lane in a southbound direction although the carriageway is relatively narrow in some parts. It is largely bordered by retail/commercial units and as a result there are a number of formal pedestrian crossing facilities. Old Mill Lane is subject to a 30mph speed limit and there are footways and street lighting on both sides of the carriageway.

Burton Road

2.7 Burton Road is a single carriageway road in each direction providing for west to east movements from Old Mill Lane to Rotherham Road. This has primarily residential frontage, however Burton Road Primary School can be found near to Old Mill Lane. This is subject to a 30mph speed limit and there are footways and street lighting on both sides of the carriageway. As mentioned above, the Old Mill Lane/Burton Road junction is signalised, however it should be noted that drivers can only turn left onto Old Mill Lane toward the A61 Harborough Hill Road/Old Mill Lane gyratory; no turning manoeuvres are allowed to Wakefield Road.

A61 Wakefield Road

2.8 Wakefield Road lies to the north of the Old Mill Lane/Burton Road junction and provides for traffic movements along the A61 toward the conurbations of New Lodge, Staincross and ultimately Wakefield. Immediately adjacent to the area, Wakefield Road is a single carriageway road in each direction and has a mix of residential and commercial frontage. This is subject to a 30mph speed limit and there are footways and street lighting on both sides of the carriageway. Various formal pedestrian crossing facilities are provided along its route.

A61 Harborough Hill Road/Old Mill Lane Gyratory

2.9 A61 Harborough Hill Road/Old Mill Lane gyratory lies to the southern end of Old Mill Lane. This is a large signalised roundabout and is approached from seven directions including Old Mill Lane from a northerly direction, Twibell Street from the north easterly direction, The Peel Centre from a south easterly direction, Harborough Hill Road from a southerly direction, Meadow Street from a south westerly direction, Old Mill Lane from a south westerly direction and Canal Way/Asda from a westerly direction. Two to three lanes can be found on the various approaches to the junction with two to three lanes also being found on the circulatory carriageway. PC World is also located on the island in the centre of the gyratory, with the gyratory also providing access to its car park. Pedestrian crossing facilities can be found on the various approaches to the junction.

Pedestrian Facilities

2.10 Given the mix of residential/commercial development in and around the area and as mentioned above, there is already a network of existing pedestrian infrastructure in the vicinity of the application site. As mentioned above all roads are bordered by footways of a reasonable width and there are a large number of formal pedestrian crossing facilities on Old Mill Lane, Wakefield Road and at the A61 Harborough Hill Road/Old Mill Lane gyratory.

2.11 The pedestrian infrastructure in the vicinity of the site is considered in more detail in Section 6 of this report.

Public Transport Facilities

2.12 The area surrounding the application site is well served by public transport with bus stops being provided on Old Mill Lane immediately adjacent to the site and on Burton Road.

2.13 Furthermore, Barnsley railway station is within 1km of the site.

2.14 Access to bus and rail services is discussed in more detail in Section 5 of this report.

Wakefield Road A61 Quality Bus Corridor Phase 3

2.15 Barnsley MBC is currently on-site constructing the Wakefield Road A61 Quality Bus Corridor (QBC) Phase 3 scheme. This relieves congestion at the Old Mill Lane/Burton Road junction by the construction of a new link road, referred to as the Burton Road Bypass, across land in the ownership of National Grid immediately to the northern boundary of the proposed foodstore. A roundabout is proposed at the Burton Road junction of the link road with an all moves signalised junction being provided at the Old Mill Lane junction. This removes the restriction that currently exists on right turning traffic exiting Burton Road to Wakefield Road mentioned above.

2.16 Old Mill Lane and Burton Road will then have a direct road connection via a single lane carriageway in each direction. A new roundabout is to be constructed along the link road to facilitate access to Wickes. The current access to Wickes off Old Mill Lane will be closed. The proposed layout of this scheme is shown on Drawing 100.

2.17 This scheme is currently being constructed on-site and is expected to be completed by the end of 2012. This will facilitate access to the proposed foodstore development.

3.0 Highway Safety

Introduction

3.1 Five years of personal injury accident data have been obtained for the period from 1st January 2006 to 31st December 2010 at the following junctions as agreed with Barnsley MBC:

- A61 Harborough Hill Road/Old Mill Lane Gyratory;
- Old Mill Lane to Burton Road Corridor;
- Wakefield Road Corridor from Burton Road to Carlton Road; and
- Burton Road/Rotherham Road.

3.2 The following is a analysis of the accidents at the above mentioned junctions

A61 Harborough Hill Road/Old Mill Lane Gyratory

3.3 An analysis of the data provided by BMBC shows there to have been 18 accidents at this junction over the five year period under consideration. This includes 15 slight injury accidents, 3 serious injury and no fatal injury accidents. Of the 18 accidents, 6 occurred in 2006, 6 in 2007, 4 in 2008, 2 in 2009 and none occurred in 2010. This indicates a downward trend in accidents occurring at this junction.

3.4 Of the above mentioned 18 accidents, 2 involved pedestrians and none involved cyclists. It should also be noted that the majority of these 18 accidents occurred either during the early afternoon or early evening periods. None of the accidents occurred during peak times.

3.5 It should also be noted that 10 of the above mentioned accidents occurred on either the Harborough Hill Road approach to the junction or on the circulatory carriageway adjacent to the Harborough Hill Road approach, 2 of which were serious. 1 of these accidents included a pedestrian running across Harborough Hill Road who slipped in front of the on-coming vehicle, the other involved a single motorcyclist on the Harborough Hill Road approach slipping on the wet surface.

3.6 The other remaining serious accident to a pedestrian occurred near to a bus stop on Old Mill Lane where a pedestrian waiting at a bus stop bent down to pick up a bag and was struck by the on-coming bus.

3.7 The remaining accidents were either single or two vehicle collisions involving only slight injuries.

Old Mill Lane to Burton Road Corridor

3.8 It should be noted that the following analysis covers the section of Old Mill Lane from its junction with Burton Road to the road bridge over the River Dearne, a distance of approximately 400m. This extended

assessment has been undertaken to include the section of Old Mill Lane where access to the main road from the foodstore development will be facilitated.

3.9 An analysis of the data provided by BMBC shows there to have been 12 accidents along the above mentioned corridor over the five year period under consideration, all of which were slight. Of the 12 accidents, 1 occurred in 2006, 1 in 2007, 4 in 2008, 2 in 2009 and 4 occurred in 2010. Of these 12 accidents, 1 included a child pedestrian and 1 included a child cyclist, the majority of the remainder were either single or two vehicle collisions involving only slight injuries. Only 1 of these accidents occurred during the peak period.

3.10 Of these 12 accidents over the 5 year period under consideration, 4 occurred at the junction of Burton Road (1 of which included a pedestrian), 3 occurred at the Wickes access (1 of which was a child cyclist) and 5 occurred on the section of Old Mill Lane from Wickes to the road bridge over the River Dearne.

3.11 With regard to the accidents to vulnerable road users mentioned above, the accident at Burton Road involved a child pedestrian crossing Old Mill Lane being struck by a car travelling northbound on Old Mill Lane (green traffic signal for the car to proceed), the accident at Wickes involved a child pedestrian pushing a cycle across Old Mill Lane and not seeing the car travelling in a northbound direction.

Wakefield Road Corridor from Burton Road to Carlton Road

3.12 The following analyses the accidents that have occurred on the section of Wakefield Road from Burton Road to Carlton Road to the north of the proposed foodstore a distance of some 700m.

3.13 An analysis of the data provided by BMBC shows there to have been 10 accidents along the above mentioned corridor over the five year period under consideration, all of which were slight. Of the 12 accidents, 3 occurred in 2006, 1 in 2007, 0 in 2008, 5 in 2009 and 1 occurred in 2010. Of these 10 accidents, 2 included an adult pedestrian, the majority of the remainder were either a single or two vehicle collisions involving only slight injuries. Only 2 of these accidents occurred during the peak period.

3.14 Of these 10 accidents over the 5 year period under consideration, 1 occurred on the stretch of Wakefield Road between Burton Road and Smithies Lane, 1 occurred at the junction of Smithies Lane, 4 occurred on Wakefield Road between Smithies Lane and Carlton Road (including an adult pedestrian) and 4 occurred at the junction of Carlton Road (including an adult pedestrian).

3.15 With regard to the accidents to vulnerable road users mentioned above, the accident between Smithies Lane and Carlton Road involved a pedestrian stepping off the footway into the path of an on-coming car and injuring his foot, the other, at the Wakefield Road/Carlton Road junction involved a pedestrian crossing between vehicles waiting to turn right into Carlton Road and then being struck by one of the vehicles as it started to make its turning manoeuvre.

Burton Road/Rotherham Road Junction

3.16 An analysis of the data provided by BMBC shows there to have been 2 injury accidents at the above mentioned junction over the 5 year period under consideration, both of which were slight. Both of these accidents involved a stationary vehicle at the traffic signals being hit from behind.

Highway Safety Conclusions

3.17 The above review of the accident data covering the 5 year period from 1st January 2006 to 31st December 2010 demonstrates there is not a safety issue on the highway network immediately adjacent to the proposed foodstore development.

4.0 Development Proposals

Proposed Development

4.1 Peel Land and Property are seeking planning permission for the following:

- 15,236sqm foodstore;
- An associated car park; and
- An 8 pump petrol filling station.

4.2 The development proposals are shown on Drawing 101 produced by Bate and Taylor Architects.

General Vehicular Access

4.3 As described in Section 2, BMBC is currently on site implementing the Wakefield Road A61 Quality Bus Corridor Phase 3. As part of this proposal, a new roundabout will be constructed on the Burton Road Bypass linking Old Mill Lane with Burton Road to facilitate access to Wickes. It is envisaged that this roundabout will also facilitate general vehicular access to the proposed foodstore development. Access to the main road network will be via the new junctions on the Bypass at Old Mill Lane and at Burton Road.

4.4 It should be noted that due to the level of traffic expected to be generated by the foodstore proposals, the road layout and junction arrangements to be implemented as part of the QBC scheme will need to be enhanced. This is described in greater detail in Section 7. The modifications to the Burton Road Bypass scheme necessary to support the proposed vehicular access arrangements are depicted on Drawing 102.

Access to Petrol Filling Station

4.5 The access to the proposed petrol filling station will be via a left in/left out priority arrangement on to the Bypass between Old Mill Land and Burton Road.

Service Access

4.6 Service access will be provided by the arrangements described above for general vehicular access. However, on entry to the site there will be a ramp up to the elevated service area, thus separating service and general traffic at the point of entry to the site.

Car Parking

4.7 A total of 772 parking spaces will be provided at-grade but below the proposed foodstore which will be on stilts. This includes 41 spaces for the mobility impaired and 37 parent and child spaces. The parking levels conform to the urban parking standard of 14-25sqm stated in the Barnsley Supplementary Planning

Document (SPD), adopted in March 2012, and are typical of this size of foodstore. The disabled parking provision of 5% slightly exceeds the 4% stated in the Barnsley SPD, but again, is seen to by typical of such a size of foodstore.

Pedestrian Access

4.8 Pedestrian access to the site will be via the main vehicular access point which includes 2m footways along the Bypass with additional pedestrian facilities being provided within the proposed car parks. In addition, there will also be a pedestrian/cycle bridge which connects the western facade of the building at the shop floor level to Old Mill Lane near to the Harborough Hill Road gyratory. This will facilitate direct pedestrian access to the existing bus stops on Old Mill Lane.

Cycle Access

4.9 Cyclist access from the highway network will be via the proposed main vehicular access described above. As also described above, there will be an additional pedestrian/cycle bridge which connects the western facade of the building at shop floor level to Old Mill Lane.

4.10 Cycle connectivity in and around the site will be enhanced by the Harborough Hill Park proposals which will connect Old Mill Lane/Harborough Hill Road to the River Dearne pathways which in turn provide connection to the Trans Pennine Trail. The connection will offer a safe, high quality route operate as a loop along the Burton Road bypass to the east of the site, where it connects to the River Dearne pathways, then south to the southern boundary, where it will travel west and connect to Old Mill Lane to the north of the gyratory via an access ramp.

4.11 A cycle hire facility will be provided adjacent to the site. This facility will be located at the proposed Park Kiosk which is part of the Riverside Community Park proposals. The facility will offer visitors the opportunity to explore the park and surrounding areas for leisure and educational purposes.

5.0 Policy

Introduction

5.1 The following section outlines the relevant planning policies from a traffic and transportation perspective and demonstrates how the proposals accord with these policies.

National Planning Policy Framework (March, 2012)

5.2 The National Planning Policy Framework (NPPF) replaces a series of 44 separate planning policy documents covering a wide range of areas of planning policy. The NPPF is therefore a comprehensive document which forms the basis of planning policy in all areas of planning other than waste policy.

5.3 While the NPPF is a material consideration in planning decisions, emphasis is given in the document to *"distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities."* The NPPF does not change the status of the local development plan as the starting point for decision making.

5.4 Paragraph 32 of the NPPF states that:

"All developments that generate significant amounts of movement should be supported by a Transport Statement or Transport Assessment. Plans and decisions should take account of whether:

- *the opportunities for sustainable transport modes have been taken up depending on the nature and location of the site, to reduce the need for major transport infrastructure;*
- *safe and suitable access to the site can be achieved for all people; and*
- *improvements can be undertaken within the transport network that cost effectively limit the significant impacts of the development. Development should only be prevented or refused on transport grounds where the residual cumulative impacts of development are severe."*

5.5 The NPPF calls for a *"balance of land uses"* which will encourage people to minimise their journey lengths for employment, shopping, leisure, education and other activities.

5.6 It can be considered that the development proposals support and conform to the sustainable transport policies of the NPPF.

5.7 As discussed in Section 6 of this TA, the site is located such as to take up opportunities for sustainable travel. The provision of enhanced cycle facilities described in Section 2 of this TA, and local QBC improvements described in Section 7, will enhance the opportunity for such alternatives to the private car.

5.8 Around the site, movements to and from public transport facilities for pedestrians and cyclists, whether they are able-bodied or have disabilities, are safe and convenient, with wide footways, drop-kerbs, tactile paving, pedestrian crossing facilities. The high level pedestrian and cycle bridge will provide a direct link between the bus stop on the A61 Old Mill Lane, north of the gyratory, to the site, providing a high quality and convenient connection between the site and public transport.

5.9 As demonstrated in in Section 8 of this TA, it is considered that, after the proposed highway infrastructure improvements associated with the scheme, the residual impacts of the development are not "severe".

5.10 It is also considered that the location of the site will contribute towards a "balance of land uses" by providing opportunities for employment and shopping in the local area.

5.11 Therefore, it is considered that the proposals are consistent with the NPPF from a transportation perspective.

Barnsley Core Strategy (Adopted September 2011)

5.12 The Barnsley Local Development Framework (LDF) is a portfolio of documents, which together comprise planning policy within Barnsley district.

5.13 The principal, overarching document within the LDF is the Core Strategy, which considers the key elements of the planning framework for Barnsley.

5.14 Section 9.6 of the Core Strategy document contains the Transport Strategy for the district, and contains six policies relating to transport:

- CSP 23 Accessibility Priorities;
- CSP 24 Safeguarding of Former Railway Lines;
- CSP 25 New Development and Sustainable Travel;
- CSP 26 New Development and Highway Improvement;
- CSP 27 Parking Strategy; and
- CSP 28 Reducing the Impact of Road Travel.

5.15 CSP 23 relates to transport investment, which should be targeted in the *"Accessibility Improvement Area"* in central Barnsley. The development will be located adjacent to some of the investment that has been implemented on Old Mill Lane, primarily the Quality Bus Corridor scheme. Therefore, the proposals are consistent with policy CSP 23.

5.16 CSP 24 relates to former railway alignments to the south of the city centre. The development will not interfere with these alignments. Therefore, the proposals are consistent with policy CSP 24.

5.17 CSP 25 states that new development will be expected to:

- *"be located and designed to reduce the need to travel, be accessible to public transport and meet the needs of pedestrians and cyclists;*
- *provide at least the minimum levels of parking for cycles, motorbikes, scooters, mopeds and disabled people, and should not provide more than the maximum number of car parking spaces set out in a Supplementary Planning Document;*
- *provide a transport statement or assessment in line with the thresholds and guidance set out in Department for Transport "Guidance on Transport Assessments" as published March 2007 (or any subsequent version);*
- *provide a travel plan statement or a travel plan in accordance with the thresholds and guidance set out in Department for Transport "Good Practice Guidelines: Delivering Travel Plans through the Planning Process" as published April 2009 (or any subsequent version). Travel plans will be secured through a planning obligation or a planning condition."*

5.18 As demonstrated in Section 6 of this TA, the development is accessible by public transport, and will meet the needs of pedestrians and cyclists, and will therefore reduce the need to travel. The development will provide vehicle and cycle parking in line with the current Supplementary Planning Document. In addition, this TA document has been produced in line with the guidance set out in the Department for Transport "Guidance on Transport Assessments", and a travel plan has been produced in line with the "Good Practice Guidelines: Delivering Travel Plans through the Planning Process" document. Therefore, the proposals are consistent with policy CSP 25.

5.19 Policy CSP 26 states that *"new development will be expected to be designed and built to provide safe, secure and convenient access for all road users."* As part of the proposals, mitigation measures are proposed on the highway, which will allow for safe and efficient access of the site after opening. Therefore, the proposals are consistent with policy CSP 26.

5.20 Policy CSP 27 relates to Barnsley Council's parking strategy, an element of which is the setting of maximum parking standards. The development will include parking in line with the maximum parking standards set out in the Supplementary Planning Document. Therefore, the proposals are consistent with policy CSP 27.

5.21 Policy CSP 28 relates to *"reducing the impact of road travel"*, in respect of air quality, freight operation, and efficient use of the current road system. An Air Quality Assessment has been undertaken as part of this application to ensure that the air impact of the development is minimised. Additionally, a Travel Plan has been produced which will promote measures such as car sharing, to ensure efficient use of the road system. Therefore, the proposals are consistent with policy CSP 28.

Barnsley Supplementary Planning Document: Parking

5.22 This Supplementary Planning Document (SPD) has been produced concerning parking within the district. This document re-emphasises the policy in the Core Strategy relating to the need to design and locate development such as to promote sustainable modes; and to provide Transport Assessments and Travel Plans where necessary, as per DfT guidance.

5.23 The document also contains *maximum* standards relating to car parking provision, and *minimum* standards relating to cycle parking provision, however, there is no minimum standard of cycle parking relating to food retail. Therefore, the maximum standards for car parking are replicated in Table 5.1.

Table 5.1: Barnsley Maximum Car Parking Standards

Use	Barnsley Urban	Barnsley-wide
A1 Shops: Food	1 space per 14 - 25sqm	1 space per 14 - 20sqm

5.24 The development is proposed at 15236sqm, which would give a maximum parking standard of 1088 parking spaces, based on the site being located in a "Barnsley Urban" location.

5.25 The proposed parking provision is for 772 non-disabled spaces, which is within the maximum standard.

5.26 The parking standards also recommend provision for disabled parking spaces at 4% of the total number of spaces. 41 disabled spaces are proposed, which is 5% of the provision, meaning that provision for those with mobility impairments at the site exceeds that required by the standards.

5.27 Parking provision at the site is therefore in line with the guidance in the Barnsley Parking SPD.

South Yorkshire Local Transport Plan (2011 – 2026)

5.28 The South Yorkshire Local Plan (2011 – 2026) is the third Local Transport Plan (LTP) for South Yorkshire.

5.0 Policy

5.29 The Transport Strategy has been devised for the Sheffield City Region (SCR) which includes the South Yorkshire districts of Barnsley, Doncaster, Rotherham and Sheffield, as well as parts of Nottinghamshire and Derbyshire.

5.30 The LTP's Transport Strategy describes the following four goals:

- *"To ensure that the transport system supports the economic growth of SCR;*
- *To ensure that the transport system enhances social exclusion and health;*
- *To reduce the emissions from vehicles; and*
- *To make transport increasingly safe and secure."*

5.31 A set of 26 policies have been devised to meet these goals which include delivering interventions required for development and regeneration, focusing new development along key public transport corridors, improvement in air quality and encouragement of safer road use.

5.32 It is considered that the development proposals are broadly in line with the above goals, primarily due to the economic benefits, the regeneration potential, the employment opportunities and the associated highway infrastructure associated with the development.

6.0 Accessibility

Introduction

6.1 A key element of national, regional and local policy is to ensure that new developments are located in areas where alternative modes of travel are available. It is important to ensure that developments are not isolated but are located close to complementary land uses. This supports the aims of integrating planning and transport, providing more sustainable transport choices, and reducing overall travel and car use.

6.2 In this instance, the location of the proposed foodstore in close proximity to the town centre, the proximity of surrounding residential development and surrounding areas of employment, ensures that there is the potential for linked trips and opportunities for reducing overall car travel.

Pedestrian Accessibility

6.3 Research has indicated that acceptable walking distances depend on a number of factors, including the quality of the development, the type of amenity offered, the surrounding area, and other local facilities. The Chartered Institution for Highways and Transportation (CIHT) document entitled *'Providing for Journeys on Foot'* suggests walking distances which are relevant to this planning application. These are reproduced in Table 6.1.

Table 6.1 Suggested Acceptable Walking Distances

	Town Centres (m)	Commuting/School/ Sightseeing (m)	Elsewhere/Local Services (m)
Desirable	200	500	400
Acceptable	400	1000	800
Preferred Maximum	800	2000	1200

6.4 To assist in summarising the accessibility of the site by foot, an indicative pedestrian catchment plan has been produced. Plan 003 shows distances of 500m, 1000m and 2000m which are termed *'Desirable'*, *'Acceptable'* and the *'Preferred Maximum'* by the CIHT for commuting trips.

6.5 Plan 3 shows that within 1,000m there are large residential areas located to the northwest and northeast (Monk Bretton) of the proposed site. These areas are linked via a connected, well-lit, footway network.

6.6 Furthermore there are numerous employment sites such as large retail stores and Barnsley town centre which are also accessible within 1,000m of the proposed foodstore.

6.0 Accessibility

6.7 Within a 2,000m of the site the whole of Barnsley town centre is available as well as sections of the residential areas located to the west, southwest and southeast of the site.

Accessibility by Cycle

6.8 To assist in assessing the accessibility of the site by cycle, Plan 004 presents a 5km cycle catchment for the site. This distance equates to a journey time of around 25 minutes, while cycling at a leisurely speed of 12 kilometres per hour.

6.9 The 5km catchment encompasses the whole of Barnsley including the peripheral districts of Carlton, Athersley South, Gawber, Dodworth and Worsbough.

6.10 The closest designated cycle route in the vicinity of the site is the National Cycle Route 67 located approximately 1km to the south of the site.

6.11 National Cycle Route 67 links Loughborough and Northallerton. Locally it connects Barnsley Railway Station to the Trans Pennine Trail.

6.12 The initial route eastbound from the station is on-road while the majority of National Route 67 is off-road and traffic free.

6.13 There is an additional section of designated cycle way located approximately 2.5km to the north. This connects New Lodge with Athersley South.

Bus Accessibility

6.14 There are a number of bus services accessible from Old Mill Lane. The closest bus facilities to the site are located on the western southbound carriage way of Old Mill Lane and consist of a shelter, timetable information and seats. The facilities will be located approximately 200m from the site.

6.15 There is an additional bus stop located across Old Mill Lane on the edge of the eastern carriageway which is also within 400m of the site. In addition, there will also be a pedestrian/cycle bridge which connects the western facade of the building at the shop floor level to Old Mill Lane which will facilitate direct pedestrian access to these bus stops. The services that utilise these stops have been summarised in Table 6.2 below.

6.0 Accessibility

Table 6.2 – Bus Services accessible in the vicinity of the site from Old Mill Lane

Bus Service	Journey	Frequency (Per Hour)	
		Mon – Sat	Sunday
1	Barnsley – New Lodge – Mapplewell - Staincross	6	2
4, 4A	Barnsley – Mapplewell – Darton – Kexborough	1	-
11	Barnsley – Smithies – Athersley	3	2
12	Barnsley – Smithies – Athersley	4	2
31	Barnsley – Cudworth	1	-
48, 48A	Barnsley – Hemsworth	Limited	-
57, 59, 59A	Barnsley – Mark Bretton – Carlton – Royston – Notton - Sandal	4	1
58, 58A	Barnsley – Royston – Carlton – Hemsworth	2	-
194	Barnsley – Royston – Wakefield	1	1

6.16 As part of the development proposals a new link road connecting the site with Burton Road will be constructed. This will provide a link from the site to bus facilities on Burton Road which will be accessible in approximately 300m from the store.

6.17 As with Old Mill Lane, bus stops on Burton Road consist of shelters, timetable information and seating. The services that utilise these stops have been summarised below.

Table 6.3 – Bus Services accessible in the vicinity of the site from Burton Road

Bus Service	Journey	Frequency (Per Hour)	
		Mon – Sat	Sunday
31/31A	Barnsley – Monk Bretton – Athersley – Carlton – Shafton – Cudworth – Lundwood	1	-
48, 48A	Barnsley – Hemsworth	Limited	-
57, 59, 59A	Barnsley – Mark Bretton – Carlton – Royston – Notton – Sandal	4	1

6.18 In total, 21 bus services will be accessible from within 400m of the proposed foodstore. Many of the services have a frequency of two services an hour or more to key local destinations such as Barnsley Interchange and local residential areas.

6.19 In conclusion the site is considered to be highly accessible by bus.

6.0 Accessibility

Rail Accessibility

6.20 Barnsley Railway Station is located approximately 800m to the south west of the site. It forms a large transport interchange with Barnsley Bus Station which is located opposite.

6.21 Frequent rail services operate from the station to a variety of local and regional destinations. During peak periods there are typically three trains an hour to Sheffield, Wakefield, Kirkgate and Leeds and further hourly services to Huddersfield and Nottingham.

Summary

6.22 In summary, it can be concluded that the foodstore will be well located for access by public transport, walking and cycling.

7.0 Derivation of Traffic Flows

Introduction

7.1 This section of the report details the methodology used to predict the demand associated with the proposed development.

7.2 The scope of this assessment was agreed at a meeting held on 18th March 2011 with Highways Officers at BMBC. The scope covered all major issues relating to the assessment of the traffic impact of the development including:

- Extent of assessment (study area);
- Time periods to be assessed;
- Assessment year and traffic growth methodology;
- Trip distribution and assignment; and
- Trip generation methodology.

7.3 It was agreed that junction capacity assessments would be required for the following five junctions:

- A61 Wakefield Road/Carlton Road (existing – signals);
- A61 Wakefield Road/Smithies Lane (existing – signals);
- A61 Wakefield Road/Burton Road (existing – signals);
- A61 Old Mill Lane/Burton Road Bypass (proposed – signals); and
- A61 Harborough Hill Road/Old Mill Lane Gyratory (existing – signals).

7.4 A percentage increase assessment of Alhambra Roundabout based on its existing layout would also be required.

7.5 It was agreed that the above junctions should be assessed for the following two time periods, which are the typical peak periods associated with foodstore traffic generation:

- Friday PM Peak; and
- Saturday Peak.

7.6 Following a meeting with BMBC Highways Officers on 13th September 2011, it was suggested by the Highways Officers that the junction of Burton Road/Rotherham Road, which was outside of the original scope, could be included in the capacity assessment, as there is a likelihood that a significant proportion of

development trips may pass through it. It was therefore decided to include this junction as part of the assessment.

Existing Situation

7.7 In order to provide a robust assessment, the existing conditions were assessed. As no suitable historic count data was available, traffic surveys, in the form of classified turning counts and queue length surveys, were undertaken for the five existing junctions included in the original scope. The surveys were undertaken by a specialist traffic data collection company on Friday 20th and Saturday 21st May 2011. Separate surveys were undertaken for the Burton Road/Rotherham Road junction on Friday 30th September and Saturday 1st October. A copy of the observed survey data is provided in Appendix A.

7.8 Analysis of the traffic survey data identified the following peak hours which form the basis of the traffic impact assessment:

- Friday PM Peak = 15:45-16:45; and
- Saturday Peak = 12:30-13:30.

7.9 The observed flows are shown in Figures 1 and 2.

7.10 Junction capacity models were constructed based on these observed flows as well as signal timing sheets and layouts provided by BMBC Environmental Services.

7.11 The models for the four existing junctions included in the original scope, plus the additional junction, were calibrated based on the queue length surveys and are therefore broadly representative of current traffic conditions at the junctions. In several instances, modelled queues are in excess of observed queues, resulting in the models presenting less capacity than there may exist in reality which ensures that the assessment should be considered to be robust and "worst-case".

Base Year Assessment

7.12 In order to take into account a proposed highway scheme in the area and the existing land use permissions at the proposed development site, a Future Base Year was derived.

Wakefield Road A61 Quality Bus Corridor Phase 3

7.13 The scheme, as part of the QBC proposals, was under construction during the traffic surveys and was assumed to be completed early in 2012 as the date of completion was not known when the assessment was

being undertaken, therefore the impact on the existing highway network would need to be included in the assessment.

7.14 The scheme will bypass an existing section of Burton Road approximately 250m in length from its junction with A61 Wakefield Road. The Bypass will run in a south westerly alignment, connecting to A61 Old Mill Lane at a proposed signalised junction approximately 150m south of the existing Burton Road junction. As previously mentioned, the proposed junction will allow all movements while the existing Burton Road junction will become left-in left-out only. Therefore, a significant reassignment of traffic onto the Bypass is likely to occur.

7.15 No reassignment information was provided to Curtins, therefore the assumption was made that 95% of the existing Burton Road traffic will transfer onto the Bypass. The remaining 5% will be assumed to consist of local traffic associated with the residences on Burton Road. The flows associated with this reassignment are shown in Figures 3 and 4.

7.16 Also as part of the scheme, the existing Wickes access on A61 Old Mill Lane will be relocated to a proposed roundabout on the Bypass. Therefore the observed Wickes traffic was transferred onto the Bypass. The flows associated with this reassignment are shown in Figures 5 and 6.

