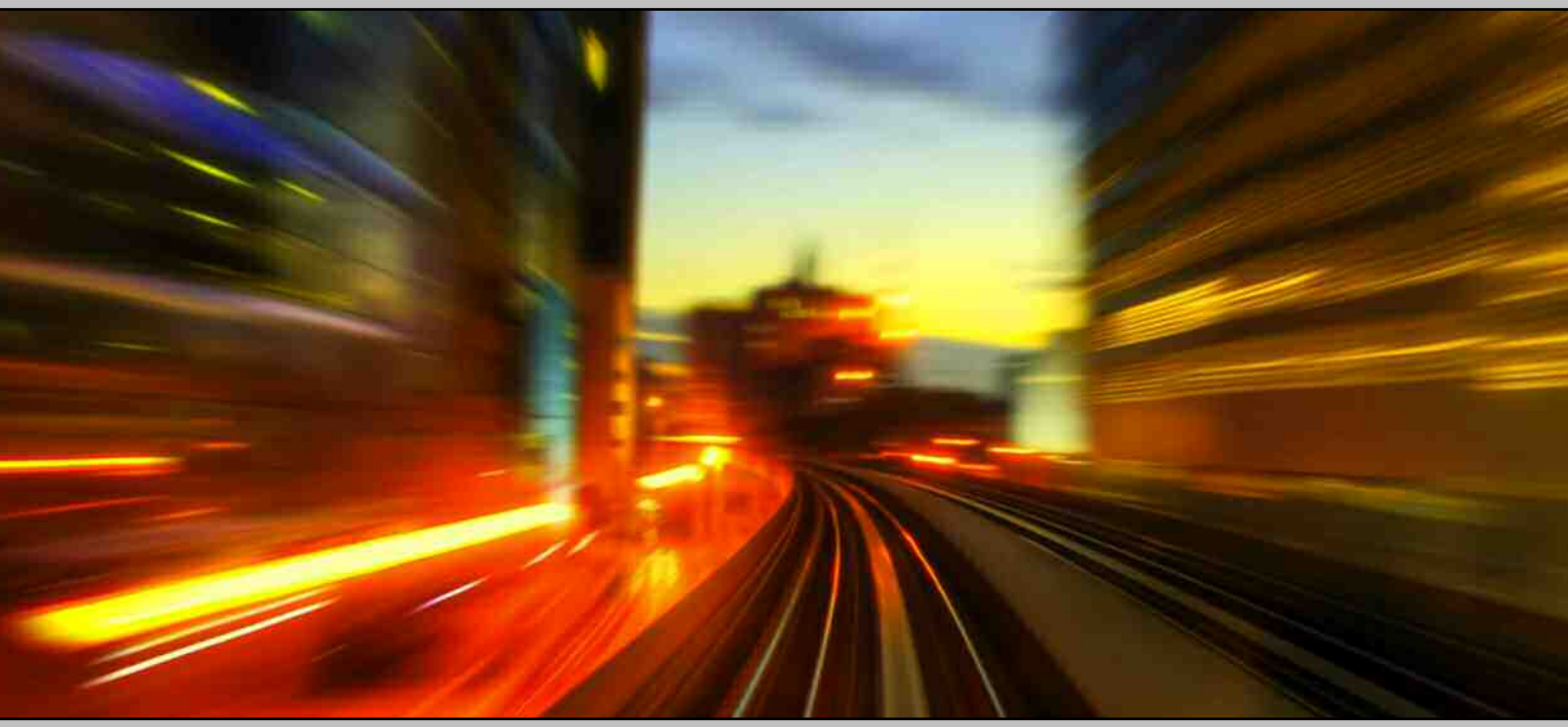

HOUGHTON MAIN RENEWABLE ENERGY PARK

PEEL ENVIRONMENTAL MANAGEMENT (UK) LTD & HOUGHTON MAIN WASTE LTD

TRANSPORT ASSESSMENT

140508/SK21431/TA02

HOUGHTON MAIN
RENEWABLE ENERGY PARK

TRANSPORT ASSESSMENT

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01DRAFT	10.04.14	Project team	Draft for comment
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CONTENTS

1 INTRODUCTION

1.1 SK Transport Planning Ltd (SKTP) has been appointed by Peel Environmental Management (UK) Limited and Houghton Main Waste Limited (Peel) to prepare a Transport Assessment (TA) in support of a planning application for the development of a Renewable Energy Park (REP) at Houghton Main in Barnsley. The location of the development is shown on **plan 1**.

1.2 The proposed development site is brownfield land and is allocated as an 'Employment Policy Area' and an 'Area of Investigation for Potential Employment Development' in the Barnsley Unitary Development Plan (2000, Saved Policies).

1.3 The proposal site benefits from planning consent for employment use. The approved scheme comprises 19 industrial units with a total GFA of 10,607sqm and 208 car parking spaces.

1.4 The proposed Renewable Energy Park comprises a 150,000tpa Timber Resource Recovery Centre (TRRC) and a 60,000tpa Anaerobic Digestion (AD) facility. The development of the site will create two distinct but compatible energy generation facilities with the potential to generate 23MW of electricity (20MW (net) from the TRRC and 3MW from the AD facility) and to provide a direct heat and/or electrical supply to appropriate off-takers in the local area.

1.5 The TA has been produced in line with the Department for Transport's 'Guidance on Transport Assessment'. The scope for the TA has been discussed with the local highway authority, Barnsley Metropolitan Borough Council (BMBC), and a detailed scoping report issued in March 2014. A copy of the scoping report is attached as **appendix a**.

1.6 The site is located on the south side of the A6195 Park Spring Road, west of the settlements of Little Houghton and Great Houghton and north of Darfield. The site benefits from an existing roundabout access junction shared with the ASOS Fulfilment Centre on the east side of Park Spring Road.

1.7 A Framework Travel Plan, attached as **appendix b**, has been prepared to support and promote sustainable access to the site, and identify measures that can be implemented to reduce the number of single occupancy car trips generated by the proposal.

1.8 The type of development proposed, whilst not generating substantial volumes of traffic, will include heavy vehicle (HV) traffic required for the transport of materials to the site, and to a lesser extent, exports from the site. The operators have control over these movements and have agreed to institute management strategies to minimise the impact of HV movements on residential amenity and highway operation during critical periods.

1.9 The TA shows that the development will have a minimal impact on surrounding highway network and will generate less traffic than that associated with the permitted site use. The TA considers the impact of the proposal on the A1695 Park Spring Road and site access. At the request of BC the traffic impact at the Broomhill and Cathill Roundabouts is also included within the TA.

1.10 To summarise, the TA considers the following study area:

- Site Access/Park Spring Road
- A6195 Park Spring link
- A6195/A635 'Broomhill Roundabout'
- A6195/Manvers Way/Highgate 'Cathill Roundabout'

1.11 The assessment concludes that the REP will generate a low number of vehicle movements, substantially below the level that would be generated by the consented industrial scheme, and that the proposed scheme will have a minimal effect on highway operation and safety.

1.12 Notwithstanding this, the operators have agreed to manage the timings of HGV movements to avoid periods of congestion on the local highway network, and to manage the routes used by HGV traffic accessing the site to reduce inconvenience to local communities.

1.13 The TA concludes that the proposal meets the requirements of local and national policy, and that the residual impact of the proposal will not be severe.

2 EXISTING CONDITIONS

Site Location & Characteristics

2.1 The site is located on the south side of the A6195 Park Spring Road just over 1km west of the settlements of Little Houghton and Great Houghton, some 6.5km east of the centre of Barnsley and 1.5km north of Darfield.

2.2 Vehicle access to the site is available via an existing roundabout on Park Spring Road, known as Houghton Main Colliery Roundabout. The junction also provides access to the ASOS Fulfilment Centre on the northern side of Park Spring Road.

2.3 The site forms part of the Houghton Main Colliery site (disused) and benefits from a live planning consent for the development of 19 industrial units with 208 parking spaces (application ref. 2008/1426). The planning consent, originally granted in 2008, was renewed in 2011.

Local Highway Network

2.4 The A6195 Park Spring Road is a single carriageway road subject to national speed limit. The road is of relatively recent construction and is of a high standard. The route is a bus corridor with typical service provision of two buses per hour in each direction during the day. Bus stops with good standard shelters are located on Park Spring Road adjacent to the site, footway connections to these are provided from the Houghton Main Colliery Roundabout.

2.5 The site relates well to the strategic highway network, with both the A1(M) and M1 approximately 9km to the east and west of the site, respectively. Access to strategic routes and the local area can be gained via the A6195 and other A class routes including the A635 which routes east-west between the M1 and A1(M) via Barnsley town centre, and meets the A6195 at the Cathill Roundabout some 2.5km south-east of the site.

2.6 The TA shows that the proposal will generate considerably less traffic than that already permitted for the site, and also that the new proposal will have an insignificant impact when compared to baseline traffic conditions. Despite this the Cathill Roundabout and Broomhill Roundabout have been included in the study area for the TA, to accord with a request from BMBC.

2.7 The Cathill Roundabout connects the A6195 with the A635, the Broomhill Roundabout is the next junction to the south on the A6195, 2km south of the Cathill Roundabout, and provides access to Broomhill via Highgate and areas of Brampton and Wath Upon Dearne via Manvers Way.

Existing Study Area Traffic Flows

2.8 Surveys of existing peak hour turning movements have been undertaken at the site access junction and the Cathill and Broomhill Roundabouts. Additional automatic traffic count (ATC) data has been collected on Park Spring Road to the north and south of the site access, including vehicle speed data.

2.9 A summary of the traffic survey data is provided in **appendix c**. The peak hours at each of the junctions are identified in **table 2.1**.

Junction	AM Peak Hour	PM Peak Hour
Houghton Main Colliery Roundabout (site access)	07.30 – 08.30	16.15 – 17.15
Cathill Roundabout/Broomhill Roundabout	07.30-08.30	16.45-17.45

Table 2.1: Study Area Peak Hour Calculation

2.10 **Table 2.2** shows existing AM and PM peak total link flows on the A1695 Park Spring Road.

Link Flows	AM Peak Hour	PM Peak Hour	Daily Total Traffic Flows (AADT)	Daily HV Flows (AADT)	% HV
A1695 N Park Spring Road	908	1084	8946	1086	12%
A1695 S Parking Spring Road	918	1095	9171	1175	13%

Table 2.2: 2014 Site Access Daily Link Flows (in veh)
[source: Traffic Sense ATC/MCTC]

2.11 AADT link traffic flows have also been taken from the DfT database for the wider network. A summary of this data is provided in **table 2.3**.

Link Flows	Daily Total Traffic Flows (AADT)	Daily HV Flows (AADT)	% HV
A635 W Doncaster Road	16095	515	3%
A635 E Doncaster Road	12445	1113	9%
A6195 S	22163	1033	5%

Table 2.3: 2012 AADT Wider Network Daily Link Flows (in veh)
[source: DfT Database 2014]

Existing Traffic Speeds

2.12 Traffic speeds on Park Spring Road to the north and south of the site access junction are indicated in **table 2.4**.

	Speed Limit (mph)	Mean Speed (mph)	85%ile Speed (mph)
A6195 N (northbound)	60	39.7	45.4
A6195 N (southbound)	60	45.5	52.7
A6195 S (northbound)	60	46.0	53.0
A6195 S (southbound)	60	39.7	45.3

Table 2.4: Surveyed Speeds
[source: Traffic Sense ATC 7 day speeds]

2.13 The traffic speeds recorded on Park Spring Road are commensurate with the existing road class and speed restriction.

Road Safety

2.14 Latest available road collision data for the local study area was requested from BMBC in March 2014. BMBC has provided data for the three year period ending 31st December 2012. Data has been analysed that has occurred in the agreed TA study area, namely the A6195 adjacent to the site (including the site access), and accidents occurring at Broomhill and Cathill Roundabouts. The data is attached as **appendix c** and a summary is provided below.

2.15 The data shows that there have been a total of 20 collisions in the study area, the causes and contributing factors to the accidents have been fully reviewed using DfT Stats20.

2.16 Of the 20 accidents a number were caused by occurrences of non-standard driver behaviour, for example: an accident caused by horses roaming in the carriageway at 4am; a tire blow-out; and, a driver with cramp. Seven of these anomalous accidents have been removed.

2.17 A number of the remaining accidents were caused by illegal or irregular driver behaviour noted by the attending police officer, such as speeding and aggressive behaviour. However, these accidents have been retained in the analysis for robustness.

2.18 Following adjustment of the data to remove the declared anomalies, the total number of accidents in the study area is 13, of which three were classed as serious and the rest as slight.

Site Access & A6195 North & South:

2.19 A total of five accidents have occurred in the immediate local highway network, defined as the Park Spring Road from Springvale, north of the site, to and including the junction with Rotherham Road in south-east.

2.20 There have been no recorded collisions at or on immediate approach to the site access roundabout in the preceding three years.

2.21 Three accidents have occurred at on the A6195 Park Spring Road to the north and south of the site, of which two were classified as slight and one was classified as serious.

2.22 The serious accident occurred on Park Spring Road (N) at 7am and was the result of a head-on collision of two vehicles travelling in opposite directions. The attending

police officer noted that the cause of the accident was 'unknown at this time', but the officer did note that contributory factors to the accident included aggressive driving behaviour.

2.23 The slight accident also occurred on Park Spring Road (N), further north on the link than the serious collision. This accident was the result of a vehicle trying to overtake a vehicle travelling in front and the vehicle in front pulling out into the first vehicle's path. The attending officer attributed the accident to aggressive driving.

2.24 The other slight accident occurred at Park Spring Road (S). The accident was caused by a vehicle suddenly braking due to traffic conditions and the vehicle behind failing to stop.

2.25 Further to the north of the site, one slight accident has occurred at the junction of Park Spring Road/Springvale. A driver losing control and hitting an oncoming vehicle in the roundabout caused this collision.

2.26 Further to the south of the site, one slight accident has occurred at the junction of Park Spring Road/Rotherham Road. This collision was caused by a driver overtaking another vehicle at speed and failing to see an oncoming vehicle.

2.27 The number and severity of accidents in the highway network immediately adjacent to the site is below that typically expected of a road of the character, speed and traffic volume of the A6195. None of the accidents have occurred at the same location and none of the accidents have been caused by the highway layout.

Broomhill & Cathill Roundabouts:

2.28 Although the development proposal will not have a significant impact at Broomhill and Cathill Roundabouts, BMBC has requested that consideration is given in the TA to traffic conditions at these junctions. For completeness, accidents occurring at, or on immediate approach, to these junctions are included within the safety analysis.

2.29 One slight accident occurred at the Broomhill Roundabout during the assessment period. A driver failing to stop at the give-way and entering the roundabout without looking caused this accident.