Existing Land Use Permissions

7.17 As outlined in Section 2, the development site partly consists of a retail park and a council depot, both accessed off Twibell Street. The retail park consists of three large units, however one unit with a GFA of 2512sqm, previously occupied by MFI and Power House, is vacant and was therefore not generating traffic on the days of the traffic surveys. Similarly, the council depot is also vacant and not generating traffic on the days of the traffic surveys. In accordance with DfT guidance, the potential levels of traffic that may be generated by this empty retail unit and vacated council depot have been added to the Base Year flows.

7.18 In order to calculate the potential number of trips these vacant properties would generate, average trip rates were extracted from the TRICS database and applied to the GFA. The associated trips were added to the observed flows. The TRICS data is included in Appendix B. The traffic flows associated with these existing permissions are shown in Figures 7 and 8.

Forecast Year Assessment

7.19 The trips associated with the reassignment of the Burton Road Bypass and the existing land use permissions not included in the traffic surveys were added to the observed flows, which were in turn factored up to 2012.

7.0 Derivation of Traffic Flows

7.20 The observed flows were factored by the following methods:

- Cars and LGVs were factored by TEMPRO NTEM dataset 6.2 factored by NTM AF09 for urban principal roads; and
- HGVs were factored by NTM 2009.

7.21 These flows form the 2012 Future Base Year without Committed scenario and represent the year of application. They are shown in Figures 9 and 10.

7.22 The 2012 Future Base Year without Committed flows were factored to the forecast year of 2017 using the same method. These growth factors are presented in Table 7.1.

Table 7.1 – Background Traffic Growth Factors

Base Year	Forecast Year	Cars & LGVs		HGVs
		Friday Peak	Saturday Peak	Both Peaks
2011	2012	1.005	1.005	1.002
2012	2017	1.042	1.043	1.020

7.23 The 2017 Future Base Year without Committed flows are shown in Figures 11 and 12.

Committed Development

7.24 It was agreed during the scoping meeting that there would be no requirement to include committed development as part of this analysis. However, it transpires that planning permission has been granted to a proposed retail development to the north of the proposed foodstore on land in the ownership of National Grid. The proposed retail development has a GFA of approximately 1906sqm and is to be a "bulky goods" store. It was therefore decided to include this as committed development.

7.25 As no traffic data associated with the committed development was available, the TRICS database was used to derive trip rates associated with "non-food superstores" with similar locational characteristics as the proposed development. The TRICS data is included in Appendix B. The trip rates and trip generation are shown in Table 7.2.

Table 7.2 – Summary of Committed Development Trip Rates and Trip Generation

Peak	Trip Rates			Trip Generation		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Friday	1.960	2.075	4.035	37	40	77
Saturday	3.553	3.651	7.204	68	70	137

Source: TRICS 2011(b)

7.26 For modelling purposes, it was assumed that 85% of committed development trips were primary trips and 15% were pass-by. The traffic flows associated with the committed development are shown in Figures 13 and 14.

7.27 The committed development flows were added to the 2012 and 2017 Future Base without Development scenarios in order to form the baseline assessment scenarios referred to as 2012 Future Base and 2017 Future Base. The flows associated with these scenarios are shown in Figures 15-18.

Trip Generation

7.28 In order to determine the trip generation associated with the proposed development, the TRICS database has been used. This industry approved database contains the trip rates associated with numerous sites of various land use types across the UK and Ireland.

7.29 A sample of existing sites from the "Food Superstore" land use category with similar geographic characteristics to the proposed site was chosen. From this sample, average trip rates were derived for both peaks and applied to the 15,236sqm GFA of the proposed development in order to calculate the total number of trips predicted to be generated by it. It should be noted that 85th percentile trip rates were not used as the number of sites in the sample was considerably less than the minimum recommended by the TRICS Good Practice Guide when using such trip rates. A summary of the trip rates and associated trip generation is presented in Table 7.3. The TRICS outputs are included in Appendix B.

Table 7.3 – Summary of Proposed Foodstore Trip Rates and Trip Generation

Peak	Trip Rates			Trip Generation		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Friday	5.719	5.609	11.327	871	855	1726
Saturday	5.367	5.150	10.516	818	785	1603

Source: TRICS 2011(b)

7.30 It is predicted that during the Friday Peak there will be 871 vehicle arrivals at the site and 855 departures. In the Saturday Peak it is predicted that there will be 818 arrivals and 785 departures.

7.0 Derivation of Traffic Flows

7.31 Further to the findings of the Retail Impact Assessment undertaken in 2011 by GVA, it is predicted that the proposed food store will draw 40% of its total trade from other food stores in the Barnsley area. These stores are:

- Asda, Old Mill Lane;
- Morrisons Lower Thomas Street; and
- Tesco, Wombwell Lane.

7.32 Many of the trips associated with these food stores, particularly the Morrisons and Tesco stores, do not use the network, or significant sections of the network, modelled as part of this TA, therefore a significant proportion of these trade draw trips will appear as new trips on the network, thereby sharing the characteristics of a primary trip.

7.33 With trade draw (transferred) trips accounting for 40% of the development trips, the remaining 60% will be treated as primary trips. It should be noted that, in reality, there is likely to be significant proportions of pass-by and diverted trips meaning that this proportion of 60% primary trips is likely to be smaller. However, it is believed that 60% primary trips, coupled with a large number of new transferred trips to the network, will provide a robust assessment by presenting a "worst-case" scenario. A summary of the total number of development trips split by primary and transferred is provided in Table 7.4.

Table 7.4 – Summary of Trip Types

Peak	Primary Trips			Transferred Trips		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Friday	523	513	1036	348	342	690
Saturday	491	471	962	327	314	641

7.34 One important aspect to note regarding the proposed foodstore's location, is that its sole vehicle access will be provided off the Burton Road Bypass, meaning that all trips associated with the store will use the Bypass for part of their journey.

Primary Development Trips

7.35 Primary development trips were distributed based on a combination of the observed distribution of the nearby Asda store on Old Mill Lane and a GIS analysis of local trade patterns. The distribution is shown in Figure 19.

7.36 As part of the development trip distribution, it was predicted that a small proportion of primary development trips travelling to/from the east of the site would have an origin/destination in the residential areas accessed off Burton Road to the east of the proposed foodstore access. The proportions were based on the difference in observed count data between the A61 Wakefield Road/Burton Road and the Burton Road/Rotherham Road junctions. The distributed development primary trips are shown in Figures 20 and 21.

Transferred Development Trips

7.37 Transferred trips were distributed based on the information provided by GVA as part of the Retail Impact Assessment. These transferred trips are shown in Figures 22 to 25.

Net Trip Reduction

7.38 In order to "net-off" or remove trips associated with the existing site, the assumption was made that 75% of the observed trips arriving and departing on Twibell Street were generated by the existing retail park with the remaining 25% being generated by the residences and businesses on the southern side of Twibell Street. These trips were added to those associated with the existing land use permissions and removed from the Base plus Development scenario. These trips total 76 arrivals and 87 departures in the Friday Peak and 120 arrivals and 114 departures in the Saturday Peak. The trips associated with the net reduction are shown in Figures 26 and 27.

Linked Trips

7.39 It is believed that there will be a very small number of linked trips between the committed bulky goods store and the proposed foodstore. These linked trips were assumed to account for 15% of committed trips. The 15% was taken from the primary trip percentage leaving 70% primary trips, 15% pass-by and 15% linked. The linked trips between the committed and proposed development are shown in Figures 28 and 29.

Petrol Filling Station

7.40 One final adjustment to the traffic flows was undertaken to take into account the proposed petrol filling station (PFS) as part of the foodstore application. A PFS trip rate was derived from the TRICS database and applied to the 8 proposed fuel pumps. The trip rates and trip generation is shown in Table 7.5. The TRICS outputs are included in Appendix B.

Table 7.5 – Summary of PFS Trip Rates and Trip Generation

Peak	Trip Rates			Trip Generation		
	Arrivals	Departures	Total	Arrivals	Departures	Total
Friday	7.723	7.911	15.634	62	63	125
Saturday	6.474	6.546	13.020	52	52	104

Source: TRICS 2011(b)

7.41 It was assumed that 75% of the trips would be pass-by traffic to and from the foodstore and the remaining 25% would be non-foodstore pass-by traffic. The assumption was also made that the majority of trips visiting both the foodstore and the PFS would visit the PFS on exit from the foodstore. The trips associated with the PFS are shown in Figures 30 and 31.

Total Development Flows

7.42 The total proposed development trips for 2017 were then created by combining each of the following elements:

- 2017 Future Base Year without Development;
- Committed Development Trips;
- Primary Development Trips;
- Transferred Trips (Trade Draw);
- Net Removal (closure of Twibell Street Retail Park and Council Depot);
- Committed and Proposed Development Linked Trips; and
- PFS Trips.

7.43 These total development flows are referred to as 2017 Future Base plus Development and are shown in Figures 32 and 33.

8.0 Capacity Assessment

Introduction

8.1 Following the calibration of the junction capacity models using the observed traffic flows and queue lengths, the 2012 Future Base, 2017 Future Base and 2017 Future Base plus Development flows were input into the existing models. Models were also constructed for the following 3 proposed junctions:

- A61 Old Mill Lane/Burton Road Bypass (proposed – signals);
- Burton Road Bypass/Proposed Foodstore Access/Wickes Access (proposed – roundabout); and
- Burton Road Bypass/Burton Road (proposed – roundabout).

8.2 The 3 scenarios tested would provide an indication of the impact of five years of background traffic growth (including committed development) and the proposed foodstore traffic.

8.3 The following section will outline and analyse the results of the junction capacity assessment as well as provide an analysis of any proposed mitigation measures as a result of the analysis.

Interpreting Model Results

8.4 Three separate industry-standard modelling software packages have been used to undertake the assessment and are outlined below:

- LinSig 3.1 – for signalised junctions and small networks;
- ARCADY 7 – for roundabouts; and
- PICADY 5 – for priority junctions.

8.5 LinSig results refer to the Degree of Saturation (DoS) and Mean Maximum Queue (MMQ) predicted in each lane of the junction. A DoS of 100% indicates that the lane in question is operating at its theoretical capacity (point of saturation), whilst a DoS of 90% indicates that the lane is operating within its practical capacity. The results also refer to the junction's overall performance by indicating the Practical Reserve Capacity (PRC) and total delay. A positive PRC indicates that the junction has space practical capacity remaining, whilst a negative PRC indicates that the junction is operating over its practical capacity.

8.6 Both ARCADY and PICADY results refer to the Ratio of Flow to Capacity (RFC) and queue length predicted in each arm of the junction. An RFC of 1.00 indicates that the arm in question is operating at its theoretical capacity, whilst an RFC of 0.85 indicates that the arm is operating within its practical capacity.

8.0 Capacity Assessment

Capacity Assessment Results

8.7 Full modelling results are provided in Appendix C at the rear of this report.

A61 Wakefield Road/Carlton Road/Smithies Lane

8.8 The two junctions of Wakefield Road/Carlton Road and Wakefield Road/Smithies Lane are both signalised and are operated by the same signal controller. Therefore, the two junctions are modelled as a two junction network within LinSig. The combining of the two junctions in the same file allows the accurate modelling of stage streaming and queue storage between the junctions.

8.9 The junctions also operate on a SCOOT system. Historic SCOOT stage capture was provided by BMBC Highways Officers for an AM, midday and PM peak. It was discovered that the junctions operate with a cycle time of 120 seconds in the PM peak, therefore the same cycle time was applied to the Friday peak. It is not expected that the junctions will operate on SCOOT in the Saturday peak, therefore a lower cycle time of 100 seconds was applied in-line with the calibrated observed models. The network was then double-cycled with the all-red pedestrian stages called once per cycle in order to replicate the level of pedestrian demand. The cycle times for both peaks were applied to all three scenarios and not adjusted, allowing for a fair comparison.

8.10 It is noted that the Smithies Lane junction has 4 arms, with one arm providing access to a car dealership. This arm is vehicle actuated, however no trips were recorded making the movement to/from this arm during the time of the survey. For modelling purposes, it was decided to include a token 10 arrivals and 10 departures at this arm for robustness.

8.11 The results for the 2012 Future Base scenario are shown in Table 8.1.

Table 8.1 – A61 Wakefield Road/Carlton Road/Smithies Lane: 2012 Future Base Results

		2012 Future Base			
		Fri (1545-1645)		Sat (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
J1: Carlton Road/Wakefield Road		**80.8%**	**-**	**74.9%**	**-**
1/1	Wakefield Rd North of Carlton Rd Ahead Left	64.5%	16.4	59.4%	12.2
2/1+2/2	Carlton Road Left Right	80.8%	16.0	74.8%	13.2
4/1+4/2	Wakefield Rd South of Carlton Rd Ahead Right	80.4%	9.9	74.9%	21.8
J2: Smithies Lane/Wakefield Road		**80.5%**	**-**	**70.7%**	**-**
1/1+1/2	Wakefield Rd North of Smithies Ln Ahead Right Left	68.4%	10.1	64.4%	17.1

2/1	Wakefield Rd South of Smithies Ln Ahead Left Right	80.5%	26.3	70.7%	17.6
3/1	Smithies Lane Left Right Ahead	79.3%	11.5	70.3%	6.3
4/1	Garage Access Right Left Ahead	3.0%	0.3	4.3%	0.3
PRC (%)		11.4		20.2	
Total Delay (pcu/Hr)		31.01		22.09	

8.12 The results indicate that the network is operating with limited spare capacity in the Friday peak with a PRC of 11.4% and a greater level of spare capacity in the Saturday peak with a PRC of 20.2%. Despite the spare capacity, queues of notable length do appear on some arms. The arm with the longest queue in the Friday peak is Wakefield Road South of Smithies Lane with an MMQ of 26.3 PCUs (151m). In the Saturday Peak, the arm with the longest queue Wakefield Road south of Carlton Road with an MMQ of 21.8 PCUs (125m).

8.13 The results for the 2017 Future Base scenario are shown in Table 8.2.

Table 8.2 – A61 Wakefield Road/Carlton Road/Smithies Lane: 2017 Future Base Results

		2017 Future Base			
		Fri (1545-1645)		Sat (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
J1: Carlton Road/Wakefield Road		**83.5%**	**-**	**78.5%**	**-**
1/1	Wakefield Rd North of Carlton Rd Ahead Left	66.8%	16.4	62.5%	13.0
2/1+2/2	Carlton Road Left Right	82.7%	17.1	77.3%	14.2
4/1+4/2	Wakefield Rd South of Carlton Rd Ahead Right	83.5%	11.0	78.5%	24.1
J2: Smithies Lane/Wakefield Road		**83.6%**	**-**	**74.2%**	**-**
1/1+1/2	Wakefield Rd North of Smithies Ln Ahead Right Left	70.9%	9.8	67.5%	16.7
2/1	Wakefield Rd South of Smithies Ln Ahead Left Right	83.6%	29.4	74.2%	19.4
3/1	Smithies Lane Left Right Ahead	82.4%	11.7	70.6%	6.4
4/1	Garage Access Right Left Ahead	3.0%	0.3	4.1%	0.3
PRC (%)		7.6		14.6	
Total Delay (pcu/Hr)		33.73		24.13	

8.14 The results indicate that the addition of five years of traffic growth sees a slight reduction in reserve capacity with the PRC of the Friday peak reducing to 7.6% and 14.6% in the Saturday peak. The queue lengths also increase, notably the MMQ on the Wakefield Road South of Smithies Lane arm in the Friday peak increases to 29.4 PCUs (169m) and to 24.1 PCUs (139m) on the Wakefield Road South of Carlton Road in the Saturday peak.

8.15 The results for the 2017 Future Base scenario are shown in Table 8.3.

Table 8.3 – A61 Wakefield Road/Carlton Road/Smithies Lane: 2017 Future Base plus Development Results

		2017 Future Base+Development			
		Fri (1545-1645)		Sat (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
J1: Carlton Road/Wakefield Road		**92.5%**	**-**	**86.2%**	**-**
1/1	Wakefield Rd North of Carlton Rd Ahead Left	68.2%	19.9	70.9%	17.8
2/1+2/2	Carlton Road Left Right	89.5%	18.8	85.7%	14.2
4/1+4/2	Wakefield Rd South of Carlton Rd Ahead Right	92.5%	15.2	86.2%	33.6
J2: Smithies Lane/Wakefield Road		**93.3%**	**-**	**83.6%**	**-**
1/1+1/2	Wakefield Rd North of Smithies Ln Ahead Right Left	79.7%	29.2	74.8%	23.3
2/1	Wakefield Rd South of Smithies Ln Ahead Left Right	93.3%	41.6	83.6%	27.4
3/1	Smithies Lane Left Right Ahead	92.2%	14.8	79.2%	6.9
4/1	Garage Access Right Left Ahead	3.4%	0.3	4.6%	0.3
PRC (%)		-3.7		4.4	
Total Delay (pcu/Hr)		47.27		30.59	

8.16 The results indicate that, with the inclusion of development traffic, the network would operate slightly over the practical capacity threshold in the Friday peak and close to the practical capacity threshold in the Saturday peak. In the Friday peak, the highest DoS of 93.3% occurs on the Wakefield Road South of Smithies Lane arm. More significant than the DoS is the level of queuing. Queues on Wakefield Road between the two junctions would block-back in both peaks and effectively lock-up the junction, further reducing capacity. The queue length of 41.6 PCUs (239m) on Wakefield Road South of Smithies Lane in the PM peak and 33.6 PCUs (193m) in the Saturday peak are likely to block various industrial and residential accesses which could cause problems to local workers and residents.

8.17 The existing performance of the junction has been discussed with BMBC Highways Officers and it is acknowledged that the two junctions have intermittent capacity problems. In order to accommodate the development traffic, a proposed mitigation has been assessed by Curtins. This mitigation involves widening Smithies Lane to accommodate the addition of a flare and is shown in Drawing 103. This flare will increase the frequency of vehicles across the stopline from Smithies Lane, meaning that additional greentime can be assigned to Wakefield Road. The results for the 2012 Future Base scenario with mitigation are shown in Table 8.4.

Table 8.4 – A61 Wakefield Road/Carlton Road/Smithies Lane: 2017 Future Base plus Development Results with Mitigation

		2017 Base+Development			
		Fri (1545-1645)		Sat (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
J1: Carlton Road/Wakefield Road		**80.40%**	**-**	**72.70%**	**-**
1/1	Wakefield Rd North of Carlton Rd Ahead Left	71.30%	19.8	70.20%	16.1
2/1+2/2	Carlton Road Left Right	74.10%	15.6	72.70%	12.5
4/1+4/2	Wakefield Rd South of Carlton Rd Ahead Right	80.40%	26.9	71.50%	26.7
J2: Smithies Lane/Wakefield Road		**82.70%**	**-**	**77.00%**	**-**
1/1+1/2	Wakefield Rd North of Smithies Ln Ahead Right Left	69.70%	12.7	70.20%	21.5
2/1	Wakefield Rd South of Smithies Ln Ahead Left Right	82.70%	30.9	77.00%	24.3
3/1+3/2	Smithies Lane Left Right Ahead	82.00%	11.9	50.80%	6
4/1	Garage Access Right Left Ahead	8.90%	0.4	7.40%	0.4
PRC (%)		8.8		16.9	
Total Delay (pcu/Hr)		30.19		21.81	

8.18 The results indicate that with the mitigation measure, the network could successfully accommodate the development traffic. In the Friday peak, the network would operate with a greater amount of spare capacity than the 2017 Future Base scenario. The Saturday peak would also have spare capacity although this may be increased further by increasing the cycle time to 120 seconds.

A61 Wakefield Road/Burton Road

8.19 The junction of Wakefield Road/Burton Road is currently signalised with a banned right turn from Burton Road. It marks the point where Wakefield Road becomes Old Mill Lane. The junction currently experiences high levels of congestion in the peak periods with long queues frequently developing on Burton Road on all arms.

8.20 The junction is to be redesigned following the construction of the Wakefield Road A61 Quality Bus Corridor Phase 3. It is envisaged that this scheme will result in large numbers of vehicles reassigning onto the Bypass, alleviating the problems at this junction. Once the Bypass is constructed, this junction will become a left-in/left-out priority junction with the right turn from Wakefield Road to Burton Road banned, therefore the only arm that will have to give-way to traffic and experience delay will be Burton Road.

8.21 The junction has been modelled using PICADY 5 and the results for the three assessment scenarios are shown in Table 8.5.

Table 8.5 – A61 Wakefield Road/Burton Road (Proposed): All Scenarios Results

Scenario	Friday (1545-1645)		Saturday (1230-1330)	
	RFC	Queue (Vehs)	RFC	Queue (Vehs)
2012 Future Base	0.050	0.05	0.049	0.05
2017 Future Base	0.052	0.05	0.051	0.05
2017 Future Base+Development	0.054	0.06	0.054	0.06

8.22 The results indicate that the proposed junction layout would operate with considerable spare capacity. This is primarily as a result of traffic reassigning onto the Bypass.

A61 Old Mill Lane/Burton Road

8.23 This proposed signalised junction is part of the proposals associated with the Burton Road Bypass. It forms the junction between the western end of the Bypass and the existing highway network. It also allows all traffic movements as well as a bus gate on the northern arm, which is part of the proposed Quality Bus Corridor. The Old Mill Lane and Burton Road Bypass arms are signalised, whereas the access to the small retail park to the west of the junction (containing the Carphone Warehouse and Tile Giant stores) remains unsignalised and has an additional access for traffic from Old Mill Lane south.

8.24 No staging data has been provided therefore the staging coded in the model represents our experience of signalised junctions of a similar nature. A cycle time of 100 seconds has been used which is typical for such junctions, particularly if operating on SCOOT. The model results also represent a worst case scenario where the bus gate is called every cycle, whereas in reality, it would be vehicle actuated and, based on a flow of 29 buses in the Friday peak, would be called less than once every two minutes.

8.25 The proposed layout associated with the Bypass has been modelled using LinSig 3.1. The results for the 2012 Future Base scenario are shown in Table 8.6.

Table 8.6 – A61 Old Mill Lane/Burton Road (Proposed): 2012 Future Base Results

		2012 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	**Lane Description**	**DoS (%)**	**MMQ (pcu)**	**DoS (%)**	**MMQ (pcu)**
1/1	A61 Old Mill Lane North Ahead (Bus)	57.10%	2.5	46.20%	1.9
1/2	A61 Old Mill Lane North Left	3.40%	0.4	4.70%	0.6
1/3	A61 Old Mill Lane North Ahead	96.00%	23.6	92.30%	21.6
2/1+2/2	Site Access Right Left	57.30%	10.7	61.90%	11.5

3/2+3/1	A61 Old Mill Lane South Ahead Left	48.60%	7	43.50%	5.8
3/3	A61 Old Mill Lane South Right	97.30%	29.2	93.30%	22.7
4/1	Carphone Warehouse Access Right Left	5.20%	0	5.90%	0
5/1	A61 North @ Right Turn Ahead	3.40%	0	2.80%	0
5/2	A61 North @ Right Turn Ahead	1.00%	0	1.50%	0
5/3+5/4	A61 North @ Right Turn Ahead Right	29.80%	0.2	31.40%	0.2
7/1	A61 South @ GW Ahead	39.30%	0.3	35.80%	0.3
8/1	Cp Wh RT In Right	0.90%	0	1.10%	0
PRC (%)		-8.1		-3.6	
Total Delay (pcu/Hr)		35.51		28.70	

8.26 The results indicate that the proposed junction layout would operate over practical capacity in both peaks during the 2012 Future Base scenario. The Friday peak would operate with a PRC of -8.1 whilst the Saturday peak would experience a PRC of -3.6.

8.27 The results for the 2017 Future Base scenario are shown in Table 8.7.

Table 8.7 – A61 Old Mill Lane/Burton Road (Proposed): 2017 Future Base Results

		2017 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	A61 Old Mill Lane North Ahead (Bus)	57.10%	2.5	46.20%	1.9
1/2	A61 Old Mill Lane North Left	3.60%	0.4	5.00%	0.6
1/3	A61 Old Mill Lane North Ahead	100.10%	29.7	96.30%	25.7
2/1+2/2	Site Access Right Left	59.60%	11.3	64.50%	12.1
3/2+3/1	A61 Old Mill Lane South Ahead Left	50.50%	7.5	45.30%	6.4
3/3	A61 Old Mill Lane South Right	101.20%	37.4	97.00%	27
4/1	Carphone Warehouse Access Right Left	5.90%	0	6.60%	0
5/1	A61 North @ Right Turn Ahead	3.40%	0	2.80%	0
5/2	A61 North @ Right Turn Ahead	1.00%	0	1.50%	0
5/3+5/4	A61 North @ Right Turn Ahead Right	31.00%	0.2	32.80%	0.2
7/1	A61 South @ GW Ahead	40.80%	0.3	37.30%	0.3
8/1	Cp Wh RT In Right	0.90%	0	1.10%	0
PRC (%)		-12.4		-7.8	
Total Delay (pcu/Hr)		48.71		35.92	

8.28 The results indicate that the proposed junction layout would operate further over practical capacity with the addition of 5 years of background growth. The Friday peak would operate with a PRC of -12.4 whilst the Saturday peak would experience a PRC of -7.8. Lengthy queues of 37.4 PCUs (215m) and 29.7 PCUs (171m) would occur on the southern and northern arms of the junction respectively in the Friday peak, and 27 PCUs (155m) and 25.7 PCUs (148m) would occur on the same arms in the Saturday peak.

8.29 The results for the 2017 Future Base plus Development scenario are shown in Table 8.8.

Table 8.8 – A61 Old Mill Lane/Burton Road (Proposed): 2017 Future Base plus Development Results

		2017 Future Base plus Development			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	A61 Old Mill Lane North Ahead (Bus)	57.10%	2.5	46.20%	1.9
1/2	A61 Old Mill Lane North Left	56.60%	6.7	51.20%	6.3
1/3	A61 Old Mill Lane North Ahead	115.00%	54.2	111.60%	50.1
2/1+2/2	Site Access Right Left	98.40%	33.8	97.90%	31.5
3/2+3/1	A61 Old Mill Lane South Ahead Left	44.40%	5.9	39.30%	5
3/3	A61 Old Mill Lane South Right	118.60%	122.5	110.50%	80.1
4/1	Carphone Warehouse Access Right Left	6.50%	0	7.10%	0.1
5/1	A61 North @ Right Turn Ahead	3.40%	0	2.80%	0
5/2	A61 North @ Right Turn Ahead	12.30%	0.1	12.10%	0.1
5/3+5/4	A61 North @ Right Turn Ahead Right	26.50%	0.2	27.90%	0.2
7/1	A61 South @ GW Ahead	42.60%	0.4	38.40%	0.3
8/1	Cp Wh RT In Right	0.90%	0	1.10%	0
PRC (%)		-31.7		-24.0	
Total Delay (pcu/Hr)		178.94		130.93	

9 The results show that the addition of the development traffic exaggerates the capacity problems at the junction and would cause it to operate over theoretical capacity. The Friday peak would operate with a PRC of -31.7% whilst the Saturday peak would experience a PRC of -24%. Considerable queues would block-back across the adjacent junctions on Old Mill Lane.

10 In order to accommodate the development traffic, a number of mitigation measures have been suggested and are shown in Drawing 104. These measures include the provision of the following:

- Widening of the Burton Road Bypass to two lanes in both directions;

- Addition of a right turn flare lane from Old Mill Lane south to Burton Road Bypass;
- Signage and road markings to allow ahead movements to mix with left turners in the nearside lane on Old Mill Lane north southbound to provide additional capacity for ahead movements; and
- Addition of a second lane on Old Mill Lane south in the southbound direction to facilitate the above measure which merges to a single lane before it crosses the River Dearne.

11 The proposed mitigation measures have been modelled and the results for the 2017 Future Base plus Development scenario are shown in Table 8.9

Table 8.9– A61 Old Mill Lane/Burton Road (Proposed): 2017 Future Base plus Development Results with Mitigation

		2017 Future Base plus Development			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	A61 Old Mill Lane North Ahead (Bus)	57.10%	2.5	46.20%	1.9
1/2	A61 Old Mill Lane North Left Ahead	89.40%	13.8	81.00%	12.2
1/3	A61 Old Mill Lane North Ahead	90.00%	14.4	81.80%	12.7
2/1	Site Access Left	76.00%	18.9	76.70%	18.7
2/2	Site Access Right	87.60%	9.4	81.00%	8.3
3/2+3/1	A61 Old Mill Lane South Ahead Left	47.80%	8	42.90%	6.9
3/3+3/4	A61 Old Mill Lane South Right	89.40%	17.1	84.90%	14
4/1	Carphone Warehouse Access Right Left	6.90%	0.1	7.50%	0.1
5/1	A61 North @ Right Turn Ahead	3.40%	0	2.80%	0
5/2	A61 North @ Right Turn Ahead	18.90%	0.1	19.50%	0.1
5/3+5/4	A61 North @ Right Turn Ahead Right	19.90%	0.1	20.50%	0.1
7/1	A61 South @ GW Ahead	45.30%	0.4	41.10%	0.3
8/1	Cp Wh RT In Right	0.90%	0	1.10%	0
PRC (%)		0.0		6.0	
Total Delay (pcu/Hr)		41.48		35.04	

12 The results demonstrate that the proposed mitigation measures successfully accommodate the development traffic and provide some 31.7% spare practical capacity in the Friday peak and 30% in the Saturday peak compared to the QBC design. The junction would operate with more capacity than the 2012 Future Base scenario without the mitigation measures, offering a better than nil-detriment level of mitigation. There would be no blocking back to adjacent junctions and the longest queue in both peaks would be on the left turn lane

from the Bypass with a queue of 18.9 PCUs (109m) in the Friday peak and 18.7 PCUs (108m) in the Saturday peak.

A61 Harborough Hill/Old Mill Lane Gyratory

13 The major arms of the junction are currently signalised and are run by two controllers. The junction has been modelled using LinSig 3.1 which is able to model multiple controllers.

14 SCOOT data capture was provided by BMBC. This data showed that stage intergreens were all 5 seconds, which indicated that certain phases, particularly pedestrian phases, would terminate a few seconds early so that intergreens longer than 5 seconds would appear as being only 5 seconds in length, due early phase termination. The modelling software cannot directly replicate this early phase termination, so rather than reduce all intergreens to 5 seconds, which would have safety implications, demand dependant pedestrian phases which exist in more than one stage are removed from a single stage, however they will still receive greentime in at least one stage. It should be noted that whilst this methodology reduces time lost to intergreens, it does not reduce all stage intergreens to 5 seconds, resulting in the model presenting a worst-case, although it still maintains a good level of calibration.