2.30 Seven slight accidents occurred at the Cathill Roundabout. The Cathill Roundabout is a busy junction with frequent incidence of queuing traffic at peak periods. Most of the accidents (six) at this location relate to rear shunts and stationary traffic conditions. In a number of these accidents included drivers failing to drive appropriately for prevailing conditions, drivers travelling to close and drivers failing to look.

2.31 The remaining accident was caused by a vehicle travelling in excess of the speed limit and resulted in the driver losing control at the roundabout.

2.32 Although all accidents are regrettable, the number, nature and severity of collisions at Broomhill and Cathill Roundabouts are typical of busy roundabout junctions with queuing traffic at key periods.

Existing Local Area Travel Patterns

2.33 Mode share information for work trips undertaken in the area around the site has been obtained from the 2011 Census.

Single Occupancy Car	71%
Sustainable Modes	29%

Table 2.5: Existing Barnsley Travel to Work Mode Share
[source: 2011 ONS Census data – Barnsley]

2.34 The existing travel pattern suggests there are opportunities in relation to the proposal site to build on bus use, cycle use and car sharing in order to minimise car trips for staff. This opportunity is borne out by a staff travel survey undertaken at the adjacent ASOS Fulfilment Centre as part of the recent expansion proposals. The ASOS survey showed that staff travel by single occupancy car is 51%, rather than the 71% Barnsley authority average.

Accessibility by Non-Car Modes

2.35 The opportunities for walking, cycling and public transport for access to the site have been considered. Use of these modes offers the opportunity to reduce the amount of traffic generated by the proposal thereby minimising the negative effects of traffic associated with the scheme.

Walking

2.36 Walking offers a realistic alternative to car trips of up to 2km. The settlements of Little Houghton, Great Houghton & Middlecliffe lie within the accepted maximum walking distance of 2km for commuting trips and footpath connections exist between Middlecliffe Lane and the A6195, just north of the proposal site, and to Great Houghton via Chapel Lane.

2.37 The northern part of Darfield is also within 2km of the site and footpath connections are again present between Darfield and the A6195 via Ings Lane, to the south of the proposal site.

2.38 Given the limited population within an acceptable walking distance of the site it is considered that walking is unlikely to make a significant contribution to travel to the site, but routes are available from the nearest settlement areas.

Cycling

2.39 Cycling offers a realistic alternative to car trips up to 5km. The area from which employees could reasonably be expected to cycle extends to the residential areas of Darfield, Cudworth and Grimethorpe and includes areas of Goldthorpe, Thirnscoe and the eastern fringe of Barnsley,

2.40 The section of Park Spring Road between the site access junction and Ings Lane is designated as part of the local cycle network with a cycle connection available to Middlecliff Lane. To the north of the site further off-road cycle connections are available from the A6195 to Great Houghton and Cudworth.

2.41 The cycle links in the vicinity of the site are shown in **figure 2.1**.

Figure 2.1: Local Cycle Network
[source: cyclestreets.net © OpenStreetMap contributors]

2.42 National cycle network routes 62 and 67 run to the west and south of the site.

Public Transport

2.43 Bus stops are available on both sides of Park Spring Road adjacent to the site. These are of a good standard with shelters, timetable information and footway connections.

2.44 A number of bus services currently use the stops adjacent to the site. These are summarised in **table 2.6**.

Stop	Service No.	Route	First Bus	Last Bus	Frequency
Both	26/26A	Barnsley – Cudworth – Grimethorpe – Great Houghton (26) – Middlecliff (26) – Darfield – Wombwell – Brampton (26)	05.45	23.10	Hourly in each direction
Southbound	28	Barnsley – Shafton – Grimethorpe – Park Spring Road	05.35	18.47	Hourly
Southbound	29/29A	Barnsley – Shafton – Park Spring Road – Grimethorpe – Hemsworth – South Elmsall – Upton	14.25	23.18	Limited service
Both	216	Wombwell – Wath upon Dearne – Goldthorpe – Thurnscoe – Little Houghton – Grimethorpe	06.43	23.10	3 per day in each direction

Table 2.6: Existing Bus Services
[source: Travel South Yorkshire]

2.45 The existing bus services offer a good level of coverage and timings for access to the site by bus. Services are available between the site and the major local centres of population. The timings of the services will cover the proposed shift patterns at each facility and regular services are available during the day, with two buses per hour between the site and Barnsley and one bus per hour towards Darfield/Brampton.

2.46 The number and frequency of existing bus services currently available offer a realistic option for travel to the site.

3 TRANSPORT POLICY CONTEXT

3.1 This section outlines the local and national policy guidelines that will govern the future development of the site.

3.2 In 2011 Government published a new transport White Paper ('Creating Growth, Cutting Carbon'). This White Paper outlines the Government's vision for sustainable local transport systems that support local economic growth, whilst achieving a reduction in carbon emissions. The document sets out where transport fits in the localism agenda and changes proposed to direct support and central government funding, including details of the new Local Sustainable Transport Fund and the Regional Growth Fund.

3.3 The White Paper echoes the findings of recent DfT studies and research, which concluded that significant behavioural change could be achieved through localised smart travel planning. The Paper hails the success of the Sustainable Towns initiative and suggests that local transport measures should be based on these proven measures. The White Paper recognises that these measures work best for short trips in urban areas. However, as two-thirds of all journeys in the UK are under-five miles, it is the short distance trip where the biggest opportunity exists for people to make sustainable travel choices and to make a real difference to their local environment.

3.4 The NPPF, published in 2012, consolidates previous national planning policy guidance into one document. The document sets the 12 principles of planning, including the need to:

'actively manage patterns of growth to make the fullest possible use of public transport, walking and cycling, and focus significant developments in locations which are or can be made sustainable'

3.5 The NPPF refers to the threshold criteria in deciding whether a TA should be undertaken. The document states that consideration should be given to both sustainable access and safety, and that developments should be located where the need to travel can be minimised and sustainable transport can be maximised. The NPPF outlines a commitment to the use of Travel Plans to reinforce the sustainable credentials of a development. The NPPF document also states that refusal on transport grounds should only be made when residual cumulative impacts of the development proposal are severe.

3.6 NPPF replaces planning policy advice in planning policy guidance notes, including PPG13.

3.7 National waste management policy and guidance is outlined in the 2013 'Waste Management Plan for England' and the 2011 'Planning Policy Statement 10: Planning for Sustainable Waste Management' (PPS10) documents. In terms of transport, PPS10 states that authorities should, inter alia, assess the capacity of existing and potential transport infrastructure to support the sustainable movement of waste and consider the suitability of the local road network.

3.8 In line with NPPF and PPS10, the site is located in an accessible location with highway infrastructure suitable for the use proposed already in place. The TA demonstrates that the residual traffic generated by the proposal can be safely accommodated on the local highway network and will not cause a severe change from baseline operational characteristics.

3.9 Local transport policy is outlined in the third South Yorkshire Local Transport Plan (known as the 'Sheffield City Region Transport Strategy: 2011-2026). The document outlines transport strategy and investment priorities for Barnsley, Doncaster, Rotherham and Sheffield for the 15 year period. The document underpins local planning policy, including the Core Strategy, and aims to:

- Support economic growth
- Enhance social inclusion and health
- Reduce emissions from vehicles
- Maximise safety and security
- Provide excellent road, rail and air links to/from South Yorkshire
- Provide a well managed and enhanced road network that facilitates the free movement of goods

3.10 LTP3 seeks to influence land use planning by locating development so that the need to travel is reduced, accessibility is maximised and local infrastructure is appropriate to the needs of the development type.

3.11 The South Yorkshire Passenger Transport Executive (SYPTE) document 'Land Use Planning and Public Transport: A Developer Guide' seeks to:

- Support developers in designing a sustainable site
- Highlight public transport interventions and incentives available

3.2 The SYPTE guidance aims to:

'…prevent dependency on the private car, it is important that attractive public transport as well as walking and cycling links are in place, supported by incentives to use them.'

3.12 SYPTE promotes developments that provide good connections to existing sustainable route corridors. SYPTE guidance states to be deemed accessible a development must be within 400m (5-minute walk) of public transport facilities.

3.13 The development proposal meets relevant adopted local and national policy requirements.

4 PERMITTED DEVELOPMENT

Permitted Development Description

4.2 The site benefits from planning consent for the development of 19 industrial units totalling 10,607m2 GFA and 208 car parking spaces (application ref 2008/1426). The planning permission was renewed in 2011 and remains a live consent that could be brought forward.

Permitted Development Traffic

4.3 Extant site traffic flows have been forecast in line with the 2013 'TRICS Good Practice Guide'. The trip forecast uses TRICS land use 02 – employment/d (industrial estate). Guidance states that this is the land use to be used for industrial sites with more than one building/operator. The extant forecast removes sites in London and Ireland, and only includes industrial estates that sit in edge of town/suburban areas.

4.4 The vehicle traffic flows permitted by the current site consent are summarized in **table 4.1** and the TRICS output is attached as **appendix d**.

	ALL VEHICLES (LV + HV)			HV ONLY			TOTAL TRAFFIC (PCU)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM Peak Hour	55	25	80	1	3	4	56	28	84
PM Peak Hour	13	47	60	1	0	1	13	47	60
DAILY (12HR)	378	389	768	26	26	53	405	416	820

Table 4.1: Consented Use Traffic Flows

4.5 The permitted development flows have been distributed onto the study area network in line with surveyed turning movements.

5 DEVELOPMENT PROPOSAL

Development Description

5.1 The proposed REP comprises a 150,000tpa Timber Resource Recovery Centre (TRRC) and a 60,000tpa Anaerobic Digestion (AD) facility. The development of the site will create two distinct but compatible energy generation facilities with the potential to generate 23MW of electricity (20MW (net) from the TRRC and 3MW from the AD facility) and to provide a direct heat and/or electrical supply to appropriate off-takers in the local area.

5.2 Vehicle access will be taken from the existing spur on the Houghton Main Colliery Roundabout.

5.2 The proposed site layout is shown in **appendix e**.

Anaerobic Digestion Facility

5.3 The AD facility will have the capacity to deal with 60,000tpa of waste imported to the site. At this level of operation the AD facility will generate export material as digestate (51,000tpa) and general residue (3,000tpa).

5.4 The facility will operate 24 hours a day, 365 days a year but will operate on a system of deliveries on weekdays and Saturday mornings only (5.5 days per week). The resulting annual and daily HV loads, and resulting daily HV movements have been provided by the future operator and are set out in **table 5.1**.

AD	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	60,000	10	6000	275	22	44
Digestive Export	51,000	15	3400	275	12	24
General Residue	3,000	10	300	275	1	2
					35	70

Table 5.1: AD Heavy Vehicles – Annual/Daily Forecast

5.4 The HV movements will occur throughout the day during set periods for deliveries. The routes used by delivery vehicles and timing of deliveries will be managed to minimise the effects of delivery vehicles on local amenity and on the operation of congested areas of the highway network. Deliveries will not take place outside the hours of 7am to 7pm weekdays or at weekends other than Saturday mornings.

5.5 The pattern of HV movements during the day has been calculated for the purposes of the TA on the basis of a typical profile for a land fill site, based on data from the TRICS database.

5.6 The profile of daily HV movements to and from the AD facility is summarised in **table 5.2**.

	AD Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM Peak Hour	4	3	7
PM Peak Hour	1	1	2
Daily	35	35	70

Table 5.2: AD Heavy Vehicles Daily Movement Summary

5.7 The operator of the AD facility has advised that a maximum of 5 staff will be on site at any one time and that the facility will operate one 12h shift per day (7am-7pm). The timing of the shifts is such that staff traffic movements will all occur outside the typical network peak periods.

5.8 ONS Census mode share data for Barnsley has been used to determine the number of car trips that will be generated by staff movements to and from the site. This indicates typical car driver mode share of 71%. The resulting staff car movements are shown in **table 5.3** together with the HV movements and combined total daily traffic movement summary.

	AD HV Traffic			AD Staff Car Traffic			Total AD Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM Peak Hour	4	3	7	0	0	0	4	3	7
PM Peak Hour	1	1	2	0	0	0	0	2	2
Daily	35	35	70	4	4	7	39	39	78

Table 5.3: Total Site Traffic Daily Profile – AD Facility

Timber Resource Recovery Centre

5.9 The TRRC will have the capability to deal with 150,000tpa of waste (import material). The facility will generate export material as ash (up to 11,133tpa) and fly ash (up to 4,500tpa). As with the AD facility, the TTRC will operate continuously throughout the year.

5.10 The vehicle fleet for the TRRC facility will be made up of 20t payload vehicles for import, 25t payload vehicles for ash export and 20t payload vehicles for fly ash export.

5.11 The resulting annual and daily HV loads and resulting daily HV movements for the TRRC as advised by the future operator are summarised in **table 5.4**.

TRRC	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	150000	20	7500	275	27	55
Ash Export	11133	25	445	275	2	3
Fly Ash Export	4500	20	225	275	1	2
					30	60

Table 5.4: TRRC Heavy Vehicle Movements Summary

5.12 The HV movements will occur throughout the day. The daily profile for a typical landfill facility has again been used as the basis for calculation of delivery movements to the facility. The resulting movements are summarised in **table 5.5**.

	TRRC Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM Peak Hour	3	3	6
PM Peak Hour	1	1	2
Daily	30	30	60

Table 5.5: TRRC Heavy Vehicles Peak Hour Forecast

5.13 The TRRC will employ a total of 25 members of staff. The operator has advised that a maximum of 4 shift staff will be on site at any one time and that the facility will operate one 12-hour shift per day (7am – 7pm). Managerial staff will work between 8am and 5pm, the traffic forecast for the assessment is based on 4 managerial staff on site during this period.

5.14 Typical mode shares for travel to work in Barnsley are again used to complete the analysis of traffic movements associated with the facility. These are shown in **table 5.6**.

	TRRC HV Traffic			TRRC Shift Staff Car Traffic			TRRC Management Staff Car Traffic			Total TRRC Traffic		
	IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
AM Peak Hour	3	3	6	0	0	0	3	0	3	6	3	9
PM Peak Hour	1	1	2	0	0	0	0	3	3	0	4	5
Daily	30	30	59	3	3	6	3	3	6	35	35	70

Table 5.6: TRRC Traffic Movements

Travel Plan & Heavy Vehicle Management Strategy

5.15 The proposed development is expected to generate very low levels of traffic but in order to ensure opportunities for sustainable trip making are taken up where possible a Travel Plan has been prepared. The Travel Plan is attached as **appendix b**.

5.16 The focus of the Travel Plan is to promote take-up of alternative modes of travel to the car for staff accessing the site. Given the site location and availability of existing bus services the realistic options to minimise car journeys are considered to be bus, cycle and car sharing. A survey undertaken at the adjacent ASOS Fulfilment Centre as part of the recent expansion application showed that staff car travel to the site is 20% lower and staff bus use is 6.3% higher than Barnsley ONS Census commuting mode share. Local precedents support the ability of the location of the proposal site adjacent to existing bus corridors and proposed travel plan measures to reduce future staff car travel beneath that assessed as a worst-case in this TA.

5.17 The travel plan also includes the management strategy for the movement of heavy vehicles to and from the site. At this stage this identifies existing restrictions on the highway network and the routes that will be used by heavy vehicles, together with proposed restrictions on the timing of movements.

5.18 The heavy vehicle management strategy will be developed in more detail with specific delivery patterns as part of the implementation of the Travel Plan.

5.19 The effects of the Travel Plan and heavy vehicle management strategy on traffic movements associated with the proposal have not been taken into account in the consideration of development traffic impact for the purposes of the TA analysis. The controls on delivery movements and the timing of staff travel will effectively reduce peak hour movements at the site to a negligible level.

Parking Provision

5.20 Parking will be provided on site at a level required to meet the operational needs of the facilities only. 11 spaces will be provided at the AD facility, including two disabled, and 10 spaces at the TRRC, including two disabled.

5.21 The Framework Travel Plan recommends that some of the parking spaces should be allocated to car sharers to assist with reducing single occupancy staff car trips.

6 FORECAST TRAFFIC FLOWS

Assessment Study Area & Assessment Scenarios

6.1 The study area includes the following junctions:

- Site Access/Park Spring Road
- A6195/A635 'Broomhill Roundabout'
- A6195/Manvers Way/Highgate 'Cathill Roundabout'

6.2 Background traffic flows for the development opening year (2017) and future year (2019) have been forecast using TEMPRO adjusted NTM local traffic growth factors. The background traffic forecasts are shown in **appendix f**. The background traffic does not contain flows associated with the permitted development proposal.

6.3 Baseline traffic forecasts have also been produced against which the impact of the proposed development is considered. The baseline traffic forecasts include the permitted development scheme for the site. These are also included in **appendix f**.

6.4 Traffic forecasts with the proposed development include the traffic associated with the renewable energy park development. These are also included in **appendix f**.

6.5 The scenarios considered in the TA are, therefore:

- 2017 Background AM/PM
- 2017 Baseline AM/PM
- 2017 with Development AM/PM
- 2019 Baseline AM/PM
- 2019 with Development AM/PM

Total Development Traffic

6.4 The traffic forecast is outlined in **section 5** and total development traffic flows summarised in **table 6.1**.

	Total HV Traffic			Total Staff Car Traffic			Total Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM Peak Hour	7	6	13	3	0	3	10	6	15
PM Peak Hour	1	3	4	0	3	3	1	6	7
Daily	65	65	130	9	9	18	74	74	148

Table 6.1: Total Development Traffic (in veh)

6.5 **Table 6.2** shows the total development traffic flows converted to passenger car units (pcu) in line with TRR67 conversion, where the HV value is 2.0 and LV value is 1.0.

	Total Traffic		
	IN	OUT	TOTAL
AM Peak Hour	17	11	28
PM Peak Hour	1	9	10
Daily	139	139	278

Table 6.2: Total Development Traffic (in pcu)

6.6 Full calculations and TRICS data utilised within the analysis is presented in **appendix f**.

Development Traffic Distribution

6.6 The operators have confirmed that the routing of trips will follow general population/settlement distributions. The ATC flows at the site roundabout approaches and DfT link flows on the wider network have therefore been used to distribute the HV and staff traffic.

6.7 **Table 6.3** shows the distribution of traffic from the site. In the peak hours there will be minimal change in traffic flows at junctions/links away from the development site. **Table 6.3** shows a worst-case scenario, as in reality the proposed heavy vehicle management strategy will remove heavy vehicle movements from the peak periods.

			Total Traffic (LV + HV)			HV Total Traffic		
Route Name	2017 AADT	Distribution	AM	PM	Daily	AM	PM	Daily
A6195 N Park Spring Road	9349	49%	8	3	73	6	2	64
A6195 S Park Spring Road	9583	51%	8	3	75	6	2	66
A635 W Doncaster Road	17077	16%	2	1	24	2	1	21
A635 E Doncaster Road	13204	12%	2	1	18	2	0	16
A6195 S	23515	22%	3	1	33	3	1	29

Table 6.3: Development Traffic Distribution (in veh)

6.8 The equivalent distribution pattern has also been used to assign traffic relating to the consented industrial development scheme for the purposes of comparison with baseline traffic conditions, as shown in **table 6.4**.

			Total Permitted Traffic (LV + HV)			Permitted HV Traffic		
Route Name	2017 AADT	Distribution	AM	PM	Daily	AM	PM	Daily
A6195 N Park Spring Road	9349	49%	40	29	379	2	0	26
A6195 S Park Spring Road	9583	51%	41	30	389	2	1	27
A635 W Doncaster Road	17077	16%	13	10	123	1	0	8
A635 E Doncaster Road	13204	12%	10	7	95	1	0	7
A6195 S	23515	22%	18	13	170	1	1	12

Table 6.4: Permitted Development Traffic Distribution (in veh)

7 TRANSPORT IMPACT

7.1 This section of the TA outlines the traffic and highway impact of the development proposals. The forecast changes in traffic flows with the inclusion of the development traffic are shown to be insignificant in relation to both background and baseline traffic conditions. The volume of traffic that will be generated by the renewable energy park is also shown to be substantially lower than would be generated by the consented development scheme.

Comparison of Permitted & New Site Traffic

7.1 The site benefits from extant planning consent for a 19 unit industrial development and 208 parking spaces. **Table 7.1** shows a comparison of the previous consent traffic flows and those associated with the current proposal.

	Total Daily Traffic (LV+HV)	Total Daily HV
Extant	768	53
AD	78	70
TRRC	71	60
Total Proposal	148	130
Change	*-619*	*77*

Table 7.1: Comparison with Consented Scheme (in veh)

7.2 The proposed use will generate significantly less total traffic than the uses currently consented for the site.

7.3 HV movements are higher with the current proposals, but spread over the day and distributed across the wider network this increase from consented and base flows is unlikely to be perceptible.

7.4 A heavy vehicle management strategy is proposed that will ensure that delivery movements do not detrimentally affect the operation of the highway network at peak times and to minimise the impact of heavy vehicle movements on amenity through the control of the routes used by delivery vehicles.

7.5 **Table 7.2** shows a comparison of permitted site traffic flows and the new proposal flows in pcu.

	Total Daily PCU
Extant	820
Proposal	278
Change	*-542*

Table 7.2: Comparison with Consented Scheme (in pcu)

7.6 As is shown, the new proposal will generate significantly less than the uses currently permitted on site. It should also be noted that the current planning permission does not include a requirement to limit heavy vehicle movements in peak periods or a travel plan.

Comparison with 2017 Background Traffic Flows

7.7 **Table 7.2** shows the change in peak hour traffic flows as a result of the development proposal; against the 2017 background traffic flows. For robustness in this instance to demonstrate the insignificant number of vehicles generated by the proposal, the base flows do not include the permitted site traffic flows.

	AM Peak			PM Peak		
Junction Flow	Background	With Dev	%	Background	With Dev	%
A6195 Site Access	996	1024	1.9	1181	1191	0.8
Cathill Roundabout	3969	3983	0.36	4148	4154	0.14
Broomhill Roundabout	3370	3376	0.18	3511	3514	0.09

Table 7.2: 2017 Comparison of Total Peak Hour Background Traffic & With Development Flows (in pcu)

7.8 **Table 7.3** shows a comparison of the AADT baseline and with development flows on the wider network links, again the permitted site traffic flows are not included in the background flows shown below to allow a worst-case comparison.

	Background	With Dev	Change
Link Flow	2017 AADT	2017 AADT	
A6195 N Park Spring Road	9349	9422	0.8%
A6195 S Park Spring Road	9583	9658	0.8%
A635 W Doncaster Road	17077	17101	0.1%
A635 E Doncaster Road	13204	13223	0.1%
A6195 S	23515	23548	0.1%

Table 7.3: 2017 Comparison of Total Daily Background Traffic & With Development Flows (in veh)

7.9 **Table 7.4** shows the change in HV movements as a result of the development.

	Background	With Dev	Change
Link Flow	2017 HV %	2017 HV %	
A6195 N Park Spring Road	12%	13%	0.6%
A6195 S Park Spring Road	13%	13%	0.6%
A635 W Doncaster Road	3%	3%	0.1%
A635 E Doncaster Road	9%	9%	0.2%
A6195 S	5%	5%	0.1%

Table 7.4: 2017 Comparison of Background HV% & With Development HV%

7.10 **Tables 7.3**, **7.4** and **7.5** show that the worst-case change in network traffic resulting from the development is low and will not cause an impact on road operation or highway safety.

Comparison with 2017 Base Traffic Flows

7.11 **Table 7.5** shows the change peak hour traffic flows when compared to the 2017 base flows (eg. the forecast situation that would occur should the permitted site development go ahead). The analysis shows that the new proposal will cause a reduction in network traffic when compared to that previously consented by BMBC as acceptable for the local highway network.

	AM Peak			PM Peak		
Junction Flows	2017 Base	With Dev	%	2017 Base	With Dev	%
A6195 Site Access	1080	1024	-5.2	1242	1191	-4.1
Cathill Roundabout	4011	3983	-0.71	4179	4154	-0.59
Broomhill Roundabout	3388	3376	-0.37	3524	3514	-0.29

Table 7.5: Change from 2017 Base Flows (in pcu)

Site Access Assessments

7.12 The tables above show that the development will have an insignificant impact on the local highway network when compared to both the background traffic and the baseline traffic volumes. Despite this, full operational assessments have been undertaken for the 2017 and 2019 base and with development scenarios.

7.13 The junctions in the study area have been assessed for opening year (2017) and future year (2019) traffic flow scenarios with and without the proposed development. All flows used are in pcu.

7.14 Full assessment output is included in **appendices g** and **h** for the opening year and future year, respectively. The results of the analysis of the site access junction (Houghton Main Colliery Roundabout) are summarised in **tables 7.6** and **7.7**.

	2017 AM Base		2017 AM with Dev		2017 PM Base		2017 PM with Dev	
	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)
From A6195 (N)	0.361	1	0.345	1	0.414	1	0.407	1
ASOS	0.024	0	0.024	0	0.065	0	0.064	0
From A6195 (S)	0.370	1	0.355	1	0.388	1	0.384	1
Site Access	0.026	0	0.010	0	0.046	0	0.009	0

Table 7.6: Houghton Main Colliery Roundabout Analysis – Opening Year

	2019 AM Base		2019 AM with Dev		2019 PM Base		2019 PM with Dev	
	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)	Max RFC	Max Queue (pcu)
From A6195 (N)	0.389	1	0.373	1	0.447	1	0.440	1
ASOS	0.026	0	0.026	0	0.073	0	0.072	0
From A6195 (S)	0.398	1	0.383	1	0.419	1	0.415	1
Site Access	0.027	0	0.011	0	0.047	0	0.006	0

Table 7.7: Houghton Main Colliery Roundabout Analysis – Future Year

7.15 The analysis demonstrates that the site access junction will operate within capacity in all scenarios. There is considerable spare capacity at this junction. The results also show that the site access junction is forecast to operate marginally better in the scenario with the proposed development than in the base case in which the consented development scheme is progressed.

Broomhill & Cathill Roundabout Traffic Impact

7.16 The TA shows that the proposal will generate less traffic onto the highway network than currently permitted for the site. It also shows that the proposal will not cause a significant increase in traffic when compared to background or base traffic flows.

BMBC has requested that consideration be given of the impact of the proposal at the Cathill and Broomhill Roundabouts.

7.17 The traffic impact at both locations as a result of the proposals is shown in **table 7.8**.

	AM Peak			PM Peak		
Junction Flow	Background	With Dev	%	Background	With Dev	%
Cathill Roundabout	3969	3983	0.36	4148	4154	0.14
Broomhill Roundabout	3370	3376	0.18	3511	3514	0.09

Table 7.8: Impact at Cathill & Broomhill Roundabouts (Comparison with 2017 Background Traffic Conditions)

7.18 **Table 7.8** shows that the maximum increase in traffic, when compared to 2017 background levels, will be only 0.36% occurring in the AM peak. This level of increase will be imperceptible to other road users and will not have a material impact on operation or road safety.

7.19 A comparison has also been made of the impact at these locations in terms of change from 2017 base flows (i.e. the situation that will occur if the existing site consent is implemented). **Table 7.9** shows that the new proposal will reduce site traffic at these locations when compared to that previously considered acceptable by BC.

	AM Peak			PM Peak		
Junction Flows	2017 Base	With Dev	%	2017 Base	With Dev	%
Cathill Roundabout	4011	3983	-0.71	4179	4154	-0.59
Broomhill Roundabout	3388	3376	-0.37	3524	3514	-0.29

Table 7.9: Traffic Impact at Cathill & Broomhill Roundabouts (Comparison with 2017 Base Consented Situation)

7.20 The TA shows that the proposal will not have a significant impact on road safety or traffic operation at the Cathill and Broomhill roundabouts. Notwithstanding this, the operators of both facilities are prepared to manage HV access to the site so that it doesn't coincide with peak network periods.

Impact on Road Safety

7.21 Full analysis has been undertaken of the latest three-year's collision data available from BMBC. This analysis has been undertaken for the TA study area, defined as the Park Spring Road adjacent to the site and the Broomhill and Cathill Roundabouts.

7.22 The analysis (shown in **section 2**) shows that there are no significant accident hotspots or prevalent collision causes on the A6195 adjacent to the site. The TA also shows that changes in traffic resulting from the proposal are below that currently permitted for the site and also that the development flows will not cause a material change when compared to background or baseline traffic conditions. As a consequence, the development will not have a significant impact on local road safety.

7.23 Notwithstanding this, the development proposes travel planning measures to reduce single occupancy staff car trips. These measures will further reduce highway and safety impact.

7.24 Consideration has also been given to historic accidents at the Cathill and Broomhill Roundabouts. The analysis shows that there has only been one accident at the Broomhill Roundabout in the previous three years and there are no prevalent safety issues at this location.

7.25 The analysis shows that there have been a number of accidents at the Cathill Roundabout relating to driver behaviour during queuing traffic situations and drivers failing to stop/giveway appropriately. The level of traffic change at this location is less than the site traffic generation previously accepted by BMBC. For example, the TA shows that the inclusion of the development traffic leads to a maximum increase from 2017 background levels of 0.36% occurring in the AM peak hour, and a maximum decrease of -0.7% in the AM peak when compared to the 2017 base (eg. the situation that would occur should the industrial permission on site be implemented). The new development proposal will result in a reduction in traffic at the Cathill and Broomhill roundabouts when compared to that consented and previously considered acceptable by BMBC.