15 The bus gate on the Old Mill Lane southbound approach has also been included in the model and is called every cycle, whereas in reality it would be called less than once every two minutes. Therefore the model presents a worst case and should be considered to be robust.

16 The model results for the 2012 Future Base scenario are show in Table 8.10.

Table 8.10 – A61 Harborough Hill/Old Mill Lane Gyratory: 2012 Future Base Results

		2012 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1+1/2	A61 Old Mill Lane S/B Approach Left	70.00%	6	68.20%	4.3
2/1	Twibell Street Left	28.80%	0.8	38.20%	1.1
3/1	Dryden Road Left	3.80%	0	5.60%	0
3/2	Dryden Road Left	1.30%	0	3.00%	0
3/3	Dryden Road Ahead	14.20%	0.6	32.10%	1.5
3/4	Dryden Road Ahead	27.90%	1.3	61.80%	3.3
4/1	A61 Harborough Hill Road Left	24.70%	2.5	19.50%	1.8
4/2	A61 Harborough Hill Road Left	68.70%	9.2	72.70%	9.4

4/3	A61 Harborough Hill Road Left	75.50%	10.2	76.70%	9.8
5/1	Meadow Street Left	5.80%	0.1	4.70%	0.1
6/1	A635 Old Mill Lane Ahead	75.20%	11	65.80%	8.4
6/2	A635 Old Mill Lane Ahead	73.40%	10.7	65.10%	8.3
7/1	Canal Way Left	54.00%	1.7	58.50%	1.9
7/2	Canal Way Left	53.50%	2.1	55.40%	2.2
8/1	PC World Egress Right	3.10%	0	5.50%	0
9/1	Ahead	3.70%	0	2.90%	0
9/2	Ahead	34.20%	0.3	30.60%	0.2
9/3	Ahead	22.50%	0.1	26.70%	0.2
10/1	A61 Old Mill Lane S/B Ahead (Bus Gate)	44.00%	1.8	35.00%	1.3
10/2	A61 Old Mill Lane S/B Ahead	74.70%	13.1	71.00%	11.6
10/3	A61 Old Mill Lane S/B Ahead	49.00%	6.5	62.00%	8.7
11/1	Ahead Left	32.00%	0.2	32.70%	0.2
11/2	Ahead	29.70%	0.2	27.70%	0.2
11/3	Ahead	23.40%	0.2	25.60%	0.2
11/4	Ahead	9.50%	0.1	11.00%	0.1
12/2+12/1	Gyratory East Left Ahead	41.40%	2.6	40.30%	5.7
12/3	Gyratory East Ahead	46.10%	6.3	42.50%	5.6
12/4	Gyratory East Right	74.60%	10.4	74.10%	9.8
12/5	Gyratory East Right	28.30%	1.1	32.40%	1.4
13/1	Ahead Left	34.30%	0.3	35.90%	0.3
13/2	Ahead	31.60%	0.3	33.80%	0.3
13/3	Ahead	27.60%	0.3	28.80%	0.3
14/1	Gyratory West Left	33.40%	0.3	35.40%	0.3
14/2	Gyratory West Right	75.60%	5.7	75.80%	6.8
14/3	Gyratory West Right	62.30%	2.1	60.70%	1.5
15/1	Left	37.30%	0.3	39.20%	0.4
15/2	Ahead	25.60%	0.2	20.70%	0.1
15/3	Ahead	44.80%	0.4	43.30%	0.4
15/4	Ahead	6.90%	0	4.60%	0
16/1	Gyratory West Ahead	28.20%	0.2	24.80%	0.2
16/2	Gyratory West Ahead	37.40%	0.3	33.80%	0.3
16/3	Gyratory West Right	15.90%	0.1	18.60%	0.1
16/4	Gyratory West Right	19.50%	0.1	19.20%	0.1
17/1	Ahead	15.90%	0.1	18.60%	0.1
17/2	Ahead Right	19.80%	0.1	19.60%	0.1
18/1	Gyratory North Right	66.60%	6.6	70.40%	8

18/2	Gyratory North Right	76.70%	7.7	69.10%	7.2
26/1	A61 Old Mill Lane N/B Ahead	33.70%	0.6	29.60%	0.7
26/2	A61 Old Mill Lane N/B Ahead	46.70%	1.8	42.20%	2
PRC (%)		17.3		17.3	
Total Delay (pcu/Hr)		51.88		51.80	

17 The results indicate that the junction has spare capacity in both peaks modelled, with a PRC of 17.3% in the Friday peak and 17.3% in the Saturday peak.

18 The model results for the 2017 Future Base scenario are show in Table 8.11

Table 8.11 – A61 Harborough Hill/Old Mill Lane Gyratory: 2017 Future Base Results

		2017 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1+1/2	A61 Old Mill Lane S/B Approach Left	72.70%	6.6	71.00%	4.6
2/1	Twibell Street Left	31.20%	0.8	41.60%	1.3
3/1	Dryden Road Left	4.00%	0	5.70%	0
3/2	Dryden Road Left	1.40%	0	3.20%	0
3/3	Dryden Road Ahead	14.70%	0.7	33.40%	1.6
3/4	Dryden Road Ahead	29.30%	1.4	64.60%	3.6
4/1	A61 Harborough Hill Road Left	25.80%	2.6	19.30%	1.9
4/2	A61 Harborough Hill Road Left	71.40%	9.8	72.00%	9.7
4/3	A61 Harborough Hill Road Left	78.60%	10.9	76.70%	10.1
5/1	Meadow Street Left	5.90%	0.1	5.00%	0.1
6/1	A635 Old Mill Lane Ahead	77.90%	11.8	69.20%	9.1
6/2	A635 Old Mill Lane Ahead	76.30%	11.4	67.00%	8.7
7/1	Canal Way Left	56.60%	1.9	62.70%	2.2
7/2	Canal Way Left	59.40%	2.6	60.20%	2.5
8/1	PC World Egress Right	3.20%	0	5.70%	0
9/1	Ahead	3.70%	0	2.90%	0
9/2	Ahead	35.60%	0.3	31.90%	0.2
9/3	Ahead	23.40%	0.2	27.80%	0.2
10/1	A61 Old Mill Lane S/B Ahead (Bus Gate)	44.00%	1.8	35.00%	1.3
10/2	A61 Old Mill Lane S/B Ahead	77.70%	14.1	74.10%	12.5
10/3	A61 Old Mill Lane S/B Ahead	50.90%	6.8	64.60%	9.3
11/1	Ahead Left	34.70%	0.3	34.30%	0.3

11/2	Ahead	29.60%	0.2	28.80%	0.2
11/3	Ahead	24.10%	0.2	26.50%	0.2
11/4	Ahead	9.80%	0.1	11.50%	0.1
12/2+12/1	Gyratory East Left Ahead	45.40%	1.7	42.20%	6.1
12/3	Gyratory East Ahead	45.80%	2.2	44.20%	5.9
12/4	Gyratory East Right	77.10%	9.8	79.90%	11.5
12/5	Gyratory East Right	29.30%	4	35.20%	1.5
13/1	Ahead Left	35.60%	0.3	37.30%	0.3
13/2	Ahead	32.80%	0.3	35.10%	0.3
13/3	Ahead	28.80%	0.3	30.10%	0.3
14/1	Gyratory West Left	34.60%	0.3	36.70%	0.3
14/2	Gyratory West Right	78.60%	12.9	78.70%	7.4
14/3	Gyratory West Right	64.80%	2.7	63.40%	1.8
15/1	Left	38.80%	0.3	40.90%	0.4
15/2	Ahead	26.50%	0.2	21.60%	0.1
15/3	Ahead	47.40%	0.5	45.10%	0.4
15/4	Ahead	6.30%	0	4.70%	0
16/1	Gyratory West Ahead	30.10%	0.2	27.10%	0.2
16/2	Gyratory West Ahead	38.10%	0.3	33.90%	0.3
16/3	Gyratory West Right	17.10%	0.1	19.40%	0.1
16/4	Gyratory West Right	19.70%	0.1	20.10%	0.1
17/1	Ahead	17.10%	0.1	19.40%	0.1
17/2	Ahead Right	20.00%	0.1	20.40%	0.1
18/1	Gyratory North Right	71.20%	7.3	73.30%	8.5
18/2	Gyratory North Right	77.60%	8.4	72.20%	7.4
26/1	A61 Old Mill Lane N/B Ahead	35.90%	0.9	32.40%	0.9
26/2	A61 Old Mill Lane N/B Ahead	47.60%	1.2	42.30%	2.1
PRC (%)		14.5		12.6	
Total Delay (pcu/Hr)		56.93		56.09	

19 The results indicate that with 5 years of background growth, the junction has spare capacity in both peaks modelled, with a PRC of 14.5% in the Friday peak and 12.6% in the Saturday peak.

20 The model results for the 2017 Future Base plus Development scenario are show in Table 8.12.

Table 8.12 – A61 Harborough Hill/Old Mill Lane Gyratory: 2017 Future Base plus Development Results

		2017 Future Base plus Development			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1+1/2	A61 Old Mill Lane S/B Approach Left	84.90%	13.7	81.00%	9.6
2/1	Twibell Street Left	4.50%	0.1	6.30%	0.1
3/1	Dryden Road Left	3.50%	0	5.30%	0
3/2	Dryden Road Left	1.90%	0	3.60%	0
3/3	Dryden Road Ahead	14.70%	0.7	33.40%	1.6
3/4	Dryden Road Ahead	29.30%	1.4	61.80%	3.3
4/1	A61 Harborough Hill Road Left	24.60%	2.4	18.00%	1.7
4/2	A61 Harborough Hill Road Left	87.40%	14	86.50%	13.2
4/3	A61 Harborough Hill Road Left	89.00%	14	87.30%	12.9
5/1	Meadow Street Left	5.70%	0.1	5.20%	0.1
6/1	A635 Old Mill Lane Ahead	80.30%	12.7	74.00%	10.2
6/2	A635 Old Mill Lane Ahead	79.00%	12.4	72.30%	9.8
7/1	Canal Way Left	41.30%	1.1	45.50%	1.3
7/2	Canal Way Left	52.70%	1.9	56.50%	2.3
8/1	PC World Egress Right	2.00%	0	3.80%	0
9/1	Ahead	4.00%	0	2.90%	0
9/2	Ahead	42.90%	0.4	37.90%	0.3
9/3	Ahead	25.90%	0.2	30.10%	0.2
10/1	A61 Old Mill Lane S/B Ahead (Bus Gate)	47.60%	1.9	35.00%	1.3
10/2	A61 Old Mill Lane S/B Ahead	85.90%	18.2	80.30%	15.4
10/3	A61 Old Mill Lane S/B Ahead	51.90%	6.6	63.70%	9.6
11/1	Ahead Left	34.60%	0.3	34.20%	0.3
11/2	Ahead	32.00%	0.2	28.50%	0.2
11/3	Ahead	29.40%	0.2	31.40%	0.2
11/4	Ahead	5.70%	0	7.60%	0
12/2+12/1	Gyratory East Left Ahead	47.40%	1.6	44.40%	2.1
12/3	Gyratory East Ahead	48.10%	1.9	42.90%	1.5
12/4	Gyratory East Right	87.60%	14.1	89.90%	15.9
12/5	Gyratory East Right	16.00%	2	20.60%	2.7
13/1	Ahead Left	39.60%	0.3	41.40%	0.4
13/2	Ahead	33.10%	0.3	34.60%	0.3
13/3	Ahead	30.50%	0.3	31.00%	0.3

14/1	Gyratory West Left	38.30%	0.3	40.50%	0.3
14/2	Gyratory West Right	81.80%	3.9	77.70%	3.7
14/3	Gyratory West Right	70.70%	2.5	65.30%	2.8
15/1	Left	31.20%	0.2	33.20%	0.2
15/2	Ahead	35.90%	0.3	30.00%	0.2
15/3	Ahead	50.80%	0.5	47.90%	0.5
15/4	Ahead	6.40%	0	4.30%	0
16/1	Gyratory West Ahead	37.30%	0.3	32.80%	0.2
16/2	Gyratory West Ahead	43.00%	0.4	39.00%	0.3
16/3	Gyratory West Right	14.00%	0.1	15.40%	0.1
16/4	Gyratory West Right	16.30%	0.1	16.90%	0.1
17/1	Ahead	14.00%	0.1	15.40%	0.1
17/2	Ahead Right	16.60%	0.1	17.20%	0.1
18/1	Gyratory North Right	69.10%	6.2	67.20%	6.2
18/2	Gyratory North Right	77.70%	7.4	71.10%	6.5
26/1	A61 Old Mill Lane N/B Ahead	44.60%	1.5	39.20%	1
26/2	A61 Old Mill Lane N/B Ahead	53.70%	1.9	48.70%	1.2
PRC (%)		1.1		0.1	
Total Delay (pcu/Hr)		67.40		63.05	

21 The results indicate that even with the addition of the proposed development traffic, the junction will still operate within practical capacity, with a PRC of 1.1% in the Friday peak and 0.1% in the Saturday peak. There will also be no “locking-up” of the circulatory. The longest queue on the entry arms in both peaks will form in the nearside lane of Old Mill Lane southbound with a length of 18.2 PCUs (105m) in the Friday peak and 15.4 PCUs (89m) in the Saturday peak.

Burton Road/Rotherham Road

22 As mentioned previously, this junction was not included in the original scope but was included due to the potential for a significant proportion of development trips to pass through it. The junction currently exists as a stand-alone signalised crossroads and operates with an element of vehicle actuation (VA).

23 The junction was modelled using LinSig 3.1 and a level of calibration was achieved which showed slightly longer queues than observed. It is believed that this was due to a number of factors including the VA operation and infrequent pedestrian demand. It should be considered that the model contains slightly less capacity than the junction exhibits in reality and is therefore a robust form of assessment.

8.0 Capacity Assessment

24 The model has been run for four cycles with the all-red pedestrian stage called once to replicate the level of pedestrian demand. Although it should be noted, that the pedestrian stage may have been called less than once every four cycles during the traffic surveys. Despite running the pedestrian stage once every four cycles, the model still presents considerably longer queue lengths than those observed during the surveys.

25 The model results for the 2012 Future Base scenario are show in Table 8.13.

Table 8.13 – Burton Road/Rotherham Road: 2012 Future Base Results

		2012 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	Burton Road East Left Ahead Right	102.00%	30.7	102.30%	31.7
2/1	A633 Rotherham Road South Right Left Ahead	102.10%	21.4	102.70%	24.3
3/2+3/1	Burton Road West Ahead Right Left	101.00%	22.8	102.70%	57
4/1+4/2	A633 Rotherham Road North Left Ahead Right	74.90%	10	62.30%	7.7
PRC (%)		-13.5		-14.1	
Total Delay (pcu/Hr)		57.98		62.39	

26 The results indicate that the junction would operate over theoretical capacity in both peaks in the Future Base 2012 scenario, with a PRC of -13.5% in the Friday peak and -14.1% in the Saturday peak. Queues on Burton Road east and west would block back across a number of residential side roads.

27 The model results for the 2017 Future Base scenario are show in Table 8.14.

Table 8.14 – Burton Road/Rotherham Road: 2017 Future Base Results

		2017 Future Base			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	Burton Road East Left Ahead Right	106.30%	42.5	106.40%	42.3
2/1	A633 Rotherham Road South Right Left Ahead	106.60%	31.1	107.50%	34.4
3/2+3/1	Burton Road West Ahead Right Left	105.30%	101.5	106.80%	103.1
4/1+4/2	A633 Rotherham Road North Left Ahead Right	78.30%	10.7	64.90%	8.5
PRC (%)		-18.5		-19.4	
Total Delay (pcu/Hr)		89.59		94.25	

8.0 Capacity Assessment

28 The addition of 5 years of background growth adds to the capacity problems at the junction, with the Friday peak experiencing a PRC of -18.5% and the Saturday peak -19.4%.

29 The model results for the 2017 Future Base plus Development scenario are show in Table 8.15.

Table 8.15 – Burton Road/Rotherham Road: 2017 Future Base + Development Results

		2017 Future Base plus Development			
		Friday (1545-1645)		Saturday (1230-1330)	
Item	Lane Description	DoS (%)	MMQ (pcu)	DoS (%)	MMQ (pcu)
1/1	Burton Road East Left Ahead Right	124.10%	99.9	122.30%	95
2/1	A633 Rotherham Road South Right Left Ahead	122.60%	71.3	123.80%	73.3
3/2+3/1	Burton Road West Ahead Right Left	123.30%	201.3	123.10%	200.4
4/1+4/2	A633 Rotherham Road North Left Ahead Right	81.40%	13.8	68.80%	10.2
PRC (%)		-37.9		-37.6	
Total Delay (pcu/Hr)		239.40		234.11	

30 Unsurprisingly, the addition of the development traffic exaggerates the capacity problems at the junction, with the Friday peak experiencing a PRC of -37.9% and the Saturday peak -37.6%. However, it should be noted that when levels of DoS exceed 100%, the results of junction capacity models should be treated with caution, as the results show an almost exponential decrease in junction performance, which would not necessarily occur in reality, particularly as traffic may reassign onto different routes with less delay.

31 Physical mitigation measures are limited due to the junction's proximity to a valley on the western side and the close proximity of a number of residences on the eastern side. However, following discussions with Highways Officers at BMBC, it is felt that the junction could benefit from a controller upgrade which would allow the installation of MOVA which could be used to dynamically manage queues and junction performance.

Burton Road Bypass/Proposed Foodstore Access/Wickes Access

32 This junction will form the single vehicular access to the proposed foodstore as well as the access to Wickes and the proposed bulky goods store. As part of the QBC scheme, the proposed layout of the junction, produced by BMBC, consists of a 3 arm roundabout with a single lane on each approach. However, as part of the proposed mitigation, the Burton Road Bypass will be widened to two lanes in each direction between this junction and the proposed Old Mill Lane/Burton Road signals. The proposed mitigation layout is shown in Drawing 102.

33 The mitigation involves upgrading the proposed roundabout to a larger one and relocating it slightly further west. This increase in size and relocation would allow the widening to two lanes on the Bypass and the addition of a fourth arm to the south which would form the foodstore access, whilst ensuring that the roundabout conforms to standards outlined in the Design Manual for Roads and Bridges (DMRB).

34 A model has been produced of this layout for the 2017 Future Base plus Development scenario only, as the mitigation will not be required for the other two scenarios. The model has been produced using the software ARCADY 7 and the results for the 2017 Future Base plus Development are shown in Table 8.16.

Table 8.16 – Burton Road Bypass/Proposed Foodstore Access/Wickes Access: 2017 Future Base plus Development Results

Arm	2017 Future Base+Development			
	Friday (1545-1645)		Saturday (1230-1330)	
	RFC	Queue (PCU)	RFC	Queue (PCU)
Wickes Access	0.31	0.45	0.33	0.49
Bypass East	0.81	4.02	0.78	3.48
Foodstore Access	0.72	2.5	0.67	1.99
Bypass West	0.77	3.23	0.69	2.25

35 The proposed mitigation layout would result in the junction operating with spare practical capacity with the development traffic in both peaks. The longest queues would occur on the eastern arm of the Bypass with queue lengths of 4.02 PCUs (23m) and 3.48 PCUs (20m) in the Friday and Saturday peaks respectively, which would not cause any blocking back.

Burton Road Bypass/Burton Road

36 This junction will form the point where the Burton Bypass joins Burton Road. A proposed layout has been produced by BMBC which consists of a 3 arm roundabout with a single lane on each approach.

37 A model has been produced of this layout for all 3 scenarios using ARCADY 7. The results for the 2012 Future Base scenario are shown in Table 8.17.

Table 8.17 – Burton Road Bypass/Burton Road: 2012 Future Base Results

Arm	2012 Future Base			
	Friday (1545-1645)		Saturday (1230-1330)	
	RFC	Queue (PCU)	RFC	Queue (PCU)
Burton Road East	0.45	0.8	0.45	0.82
Bypass	0.67	2.02	0.59	1.41
Burton Road West	0.05	0.05	0.04	0.04

38 The results indicate that the junction will operate with considerable spare capacity in the 2012 Future Base scenario, with the highest RFC being on the Bypass arm, with an RFC of 0.67 in the Friday peak and 0.59 in the Saturday peak.

39 The results for the 2017 Future Base scenario are shown in Table 8.18

Table 8.18 – Burton Road Bypass/Burton Road: 2017 Future Base Results

Arm	2017 Future Base			
	Friday (1545-1645)		Saturday (1230-1330)	
	RFC	Queue (PCU)	RFC	Queue (PCU)
Burton Road East	0.46	0.86	0.47	0.88
Bypass	0.7	2.29	0.61	1.56
Burton Road West	0.05	0.05	0.04	0.04

40 The results indicate that even with the addition of 5 years of background growth, the junction will still operate with considerable spare capacity with the highest RFC being on the Bypass arm, with an RFC of 0.7 in the Friday peak and 0.61 in the Saturday peak.

41 The results for the 2017 Future Base plus Development scenario are shown in Table 8.19.

Table 8.19 – Burton Road Bypass/Burton Road: 2017 Future Base plus Development Results

Arm	2017 Future Base+Development			
	Friday (1545-1645)		Saturday (1230-1330)	
	RFC	Queue (PCU)	RFC	Queue (PCU)
Burton Road East	0.63	1.66	0.62	1.59
Bypass	0.89	7.24	0.78	3.48

Burton Road West	0.06	0.06	0.04	0.05

42 The results indicate that with the addition of the development traffic, the Bypass arm of the junction will operate slightly over the practical capacity threshold with an RFC of 0.89 but some 0.11 below the point of saturation. This is not expected to cause any significant problems, especially considering the relatively short queue length of 7.24 PCUs (42m), which will not block back to any upstream junctions. The junction will operate with spare capacity during the Saturday peak, with the highest RFC of 0.78 occurring on the Bypass arm.

Alhambra Roundabout Percentage Impact

43 As requested as part of the scope, a percentage impact assessment of the roundabout has been undertaken. The analysis considers the percentage impact between the 2017 Future Base and 2017 Future Base plus Development on each turning movement, each arm and on the junction as a whole. The percentage impact is shown in Figure 34.

44 The results indicate that the percentage impact will be negative in both peaks, with -1.6% in the Friday peak and -3% in the Saturday peak, meaning that the traffic flows at the junction will decrease with the development. This is largely due to the effect of the trade draw, particularly trips previously associated with the Morrisons store to the southwest of the junction. A fairly significant proportion of traffic will no longer use this part of the network, in particular an element of traffic travelling from the north will now turn left at the junction of Old Mill Lane/Burton Road.

45 When considering each arm, the only arm that will experience an increase will be Sheffield Road south with a particular increase in the third exit movement to Harborough Hill Road, however the impact of this increase is somewhat reduced as there will be a substantial decrease in traffic making the first exist movement from this arm.

Conclusion

46 A junction capacity assessment has been undertaken for five existing junctions and three proposed junctions.

47 The assessment tested traffic flows associated with three scenarios, a 2012 Future Base, a 2017 Future Base and a 2017 Future Base plus Development traffic, with the purpose of assessing the impact of background growth and the traffic associated with the proposed foodstore.

8.0 Capacity Assessment

48 The results suggest that the following junctions will operate with spare practical capacity at 2017 with the addition of the proposed foodstore traffic:

- A61 Wakefield Road/Burton Road;
- A61 Harborough Hill Road/Old Mill Lane Gyratory; and
- Burton Road/Burton Road Bypass.

49 Mitigation measures have been suggested and modelled which provide sufficient capacity at the following junctions:

- A61 Wakefield Road/Carlton Road/Smithies Lane (2 junction network);
- A61 Old Mill Lane/Burton Road Bypass;
- Burton Road/Rotherham Road; and
- Burton Road Bypass/Foodstore Access/Wickes Access.

50 It can be concluded that the existing highway network, coupled with mitigation measures at four junctions identified above, can provide sufficient capacity for the proposed foodstore to operate without having a detrimental impact on the surrounding road network.

9.0 Summary & Conclusions

Summary

9.1 This report considers the traffic and transport implications associated with proposals to construct a 15,236sqm GFA foodstore, car park and 8 pump petrol filling station on a development site located off the A61 Old Mill Lane, Barnsley.

9.2 The development proposals have been outlined and an assessment has been undertaken based on scoping discussions with BMBC.

9.3 Vehicular access to the development will be taken from the proposed Burton Road Bypass/Wickes Access roundabout. To ensure that the roundabout conforms to DMRB standards, it will be relocated slightly west and the diameter increased to allow the addition of a fourth arm, which will be used solely as the foodstore access. Pedestrians will be able to access via this junction or directly from Old Mill Lane north of the gyratory via a proposed pedestrian/cycle bridge connecting directly at the shop floor level.

9.4 Parking provision is in line with BMBC parking standards.

9.5 A detailed review of accidents over a five year period does not indicate any correlations that would suggest that highway condition, layout or design were significant contributory factors in the accidents.

9.6 The site's location in between Barnsley town centre and existing residential areas ensures that there are good pedestrian and cycling facilities already in place.

9.7 There are existing public transport facilities in the form of bus and rail infrastructure that provide alternative modes of travel to the car and are considered to be realistic modes of travel for commuting journeys. A Quality Bus Corridor currently being implemented by BMBC will enhance the existing bus facilities and journey times.

9.8 The capacity assessment undertaken should be considered to be robust as it offers a potentially higher level of new trips than would actually appear on the network, primarily due to treating all development generated traffic as primary trips or transferred trips (which in turn contain a large proportion of new trips to the network). No pass-by or linked trips (with the exception of committed development linked trips) were modelled. The assessment can therefore be considered to offer a "worst-case" assessment.

9.9 The results of the capacity assessments indicate that, with the addition of achievable mitigation measures at four junctions, the development traffic can be accommodated on the surrounding highway network.

9.0 Summary & Conclusions

Conclusion

9.10 From a traffic and transportation perspective there are no reasons why the development proposals should not be granted planning approval.