7.26 It is clearly shown that even the worst-case increase in traffic change (ie. increase from background levels) will not significantly change existing safety levels at this location.

7.27 Notwithstanding the insignificant impact at the Cathill and Broomhill Roundabouts, the operator has agreed to limit deliveries and export movements during the AM and PM peak periods. This will further assist in reducing traffic and road safety impact at both junctions.

Heavy Vehicle Impact

7.28 The site is well located for access by heavy vehicles, with immediate highway access routes of good standard and construction. The site already benefits from a live consent for industrial uses, with associated heavy vehicle movements, and adjacent land uses are similar in nature.

7.29 BMBC has expressed concern at the operation of two junctions to the south of the proposal, Broomhill and Cathill Roundabouts, in the peak periods. The development includes measures to reduce impact at these locations during critical periods, including restricting site heavy vehicle delivery/export so that it doesn't coincide with stress periods. The TA also shows that the level of heavy vehicle movements will not be significant.

7.30 As shown on **figures 7.1**, **7.2** and **7.3** a number of locations within the vicinity of the site benefit from height, width and weight restrictions to reduce the impact of heavy vehicles on local amenity. As outlined in the Framework Travel Plan, the operators are committed to promoting access to the site by the most appropriate heavy vehicle routes to minimise impact on sensitive residential locations.

Table 7.1: Existing Width Restrictions
[source: ukhaulier.co.uk]

Table 7.3: Existing Weight Restrictions
[source: ukhaulier.co.uk]

Table 7.3: Existing Height Restrictions
[source: ukhaulier.co.uk]

8 CONCLUSIONS

8.1 SK Transport Planning Ltd (SKTP) has been appointed by Peel to prepare a Transport Assessment (TA) in support of a planning application for the development of a Renewable Energy Park at the Houghton Main site in Barnsley.

8.2 The site is located on the south side of the A6135 Park Spring Road, west of the settlements of Little Houghton and Great Houghton and north of Darfield. The site benefits from an existing roundabout access junction shared with the ASOS Fulfilment Centre on the north side of Park Spring Road. The site is well served by existing public transport routes on Park Spring Road.

8.3 The TA has been produced in line with the Department for Transport's 'Guidance on Transport Assessment'. The scope for the TA has been discussed with the local highway authority, Barnsley Metropolitan Borough Council, and a detailed scoping report issued in March 2014. At the request of the council, consideration is also given to the traffic impact of the proposals at the Broomhill and Cathill Roundabouts.

8.4 The assessment shows that the renewable energy park will generate a low number of vehicle movements, substantially below the level that would be generated by the consented industrial scheme, and that the proposed scheme will have a minimal effect on highway operation and safety.

8.5 The type of development proposed, whilst not generating substantial volumes of traffic, will include HGV traffic required for the transport of materials to the site, and to a lesser extent exports from the site. The operators have control over these movements and have agreed to institute management strategies to minimise the impact of HGV movements on amenity and highway operation during critical periods.

8.6 A Framework Travel Plan has been prepared to support and promote sustainable access to the site, and identify measures that can be implemented to further reduce the number of single occupancy car trips generated by the proposal.

8.7 The Transport Assessment concludes that the proposal meets the requirements of local and national policy, and that the residual impact of the proposal will not be severe.

APPENDIX A

140318/SK213441/TA/Scope
BY EMAIL

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18th March 2014

Dear Barbara,

RE: Anaerobic Digestion Facility & Timber Resource Recovery Centre, Houghton Colliery, Houghton Main – Transport Assessment Scope

It was good to meet with you last month at the inception meeting for the Houghton Colliery project. I feel that it was a productive meeting and your advice gave me a good indication of the highway authority's requirements in terms of transport planning submission documents and scope.

Since this meeting Enzygo has submitted the Environmental Impact Assessment scoping study for the facilities. We provided the transport information for this, which included your stated requirement to examine impact of the proposal at the Broomhill and Cathill roundabouts to the south of the site. Given the differences between IEMA ES transport chapter requirements and the Department for Transport (DfT) Transport Assessment requirements, I thought it would be useful to contact you directly regarding our proposed scope for the Transport Assessment and also to provide you with the trip generation forecasts discussed in the meeting.

My scope, outlined below, is in line with DfT guidance and is also informed by development trip forecast information from the two operators of the AD and TRR facilities.

Background to the Proposal:

The site is located circa 1km to the west of Little Houghton and 6.5km to the east of Barnsley town centre. Access to the site is from a spur off a roundabout (known as Houghton Main Colliery Roundabout) on the A6195 Park Spring Road. The existing roundabout provides a good standard of access to the site and the ASOS facility opposite.

Park Spring Road is a single carriageway road, which is subject to the national speed limit (60mph). Park Spring Road is also an existing bus corridor that provides a reasonable service provision of circa two buses per hour in each direction during the day. Existing bus services provide good coverage of local areas, including Barnsley, Grimethorpe and Pontefract. Footways link the site to the existing bus stops.

The site relates well to the strategic highway network, with the both the A1(M) and M1 approximately 9km away to the east and west, respectively. Access to the motorway

network and surrounding areas can be gained using the A6195 and other A class highway routes linking to it. Similarly, a good class of road (A635) provides an existing connection to Barnsley town centre.

Historically the site was used as Houghton Colliery and the site currently benefits from a live permission for the development of 19 industrial units with 208 parking spaces (ref: 2008/1426). This permission was renewed in 2012 and is still a live consent.

Extant site traffic flows have been forecast in line with the 2013 'TRICS Good Practice Guide'. The trip forecast (output attached to this letter) uses TRICS land use 02 – employment/d (industrial estate). Guidance states that this is the land use to be used for industrial sites with more than one building/operator. The extant forecast removes sites in London and Ireland, and only includes industrial estates that sit in edge of town/suburban areas. The vehicle traffic flows permitted by the current site consent are summarized in table 1.

	ALL VEHICLES			OGV		
	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	55	25	80	1	3	4
PM	13	47	60	1	0	1
DAILY	378	389	768	26	26	53

Table 1: Extant Site Use Traffic Flows

Trip Forecast:

The trip forecast for new AD and TRRC facility proposal is based on HV deliveries/export numbers, vehicle payloads and staff numbers provided by the future operators of the site. The operators, who run similar facilities throughout the UK, have advised that the forecast is very realistic and replicates their experience elsewhere. I have outlined below the method used.

Anaerobic Digestion (AD) Facility:

The AD facility will have the capability to deal with 60,000tpa of waste per year. Export is split into digestate and general residue. The operator has confirmed that the facility will generate 51,000tpa digestate export and 3,000tpa general residue export.

The facility will operate 24 hours a day, 365 days per year. However, deliveries will be restricted to 5.5 working days per week. Import will occur on 10t payload vehicles, digestate export will occur on 15t payload vehicles and general residue export on 10t payload vehicles.

Table 2 shows the resulting annual and daily HV loads, and resulting daily HV movements generated by the facility.

AD	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	**60,000**	10	6000	275	22	44
Digestive Export	51,000	15	3400	275	12	24
General Residue	3,000	10	300	275	1	2
					35	**70**

Table 2: AD Heavy Good Annual/Daily Forecast

The HV movements will occur throughout the day. As before, and to allow an assessment of hourly HV arrivals and departures, we have used a typical land fill site traffic profile from TRICS.

	AD Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM	4	3	7
PM	1	1	2
Daily	35	35	70

Table 3: AD Heavy Good Peak Hour Forecast

The AD facility will employ 10 members of staff. The operator has advised that a maximum of five staff will be on site at any one time and that the facility will operate one 12 hour shift per day between 7am and 7pm. Consequently none of the staff will arrive for work or depart work in the network peak period.

To calculate how many car trips the staff will generate I have applied ONS 2011 Census journey to work mode share data for Barnsley (71% car).

The total traffic associated with the AD facility is shown in table 4.

	AD HV Traffic			AD Staff Car Traffic			Total AD Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	4	3	7	0	0	0	4	3	7
PM	0	2	2	0	0	0	0	2	2
Daily	35	35	71	4	4	7	39	39	78

Table 4: Total AD Traffic

Timber Resource Recovery Centre (TRRC):

The TRRC facility will have the capability to deal with 150,000tpa of waste per year. Export is split into digestate and general residue. The operator has confirmed that the facility will generate 11,133tpa ash export and 4,500tpa fly ash export.

The facility will operate 24 hours a day, 365 days per year. However, deliveries will be restricted to 5.5 working days per week. Import will occur on 20t payload vehicles, ash export will occur on 25t payload vehicles and fly ash export on 20t payload vehicles.

Table 5 shows the resulting annual and daily HV loads, and resulting daily HV movements generated by the facility.

TRRC	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	**150000**	20	7500	275	27	54
Ash Export	11133	25	445	275	2	4
Fly Ash Export	4500	20	225	275	1	2
					30	**60**

Table 5: TRRC Heavy Good Annual/Daily Forecast

The HV movements will occur throughout the day. As before, and to allow an assessment of hourly HV arrivals and departures, we have used a typical land fill site traffic profile from TRICS.

	TRRC Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM	3	3	6
PM	0	1	2
Daily	30	30	60

Table 6: TRRC Heavy Good Peak Hour Forecast

The TRRC facility will employ 25 members of staff. The operator has advised that a maximum of 4 shift staff will be on site at any one time and that the facility will operate a 12-hour shift per day, starting at 7am and finishing at 7pm. The operator has also advised that the managers will also be on site and will work between 8am and 5pm. For the purposes of the forecast I have assumed that 4 managers will be on site each day during this period.

To calculate how many car trips the staff will generate I have again applied ONS 2011 Census journey to work mode share data for Barnsley (71% car).

The total traffic associated with the AD facility is shown in table 7.

	TRRC HV Traffic			TRRC Shift Staff Car Traffic			TRRC Management Staff Car Traffic			Total TRRC Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	3	3	6	0	0	0	3	0	3	6	3	9
PM	1	1	2	0	0	0	0	3	3	1	4	5
Daily	30	30	59	3	3	6	3	3	6	35	35	70

Table 7: Total TRRC Traffic

Total Site Traffic:

Table 8 shows total forecast traffic generation.

	Total HV Traffic			Total Staff Car Traffic			Total Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	7	6	13	3	0	3	10	6	15
PM	1	3	4	0	3	3	1	6	7
Daily	65	65	130	9	9	18	74	74	148

Table 8: Total Development Site Traffic

Site Traffic Impact:

The proposed development traffic generation is compared below to the traffic generation associated with the existing site permission.

	Total Daily Traffic (LV+HV)	Total Daily HV
Extant	768	53
AD	78	70
TRRC	71	60
Total Proposed	*148*	*130*

Table 9: Comparison with Consented

As can be seen, the proposed use will generate significant less total traffic than the uses currently consented for the site. HV movements are higher with the current proposals, but spread over the day and distributed across the wider network, this is unlikely to be perceptible. Measures can be put in place to manage HV access, as discussed with you at the meeting.

Forecast Distribution:

The operators have confirmed that the routing of trips will follow general population/settlement distributions. Therefore we have used existing turning movements at the site access roundabout and link flows on the wider network to distribute the HV and staff traffic.

Table 10 shows the distribution of traffic from the site. In the peak hours there will be minimal change in traffic flows at junctions/links away from the development site. Furthermore, the change in traffic resulting from the new proposals is significantly less than the traffic levels associated with the current consent for the site, as shown in table 9.

			Total Traffic (LV + HV)			HV Total Traffic		
Route Name	2017 AADT	Distribution	AM	PM	Daily	AM	PM	Daily
A6195 N Park Spring Road	9349	49%	8	3	73	6	2	64
A6195 S Park Spring Road	9583	51%	8	3	75	6	2	66
A635 W Doncaster Road	17077	16%	2	1	24	2	1	21
A635 E Doncaster Road	13204	12%	2	1	18	2	0	16
A6195 S	23515	22%	3	1	33	3	1	29

Table 10: Distribution

Study Area Requirements:

Although it is shown above the development will not generate significant volumes of traffic in the peak periods and also that the forecast development traffic is below that currently permitted for the site, I still propose the submission of a full Transport Assessment with the application. This is to ensure that the impact of the proposal is fully appraised from a traffic, safety and accessibility perspective, and also to fit with the requests made by you at our meeting.

In terms of study area, bearing in mind the low volume of hourly traffic forecast (particularly when compared to the extant permission for the site) I would normally suggest that the

study be restricted to the site access and the Park Spring Road links. However, in the meeting last month you outlined the highway authority's concerns regarding the existing operating conditions of the Broomhill and Cathill roundabouts to the south of the site and I agreed that we would examine the impact of the proposals at these locations in the Transport Assessment study area. Our client also indicated at the meeting willingness to commit to a restriction on site HV movements during critical AM and PM peak hours.

Given this I have set the TA study area as follows:

- Site Access/Park Spring Road
- Broomhill Roundabout
- Cathill Roundabouts

We have already undertaken surveys at the site access roundabout and ATC volume/speed surveys of Park Spring Road (north and south). We also have obtained recent daily link flow data for a significant number of roads in the highway network from DfT. This data has been used to assist with forecasting the distribution and setting the study area.

At the meeting you said that we would be able to purchase traffic flow data for Broomhill and Cathill from BMBC. Could you provide me with contact details so that we can purchase this data and include impact assessments at these two junctions in our Transport Assessment?

Transport Assessment Scope:

In line with current DfT guidance the TA will include the following elements:

1) Existing Situation

- Site location
- Surrounding highway network (including character and classification)
- Existing access arrangements
- Extant/historic site uses
- Existing peak hour study area traffic flows
- Park Spring Road speed survey
- Extant site traffic flows
- Road accident history

2) Policy Context

- National/regional policy review
- Local policy review

3) Development Proposals

- Proposed scale & land use
- Proposed layout
- Proposed staff numbers
- Proposed parking provision
- Proposed servicing & HV access strategy (with swept paths)
- Proposed staff sustainable access strategy (with travel plan type measures)

4) Accessibility by Non-car Modes

- Accessibility on foot
- Accessibility by cycle
- Accessibility by public transport

- Access to local amenities & services
- Accessibility impact analysis

5) Traffic Forecast

- Forecast of opening and future year base study area peak hour flows
- Forecast of development traffic (LV & HV)
- Forecast impact of sustainable access strategy measures on staff car use
- Forecast residual traffic flows (LV & HV)
- Forecast development trip distribution (LV & HV)
- Forecast opening year/future year base and development study area peak hour flows
- Summary of daily flows to be used in the ES Chapter

6) Impact & Mitigation

- Comparison of new & extant site traffic flows
- Network impact analysis
- Modelling analysis of study area junctions
- Identification of mitigation measures, if required

Framework Travel Plan:

The proposed staff numbers at the site is not of the scale that would typically warrant the submission of a Travel Plan with the development. However, I suggest that a brief document is included in the TA to outline measures that could be used at the site to influence travel behavior, these measures would obviously need to be mindful of operating requirements, etc.

The Framework Travel Plan will be included as an appendix to the Transport Assessment. The measures proposed would be taken from latest government and local authority guidance and best practice.

I trust my proposed scope meets your requirements and look forward to discussing this with you further next week. If you could ring me as soon as possible with contact details for Cathill and Broomhill roundabout traffic flows I would greatly appreciate it.

Yours sincerely,

JOHN THOMPSON

APPENDIX B

TRANSPORT ASSESSMENT APPENDIX B

HOUGHTON MAIN

RENEWABLE ENERGY PARK

FRAMEWORK TRAVEL PLAN

DOCUMENT CONTROL

Project Title:	Houghton Main Renewable Energy Park
Client:	Peel Environmental Management (UK) Limited & Houghton Main Waste Limited
Project Manager:	John Thompson
Project Number:	SK21341
Document Reference:	SK21341_FTP02
Document Type:	Framework Travel Plan
Reviewed by:	Lesli Speers
Authorised by:	John Thompson
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Issue	Date	Distribution	Comments
01DRAFT	10.04.14	Project Team	Draft for comment
01	17.04.14	Project Team	Updated with new traffic flows
02	08.05.14		Final

CONTENTS

1 CONTEXT

Introduction & Background to the Proposal

1.1 SK Transport Planning Ltd (SKTP) has been appointed by Peel Environmental Management (UK) Limited on behalf of Houghton Main Waste Limited (Peel) to prepare a Framework Travel Plan in support of a planning application for the development of a Renewable Energy Park (REP) at the Houghton Main site in Barnsley. The location of the development is shown on **plan 1**.

1.2 The proposal site benefits from planning consent for employment use, the approved scheme comprises 19 industrial units with a total GFA of 10,607m^2 and 208 car parking spaces. A Transport Assessment (TA) has been produced for the site, in line with local and national guidance. The scope of the TA was discussed with Barnsley Metropolitan Borough Council (BMBC) at a meeting in January 2014 and a full scope submitted in March 2014.

1.3 The proposed renewable energy park comprises a 150,000tpa Timber Resource Recovery Centre (TRRC) and a 60,000tpa Anaerobic Digestion (AD) facility. The development of the site will create two distinct but compatible energy generation facilities with the potential to generate 23MW of electricity (20MW (net) from the TRRC and 3MW from the AD facility) and to provide a direct heat and/or electrical supply to appropriate off-takers in the local area.

1.4 Vehicle access will be taken from the existing spur on the Houghton Main Colliery Roundabout.

1.5 The site will employ a total of 30 members of staff. Operators have confirmed that a maximum of 13 staff will be on site at any one time, with 9 of the staff starting and finishing work outside the network peak periods. The travel plan measures proposed acknowledges the low number of staff employed and also the low forecast traffic levels.

1.6 The TA shows that the site is well served by public transport routes that provide good coverage of residential areas. The public transport routes also provide services that sit well with future shift patterns on the site.

1.7 The type of development proposed, whilst not generating substantial volumes of traffic, will include HGV traffic required for the transport of materials to the site, and to a lesser extent exports from the site. The operators have control over these movements and have agreed to institute management strategies to minimise the impact of HGV movements on residential amenity and highway operation during critical periods.

1.8 The assessment concludes that the REP will generate a low number of vehicle movements, substantially below the level that would be generated by the consented industrial scheme, and that the proposed scheme will have a minimal effect on highway operation and safety.

1.9 Full details of the impact of the proposal are available in SKTP Transport Assessment report (SK21341_TA02) submitted with the application.

1.10 This framework outlines site management and policy measures that build upon existing the accessibility level of the site and will assist in reducing single occupancy car use to the site.

The Travel Plan Process

1.11 A travel plan is a tool for managing access to a site that aims to promote access by sustainable modes. A travel plan contains a package of measures designed to meet the objective to reduce car use generated from the site by supporting sustainable modes of transport and measures that will build on the accessible location of the site.

Travel plans are site specific and the contents of the plan is dependent upon site location, site scale and site operation.

1.12 A successful travel plan involves a dynamic process of implementation, monitoring indicators and review to ensure that it is meeting the needs of staff of the site and reducing unnecessary single occupancy car use. The first stage in the travel plan process is often a framework, or interim, plan that outlines the philosophy that will be adopted upon occupation of a development.

1.13 This submitted framework outlines the accessibility of the site, infrastructure measures proposed as part of the development, and management and policy measures for adoption upon occupation of the site. The measures proposed acknowledge the opportunities that already exist for staff to access the site by public transport, and also the operational characteristics of the site. The measures outlined in the framework have been drawn from UK and local area best practice.

1.14 The travel plan also includes a heavy vehicle management strategy to assist in reducing the impact on residential amenity and critical network periods.

Policy Overview

1.15 The framework measures have been developed in line with local and national green travel planning advice and best practice, including:

- White Paper on the Future of Transport 'A New Deal for Transport: Better for Everyone'
- White Paper 'Cutting Carbon, Creating Growth'
- 'National Planning Policy Framework'
- Department for Transport 'Planning Policy Guidance Note 13: Transport'
- The Department for Transport, Local Government & the Regions 'Walk In to Walk Out'
- The Department for Environment, Transport & the Regions 'Preparing your Organisation for Transport in the Future: The Benefits of Green Transport Plans'
- The Energy Efficiency Best Practice Programme 'A Travel Plan Resource Pack for Employers'
- Department for Transport 'Making Travel Plans Work'
- Department for Transport 'Essential Guide to Travel Planning'
- Department for Transport 'Effects of Smarter Choice Programme in Sustainable Travel Towns'
- Department for Transport 'Smarter Choices – Changing the Way we Travel'
- Transport for Quality of Life 'Tools for Travel Planning in Urban Areas'
- Highways Agency, TRAVELWISE et al 'Soft Measures – Hard Facts'

1.16 In line with local and national guidance, the measures proposed include *soft* measures (such as promotion and marketing and site activity management) and *hard* measures (such as cycle parking provision and dedicated car sharer parking).

Benefits & Objectives

1.17 The adoption of a travel plan can result in the following benefits for future staff, and the wider community:

- Promoting of active and healthy lifestyles
- Providing sustainable and vibrant communities
- Reducing road safety and congestion issues
- Reducing carbon emissions and improving local air quality issues

- Reducing single occupancy car trips
- Reducing impact of heavy vehicle traffic

1.18 The principal aim of a travel plan is to reduce the environmental effects of transport associated with new developments, particularly those associated with the private car such as air quality and vehicle emissions. There are also secondary benefits to the introduction of travel plans, which include improvements to quality of life, reduction in congestion, improvements to health, travel cost savings and improvements to road safety.

1.19 Initial key aims of the framework travel plan are set as follows:

- To provide clear guidance on the methods to be used to assess the impact of the travel plan
- To develop a toolkit of strategy measures to complement the site operation and location
- To outline the strategy for monitoring and reviewing the plan

1.20 This framework includes an initial package of measures to be taken forward by the travel plan co-ordinator upon occupation of the development. The key objectives of framework have been initially set as:

- Reducing single occupancy car use
- Promoting access by public transport
- Promoting suitable heavy vehicle routes and delivery/export times

2 SITE LOCATION & ACCESSIBILITY

Site Location

2.1 The site is located on the south side of the A6195 Park Spring Road just over 1km west of the settlements of Little Houghton and Great Houghton, some 6.5km east of the centre of Barnsley and 1.5km north of Darfield.

2.2 Vehicle access to the site is available via an existing roundabout on Park Spring Road, known as Houghton Main Colliery Roundabout. The junction also provides access to the ASOS Fulfilment Centre on the northern side of Park Spring Road.

2.3 The site forms part of the Houghton Main Colliery site (disused) and benefits from a live planning consent for the development of 19 industrial units with 208 parking spaces (application ref. 2008/1426). The planning consent, originally granted in 2008, was renewed in 2011.

Access by Vehicle

2.4 The A6195 Park Spring Road is a single carriageway road subject to national speed limit. The road is of relatively recent construction and is of a high standard. The route is a bus corridor with typical service provision of two buses per hour in each direction during the day. Bus stops with good standard shelters are located on Park Spring Road adjacent to the site, footway connections to these are provided from the Houghton Main Colliery Roundabout.

2.5 The site relates well to the strategic highway network, with both the A1(M) and M1 approximately 9km to the east and west of the site, respectively. Access to strategic routes and the local area can be gained via the A6195 and other A class routes including the A635 which routes east-west between the M1 and A1(M) via Barnsley

town centre, and meets the A6195 at the Cathill Roundabout some 2.5km south-east of the site.

2.6 The TA shows that the proposal will generate considerably less traffic than that already permitted for the site, and also that the new proposal will have an insignificant impact when compared to baseline traffic conditions. Despite this the Cathill Roundabout and Broomhill Roundabout have been included in the study area for the TA and impact at these locations is considered, to accord with a request from BMBC.

2.7 The Cathill Roundabout connects the A6195 with the A635, the Broomhill Roundabout is the next junction to the south on the A6195, 2km south of the Cathill Roundabout, and provides access to Broomhill via Highgate and areas of Brampton and Wath Upon Dearne via Manvers Way.

2.8 The opportunities for walking, cycling and public transport for access to the site have been considered. Use of these modes offers the opportunity to reduce the amount of traffic generated by the proposal thereby minimising the negative effects of traffic associated with the scheme.

Access on Foot

2.9 Walking offers a realistic alternative to car trips of up to 2km. The settlements of Little Houghton, Great Houghton & Middlecliffe lie within the accepted maximum walking distance of 2km for commuting trips and footpath connections exist between Middlecliffe Lane and the A6195, just north of the proposal site, and to Great Houghton via Chapel Lane.

2.10 The northern part of Darfield is also within 2km of the site and footpath connections are again present between Darfield and the A6195 via Ings Lane, to the south of the proposal site.

2.11 Given the limited population within an acceptable walking distance of the site it is considered that walking is unlikely to make a significant contribution to travel to the site, but routes are available from the nearest settlement areas.

Access by Cycle

2.12 Cycling offers a realistic alternative to car trips up to 5km. The area from which employees could reasonably be expected to cycle extends to the residential areas of Darfield, Cudworth and Grimethorpe and includes areas of Goldthorpe, Thurnscoe and the eastern fringe of Barnsley,

2.13 The section of Park Spring Road between the site access junction and Ings Lane is designated as part of the local cycle network with a cycle connection available to Middlecliff Lane. To the north of the site further off-road cycle connections are available from the A6195 to Great Houghton and Cudworth.

2.14 National cycle network routes 62 and 67 run to the west and south of the site.

Access by Bus

2.15 Bus stops are available on both sides of Park Spring Road adjacent to the site. These are of a good standard with shelters, timetable information and footway connections.

2.16 A number of bus services currently use the stops adjacent to the site. These are summarised in **table 2.6**.

Stop	Service No.	Route	First Bus	Last Bus	Frequency
Both	26/26A	Barnsley – Cudworth – Grimethorpe – Great Houghton (26) – Middlecliff (26) – Darfield – Wombwell – Brampton (26)	05.45	23.10	Hourly in each direction
Southbound	28	Barnsley – Shafton – Grimethorpe – Park Spring Road	05.35	18.47	Hourly
Southbound	29/29A	Barnsley – Shafton – Park Spring Road – Grimethorpe – Hemsworth – South Elmsall – Upton	14.25	23.18	Limited service
Both	216	Wombwell – Wath upon Dearne – Goldthorpe – Thurnscoe – Little Houghton – Grimethorpe	06.43	23.10	3 per day in each direction

Table 2.6: Existing Bus Services
[source: Travel South Yorkshire]

2.17 The existing bus services offer a good level of coverage and timings for access to the site by bus. Services are available between the site and the major local centres of population. The timings of the services will cover the proposed shift patterns at each facility and regular services are available during the day, with two buses per hour between the site and Barnsley and one bus per hour towards Darfield/Brampton.

2.18 The number and frequency of existing bus services currently available offer a realistic option for travel to the site.

3 PROPOSAL

Permitted Development Description

3.1 The site benefits from planning consent for the development of 19 industrial units totalling 10,607m2 GFA and 208 car parking spaces (application ref 2008/1426). The planning permission was renewed in 2012 and remains a live consent that could be brought forward.

3.2 The permission for the industrial use does not include a requirement to manage heavy vehicle access times or a travel plan.

Renewable Energy Proposal: Overview

3.3 The proposed REP comprises a 150,000tpa Timber Resource Recovery Centre (TRRC) and a 60,000tpa Anaerobic Digestion (AD) facility. The development of the site will create two distinct but compatible energy generation facilities with the potential to generate 23MW of electricity (20MW (net) from the TRRC and 3MW from the AD facility) and to provide a direct heat and/or electrical supply to appropriate off-takers in the local area.

3.4 Vehicle access will be taken from the existing spur on the Houghton Main Colliery Roundabout.

3.5 Parking will be provided on site at a level required to meet the operational needs of the facilities only. 11 spaces will be provided at the AD facility, including two disabled, and 10 spaces at the TRRC, including two disabled.

3.6 The site is well located for access by heavy vehicles, with immediate highway access routes of good standard and construction. The site already benefits from a live consent for industrial uses, with associated heavy vehicle movements, and adjacent land uses are similar in nature.

3.7 BMBC has expressed concern at the operation of two junctions to the south of the proposal, Broomhill and Cathill Roundabouts, in the peak periods. The development includes measures to reduce impact at these locations during critical periods, including restricting site heavy vehicle delivery/export so that it doesn't coincide with stress periods. The TA also shows that the level of heavy vehicle movements will not be significant.

3.8 As shown on **figures 3.1**, **3.2** and **3.3** a number of locations within the vicinity of the site benefit from height, width and weight restrictions to reduce the impact of heavy vehicles on local amenity. The operators are committed to promoting access to the site by the most appropriate heavy vehicle routes to minimise impact on sensitive residential locations.

Table 3.1: Existing Width Restrictions
[source: ukhaulier.co.uk]

Table 3.2: Existing Weight Restrictions
[source: ukhaulier.co.uk]

Table 3.3: Existing Height Restrictions
[source: ukhaulier.co.uk]

Anaerobic Digestion Facility: Operation & Heavy Vehicles

3.9 The AD facility will have the capacity to deal with 60,000tpa of waste imported to the site. At this level of operation the AD facility will generate export material as digestate (51,000tpa) and general residue (3,000tpa).

3.10 The facility will operate 24 hours a day, 365 days a year but will operate on a system of deliveries on weekdays and Saturday mornings only (5.5 days per week). The resulting annual and daily HV loads, and resulting daily HV movements have been provided by the future operator and are set out in **table 3.1**.