Plans

Drg No:	Rev:
90095 / 001	-

Project: BARNSLEY, PROPOSED FOOD STORE

Drg Title: REGIONAL SITE LOCATION PLAN

Drawn: CMC

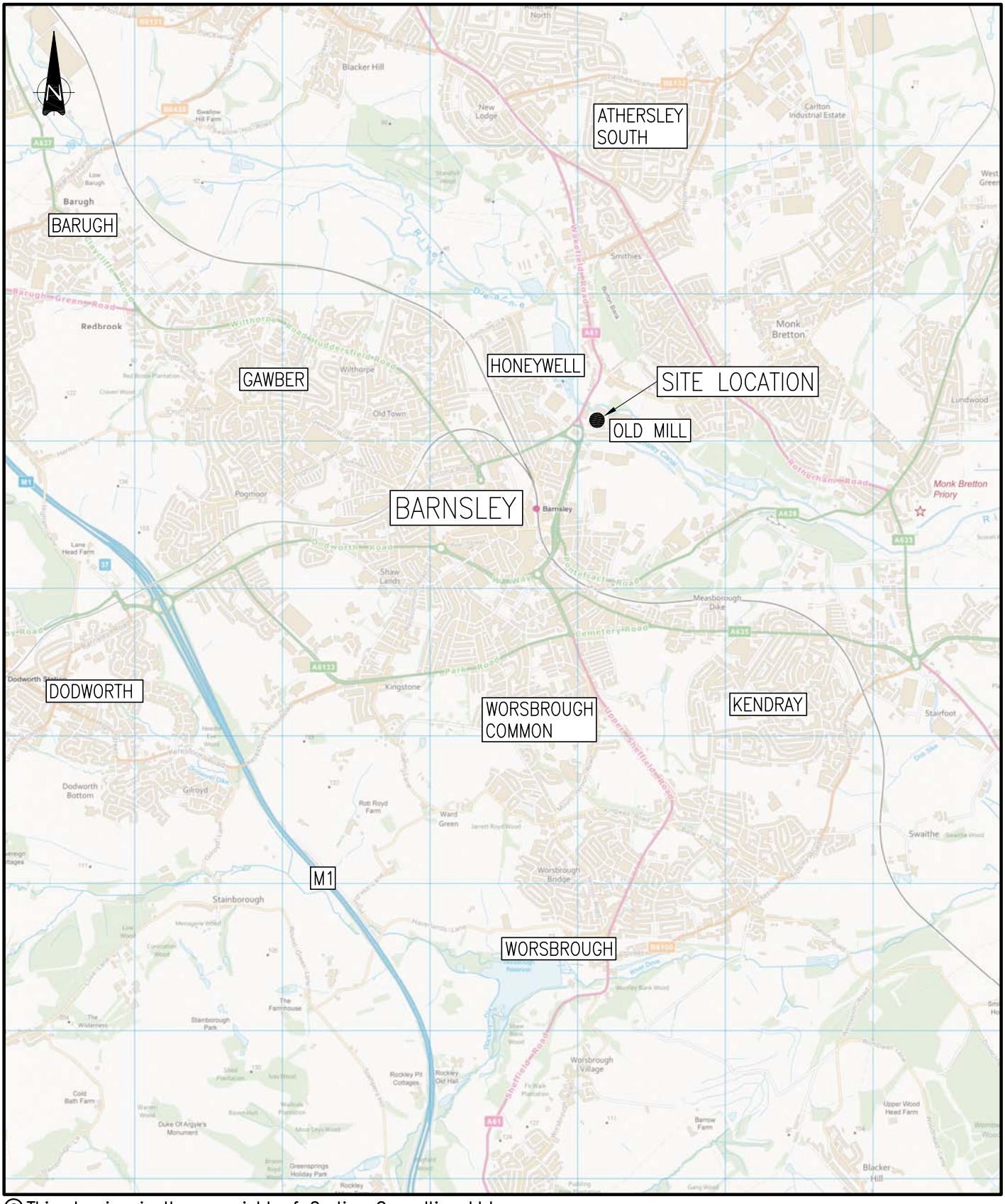
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Curtins Consulting Ltd
10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
e: manchester@curtins.com www.curtins.com

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Drg No:	Rev:
90095_002	-

Project: BARNSLEY, PROPOSED FOOD STORE

Drg Title: LOCAL SITE LOCATION PLAN

Drawn: CMC

Checked: AV

Scale: NTS

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10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
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Drg No:	Rev:
90095 / 003	-

Project: BARNSLEY, PROPOSED FOOD STORE

Drg Title: PEDESTRIAN CATCHMENT PLAN

Drawn: CMC

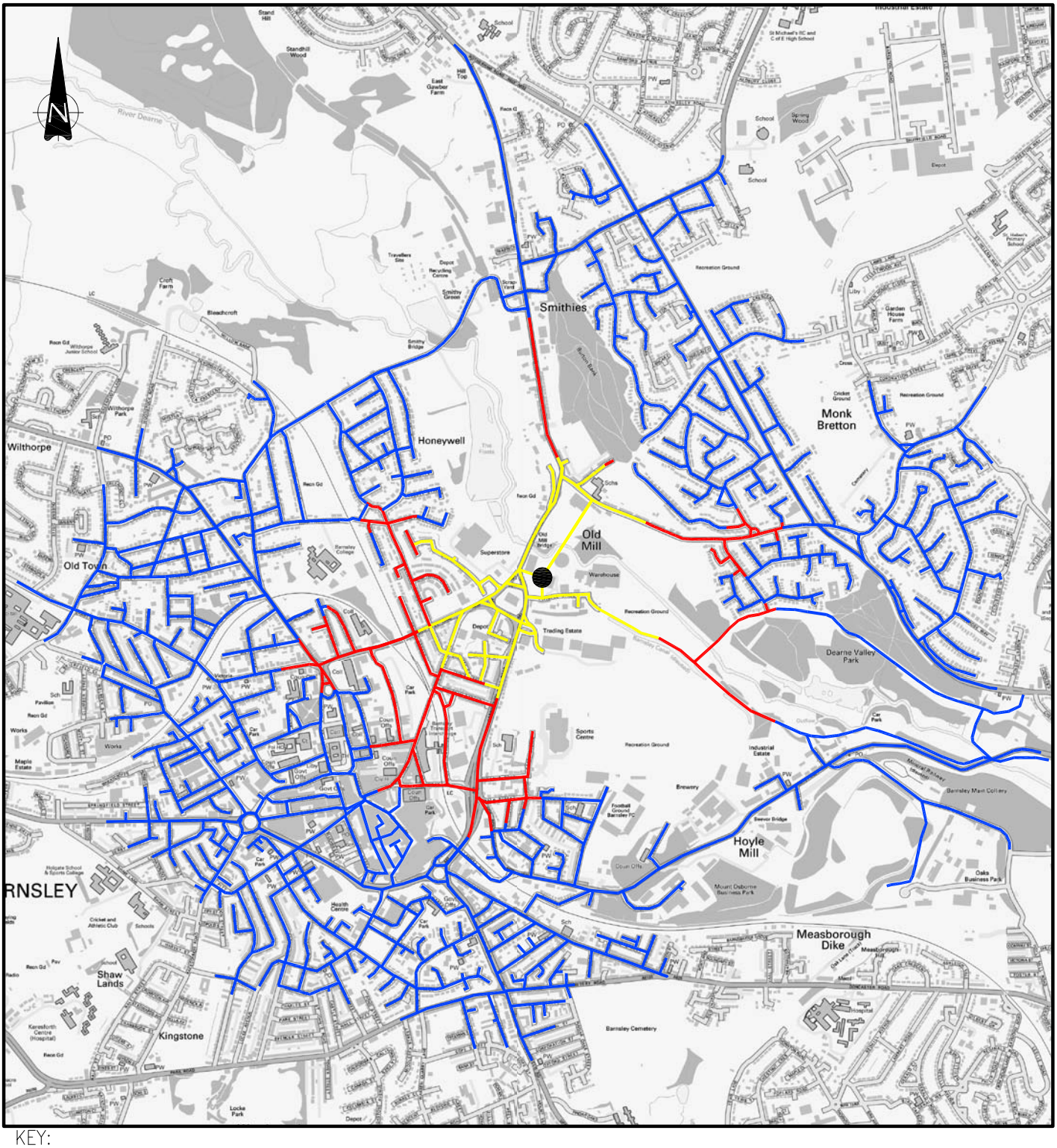
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10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
e: manchester@curtins.com www.curtins.com

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KEY:

SITE LOCATION

2000m CATCHMENT

500m CATCHMENT

1000m CATCHMENT

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Drg No:	Rev:
90095 / 004	-

Project: BARNSLEY, PROPOSED FOOD STORE

Drg Title: INDICATIVE CYCLE CATCHMENT

Drawn: CMC

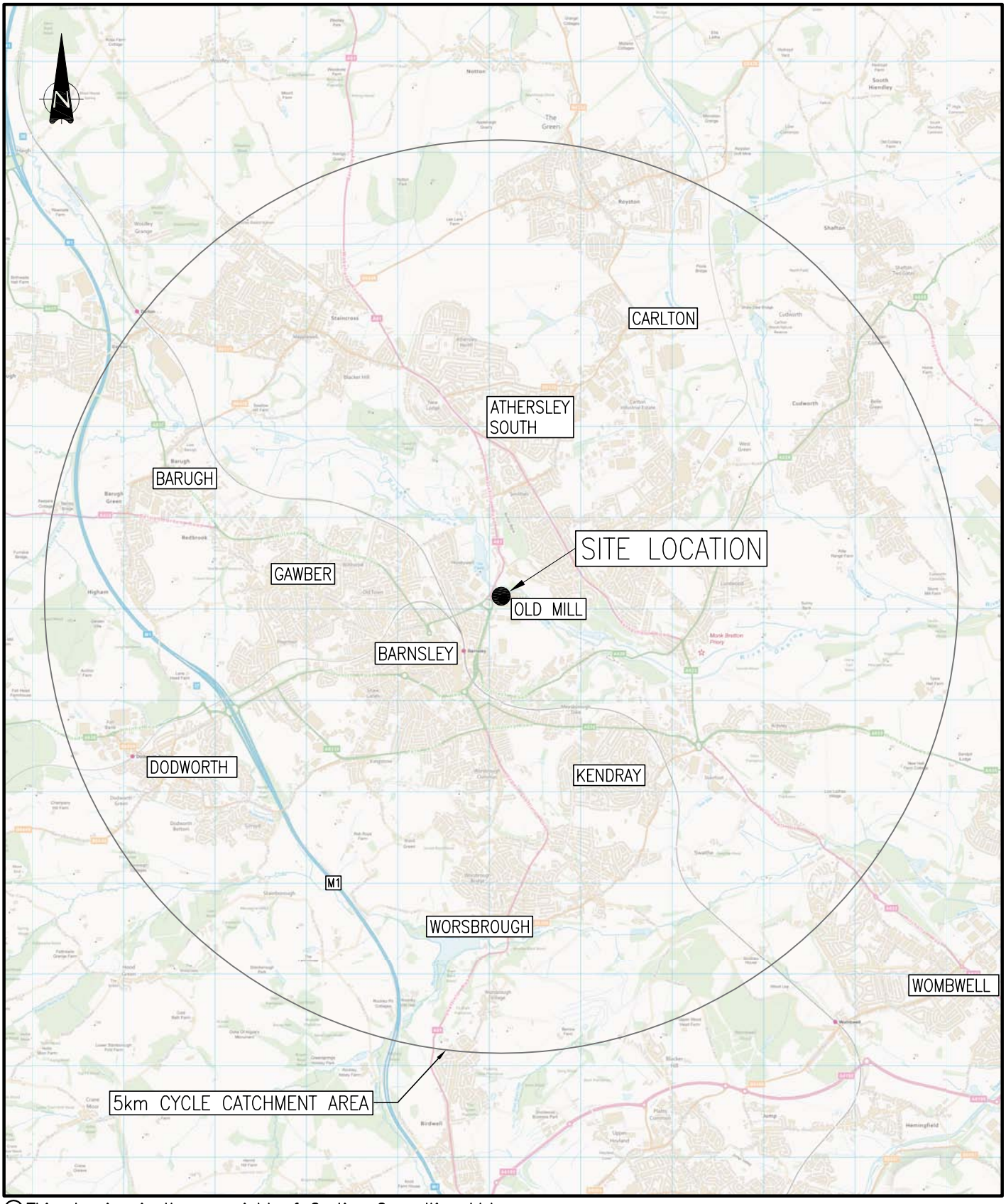
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10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
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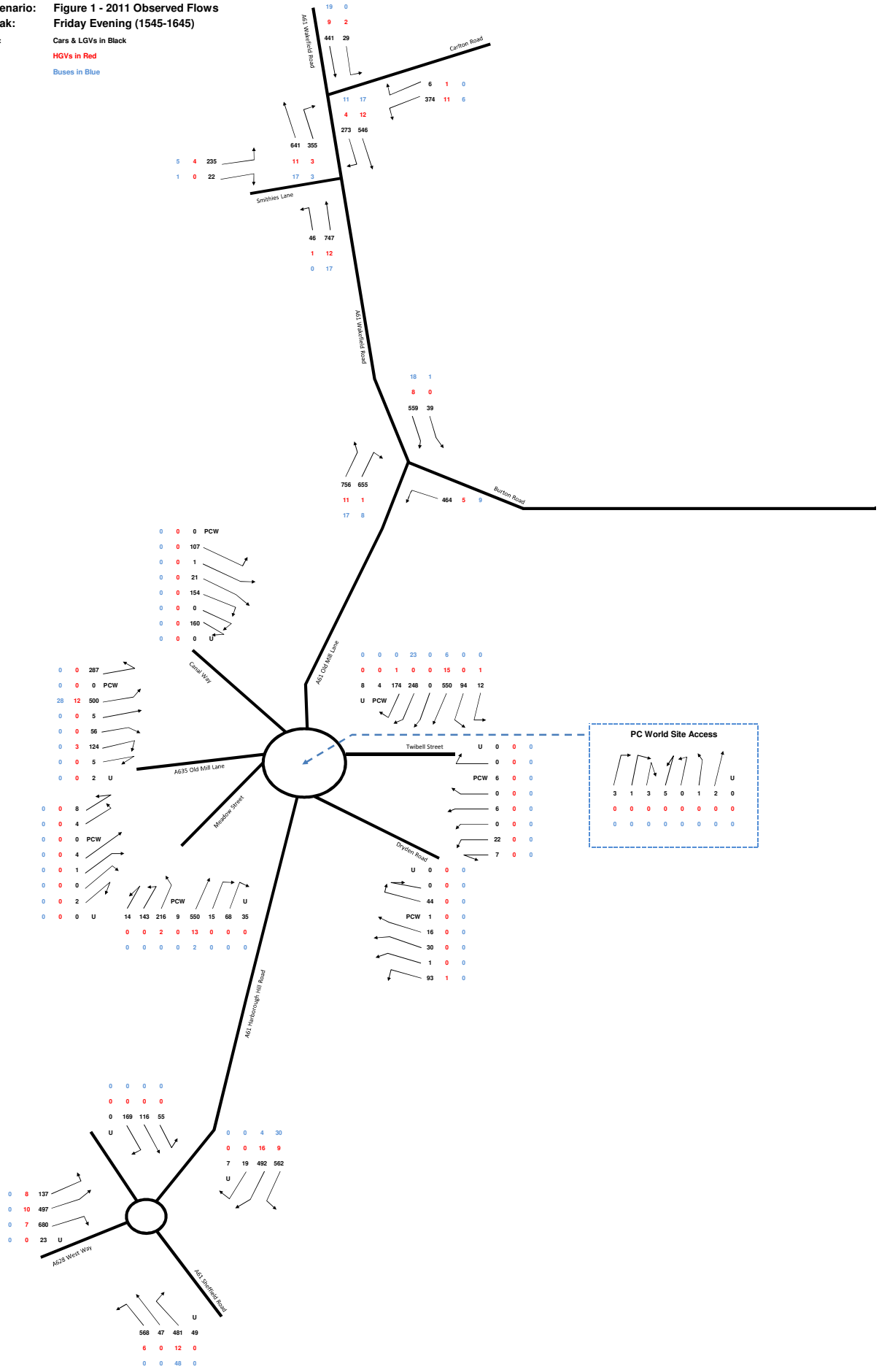
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Figures

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Figure 2 - 2011 Observed Flows	Saturday Afternoon (1230-1330)
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Figure 5 - 2011 Existing Wickes Reassignment	Friday Evening (1545-1645)
Figure 6 - 2011 Existing Wickes Reassignment	Saturday Afternoon (1230-1330)
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Figure 8 - Existing Permission not Included in Surveys	Saturday Afternoon (1230-1330)
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Figure 32 - 2017 Future Base plus Development	Friday Evening (1545-1645)
Figure 33 - 2017 Future Base plus Development	Saturday Afternoon (1230-1330)

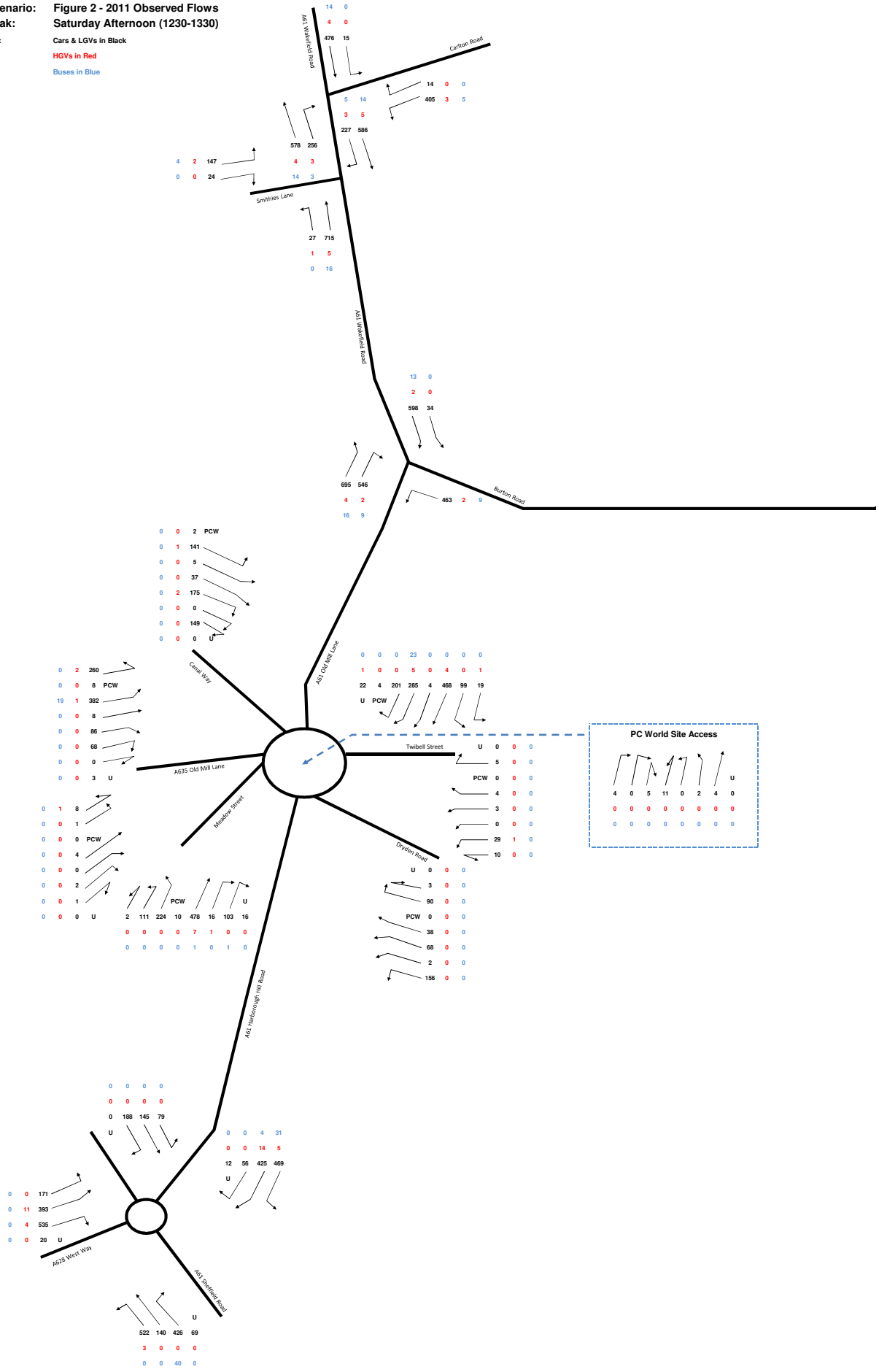
Project: 90095 - Barnsley Foodstore
Scenario: Figure 1 - 2011 Observed Flows
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



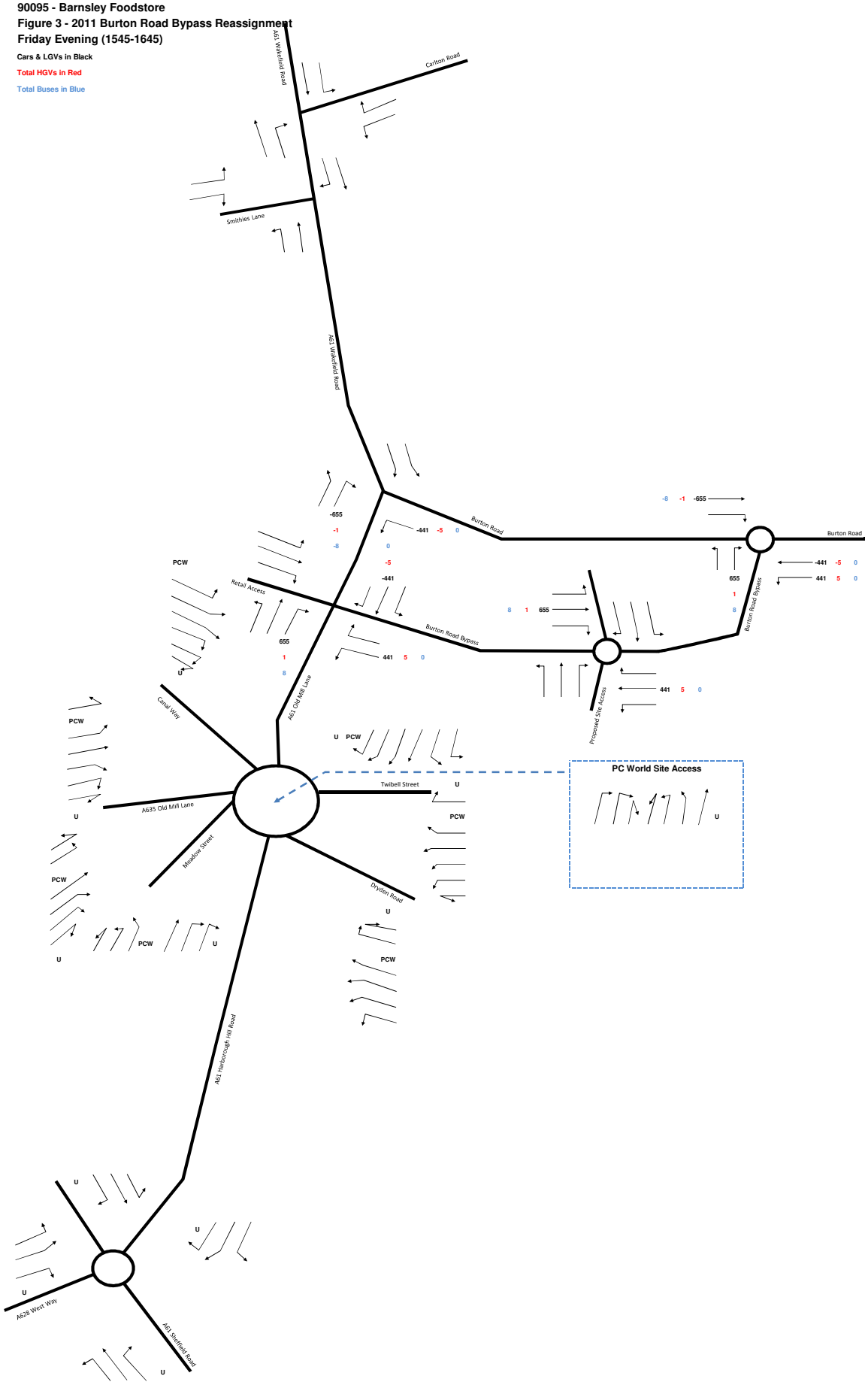
Project: 90095 - Barnsley Foodstore
Scenario: Figure 2 - 2011 Observed Flows
Peak: Saturday Afternoon (1230-1330)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



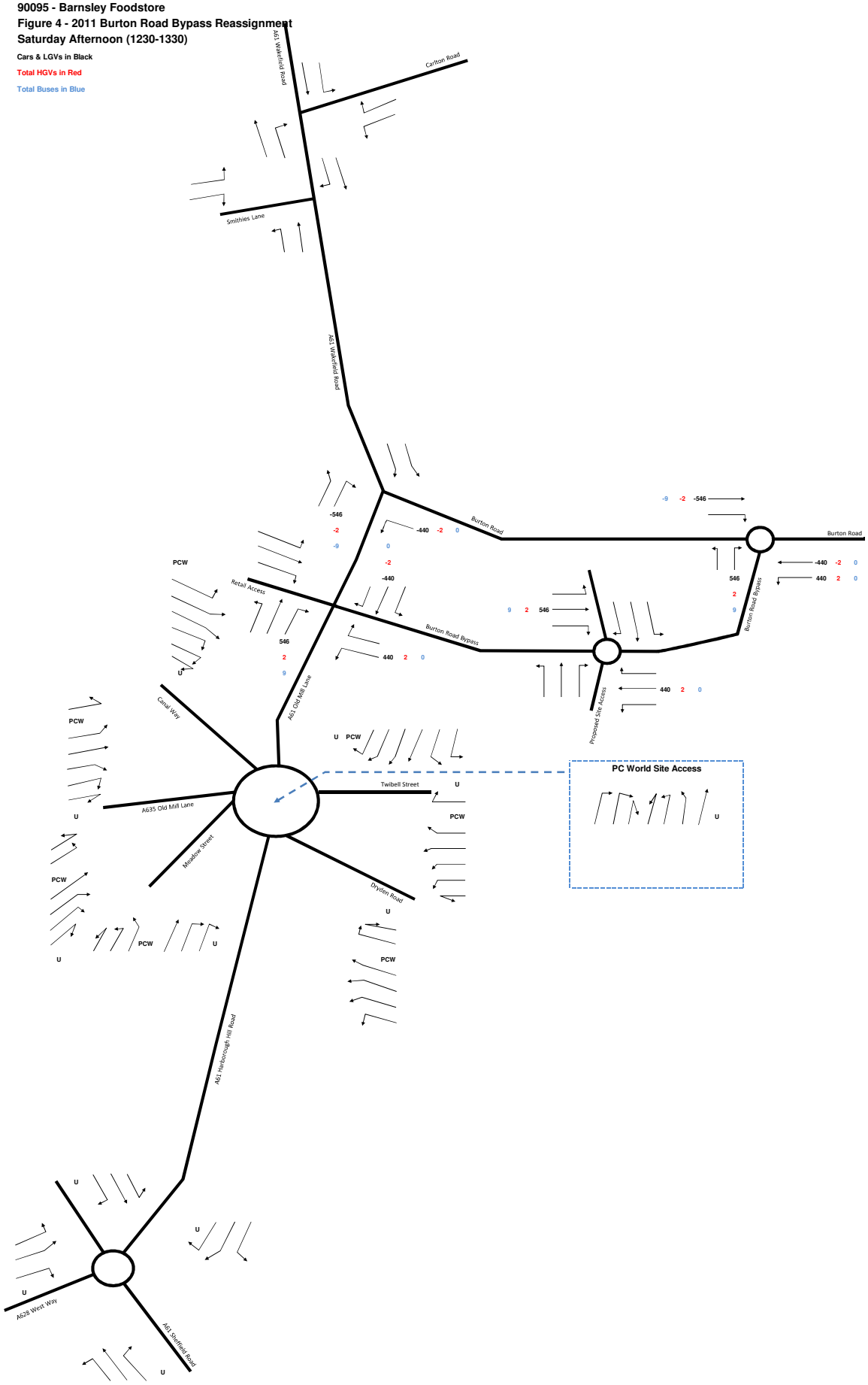
Project: 90095 - Barnsley Foodstore
Scenario: Figure 3 - 2011 Burton Road Bypass Reassignment
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
Total HGVs in Red
Total Buses in Blue



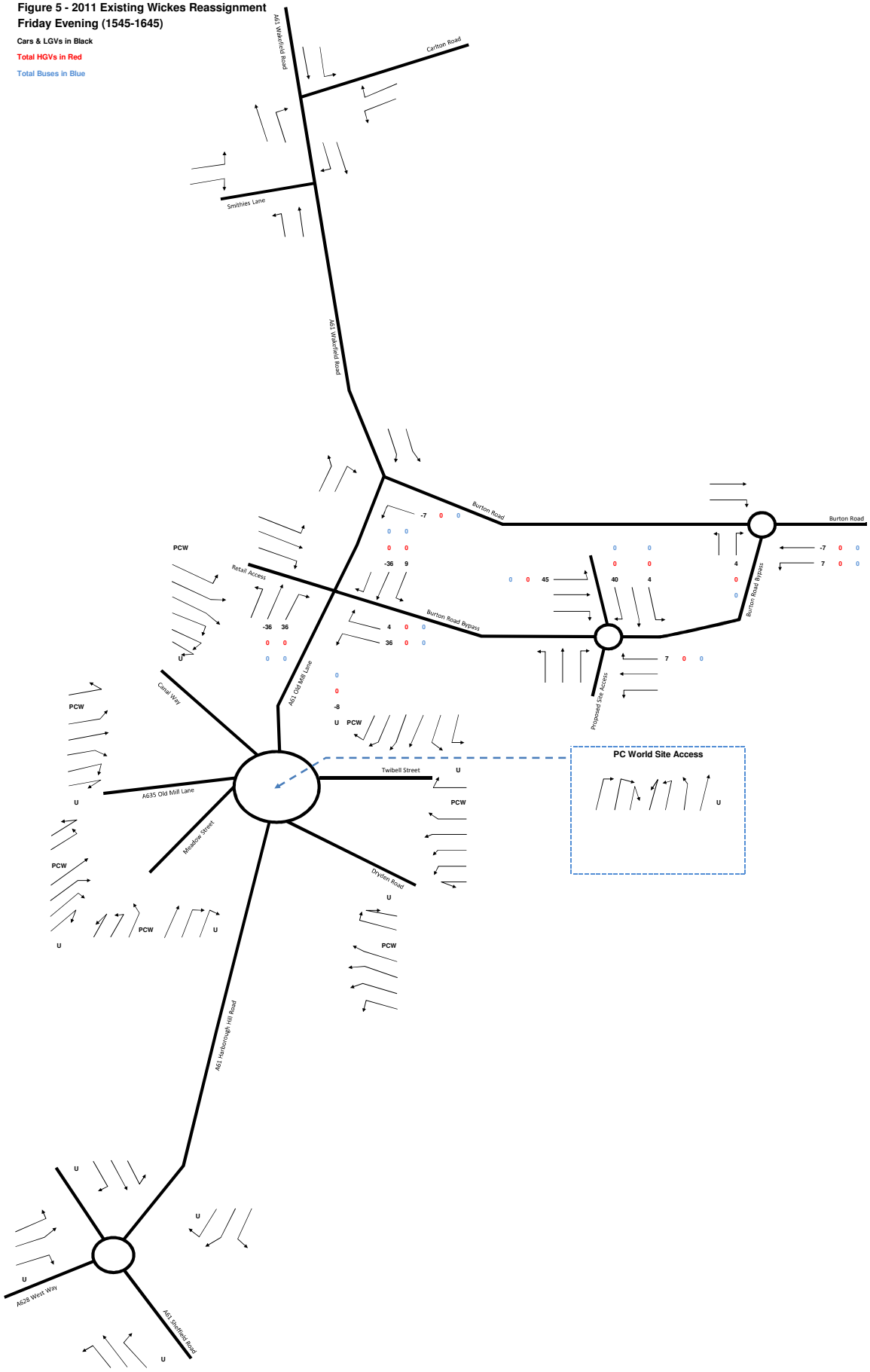
Project: 90095 - Barnsley Foodstore
Scenario: Figure 4 - 2011 Burton Road Bypass Reassignment
Peak: Saturday Afternoon (1230-1330)

Key: Cars & LGVs in Black
Total HGVs in Red
Total Buses in Blue



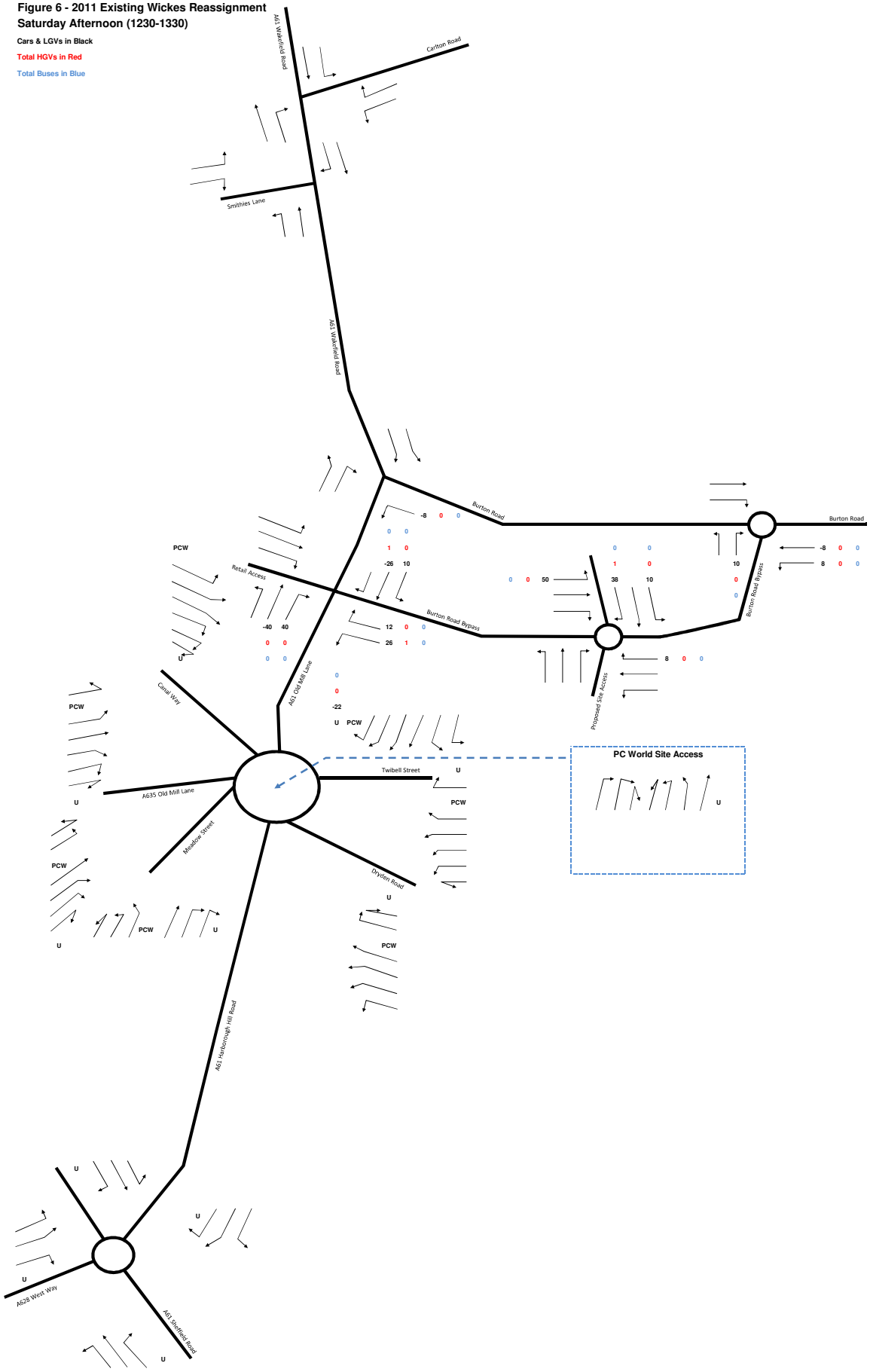
Project: 90095 - Barnsley Foodstore
Scenario: Figure 5 - 2011 Existing Wickes Reassignment
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
Total HGVs in Red
Total Buses in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 6 - 2011 Existing Wickes Reassignment
Peak: Saturday Afternoon (1230-1330)

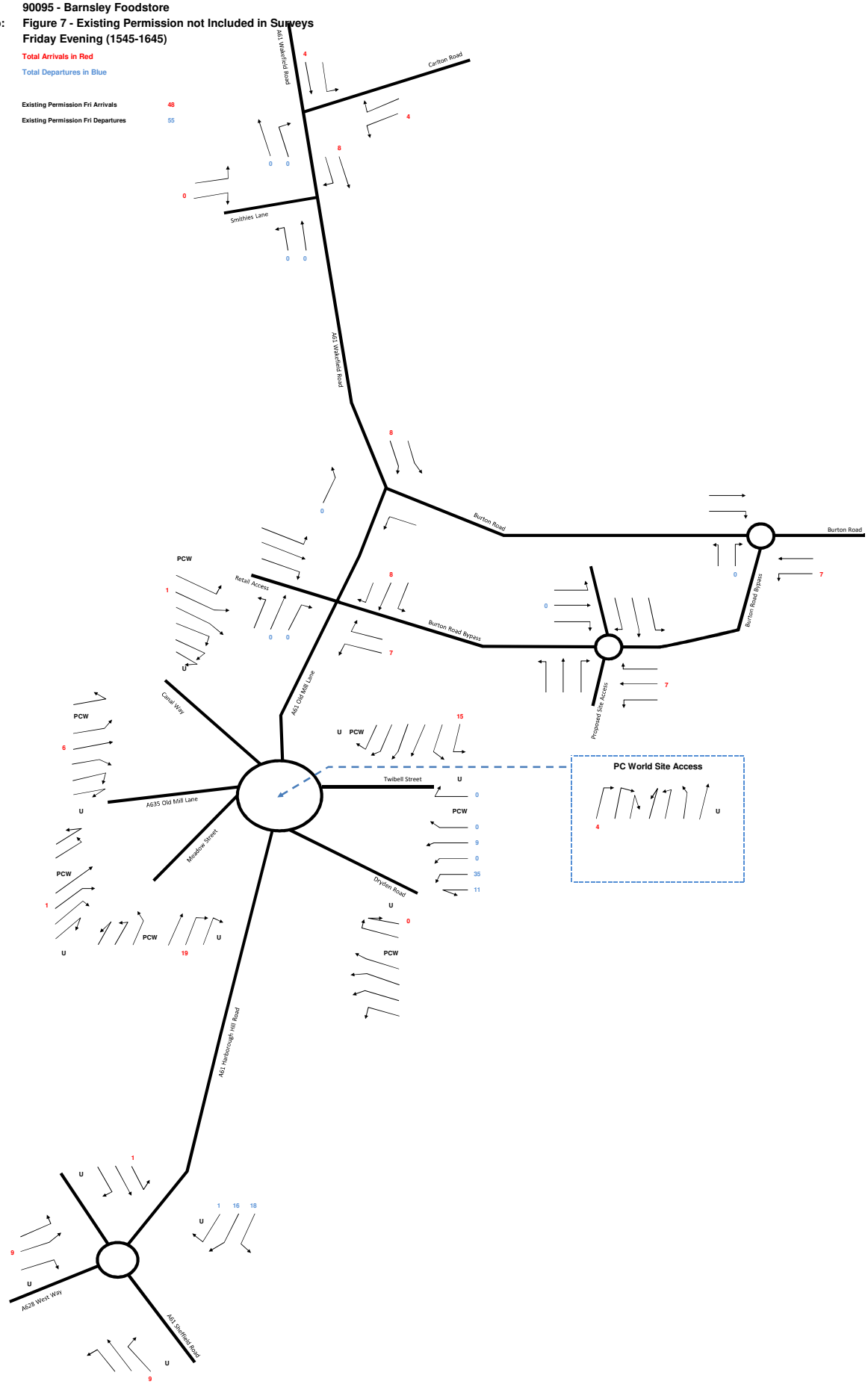
Key: Cars & LGVs in Black
Total HGVs in Red
Total Buses in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 7 - Existing Permission not Included in Surveys
Peak: Friday Evening (1545-1645)

Key: Total Arrivals in Red
Total Departures in Blue

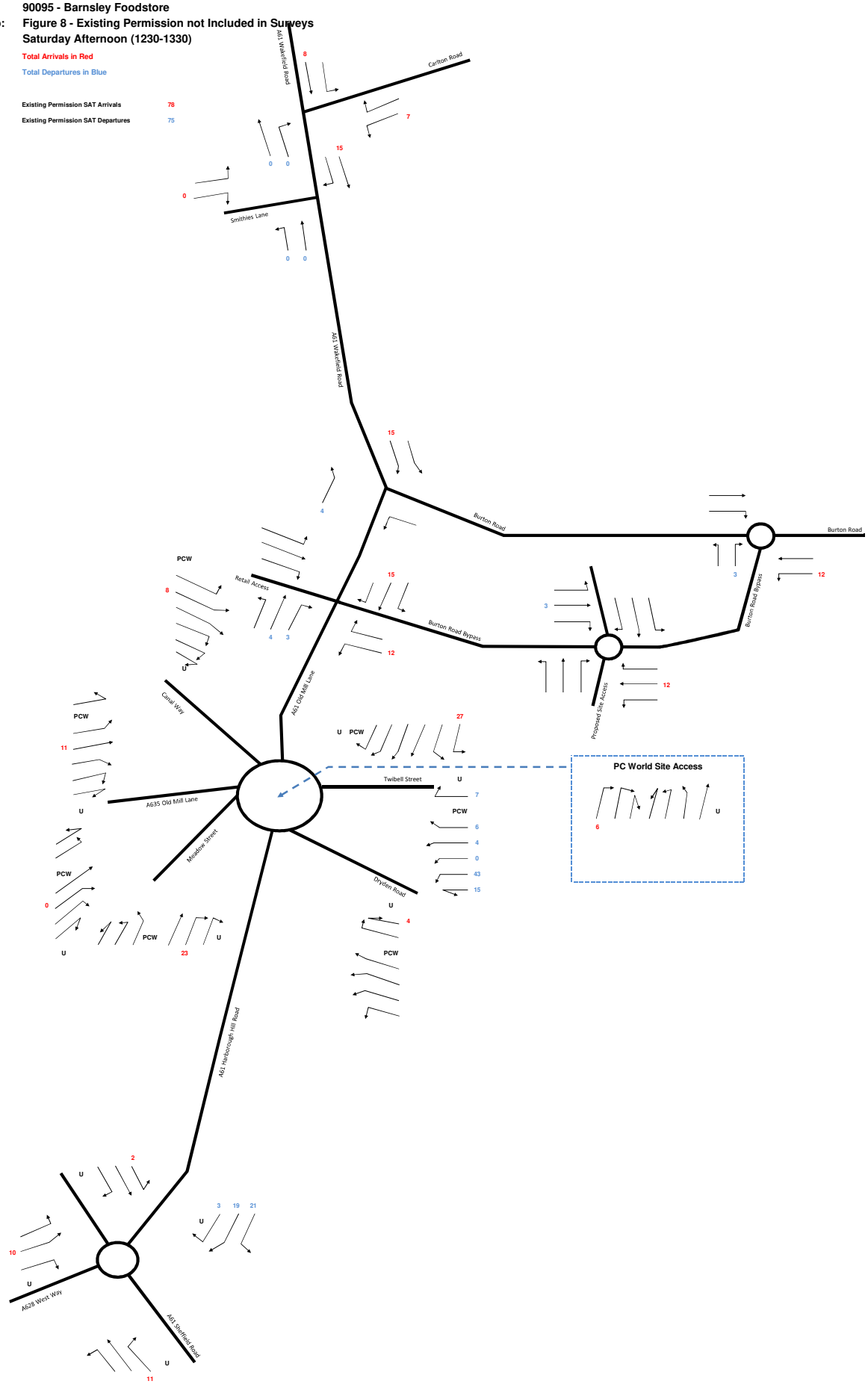
Existing Permission Fri Arrivals	48
Existing Permission Fri Departures	55



Project: 90095 - Barnsley Foodstore
Scenario: Figure 8 - Existing Permission not Included in Surveys
Peak: Saturday Afternoon (1230-1330)

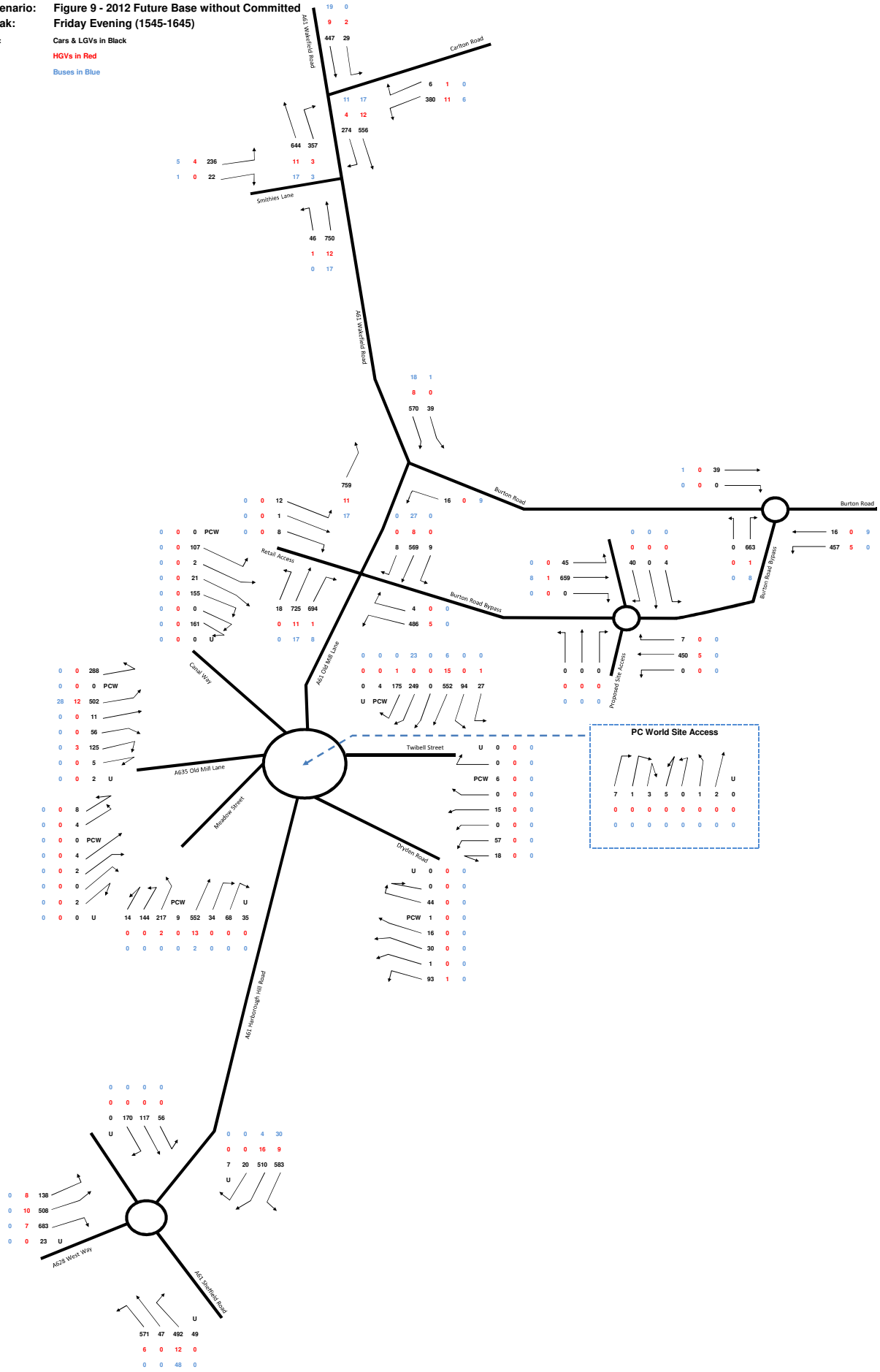
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Existing Permission SAT Arrivals	78
Existing Permission SAT Departures	75



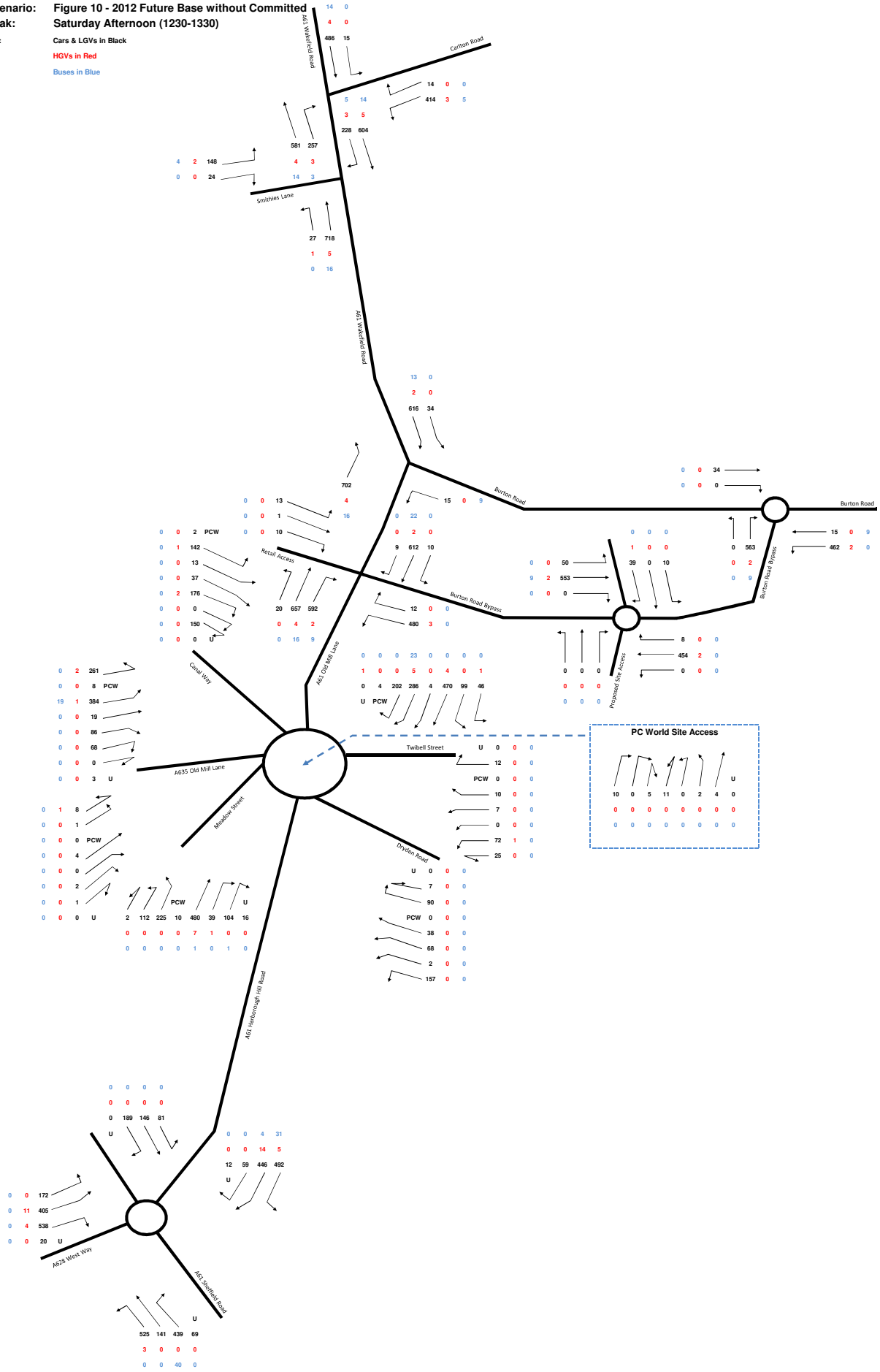
Project: 90095 - Barnsley Foodstore
Scenario: Figure 9 - 2012 Future Base without Committed
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



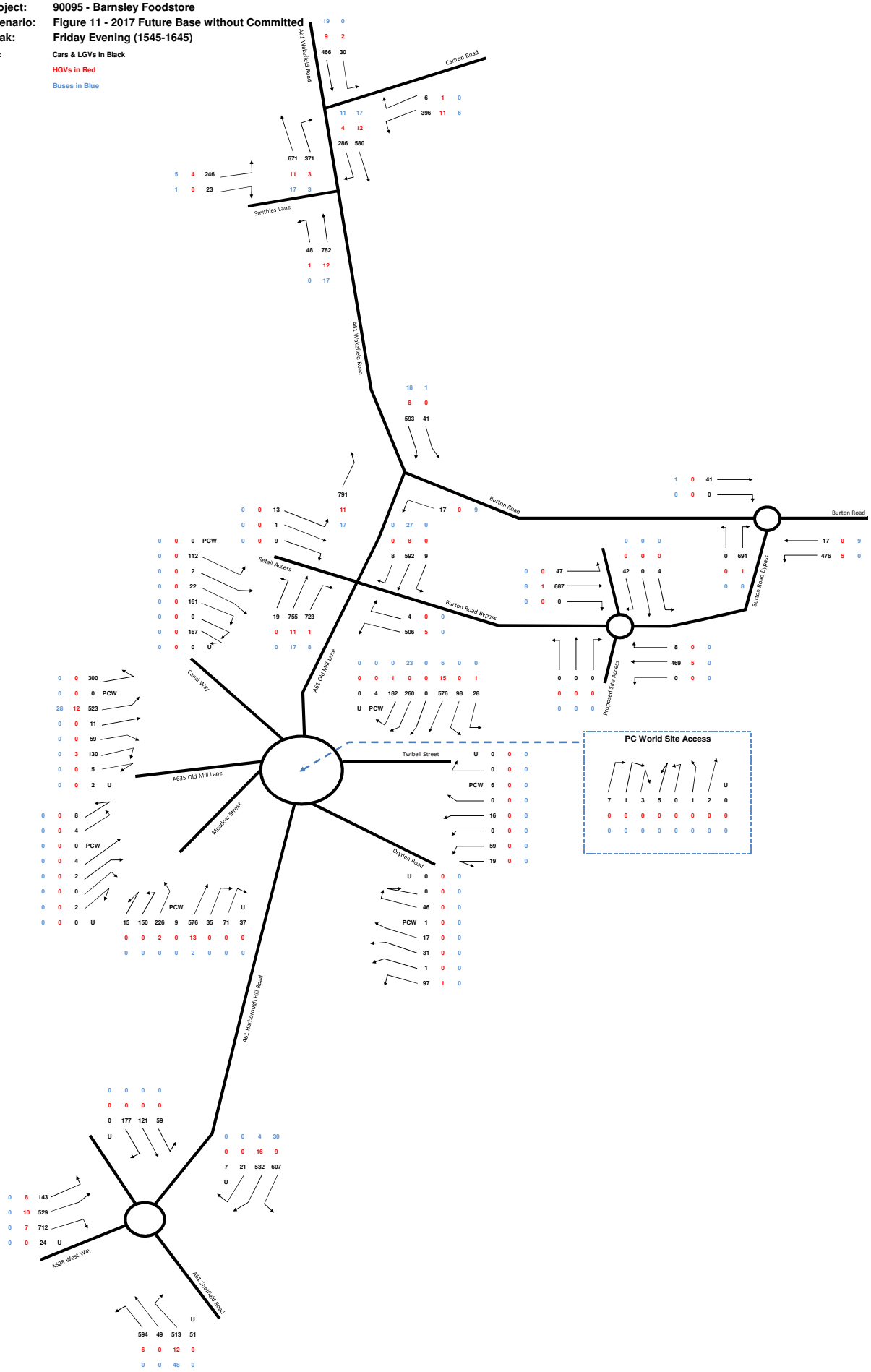
Project: 90095 - Barnsley Foodstore
Scenario: Figure 10 - 2012 Future Base without Committed
Peak: Saturday Afternoon (1230-1330)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



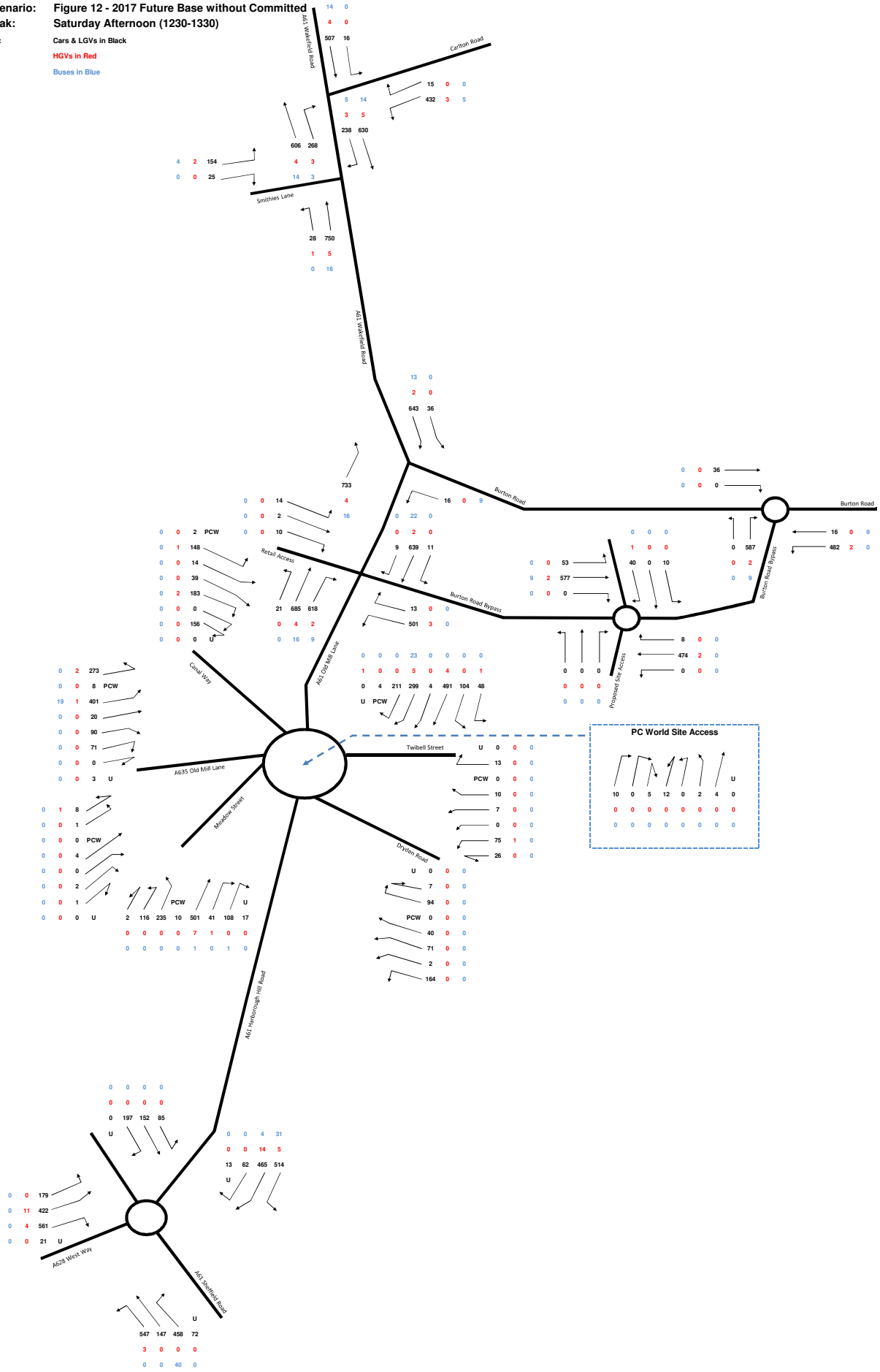
Project: 90095 - Barnsley Foodstore
Scenario: Figure 11 - 2017 Future Base without Committed
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 12 - 2017 Future Base without Committed
Peak: Saturday Afternoon (1230-1330)

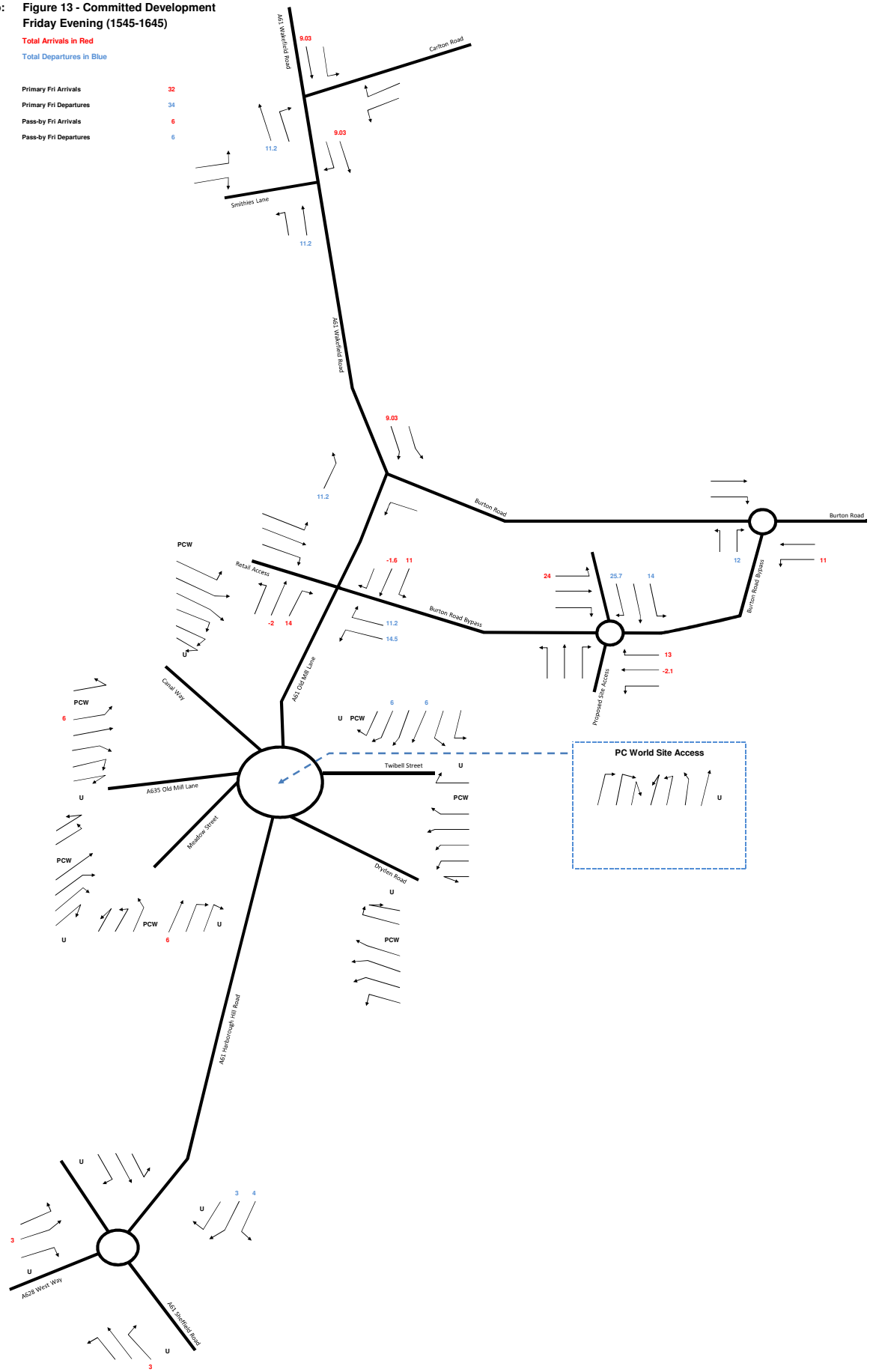
Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 13 - Committed Development
Peak: Friday Evening (1545-1645)