AD	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	60,000	10	6000	275	22	44
Digestive Export	51,000	15	3400	275	12	25
General Residue	3,000	10	300	275	1	2
					35	70

Table 3.1: AD Heavy Vehicles – Annual/Daily Forecast

3.11 The HV movements will occur throughout the day during set periods for deliveries. The routes used by delivery vehicles and timing of deliveries will be managed to minimise the effects of delivery vehicles on local amenity and on the operation of congested areas of the highway network. Deliveries will not take place outside the hours of 7am to 7pm weekdays or at weekends other than Saturday mornings.

3.12 The pattern of HV movements during the day has been calculated for the purposes of the TA on the basis of a typical profile for a land fill site, based on data from the TRICS database.

3.13 The profile of daily HV movements to and from the AD facility is summarised in **table 3.2**.

	AD Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM Peak Hour	4	3	7
PM Peak Hour	0	2	2
Daily	35	35	70

Table 3.2: AD Heavy Vehicles Daily Movement Summary

Anaerobic Digestion: Staff

3.14 The operator of the AD facility has advised that a maximum of 5 staff will be on site at any one time and that the facility will operate one 12h shift per day (7am-7pm). The timing of the shifts is such that staff traffic movements will all occur outside the typical network peak periods.

3.15 In the TA, the established travel pattern for Barnsley has been used to determine the number of car trips that will be generated by staff movements to and from the site. This indicates typical car driver mode share of 71%, higher than the car mode share achieved at the adjacent ASOS Fulfilment Centre. The resulting staff car movements are shown in **table 3.3** together with the HV movements and combined total daily traffic movement summary.

	AD HV Traffic			AD Staff Car Traffic			Total AD Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM Peak Hour	4	3	7	0	0	0	4	3	7
PM Peak Hour	0	2	2	0	0	0	0	2	2
Daily	35	35	71	4	4	7	39	39	78

Table 3.3: Total Site Traffic Daily Profile – AD Facility

Timber Resource Recovery Centre: Operation & Heavy Vehicles

3.16 The TRRC facility will have the capability to deal with 150,000tpa of waste (import material). The facility will generate export material as ash (up to 11,133tpa) and fly ash (up to 4,500tpa). As with the AD facility, the TRRC will operate continuously throughout the year.

3.17 The vehicle fleet for the TRRC facility will be made up of 20t payload vehicles for import, 25t payload vehicles for ash export and 20t payload vehicles for fly ash export.

3.18 The resulting annual and daily HV loads and resulting daily HV movements for the TRRC as advised by the future operator are summarised in **table 3.4**.

TRRC	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	150000	20	7500	275	27	54
Ash Export	11133	25	445	275	2	4
Fly Ash Export	4500	20	225	275	1	2
					30	60

Table 3.4: TRRC Heavy Vehicle Movements Summary

3.19 The HV movements will occur throughout the day. The daily profile for a typical landfill facility has again been used as the basis for calculation of delivery movements to the facility. The resulting movements are summarised in **table 3.5**.

	TRRC Heavy Vehicle Traffic		
	IN	OUT	TOTAL
AM Peak Hour	3	3	6
PM Peak Hour	1	1	2
Daily	30	30	60

Table 3.5: TRRC Heavy Vehicles Peak Hour Forecast

Timber Resource Recovery Centre: Staff

3.20 The TRRC will employ a total of 25 members of staff. The operator has advised that a maximum of 4 shift staff will be on site at any one time and that the facility will operate one 12-hour shift per day (7am – 7pm). Managerial staff will work between 8am and 5pm, the traffic forecast for the assessment is based on 4 managerial staff on site during this period.

3.21 Typical mode shares for travel to work in the area are again used to complete the analysis of traffic movements associated with the facility. These are shown in **table 3.6**.

	TRRC HV Traffic			TRRC Shift Staff Car Traffic			TRRC Management Staff Car Traffic			Total TRRC Traffic		
	IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT	IN	OUT	TOT
AM Peak Hour	3	3	6	0	0	0	3	0	3	6	3	9
PM Peak Hour	1	1	2	0	0	0	0	3	3	1	4	5
Daily	30	30	59	3	3	6	3	3	6	35	35	70

Table 3.6: TRRC Traffic Movements

Total Site Traffic: Staff & Heavy Vehicle

3.22 The total forecast traffic used in the TA is shown in **table 3.7**. The level of traffic associated with the renewable energy park is significantly lower than that associated with permitted industrial uses on site.

3.23 The level of traffic generated by the proposal is shown in the TA to have an insignificant impact on highway network operation and safety levels.

	Total HV Traffic			Total Staff Car Traffic			Total Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM Peak Hour	7	6	13	3	0	3	10	6	16
PM Peak Hour	1	3	4	0	3	3	1	6	7
Daily	65	65	130	9	9	18	74	74	148

Table 3.7: Total Renewable Energy Park Traffic

4 TRAVEL PLAN MANAGEMENT

Travel Plan Co-ordinator

4.1 An effective travel plan needs a clear hierarchy of responsibility. Travel plan co-ordinators play an important role in developing the plan, managing the plan and monitoring its effectiveness.

4.2 Three months prior to the occupation of the site, a travel plan co-ordinator will be identified for each facility and contact details given to BC to enable the plan to be finalised and agreed shortly after occupation of the site.

4.3 The travel plan co-ordinators will be responsible for the day-to-day running of the travel plan and will also develop, implement and monitor the travel plan's effectiveness. The co-ordinators will form the main point of contact for the local authority and staff. The co-ordinators will also be responsible for raising awareness and marketing the travel plan and surveying its effectiveness.

4.4 In summary, the travel plan co-ordinators' general role and responsibilities will include:

- Implementing the plan measures.
- Providing a point of contact for staff and local residents.
- Publicising and raising awareness of the travel plan initiatives.
- Keeping up to date local public transport information on the travel notice boards.
- Regularly monitoring and surveying travel patterns.
- Managing parking space allocation.

4.5 The travel plan co-ordinators will also liaise with site managers should any issues arise with heavy vehicle routeings.

Marketing & Promotion

4.6 Research undertaken by DfT and Sustrans as part of the Cycle Demonstration and Sustainable Towns initiatives demonstrated that marketing and promotion are as important to facilitating active travel as the provision of new transport infrastructure. This has been corroborated by recent research undertaken by HA, TRAVELWISE *et al* in 2011. The research shows that people will more readily make sustainable trips if information on available routes and mode choice is readily available.

4.7 The travel plan co-ordinators will be responsible for marketing and promoting the final plan. The following measures are proposed to raise awareness of local public transport routes and initiatives:

1. Provision of welcome packs for all new staff.
2. Provision and maintenance of an up to date travel notice boards in prominent locations.
3. Creation of simple car sharing database.

5 TRAVEL PLAN TOOLKIT

5.1 The recommendations included in the toolkit acknowledge the operational requirements of the proposal and low number of staff at the facility. The measures have been drawn from best practice, DfT guidance, case studies throughout the UK.

5.2 The monitoring and management plan in **section 6** provides commitment to regularly reviewing the adopted marketing and management measures. The framework includes a commitment to undertake a simple staff travel survey upon occupation of each facility to allow car sharing matches to be made and an understanding of staff requirements to be gained. The surveys will allow the toolkit outlined below to be validated and updated, as required.

Cycling Toolkit:		
Measure	Responsibility	Timescale
Provide secure cycle storage spaces in line with local standards	Contractor	Construction
Provide cycle route maps on prominent travel noticeboard	Travel Plan Co-ordinator	On-going
Promote local and national cycling events/initiatives	Travel Plan Co-ordinator	On occupation, on-going
Public Transport Toolkit:		
Measure	Responsibility	Timescale
Provide link to SY journey planning website as part of welcome pack	Travel Plan Co-ordinator	On appointment
Provide local bus route maps and timetables on noticeboard	Travel Plan Co-ordinator	On-going
Efficient Staff Car Use Toolkit:		
Measure	Responsibility	Timescale
Car parking levels in line with BC maximum standards	Contractor	Construction
Set up simple staff car sharing database	Travel Plan Co-ordinator	Within 6 months
Provide local taxi company numbers on noticeboard	Travel Plan Co-ordinator	On occupation
Promote www.taxibudi.com a scheme offered by Liftshare to reduce travel costs	Travel Plan Co-ordinator	On occupation
Provide priority car sharer parking spaces	Contractor	Construction
Efficient Heavy Vehicle Use Toolkit:		
Measure	Responsibility	Timescale
Restrict heavy vehicle delivery and export times to periods outside 8am-9am and 5pm-6pm	Operator	On occupation
Restrict heavy vehicle routes to strategic network or most appropriate roads, in line with existing highway restrictions	Operator	On occupation

Table 5.1: Toolkit & Implementation

6 PERFORMANCE MONITORING

Monitoring, Review & Timescales

6.1 The travel plan will be monitored on a regular basis to using staff surveys to ensure that single occupancy car use is reduced and the heavy vehicle strategy is adhered to.

6.2 A questionnaire survey will be used and will aim to collect the following information:

- Actual travel mode
- Preferred travel mode
- Home location

6.3 The first surveys will be undertaken six months after occupation of each facility.

6.4 Following the initial surveys, monitoring will be repeated on an annual basis for a period of three years, in line with DfT guidance.

Targets

6.5 The overarching targets of the final travel plan will be to reduce single occupancy car trips to the site, and reduce impact of heavy vehicles on local amenity and the peak period highway network.

6.6 DfT also recommends that action based targets should be set for new developments, based on specific milestones or indicators. The following interim action based targets have been set for the framework and will be agreed with MCC upon finalisation of the plan.

- Appointment of travel plan co-ordinator three months prior to occupation
- Personalised journey planning for all new residents
- Provision of timetables and sustainable transport maps on a prominent noticeboard

APPENDIX C

2014 Surveyed Houghton Main Roundabout Flows (in pcu)

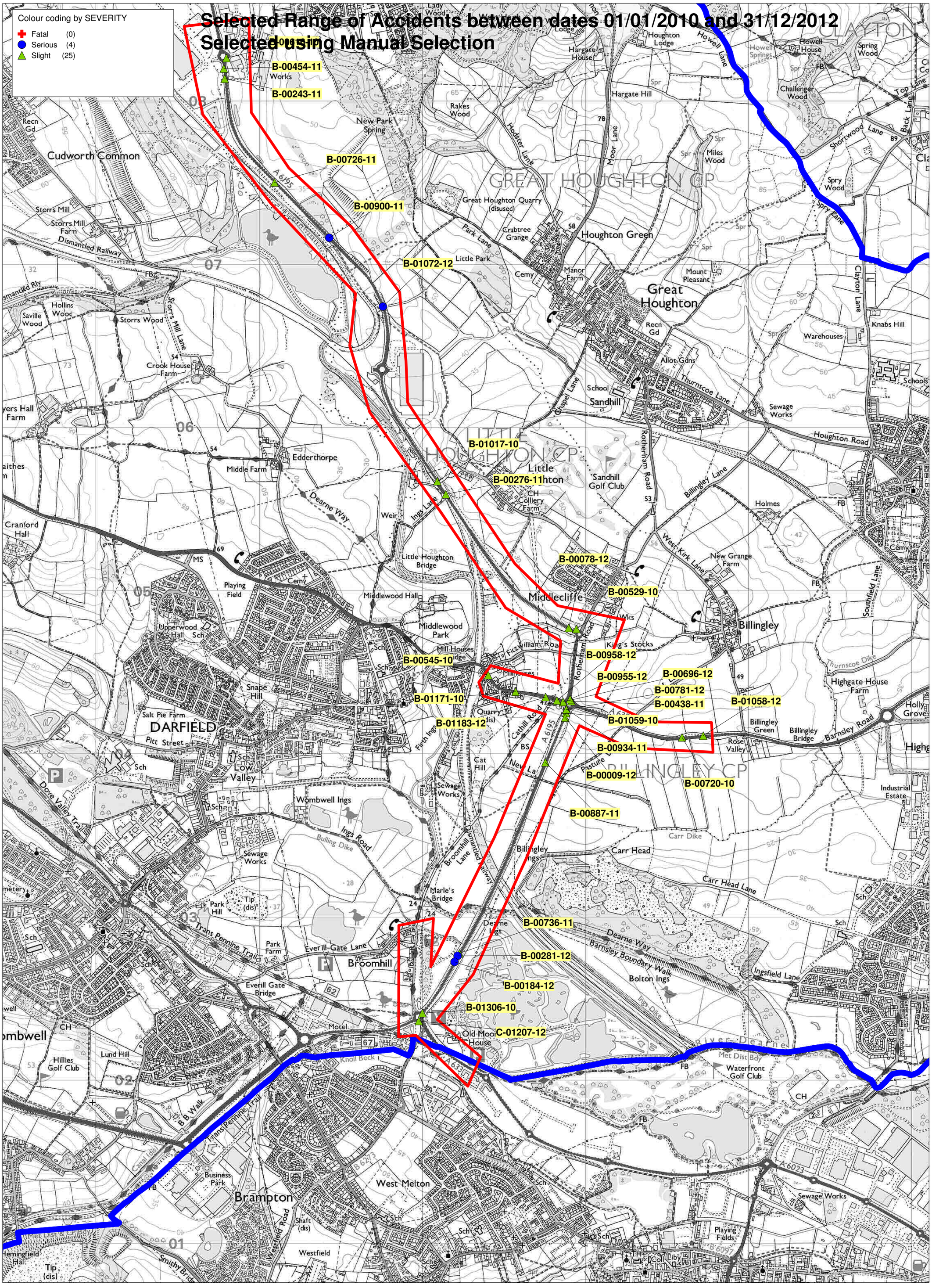
	AM Peak: 7.30am- 8.30am				PM Peak: 4.15pm-5.15pm			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	26	398	0	0	12	503	0
ASOS	12	0	14	0	26	0	39	0
A6195 S	471	35	0	0	543	10	0	0
Access	0	0	0	0	0	0	0	0

2014 Surveyed Flows (in pcu): Cathill Roundabout

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	132	437	46	0	172	523	116
A635 E	214	0	523	510	192	0	561	661
A6195 S	510	521	0	103	580	323	0	173
A635 W	59	540	219	0	60	476	140	0

2014 Surveyed Flows (in pcu): Broomhill Roundabout

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	576	552	0	0	532	653	20
Manvers Way	501	0	417	8	498	0	469	58
A6195 S	640	493	0	7	613	506	0	17
Highgate	13	19	12	0	0	1	0	0



MAKING SOUTH YORKSHIRE ROADS SAFER

Selected map area

SCALE	1 : 16500
DATE	03/04/2014
DRWG No.	
DRN BY	

ıccidents between dates **01/01/2010 and 31/12/2012** (36) months

ɛlection:

elected using Build Query : Local_auth = 'BARNSLEY'