Key: Total Arrivals in Red
Total Departures in Blue

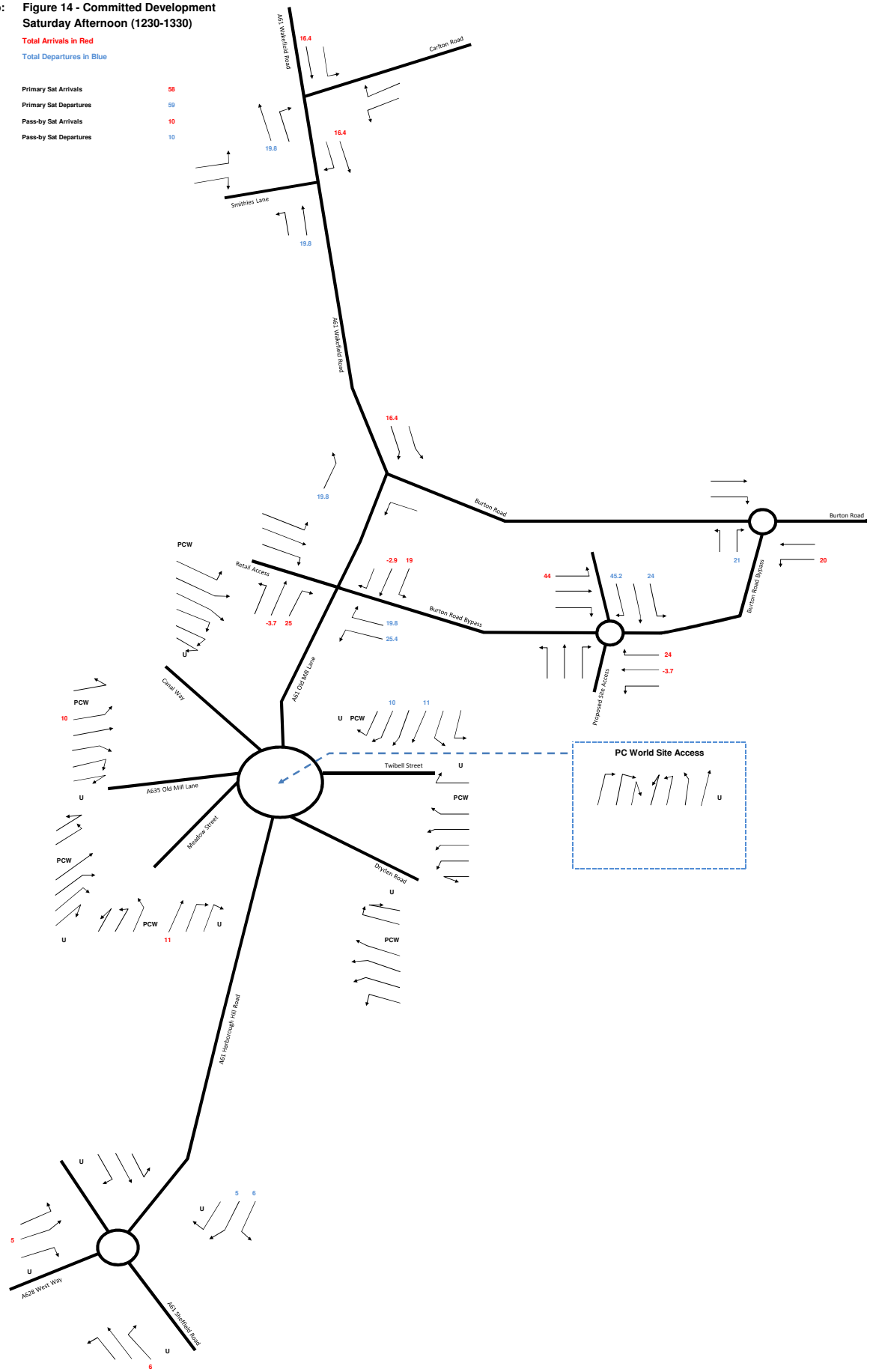
Primary Fri Arrivals	32
Primary Fri Departures	34
Pass-by Fri Arrivals	6
Pass-by Fri Departures	6



Project: 90095 - Barnsley Foodstore
Scenario: Figure 14 - Committed Development
Peak: Saturday Afternoon (1230-1330)

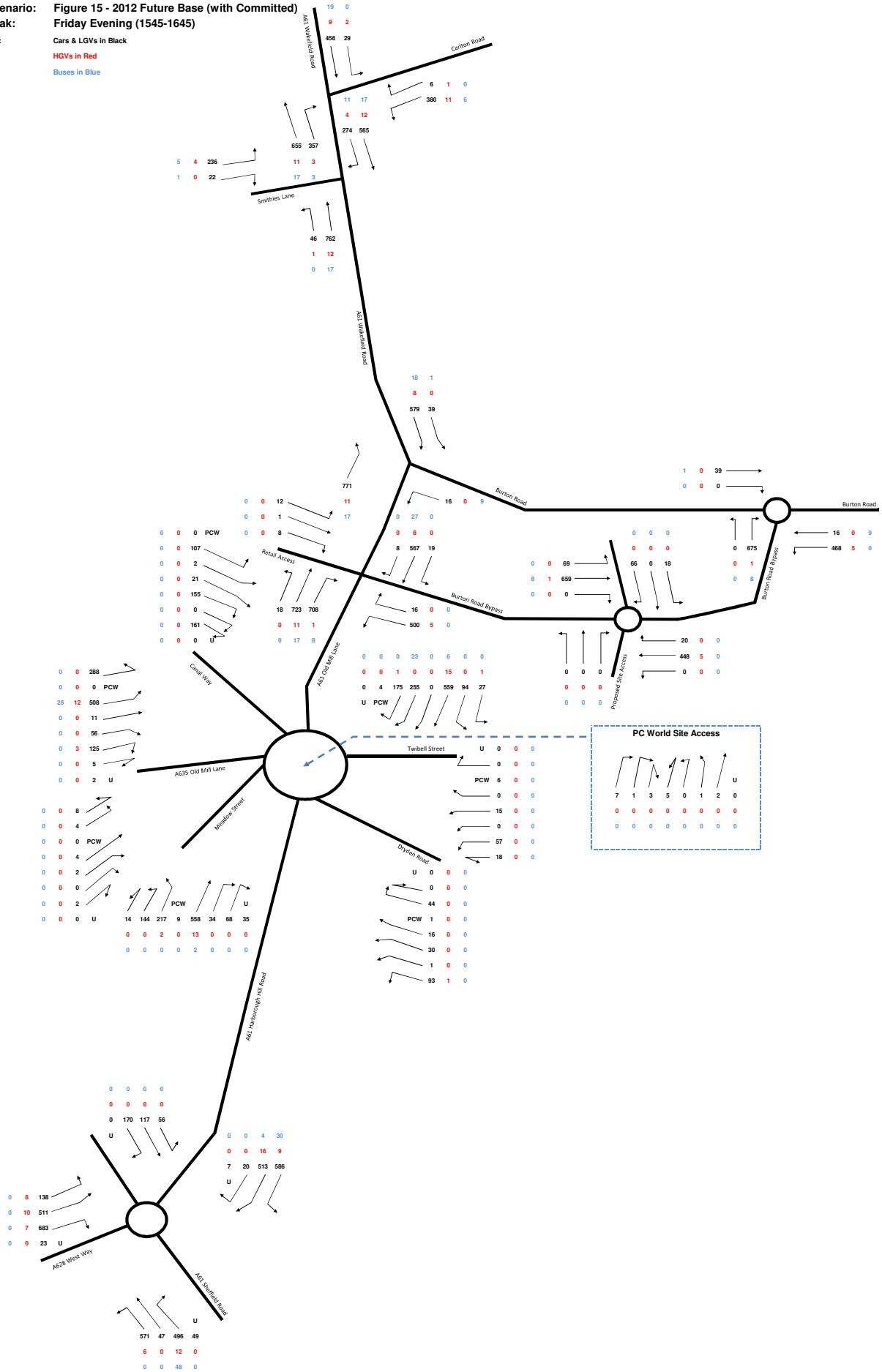
Key: Total Arrivals in Red
Total Departures in Blue

Primary Sat Arrivals	58
Primary Sat Departures	59
Pass-by Sat Arrivals	10
Pass-by Sat Departures	10



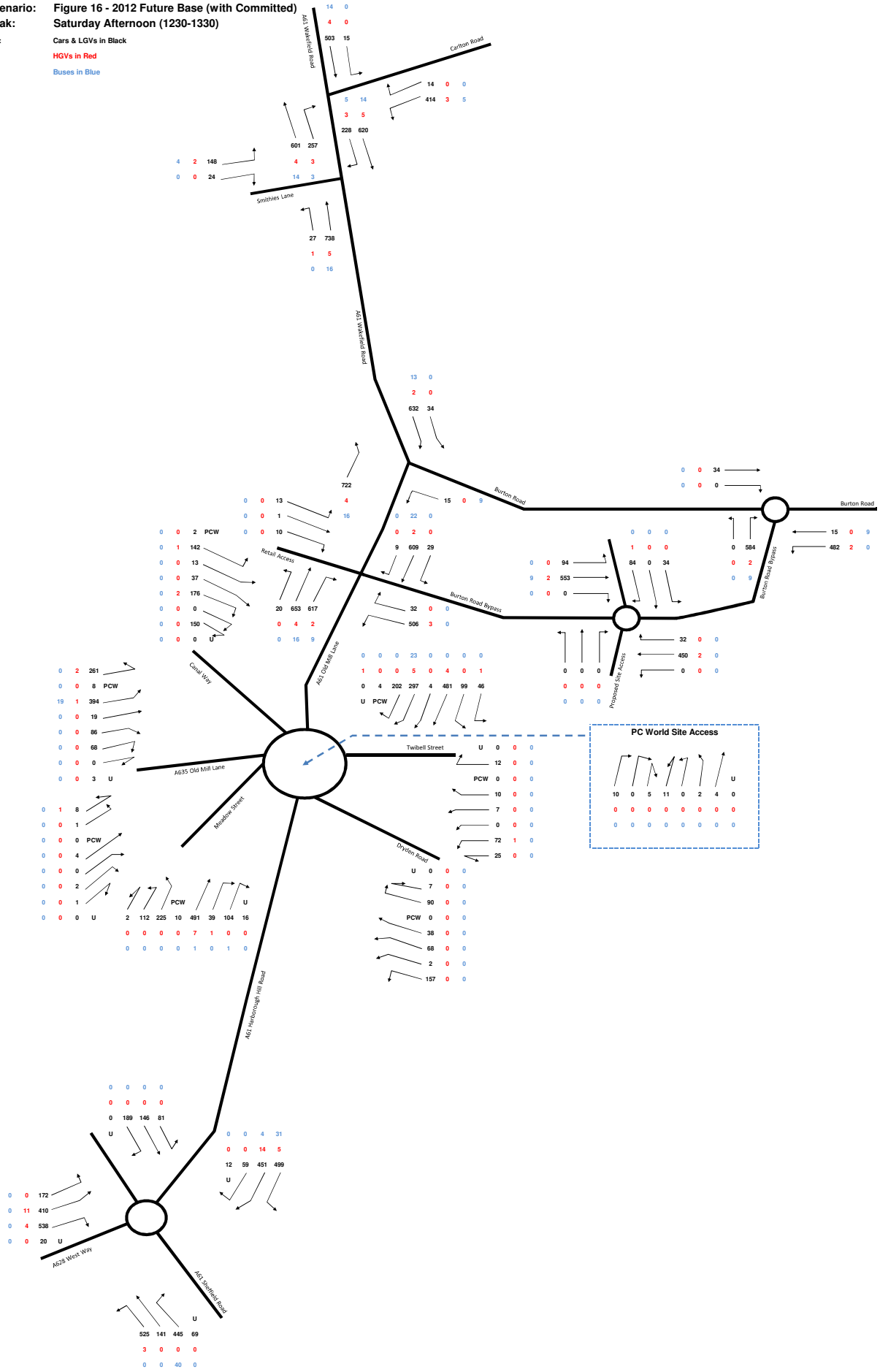
Project: 90095 - Barnsley Foodstore
Scenario: Figure 15 - 2012 Future Base (with Committed)
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



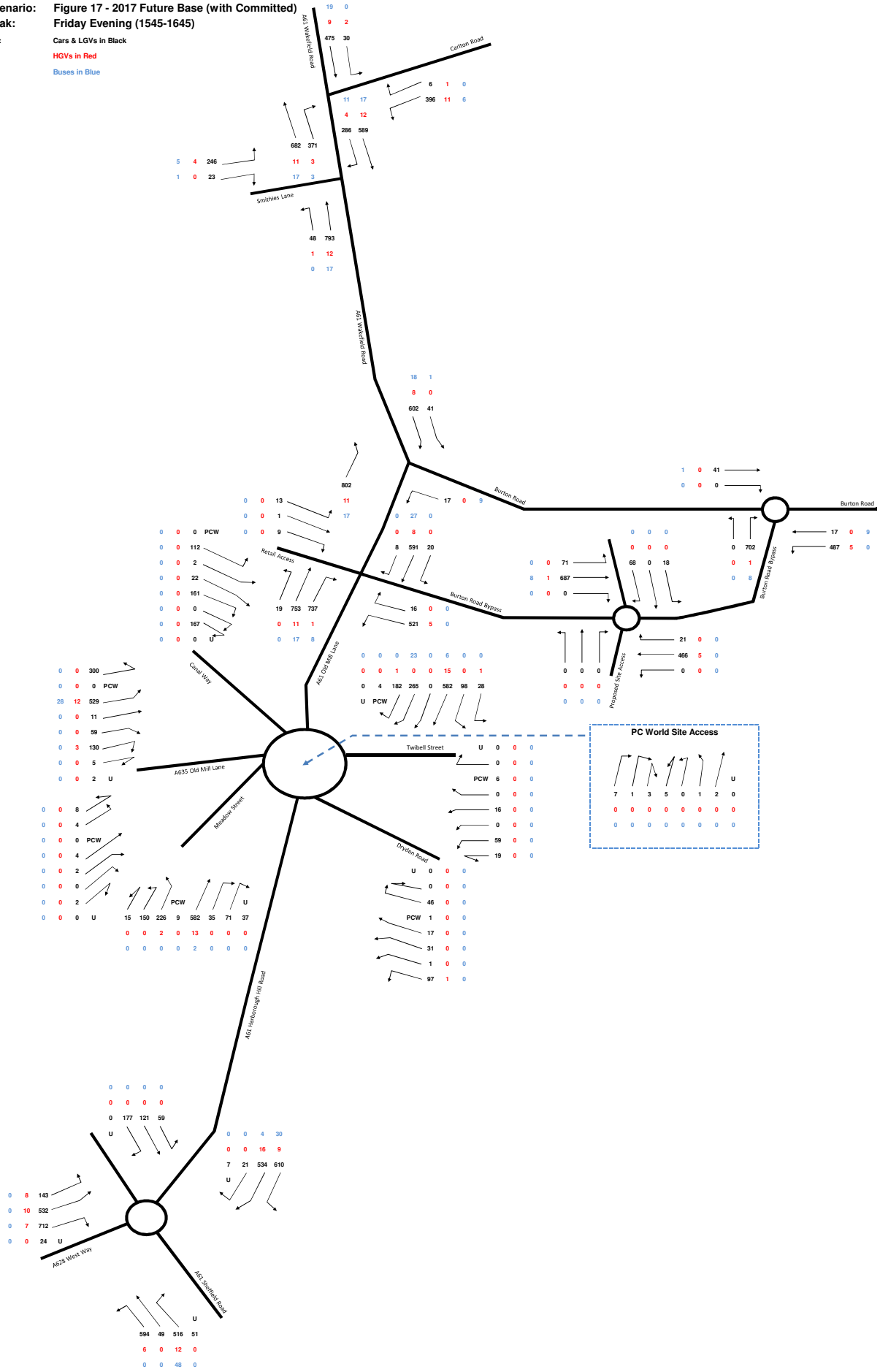
Project: 90095 - Barnsley Foodstore
Scenario: Figure 16 - 2012 Future Base (with Committed)
Peak: Saturday Afternoon (1230-1330)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



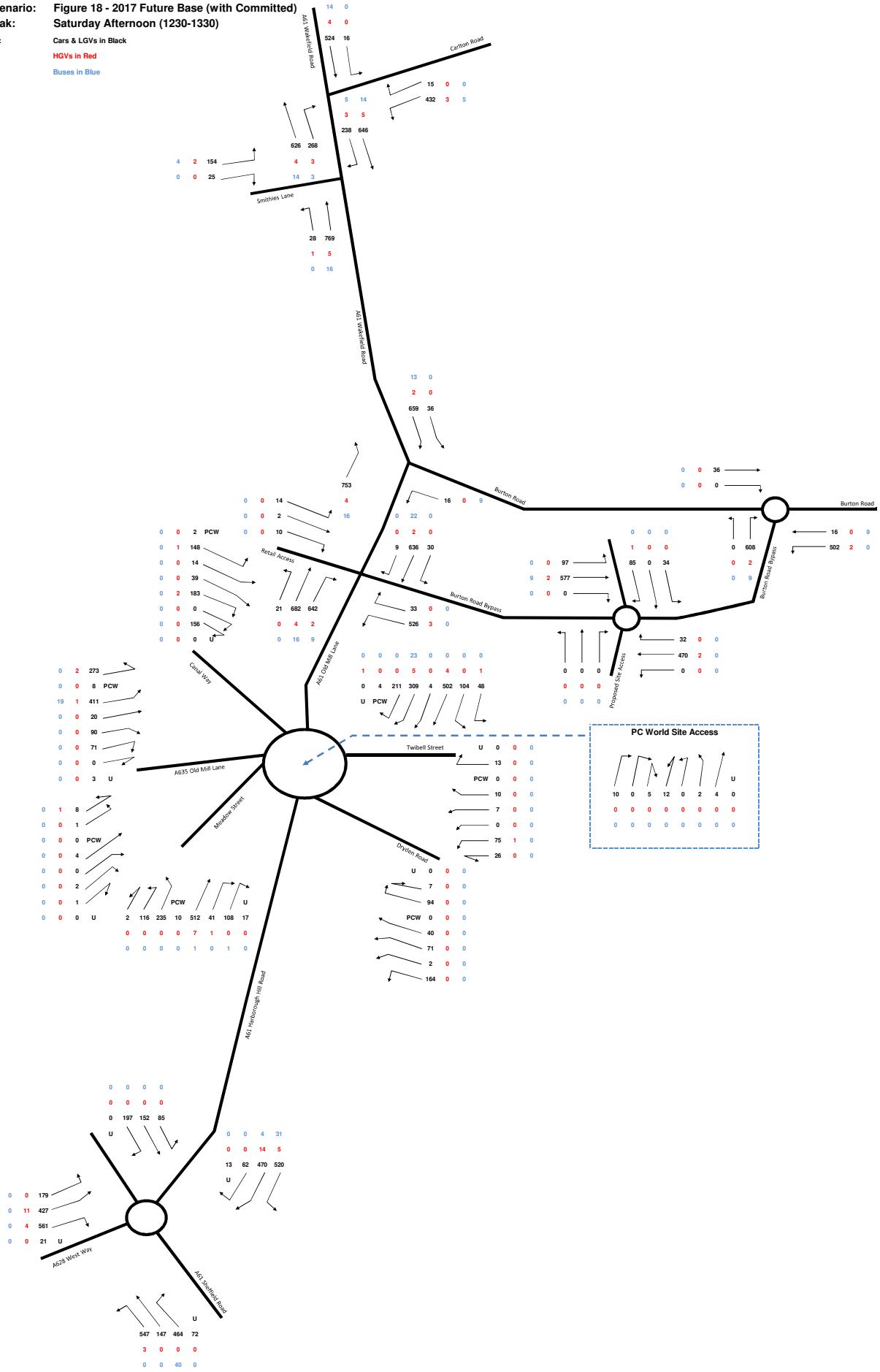
Project: 90095 - Barnsley Foodstore
Scenario: Figure 17 - 2017 Future Base (with Committed)
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue

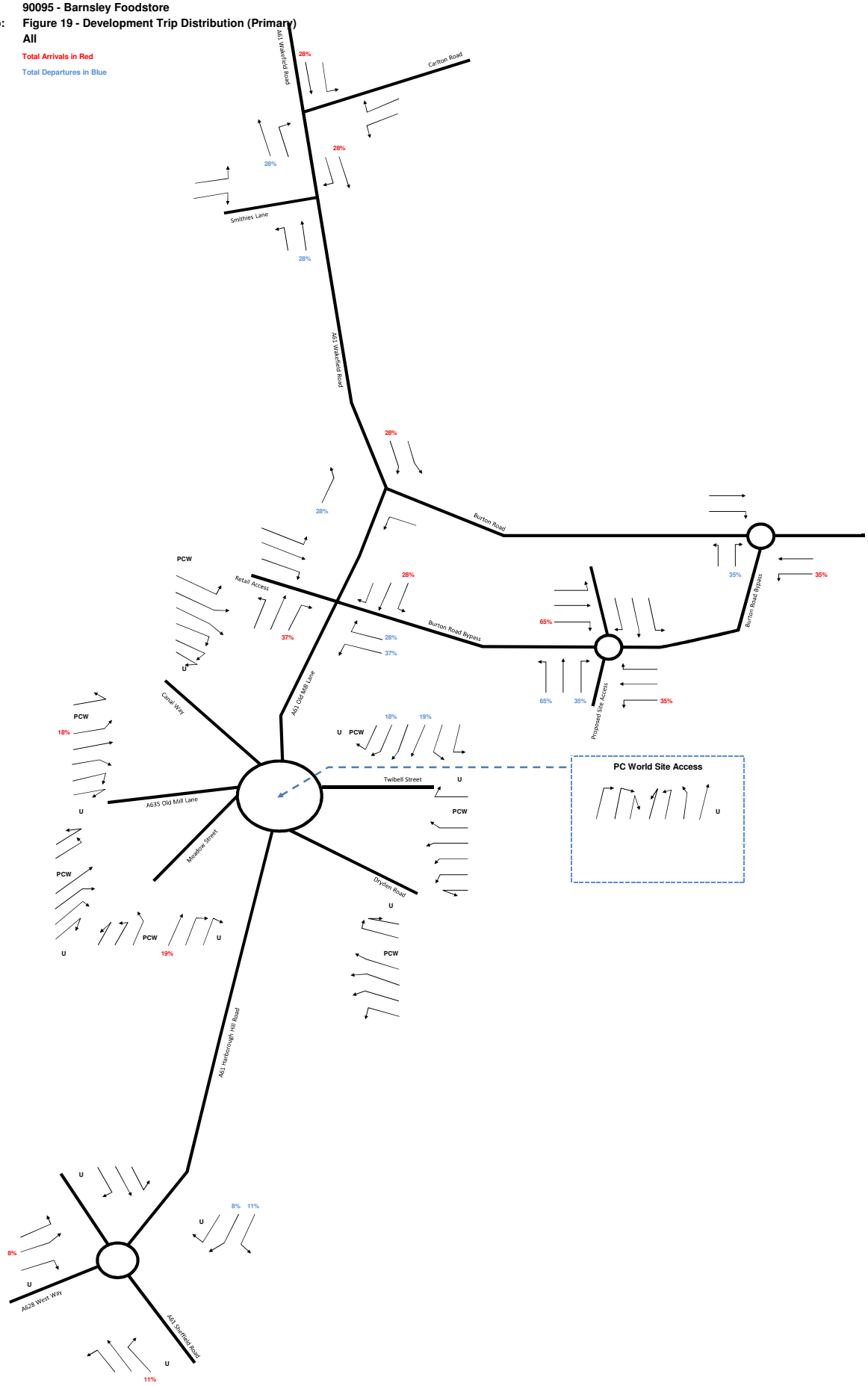


Project: 90095 - Barnsley Foodstore
Scenario: Figure 18 - 2017 Future Base (with Committed)
Peak: Saturday Afternoon (1230-1330)

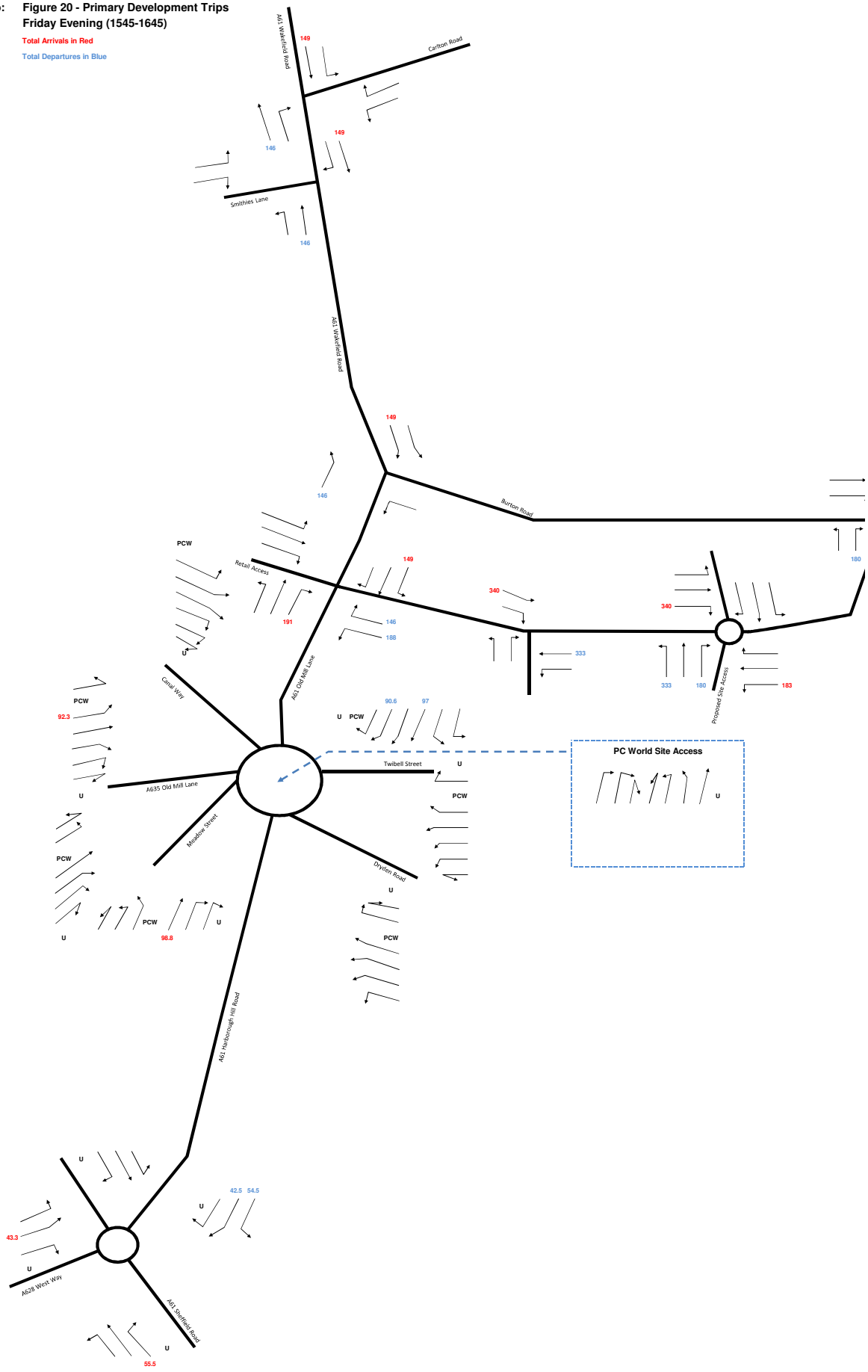
Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



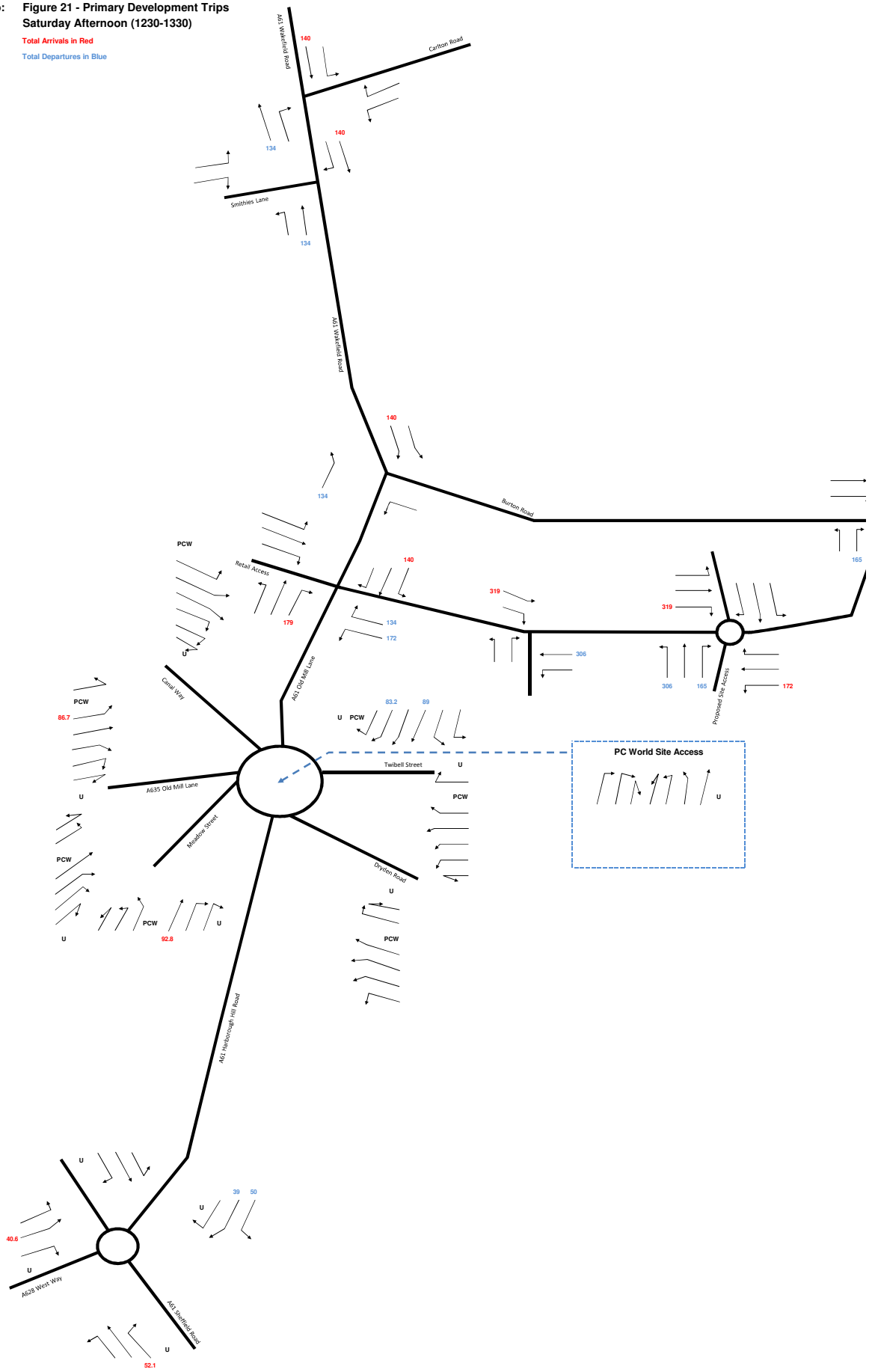
Project: 90095 - Barnsley Foodstore
Scenario: Figure 19 - Development Trip Distribution (Primary)
Peak: All
Key: Total Arrivals in Red
Total Departures in Blue