Notes:

SK Transport Ltd

Police Ref.	Date	Cas.	Sev.	P2W	Cycs	Peds	Ch	OAPs	Vis.	Manv.	Road Cond.	Time	Location
-00529-10	17/05/2010	1	Slight	0	1	0	0	0	Light	No turn	Dry	0634	PARK SPRINGS RD MIDDLECLIFFE AT J/W ROTHERHAM RD RDBT
-00545-10	24/05/2010	1	Slight	0	0	1	0	0	Light	No turn	Dry	1242	DONCASTER RD DARFIELD
-00616-10	09/06/2010	1	Slight	0	0	0	0	1	Light	No turn	Dry	0640	PARKSPRINGS RD GRIMETHORPE J/W SPRINGVALE RD
-00720-10	03/07/2010	2	Slight	0	0	0	1	0	Light	No turn	Dry	1045	A635 GOLDTHORPE
-01017-10	29/09/2010	3	Slight	0	0	0	1	0	Light	No turn	Wet/Damp	0900	PARK SPRING RD BARNSLEY
-01059-10	06/10/2010	1	Slight	0	0	0	0	0	Light	No turn	Wet/Damp	0802	DEARNE VALLEY PARKWAY DARFIELD 30 MTS FROM CATHILL R/AB
-01171-10	06/11/2010	3	Slight	0	0	0	0	0	Dark	No turn	Dry	1728	DONCASTER RD DARFIELD
-01306-10	06/12/2010	2	Slight	0	0	0	0	0	Light	No turn	Snow	1415	BROOMHILL RDBT BRAMPTON AT J/W DEARNE VALLEY PARKWAY
-00243-11	15/03/2011	1	Slight	0	0	0	0	0	Dark	No turn	Wet/Damp	0426	PARK SPRING RD GRIMETHORPE
-00276-11	20/03/2011	1	Slight	0	1	0	0	0	Light	No turn	Dry	1230	PARK SPRING RD LITTLE HOUGHTON
-00438-11	24/04/2011	1	Slight	0	0	0	0	0	Dark	No turn	Dry	2200	DONCASTER RD DARFIELD J/W CATHILL R/ABOUT
-00454-11	11/05/2011	1	Slight	1	0	0	0	0	Dark	No turn	Dry	2320	PARK SPRING RD GRIMETHORPE
-00726-11	31/07/2011	1	Slight	0	0	0	0	0	Light	No turn	Dry	1025	PARK SPRING RD GRIMETHORPE
-00736-11	04/08/2011	5	Slight	0	0	0	0	0	Light	No turn	Wet/Damp	1109	DEARNE VALLEY PARKWAY BROOMHILL 500 MTS FROM MANVERS
-00887-11	17/09/2011	1	Slight	0	0	0	0	0	Light	No turn	Dry	1330	DEARNE VALLEY PARKWAY DARFIELD 300 MTS FROM DONCASTER
-00900-11	23/09/2011	1	Serious	0	0	0	0	0	Light	No turn	Dry	0700	PARK SPRING ROAD GRIMETHORPE BARNSLEY 750M N HOUGHTON
-00934-11	28/09/2011	5	Slight	0	0	0	0	0	Light	No turn	Dry	1425	DEARNE VALLEY PARKWAY DARFIELD
-00009-12	01/01/2012	2	Slight	0	0	0	1	0	Dark	No turn	Wet/Damp	0230	DEARNE VALLEY PARKWAY BROOMHILL 40 MTS FROM CATHILL R/
-00078-12	26/01/2012	1	Slight	0	0	0	0	0	Light	No turn	Wet/Damp	0937	PARK SPRING RD MIDDLECLIFFE
-00184-12	01/03/2012	1	Serious	1	0	0	0	0	Light	Right	Dry	1725	DEARNE VALLEY PARKWAY BROOMHILL 400 YDS FROM A 633
-00281-12	28/03/2012	1	Serious	1	0	0	0	0	Light	Right	Dry	1320	DEARNE VALLEY PARKWAY BROOMHILL 500 MTS FROM BROOMHIL
-00696-12	31/07/2012	1	Slight	0	0	0	0	0	Light	No turn	Dry	1520	DONCASTER RD BARNSLEY J/W CATHILL RNDBT
-00781-12	30/08/2012	1	Slight	1	0	0	0	0	Light	No turn	Dry	1220	DEARNE VALLEY PARKWAY DARFIELD, BARNSLEY J/W BARNSLEY I
00955-12	22/10/2012	1	Slight	1	0	0	0	0	Dark	No turn	Wet/Damp	0720	ROTHERHAM RD BARNSLEY J/W CATHILL R/ABOUT
00958-12	22/10/2012	2	Slight	0	0	0	0	0	Light	Right	Wet/Damp	1100	DONCASTER RD BARNSLEY
01207-12	09/11/2012	1	Slight	0	0	0	0	0	Light	No turn	Dry	1300	PONTEFRACT RD BRAMPTON ROTHERHAM J/W BARNSLEY RD
01058-12	21/11/2012	3	Slight	0	0	0	0	1	Light	No turn	Wet/Damp	1124	DONCASTER ROAD BARNSLEY 200 METRES BILLINGLY GREEN LANI
01072-12	25/11/2012	1	Serious	0	0	0	0	0	Dark	No turn	Wet/Damp	0658	PARK SPRINGS RD BARNSLEY
01183-12	19/12/2012	1	Slight	0	0	0	0	0	Light	No turn	Wet/Damp	1240	DONCASTER ROAD DARFIELD, BARNSLEY 100 M EAST DEARNE VAL
ɔlumn Totals		47		5	2	1	3	2					
ɔ. of Accidents				5	2	1	3	2					

ɔtal number of accidents listed: 29

Accidents between dates **01/01/2010 and 31/12/2012** (36) months

Selection:
Selected using Build Query : Local_auth = 'BARNSLEY'

Notes:
SK Transport Ltd

Police Ref.	Date	Cas.	Sev.	P2W	Cycs	Peds	Ch	OAPs	Vis.	Manv.	Road Cond.	Time	Location

Accidents between dates **01/01/2010 and 31/12/2012** (36) months

Selection:

Selected using Build Query : Local_auth = 'BARNSLEY'

Notes:

SK Transport Ltd

olice Ref.	Acc Class	Date	Time	Grid References	Casualties Ftl	Ser	Slt	Causation Factors/ Prob	Ped L M D	Light	Weather	Road Surface	Vehicle Types
-00529-10	Slight	17/05/2010	0634	442947 404765	0	0	1	405V1A 407V1A 706V1A 802V1A	0 0 0	Light	Fine without high winds	Dry	1 9
-00545-10	Slight	24/05/2010	1242	442406 404481	0	0	1	803C1B	9 9 0	Light	Fine without high winds	Dry	1 1
-00616-10	Slight	09/06/2010	0640	440800 408264	0	0	1	403V1B	0 0 0	Light	Fine without high winds	Dry	9 17
-00720-10	Slight	03/07/2010	1045	443595 404100	0	0	2	405V2B 409V2B 410V2B	0 0 0	Light	Fine without high winds	Dry	9 9
-01017-10	Slight	29/09/2010	0900	442094 405669	0	0	3	408V2B	0 0 0	Light	Raining without high winds	Wet/Damp	9 9
-01059-10	Slight	06/10/2010	0802	442883 404250	0	0	1	405V2A 406V2A 103V2A 307V2B	0 0 0	Light	Raining without high winds	Wet/Damp	9 9
-01171-10	Slight	06/11/2010	1728	442574 404380	0	0	3	901V3A	0 0 0	Dark	Fine without high winds	Dry	9 9 9
-01306-10	Slight	06/12/2010	1415	442002 402410	0	0	2	405V2A 406V2A	0 0 0	Light	Other	Snow	19 9
-00243-11	Slight	15/03/2011	0426	440790 408137	0	0	1	109V1A	0 0 0	Dark	Fog or mist	Wet/Damp	9
-00276-11	Slight	20/03/2011	1230	442146 405590	0	0	1	602V1A 405V1A	0 0 0	Light	Fine without high winds	Dry	9 1
-00438-11	Slight	24/04/2011	2200	442916 404322	0	0	1	403V1A 410V1B 601V1B	0 0 0	Dark	Fine without high winds	Dry	9
-00454-11	Slight	11/05/2011	2320	440784 408199	0	0	1	410V1A	0 0 0	Dark	Fine without high winds	Dry	9 2
-00726-11	Slight	31/07/2011	1025	441095 407501	0	0	1	410V2B	0 0 0	Light	Fine without high winds	Dry	9 9
-00736-11	Slight	04/08/2011	1109	442229 402776	0	0	5	405V1A	0 0 0	Light	Fine without high winds	Wet/Damp	9 19
-00887-11	Slight	17/09/2011	1330	442757 403947	0	0	1	307V1A 405V1A	0 0 0	Light	Fine without high winds	Dry	9 9
-00900-11	Serious	23/09/2011	0700	441431 407162	0	1	0	409V2B 410V2B	0 0 0	Light	Fine without high winds	Dry	9 21
-00934-11	Slight	28/09/2011	1425	442885 404274	0	0	5	406V1A	0 0 0	Light	Fine without high winds	Dry	9 9 9
-00009-12	Slight	01/01/2012	0230	442878 404221	0	0	2	509V1A 503V1A	0 0 0	Dark	Fine without high winds	Wet/Damp	9
-00078-12	Slight	26/01/2012	0937	442900 404771	0	0	1	403V2A 307V2B 410V2B 408V2B	0 0 0	Light	Fine without high winds	Wet/Damp	21 9
-00184-12	Serious	01/03/2012	1725	442199 402724	0	1	0	405V1A	0 0 0	Light	Fine without high winds	Dry	9 5 9
00281-12	Serious	28/03/2012	1320	442218 402761	0	1	0	403V1A 405V1A	0 0 0	Light	Fine without high winds	Dry	5 9
00696-12	Slight	31/07/2012	1520	442865 404318	0	0	1	308V2A 408V1A	0 0 0	Light	Unknown	Dry	9 9
00781-12	Slight	30/08/2012	1220	442885 404271	0	0	1	405V1A 403V1A	0 0 0	Light	Fine without high winds	Dry	5 9
00955-12	Slight	22/10/2012	0720	442908 404334	0	0	1	405V1A	0 0 0	Dark	Raining without high winds	Wet/Damp	5 19
00958-12	Slight	22/10/2012	1100	442827 404326	0	0	2	405V1B 406V1B 306V2B	0 0 0	Light	Raining without high winds	Wet/Damp	9 9
01207-12	Slight	09/11/2012	1300	441980 402362	0	0	1	302V2B 405V2B	0 0 0	Light	Fine without high winds	Dry	9 9
01058-12	Slight	21/11/2012	1124	443725 404110	0	0	3	406V2A	0 0 0	Light	Raining without high winds	Wet/Damp	9 9

Accidents between dates **01/01/2010 and 31/12/2012** (36) months

Selection:
Selected using Build Query : Local_auth = 'BARNSLEY'

Notes:
SK Transport Ltd

Police Ref.	Acc Class	Date	Time	Grid References	Casualties Ftl	Ser	Slt	Causation Factors/ Prob	Ped L M D	Light	Weather	Road Surface	Vehicle Types
-01072-12	Serious	25/11/2012	0658	441760 406741	0	1	0	103V1A	0 0 0	Dark	Raining without high winds	Wet/Damp	9 9
-01183-12	Slight	19/12/2012	1240	442758 404347	0	0	1	406V2A	0 0 0	Light	Fine without high winds	Wet/Damp	9 9
Column Totals					0	4	0						

Total number of accidents listed: 29

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00529-10 17/05/2010 Monday Time:0634 Vehicles 2 Casualties 1 Slight
Easting: 442,947 Northing: 404,765
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 30

Location: PARK SPRINGS RD MIDDLECLIFFE AT J/W ROTHERHAM RD RDBT
Description:V1 ENTERED RDBT AND CLIPPED REAR WHEEL OF CYCLIST ALREADY ON RDBT.

Vehicle Reference1 Car Going ahead right hand bend
First point of impact:Front
Vehicle direction: N to W Journey: Journey as part of work
Age of Driver : 41 Breath test:Not applicable

Contributory Factors : 405 407 706 802

Vehicle Reference2 Pedal cycle Going ahead
First point of impact:Back
Vehicle direction: W to E Journey: Journey as part of work
Age of Driver : 35 Breath test:Not applicable

Contributory Factors : 405 407 706 802

Casualty Reference 1 Age:35 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00545-10 24/05/2010 Monday Time:1242 Vehicles 1 Casualties 1 Slight
Easting: 442,406 Northing: 404,481
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Single carriageway Speed Limit: 30

Location: DONCASTER RD DARFIELD
Description:V1 (PCV) TV ALONG DONCASTER RD. V1 BEGINS TO PULL IN TO BUS STOP WHEN PED STEPS BACKWARDS INTO PATH OF V1 & COLL OCCURRED.

Vehicle Reference:1 Bus or coach Slowing or Stopping
First point of impact:Front
Vehicle direction: NW to SE Journey: Journey as part of work
Age of Driver : 43 Breath test:Not applicable

Contributory Factors : 803

Casualty Reference 1 Age:17 Male Pedestrian Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Movement U/K
Ped Location:In carr not crossing

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00616-10 09/06/2010 Wednesday Time:0640 Vehicles 2 Casualties 1 Slight
Easting: 440,800 Northing: 408,264
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 60

Location: PARKSPRINGS RD GRIMETHORPE J/W SPRINGVALE RD
Description:V1 LOST CONTROL ON R/ABOUT CAUSING IT TO TIP ONTO OPP C/WAY. V1 THEN COLL WITH FRONT OF V2 TV IN OPP DIRC.

Vehicle Reference1 Agricultural vehicle Going ahead
First point of impact:Front
Vehicle direction: N to S Journey: Journey as part of work
Age of Driver : 67 Breath test:Not applicable

Contributory Factors : 403

Casualty Reference 1 Age:67 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: S to N Journey: Commuting to/from work
Age of Driver : 46 Breath test:Not applicable

Contributory Factors : 403

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00720-10 03/07/2010 Saturday Time:1045 Vehicles 2 Casualties 2 Slight
Easting: 443,595 Northing: 404,100
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Single carriageway Speed Limit: 60

Location: A635 GOLDTHORPE
Description:V1 TV ALONG A635 IN DIRC OF DARFIELD BEHIND V2. V1 O/T V2 WHEN SAFE TO DO SO BUT AS V1 WAS O/T DRIVER OF V2 SWERVED OUT & COLL WITH PASS SIDE OF V1 CAUSING IT TO SHUNT ACROSS OPP C/WAY & INTO LAYBY.6

Vehicle Reference:1 Car Overtaking moving vehicle on its offside
First point of impact:Did not impact
Vehicle direction: E to W Journey: Not known
Age of Driver : 48 Breath test:Not applicable

Contributory Factors : 405 409 410

Casualty Reference 1 Age:48 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di: Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 2 Age:11 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di: Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Offside
Vehicle direction: E to W Journey: Not known
Age of Driver : 62 Breath test:Not applicable

Contributory Factors : 405 409 410

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01017-10 29/09/2010 Wednesday Time:0900 Vehicles 2 Casualties 3 Slight
Easting: 442,094 Northing: 405,669
Raining without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD BARNSLEY
Description:V1 SLOWING FOR TF IN FRONT, V2 FAILED TO REACT IN TIME AND COLL WITH REAR OF V1.