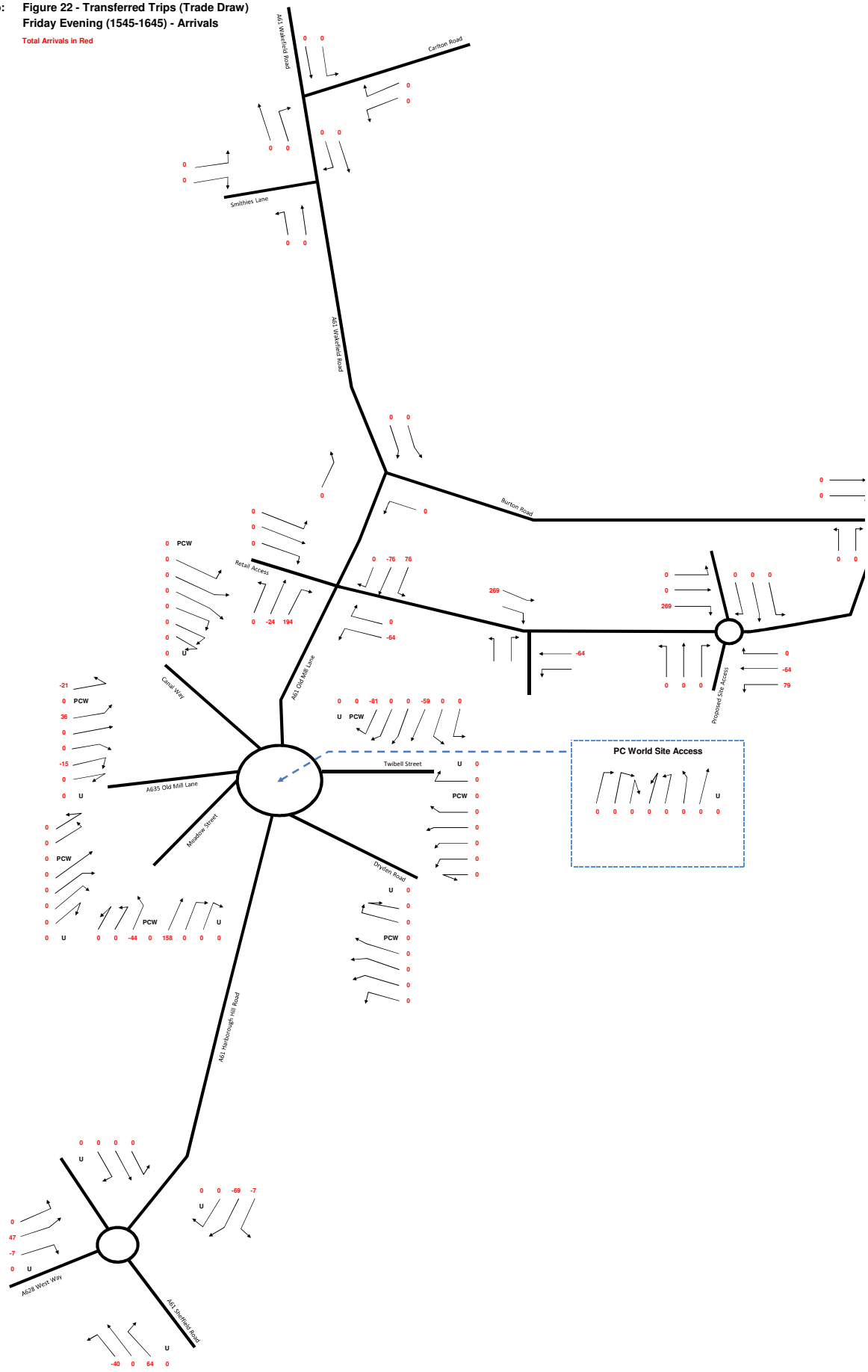
Project: 90095 - Barnsley Foodstore
Scenario: Figure 20 - Primary Development Trips
Peak: Friday Evening (1545-1645)
Key: Total Arrivals in Red
Total Departures in Blue



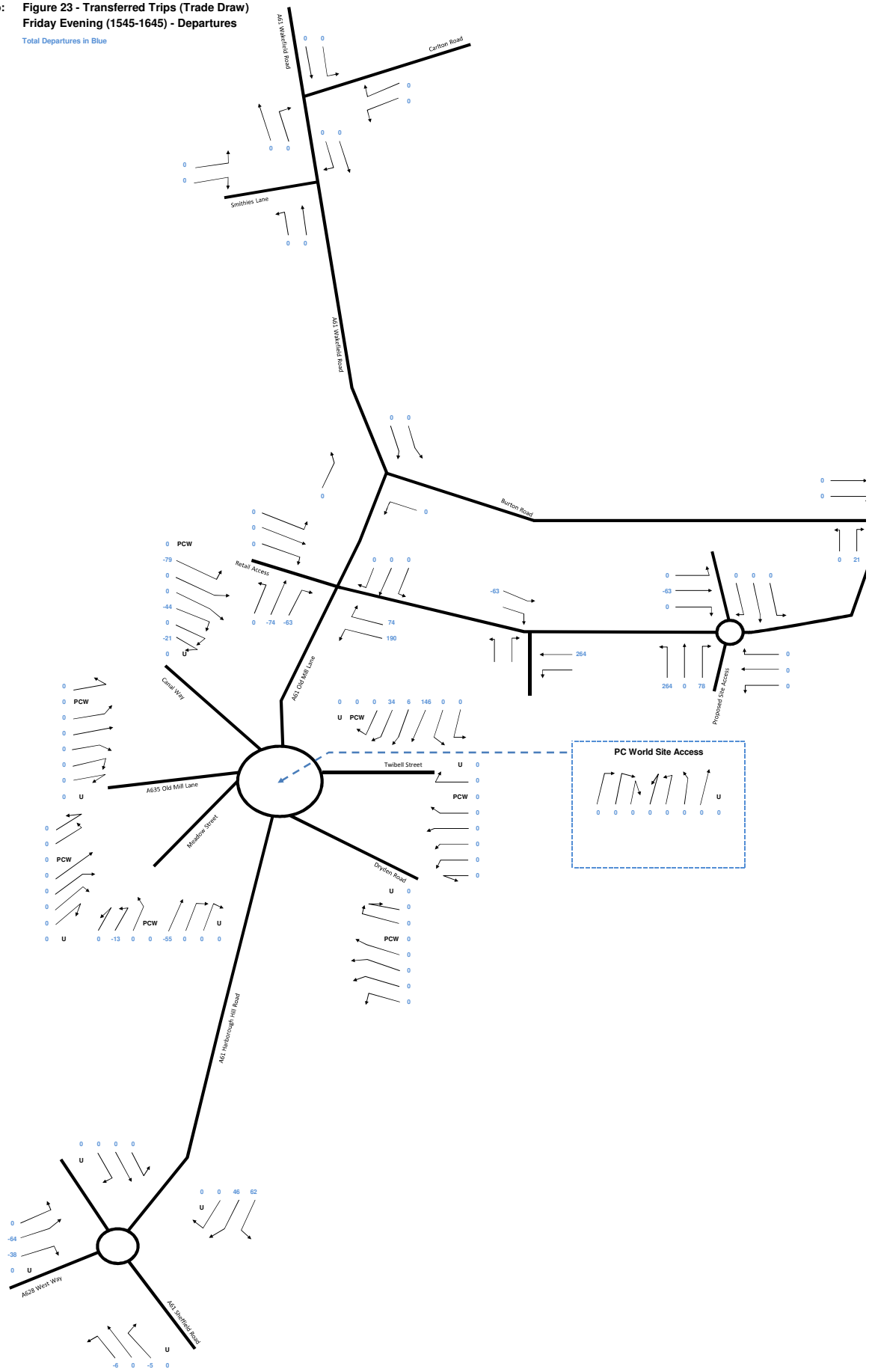
Project: 90095 - Barnsley Foodstore
Scenario: Figure 21 - Primary Development Trips
Peak: Saturday Afternoon (1230-1330)
Key: Total Arrivals in Red
Total Departures in Blue



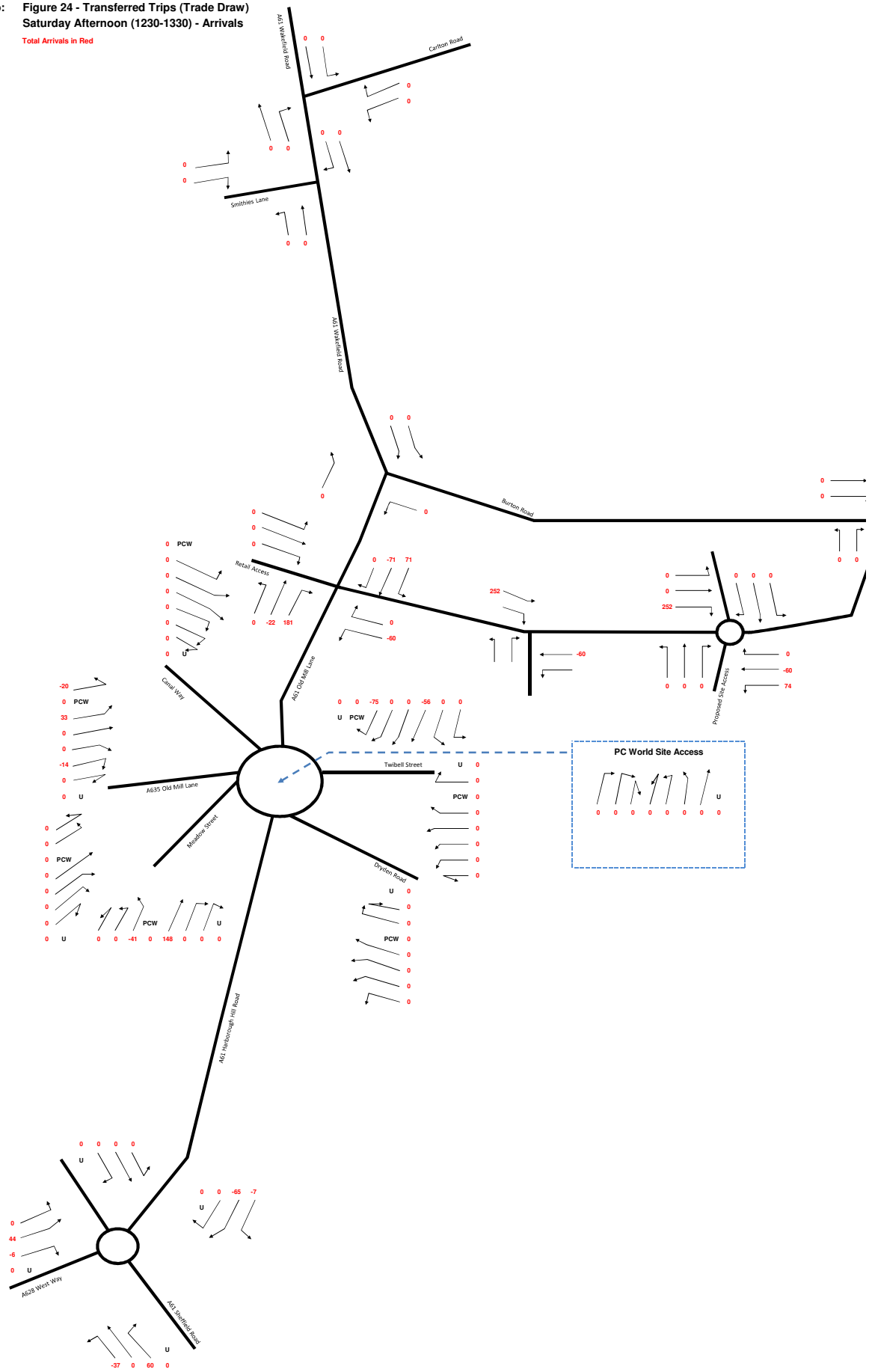
Project: 90095 - Barnsley Foodstore
Scenario: Figure 22 - Transferred Trips (Trade Draw)
Peak: Friday Evening (1545-1645) - Arrivals
Key: Total Arrivals in Red



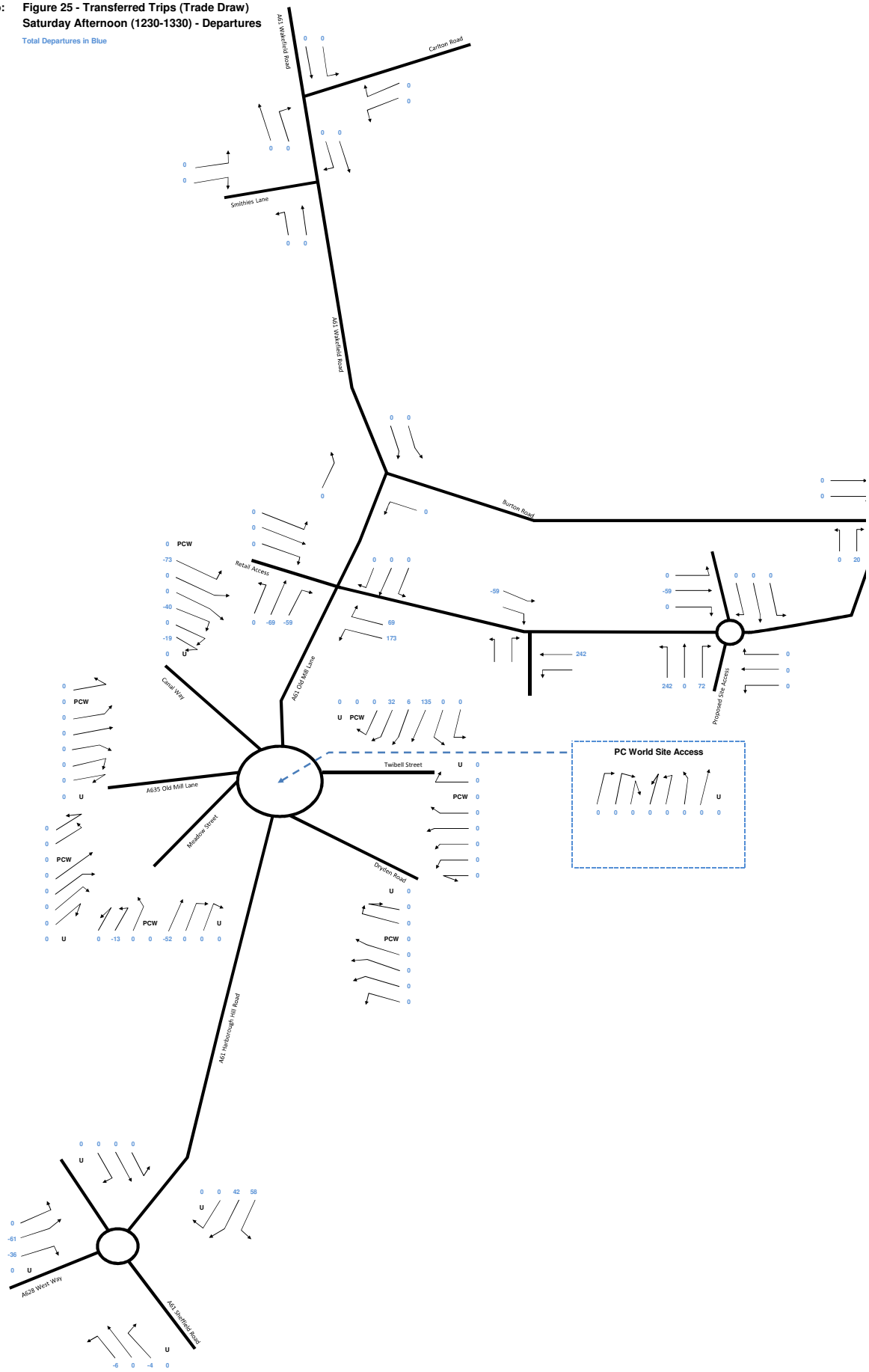
Project: 90095 - Barnsley Foodstore
Scenario: Figure 23 - Transferred Trips (Trade Draw)
Peak: Friday Evening (1545-1645) - Departures
Key: Total Departures in Blue



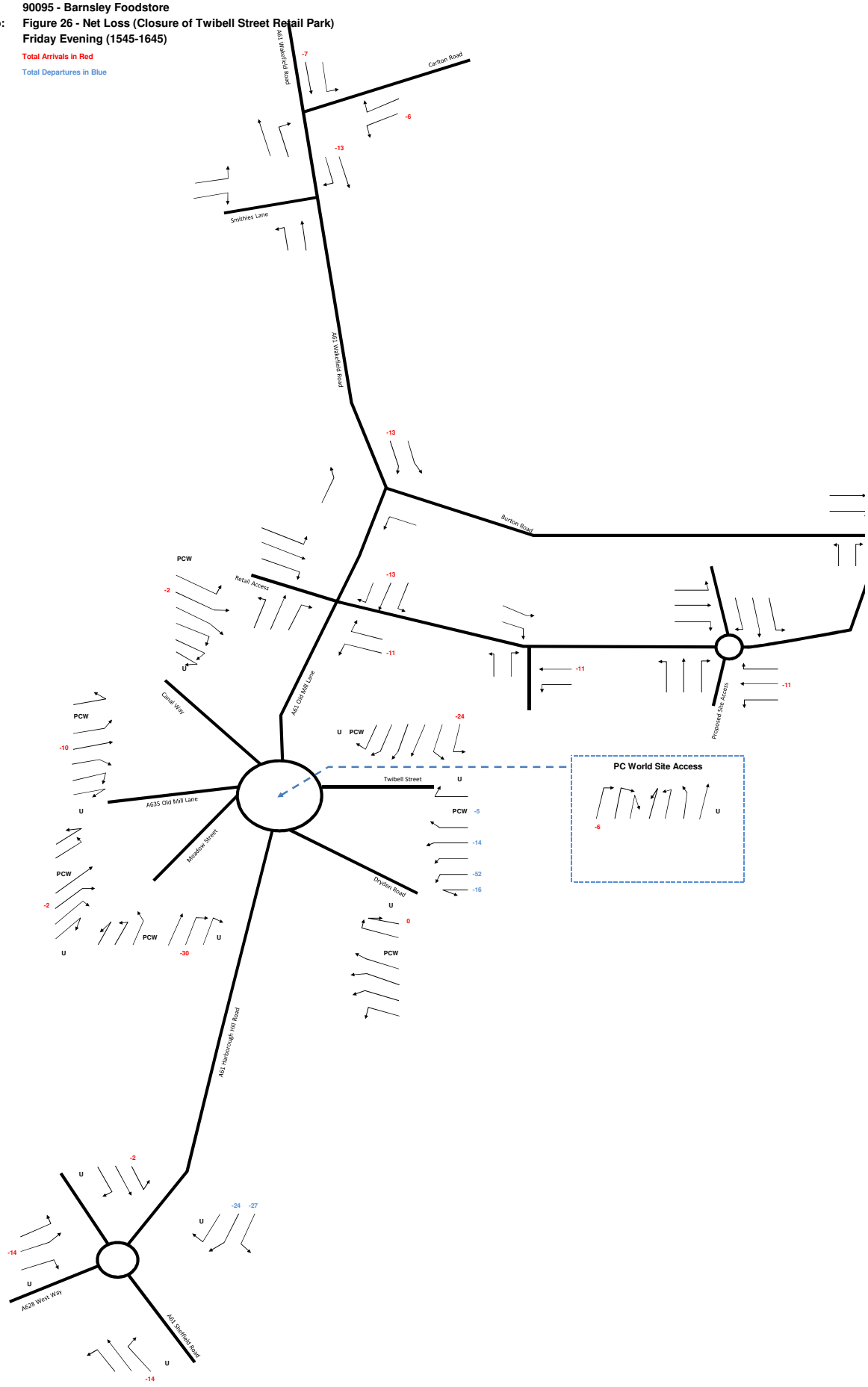
Project: 90095 - Barnsley Foodstore
Scenario: Figure 24 - Transferred Trips (Trade Draw)
Peak: Saturday Afternoon (1230-1330) - Arrivals
Key: Total Arrivals in Red



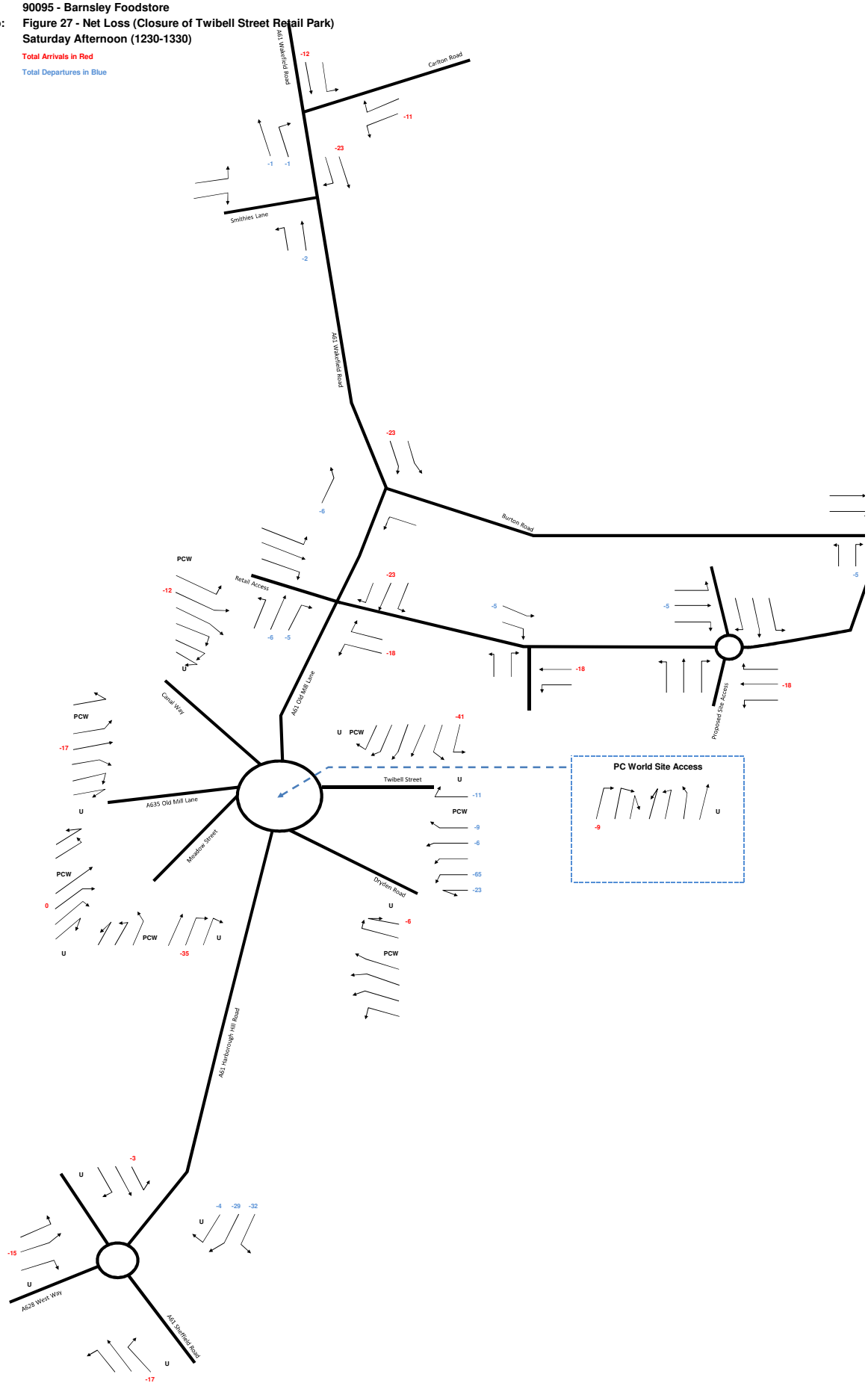
Project: 90095 - Barnsley Foodstore
Scenario: Figure 25 - Transferred Trips (Trade Draw)
Peak: Saturday Afternoon (1230-1330) - Departures
Key: Total Departures in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 26 - Net Loss (Closure of Twibell Street Retail Park)
Peak: Friday Evening (1545-1645)
Key: Total Arrivals in Red
Total Departures in Blue



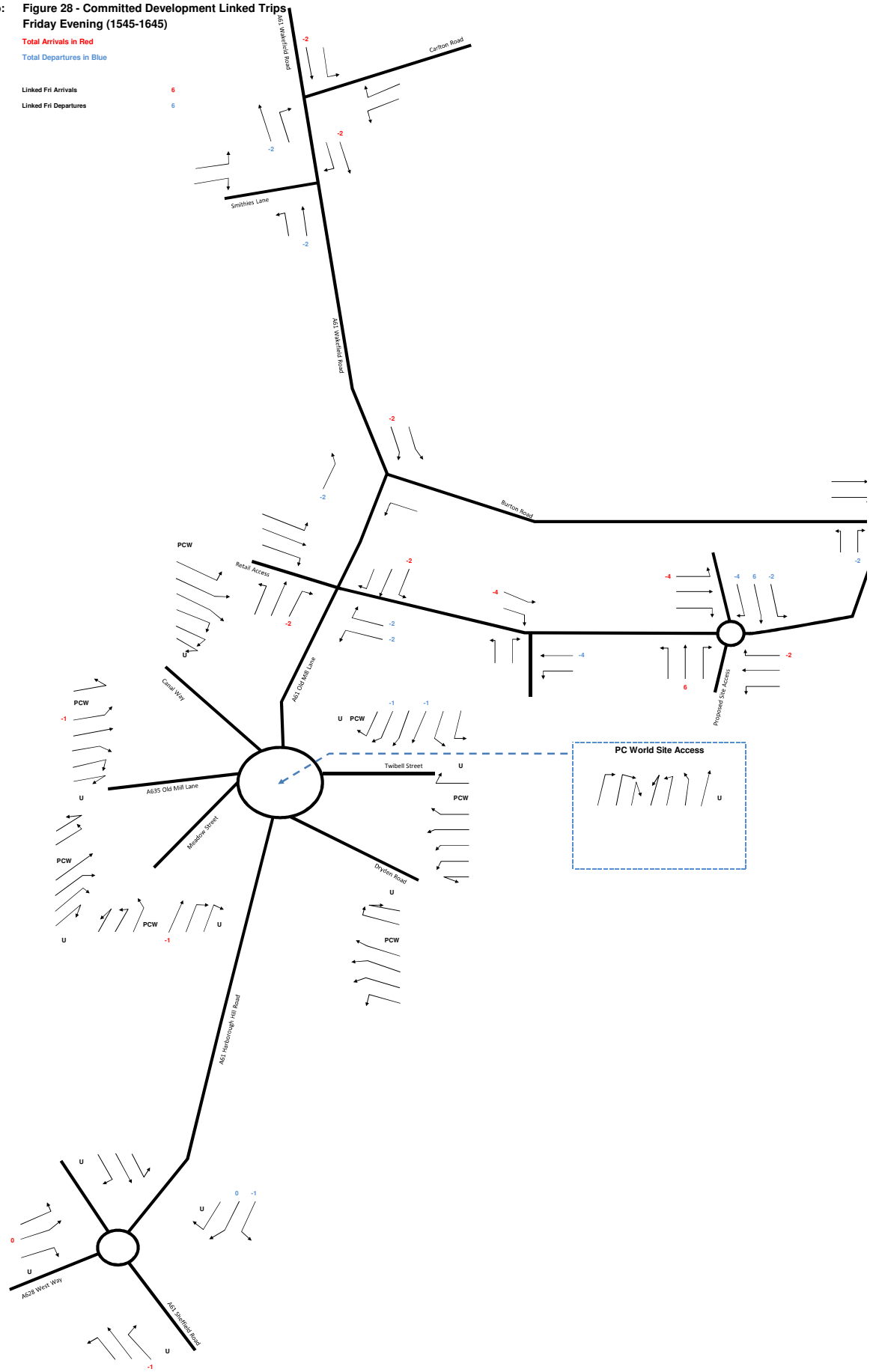
Project: 90095 - Barnsley Foodstore
Scenario: Figure 27 - Net Loss (Closure of Twibell Street Retail Park)
Peak: Saturday Afternoon (1230-1330)
Key: Total Arrivals in Red
Total Departures in Blue



Project: 90095 - Barnsley Foodstore
Scenario: Figure 28 - Committed Development Linked Trips
Peak: Friday Evening (1545-1645)

Key: Total Arrivals in Red
Total Departures in Blue

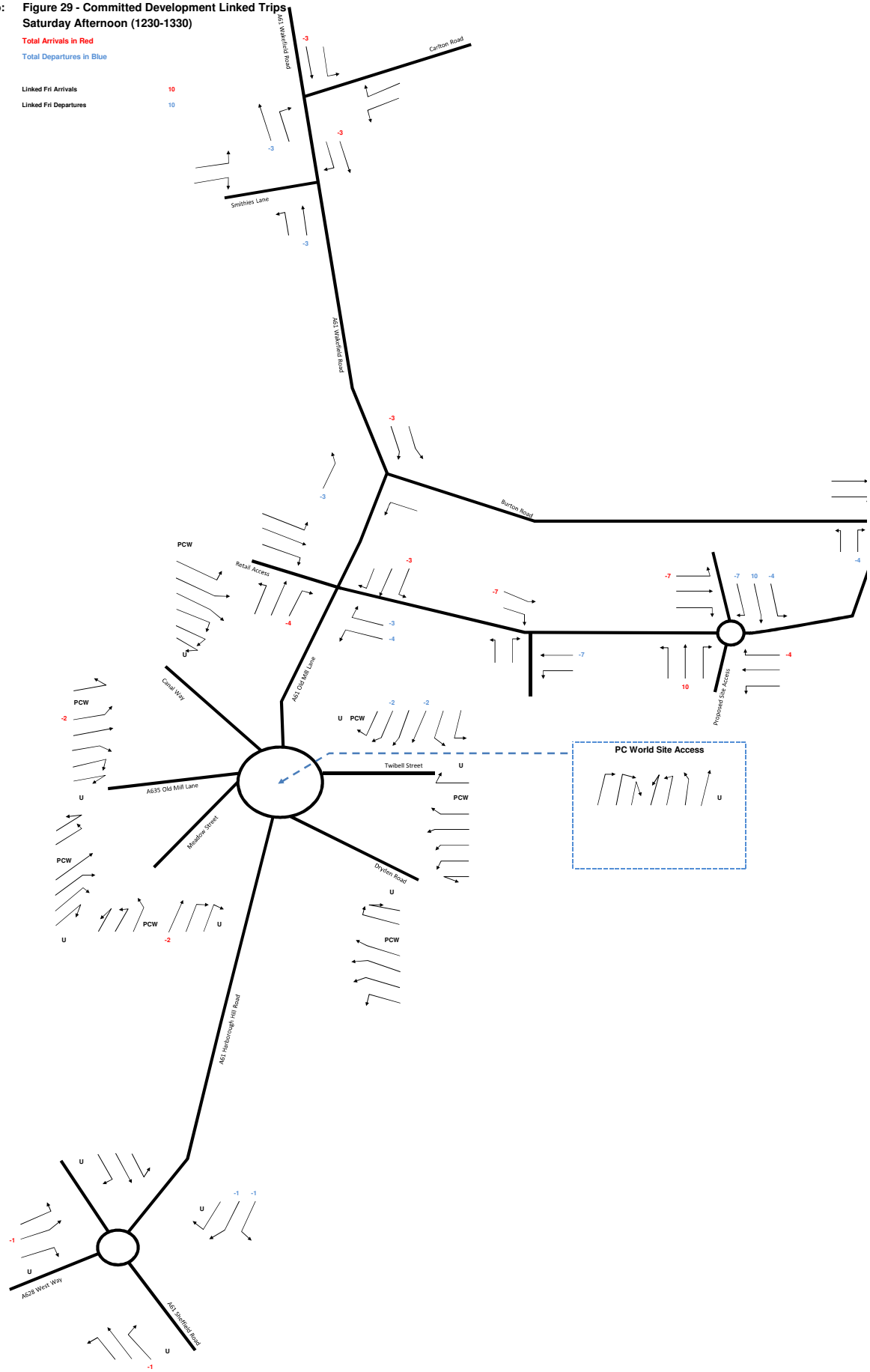
Linked Fri Arrivals	6
Linked Fri Departures	6



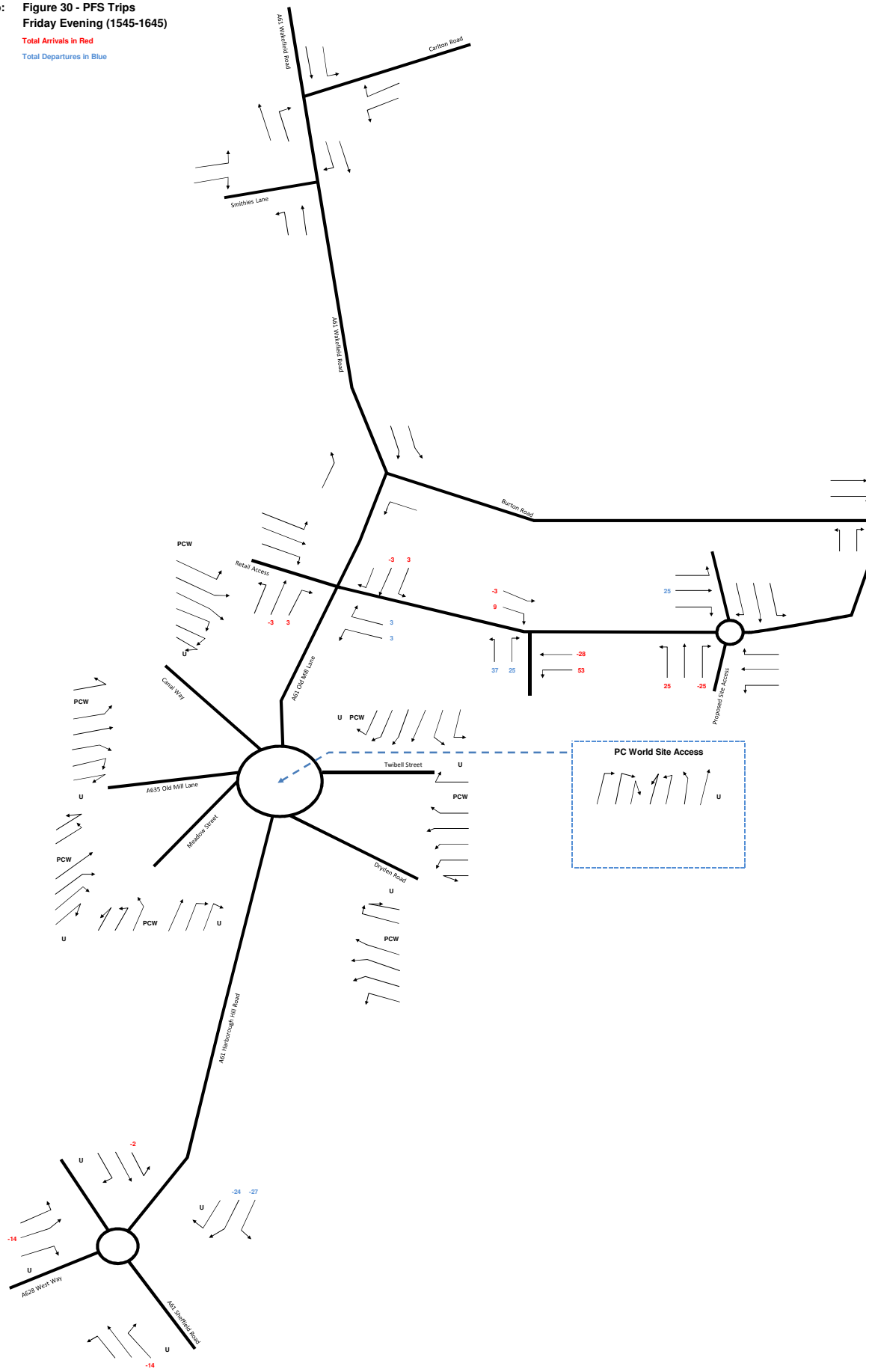
Project: 90095 - Barnsley Foodstore
Scenario: Figure 29 - Committed Development Linked Trips
Peak: Saturday Afternoon (1230-1330)

Key: Total Arrivals in Red
Total Departures in Blue

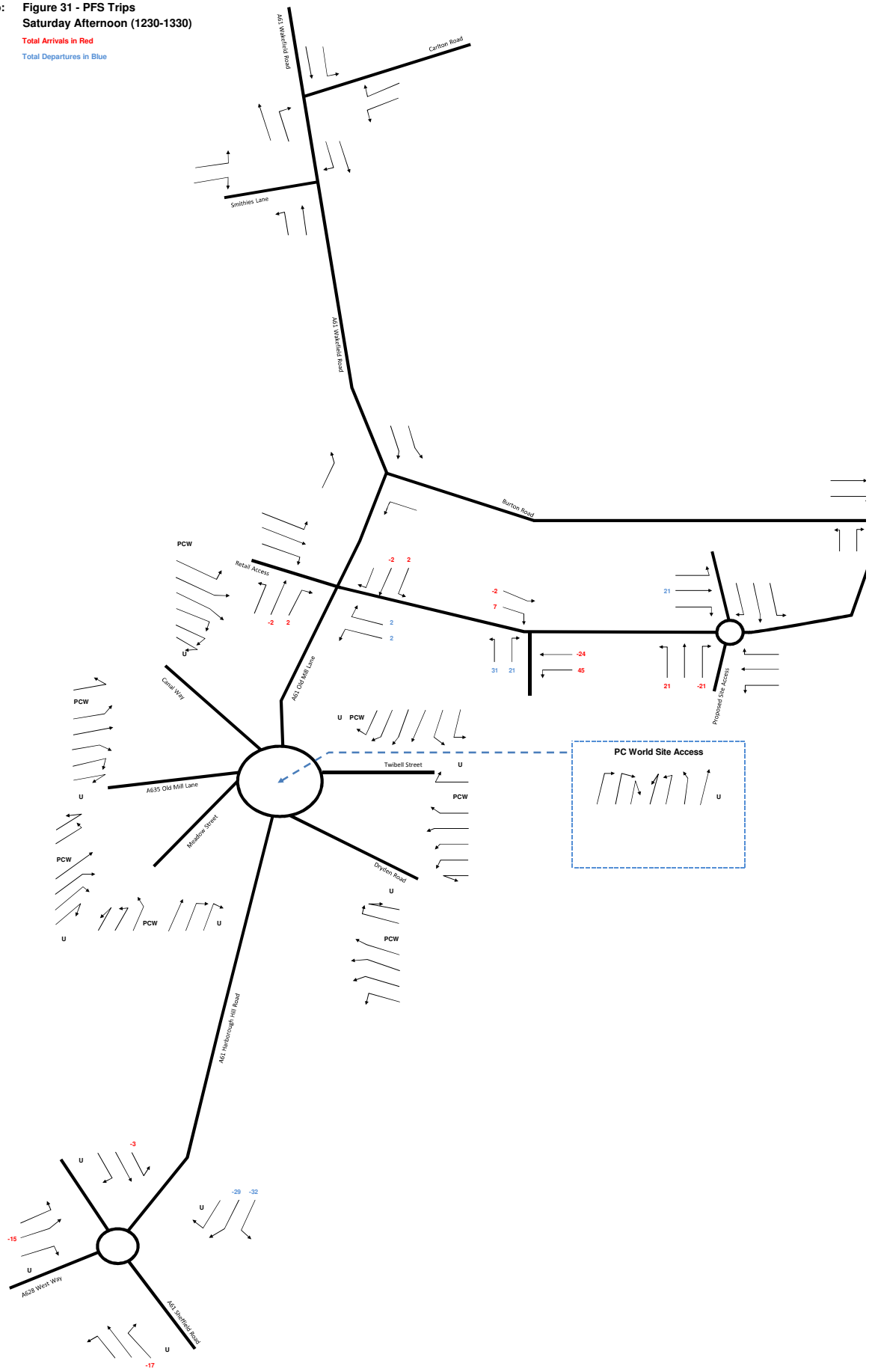
Linked Fri Arrivals	10
Linked Fri Departures	10



Project: 90095 - Barnsley Foodstore
Scenario: Figure 30 - PFS Trips
Peak: Friday Evening (1545-1645)
Key: Total Arrivals in Red
Total Departures in Blue

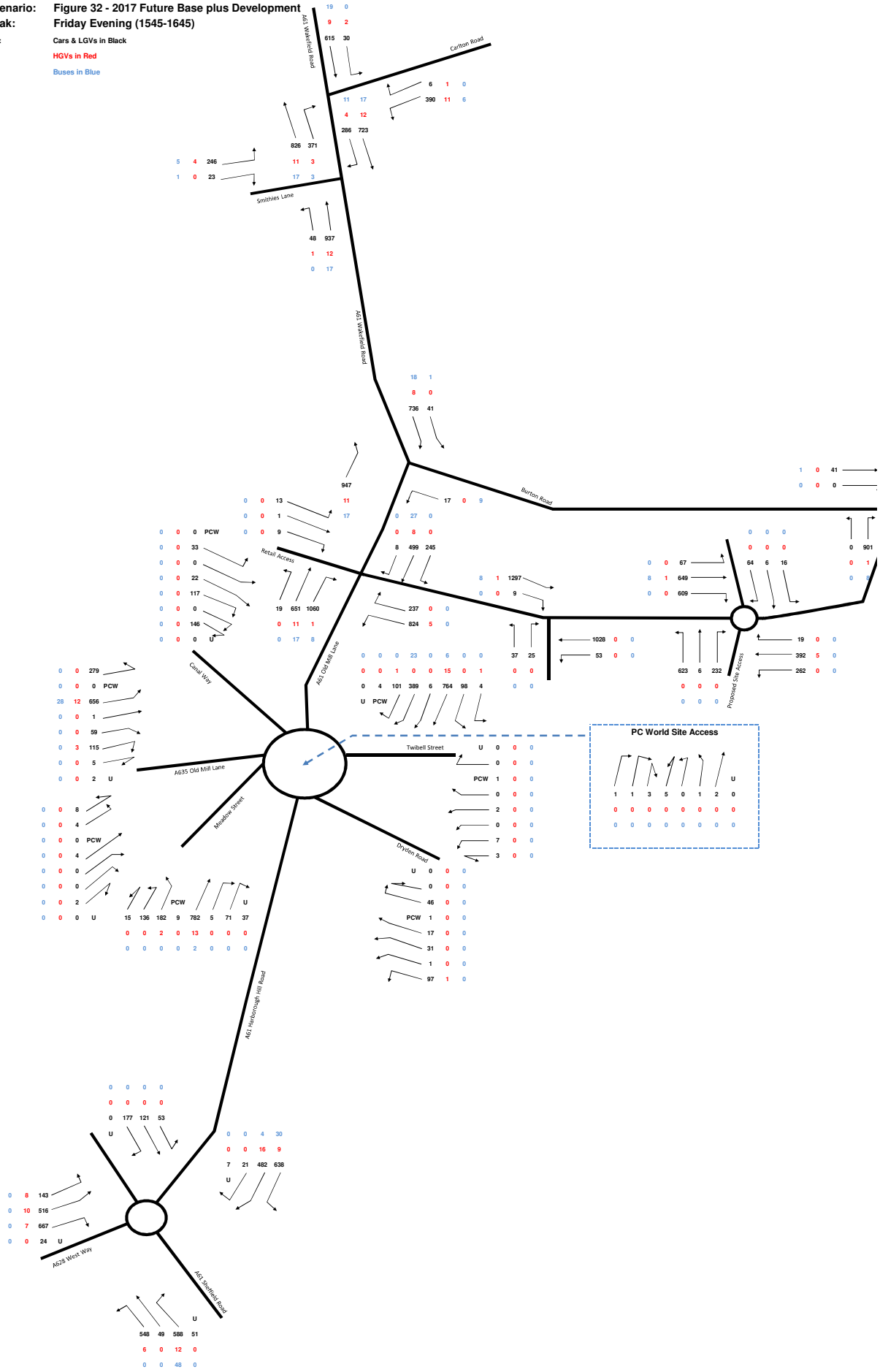


Project: 90095 - Barnsley Foodstore
Scenario: Figure 31 - PFS Trips
Peak: Saturday Afternoon (1230-1330)
Key: Total Arrivals in Red
Total Departures in Blue



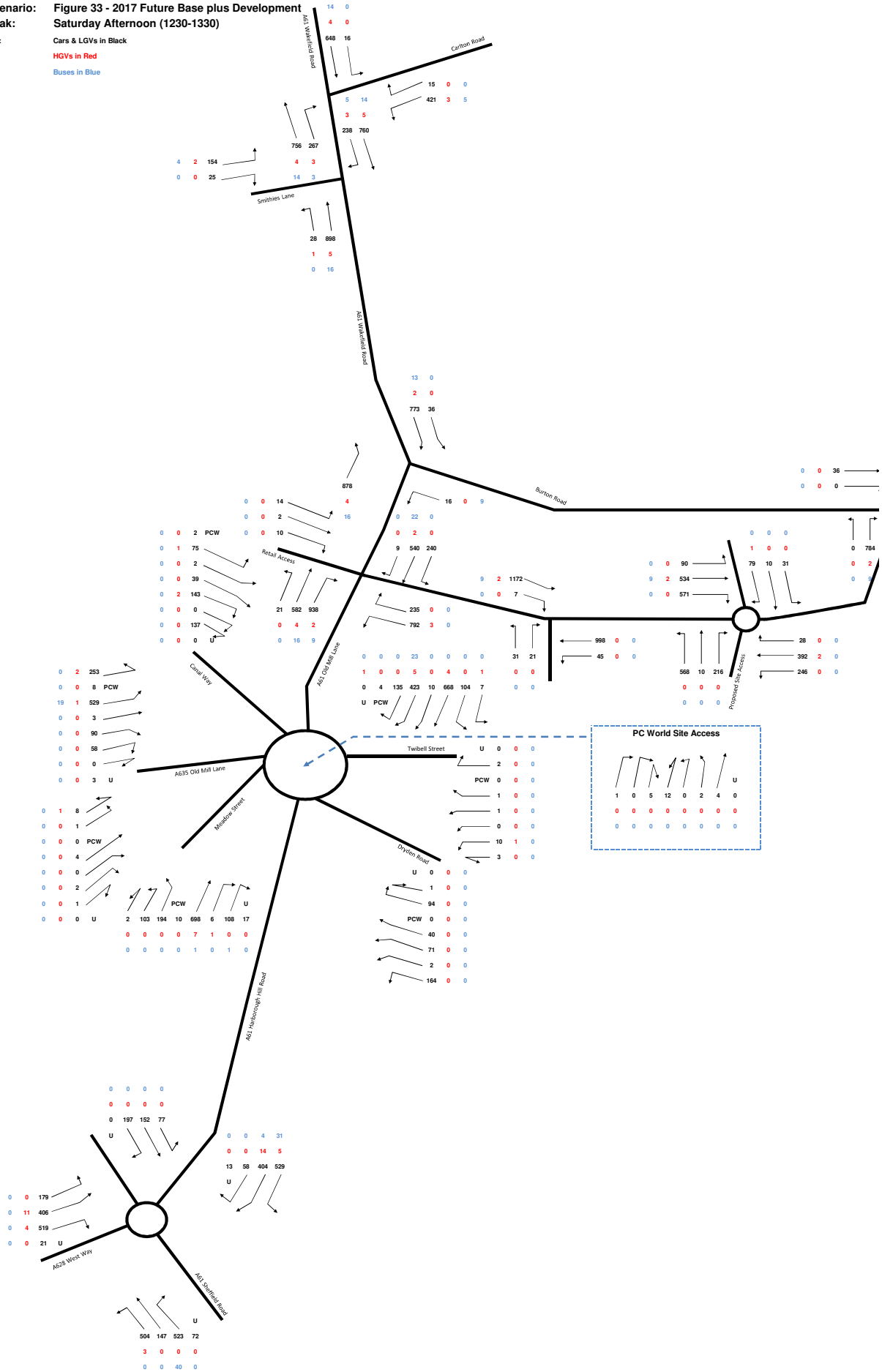
Project: 90095 - Barnsley Foodstore
Scenario: Figure 32 - 2017 Future Base plus Development
Peak: Friday Evening (1545-1645)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue

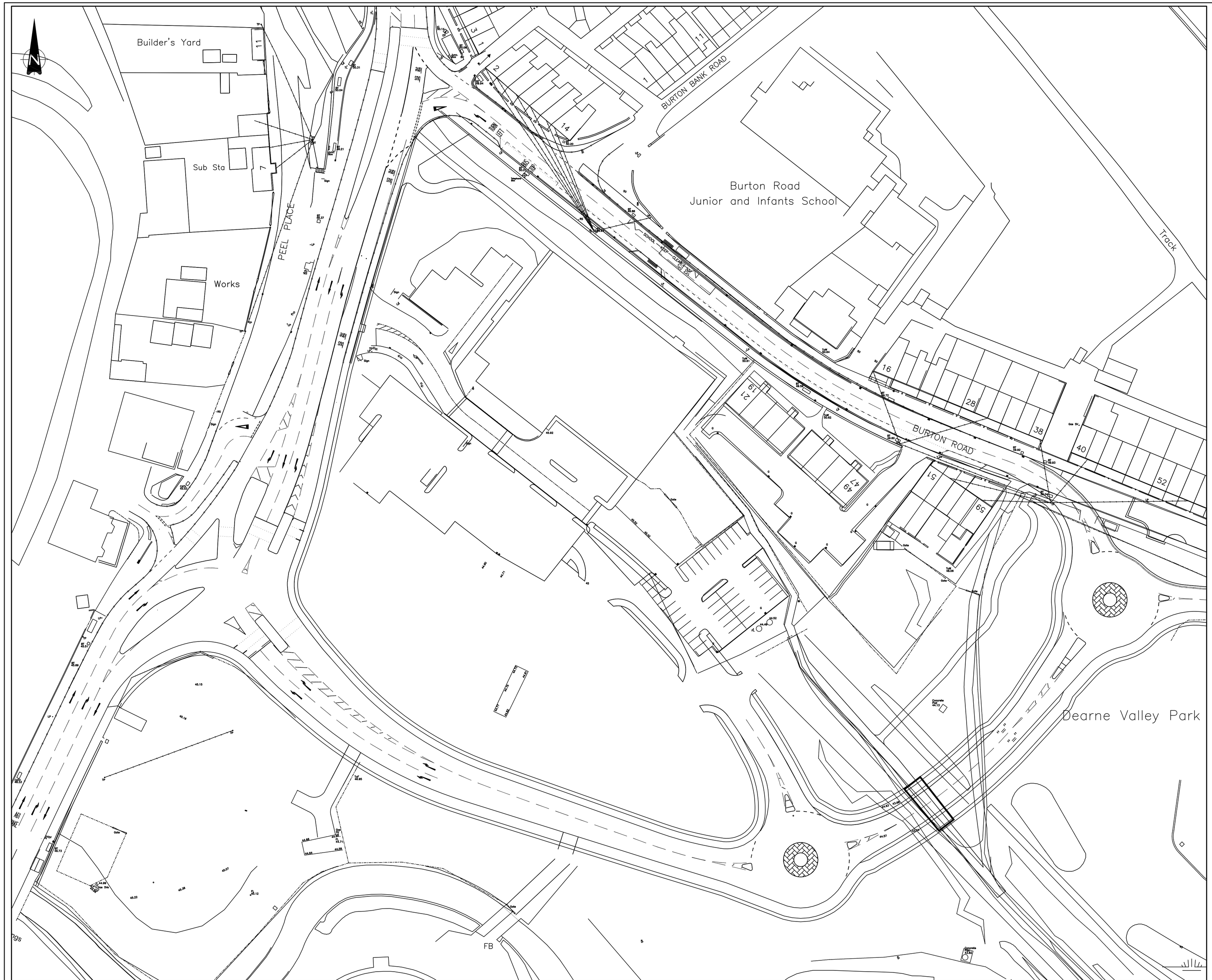


Project: 90095 - Barnsley Foodstore
Scenario: Figure 33 - 2017 Future Base plus Development
Peak: Saturday Afternoon (1230-1330)

Key: Cars & LGVs in Black
HGVs in Red
Buses in Blue



Drawings



NOTES:

Rev:	Description:	Date:	By:	Chkd:

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Curtins Consulting Ltd
10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
e: manchester@curtins.com www.curtins.com

Structures • Civils • Environmental • Infrastructure • Transport Planning • Health & Safety • Dispute Resolution
Birmingham • Bristol • Cardiff • Douglas • Edinburgh • Kendal • Leeds • Liverpool • London • Manchester • Nottingham

Status:
PRELIMINARY

Project:
BARNSLEY, PEEL HOLDINGS
PROPOSED FOOD STORE

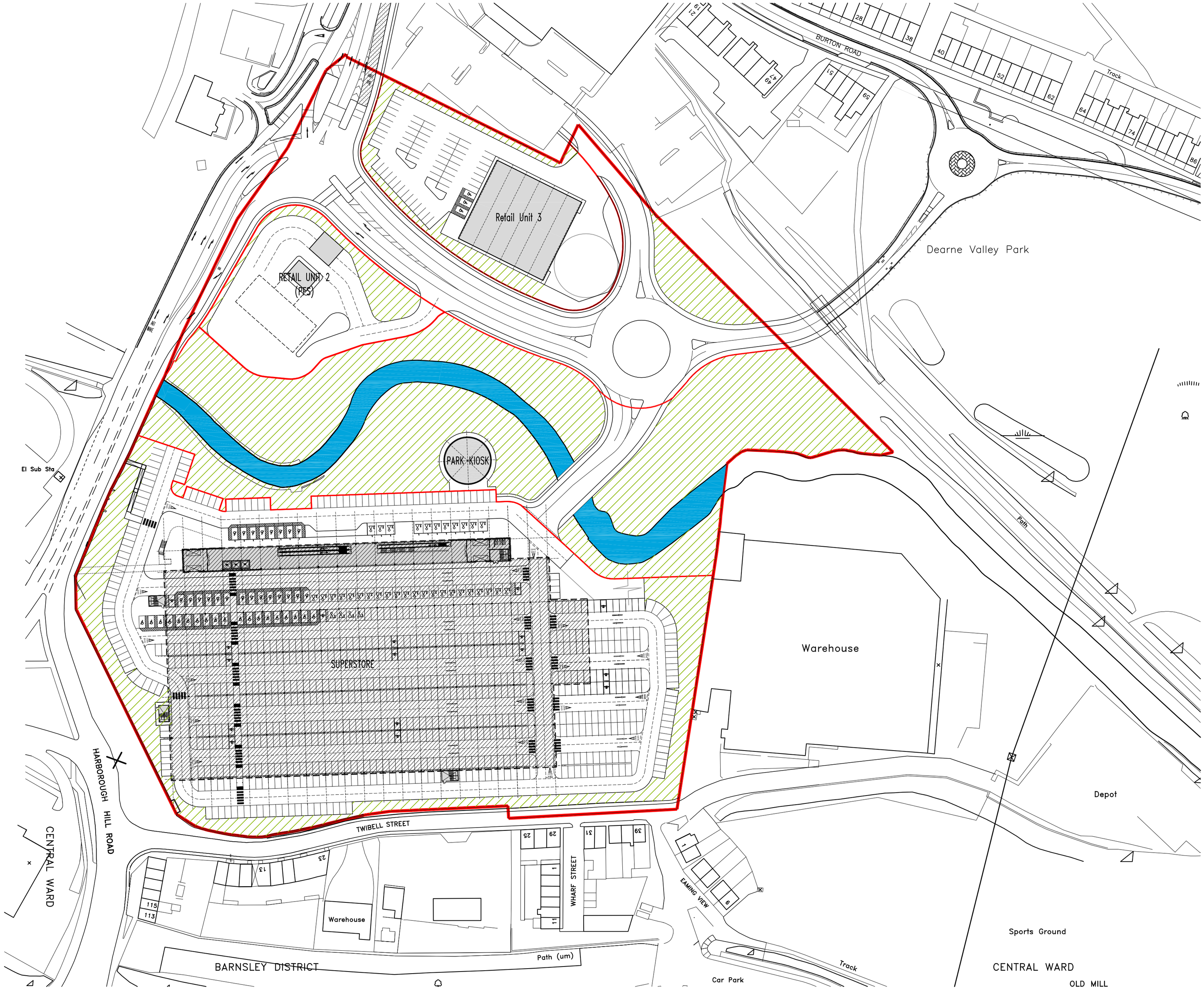
Drg Title:
BURTON ROAD
BYPASS SCHEME

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A1	25.05.12	RB	AV

Drg No: 90095 / 100

Rev: -

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NOTES:

1) THIS DRAWING WAS EXTRACTED FROM BATE & TAYLOR DWG No. MH403-201 REV D

Key

Landscaping

Buildings

Outline of Superstore on Stilts

BUILDING AREA SCHEDULE (GROSS EXT FLOOR AREAS)

SUPERSTORE
At Basement Level – 1239 SQM 13,332 SQ FT
At Retail Level – 13,967 SQ.M 150,285 SQ FT

RETAIL UNIT 2 (PFS)
PFS Kiosk – 73 SQM 785 SQ FT
PFS Car Wash – 91 SQM 979 SQ FT

PARK KIOSK – 274 SQM 2,948 SQ FT

RETAIL UNIT 3 – 1267 SQM 13,633 SQ FT

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Status: PRELIMINARY

Project: BARNSLEY, PEEL HOLDINGS PROPOSED FOOD STORE

Drg Title: PROPOSED DEVELOPMENT SCHEME

Scale:	Size:	First Issue:	Drawn:	Checked:
1:1000	A2	25.05.12	RB	AV

Drg No: 90095 / 101 Rev: -

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e: manchester@curtins.com www.curtins.com

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Status:
PRELIMINARY

Project:
BARNSLEY, PEEL HOLDINGS
PROPOSED FOOD STORE

Drg Title:
PROPOSED ACCESS

Scale:	Size:	First Issue:	Drawn:	Checked:
1:200	A1	25.05.12	RB	AV

Drg No: 90095 / 102

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Status: PRELIMINARY

Project: BARNSLEY, PEEL HOLDINGS
PROPOSED FOOD STORE

Drg Title: A61 WAKEFIELD ROAD
SMITHIE LANE MITIGATION

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A3	25.05.12	RB	AV

Drg No: 90095 / 103

Rev: -

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NOTES:

KEY:

- EXISTING (AS PER TOPO SURVEY)
- ELEMENTS OF COUNCIL HIGHWAY SCHEME TO REMAIN UNCHANGED
- CURTINS' PROPOSED HIGHWAY SCHEME (KERBLINES)
- CURTINS' PROPOSED HIGHWAY SCHEME (ROAD MARKINGS)

Rev:	Description:	Date:	By:	Chkd:

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10 Oxford Court, Bishopsgate, Manchester, M2 3WQ
t: 0161 236 2394
e: manchester@curtins.com www.curtins.com
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Status: PRELIMINARY

Project:
BARNSLEY, PEEL HOLDINGS
PROPOSED FOOD STORE

Drg Title:
DRAWING TITLE
A61 OLD MILL LANE /
BURTON ROAD BYPASS MITIGATION

Scale:	Size:	First Issue:	Drawn:	Checked:
1:500	A2	25.05.12	RB	AV

Drg No: 90095 / 104

Rev: -

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