Vehicle Reference1 Car Slowing or Stopping
First point of impact:Back
Vehicle direction: SW to NE Journey: Taking pupil to/from school
Age of Driver : 40 Breath test:Not applicable

Contributory Factors : 408

Casualty Reference 1 Age:40 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 3 Age:10 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Slowing or Stopping
First point of impact:Front
Vehicle direction: SW to NE Journey: Journey as part of work
Age of Driver : 25 Breath test:Not applicable

Contributory Factors : 408

Casualty Reference 2 Age:25 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01059-10 06/10/2010 Wednesday Time:0802 Vehicles 2 Casualties 1 Slight
Easting: 442,883 Northing: 404,250
Raining without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY DARFIELD 30 MTS FROM CATHILL R/ABOUT
Description:V1 TV ALONG A6195 FROM W/WELL TW CATHILL.V2 TV SAME DIRC. V1 CAME TO HALT IN QUEUING TF.V2 BRAKED BUT WAS UNABLE TO STOP IN TIME & COLL WITH REAR OF V1.

Vehicle Reference:1 Car Going ahead
First point of impact:Back
Vehicle direction: S to N Journey: Journey as part of work
Age of Driver : 45 Breath test:Not applicable

Contributory Factors : 405 406 103 307

Casualty Reference 1 Age:45 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: S to N Journey: Journey as part of work
Age of Driver : 21 Breath test:Not applicable

Contributory Factors : 405 406 103 307

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01171-10 06/11/2010 Saturday Time:1728 Vehicles 3 Casualties 3 Slight
Easting: 442,574 Northing: 404,380
Fine without high winds Road Surface:Dry Darkness: street lights present and lit
Road Type: Single carriageway Speed Limit: 30

Location: DONCASTER RD DARFIELD
Description:V1 & V2 STATIONARY AT TEMP TF LGTS, V3 FAILED TO REACT IN TIME COLL WITH REAR OF V2 PUSHING IT INTO V1,

Vehicle Reference1 Car Waiting to go ahead but held up
First point of impact:Back
Vehicle direction: E to W Journey: Not known
Age of Driver : Breath test:Not applicable

Contributory Factors : 901

Casualty Reference 1 Age: Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Waiting to go ahead but held up
First point of impact:Front
Vehicle direction: E to W Journey: Not known
Age of Driver : Breath test:Not applicable

Contributory Factors : 901

Casualty Reference 2 Age:29 Female Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 3 Age:35 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

Vehicle Reference3 Car Going ahead
First point of impact:Front
Vehicle direction: E to W Journey: Not known
Age of Driver : Breath test:Not applicable

Contributory Factors : 901

B-01306-10 06/12/2010 Monday Time:1415 Vehicles 2 Casualties 2 Slight
Easting: 442,002 Northing: 402,410
Other Road Surface:Snow Daylight:street lights present
Road Type: Roundabout Speed Limit: 60

Location: BROOMHILL RDBT BRAMPTON AT J/W DEARNE VALLEY PARKWAY
Description:V1 STOPPED AT RDBT BUT V2 FAILED TO REACT IN TIME AND COLL WITH REAR OF V1.

Vehicle Reference1 Car Waiting to go ahead but held up
First point of impact:Back
Vehicle direction: N to S Journey: Not known
Age of Driver : 18 Breath test:Not applicable

Contributory Factors : 405 406

Casualty Reference 1 Age:18 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 2 Age:16 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Van or Goods <= 3.5 tonnes m Going ahead
First point of impact:Front
Vehicle direction: N to S Journey: Not known
Age of Driver : 52 Breath test:Not applicable

Contributory Factors : 405 406

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00243-11 15/03/2011 Tuesday Time:0426 Vehicles 1 Casualties 1 Slight
Easting: 440,790 Northing: 408,137
Fog or mist Road Surface:Wet/Damp Darkness: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD GRIMETHORPE
Description:V1 TV ALONG PARK SPRING RD SUDDENLY CONFRONTED BY HORSES ROAMING FREE ON C/WAY IN PATH OF HIS VEH.V1 SWERVED TO AVOID HORSES & LOST CONTROL, VEH ROLLED ONTO ITS O/S & HIT KERB, CAUSING IT TO LAND ON IT'S WHEELS ON OPP SIDE OF RD.

Vehicle Reference:1 Car Going ahead
First point of impact:Offside
Vehicle direction: S to N Journey: Commuting to/from work
Age of Driver : 31 Breath test:Negative

Contributory Factors : 109

Casualty Reference 1 Age:31 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00276-11 20/03/2011 Sunday Time:1230 Vehicles 2 Casualties 1 Slight
Easting: 442,146 Northing: 405,590
Fine without high winds Road Surface:Dry Daylight: street lighting unknown
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD LITTLE HOUGHTON
Description:DRIVER OF V2 STOPPED DUE TO CRAMP, V1 COLL WITH REAR OF V2 THROWING CYCLIST ONTO ROOF.

Vehicle Reference1 Pedal cycle Going ahead
First point of impact:Front
Vehicle direction: N to S Journey: Not known
Age of Driver : 34 Breath test:Driver not contacted

Contributory Factors : 602 405

Casualty Reference 1 Age:34 Male Driver/rider Severity:Slight

Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Parked
First point of impact:Back
Vehicle direction: Parked to Parked Journey: Not known
Age of Driver : 46 Breath test:Not requested

Contributory Factors : 602 405

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00438-11 24/04/2011 Sunday Time:2200 Vehicles 1 Casualties 1 Slight
Easting: 442,916 Northing: 404,322
Fine without high winds Road Surface:Dry Darkness: street lights present and lit
Road Type: Roundabout Speed Limit: 60

Location: DONCASTER RD DARFIELD J/W CATHILL R/ABOUT
Description:V1 TV ALONG A6195 TW CATHILL R/ABOUT. V1 APP R/ABOUT AT SPEED LOST CONTROL & LEFT C/WAY COLL WITH FENCE

Vehicle Reference:1 Car Going ahead
First point of impact:Front
Vehicle direction: N to W Journey: Not known
Age of Driver : 28 Breath test:Negative

Contributory Factors : 403 410 601

Casualty Reference 1 Age:17 Female Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00454-11 11/05/2011 Wednesday Time:2320 Vehicles 2 Casualties 1 Slight
Easting: 440,784 Northing: 408,199
Fine without high winds Road Surface:Dry Darkness: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD GRIMETHORPE
Description:V2 (M/CYCLE) TV ALONG A6195 TW GRIMETHORPE. V1 TV SAME DIRC. AS V1 APP V2 DRIVER OF V1 LOST CONTROL DUE TO TYRE BLOW OUT. V1 SWERVED INTO ONCOMING LN & ATTEMPTED TO CORRECT SKID BY STEERING TO N/S. AS A RESULT V1 COLL WITH V2.

Vehicle Reference1 Car Going ahead
First point of impact:Offside
Vehicle direction: SE to NW Journey: Commuting to/from work
Age of Driver : 26 Breath test:Not requested

Contributory Factors : 410

Vehicle Reference2 Motorcycle 50cc and under Going ahead
First point of impact:Back
Vehicle direction: SE to NW Journey: Not known
Age of Driver : 16 Breath test:Not requested

Contributory Factors : 410

Casualty Reference 1 Age:16 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00726-11 31/07/2011 Sunday Time:1025 Vehicles 2 Casualties 1 Slight
Easting: 441,095 Northing: 407,501
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD GRIMETHORPE
Description:3 VEH'S IN SLOW MOVING TF, V2 PULLED OUT TO OVERTAKE AND AS IT GOT ALONG SIDE V3 PULLED OUT CAUSING V2 TO TAKE EVASIVE ACTION LOSING CONTROL AND COLL WITH V1 THAT WAS STATIONARY.

Vehicle Reference1 Car Parked
First point of impact:Back
Vehicle direction: Parked to Parked Journey: Not known
Age of Driver : 66 Breath test:Not requested

Contributory Factors : 410

Vehicle Reference2 Car Going ahead
First point of impact:Offside
Vehicle direction: SE to NW Journey: Not known
Age of Driver : 38 Breath test:Not requested

Contributory Factors : 410

Casualty Reference 1 Age:38 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00736-11 04/08/2011 Thursday Time:1109 Vehicles 2 Casualties 5 Slight
Easting: 442,229 Northing: 402,776
Fine without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Dual carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY BROOMHILL 500 MTS FROM MANVERS WAY
Description:V1 ATTEMPTS A U TURN IN CARR AND COLL WITH V2.

Vehicle Reference:1 Car Moving off
First point of impact:Front
Vehicle direction: NE to NE Journey: Journey as part of work
Age of Driver : 51 Breath test:Negative

Contributory Factors : 405

Casualty Reference 1 Age:51 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

Vehicle Reference2 Van or Goods <= 3.5 tonnes mGoing ahead
First point of impact:Front
Vehicle direction: SW to NE Journey: Journey as part of work
Age of Driver : 55 Breath test:Negative

Contributory Factors : 405

Casualty Reference 2 Age:54 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 3 Age:27 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 4 Age:55 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 5 Age:47 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00887-11 17/09/2011 Saturday Time:1330 Vehicles 2 Casualties 1 Slight
Easting: 442,757 Northing: 403,947
Fine without high winds Road Surface:Dry Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY DARFIELD 300 MTS FROM DONCASTER RD
Description:V2 QUEUEING IN STATIONARY TF, V1 FAILED TO REACT IN TIME AND COLL WITH REAR OF V2.

Vehicle Reference1 Car Slowing or Stopping
First point of impact:Front
Vehicle direction: S to N Journey: Not known
Age of Driver : 42 Breath test:Negative

Contributory Factors : 307 405

Casualty Reference 1 Age:30 Female Passenger Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference2 Car Waiting to go ahead but held up
First point of impact:Back
Vehicle direction: S to N Journey: Not known
Age of Driver : 58 Breath test:Negative

Contributory Factors : 307 405

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00900-11 23/09/2011 Friday Time:0700 Vehicles 2 Casualties 1 Serious
Easting: 441,431 Northing: 407,162
Fine without high winds Road Surface:Dry Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING ROAD GRIMETHORPE BARNSLEY 750M N HOUGHTON MAIN R
Description:VEH 1 TRAVEL TOWARDS SHAFTON. VEH 2 TRAV OPPOSITE DIRECTION COLLIDES OFFSIDE TO OFFSIDE WITH VEH 1 FOR REASONS UNKNOWN AT THIS TIME.

Vehicle Reference:1 Goods >= 7.5 tonnes mgw Going ahead
First point of impact:Front
Vehicle direction: SE to NW Journey: Journey as part of work
Age of Driver : 47 Breath test:Negative

Contributory Factors : 409 410

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: SE to NW Journey: Commuting to/from work
Age of Driver : 17 Breath test:Not provided (medical)

Contributory Factors : 409 410

Casualty Reference 1 Age:17 Male Driver/rider Severity:Serious
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates **01/01/2010 and 31/12/2012 (36) months**
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00934-11 28/09/2011 Wednesday Time:1425 Vehicles 3 Casualties 5 Slight
Easting: 442,885 Northing: 404,274
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 40

Location: DEARNE VALLEY PARKWAY DARFIELD
Description:ALL VEHS SLOWING IN LINE OF TF AS THEY APP R/ABOUT. V1 FAILED TO STOP IN TIME & COLL WITH REAR OF V2. V2 SHUNTED INTO REAR OF V3.

Vehicle Reference:1 Car Slowing or Stopping
First point of impact:Front
Vehicle direction: S to N Journey: Not known
Age of Driver : 18 Breath test:Negative

Contributory Factors : 406

Casualty Reference 1 Age:18 Female Driver/rider Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

Vehicle Reference2 Car Slowing or Stopping
First point of impact:Back
Vehicle direction: S to N Journey: Not known
Age of Driver : 18 Breath test:Negative

Contributory Factors : 406

Casualty Reference 2 Age:18 Female Driver/rider Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Casualty Reference 3 Age:16 Female Passenger Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Casualty Reference 4 Age:18 Female Passenger Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Casualty Reference 5 Age: Female Passenger Severity:Slight
Ped Dir: Ped Movement :
Ped Location:

Vehicle Reference3 Car Slowing or Stopping
First point of impact:Back
Vehicle direction: S to N Journey: Not known
Age of Driver : 40 Breath test:Negative

Contributory Factors : 406

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00009-12 01/01/2012 Sunday Time:0230 Vehicles 1 Casualties 2 Slight
Easting: 442,878 Northing: 404,221
Fine without high winds Road Surface:Wet/Damp Darkness: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY BROOMHILL 40 MTS FROM CATHILL R/ABOUT
Description:V1 TV SOUTH ALONG A6195 WHEN VEH GENTLY VEERS OFF RD TO O/S

Vehicle Reference:1 Car Going ahead
First point of impact:Front
Vehicle direction: NE to SW Journey: Not known
Age of Driver : 46 Breath test:Negative

Contributory Factors : 509 503

Casualty Reference 1 Age:46 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 2 Age:3 Male Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00078-12 26/01/2012 Thursday Time:0937 Vehicles 2 Casualties 1 Slight
Easting: 442,900 Northing: 404,771
Fine without high winds Road Surface:Wet/Damp Daylight: street lighting unknown
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRING RD MIDDLECLIFFE
Description:VEH'S TR IN OPP DIRECTIONS, V2 OVERTAKING THEN BRAKED TO AVOID ONCOMING V1, V2 THEN COLL WITH BARRIER AND V1.

Vehicle Reference1 Goods >= 7.5 tonnes mgw Going ahead
First point of impact:Front
Vehicle direction: E to W Journey: Journey as part of work
Age of Driver : 47 Breath test:Negative

Contributory Factors : 403 307 410 408

Vehicle Reference2 Car Overtaking on nearside
First point of impact:Front
Vehicle direction: W to E Journey: Not known
Age of Driver : 40 Breath test:Negative

Contributory Factors : 403 307 410 408

Casualty Reference 1 Age:40 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00184-12 01/03/2012 Thursday Time:1725 Vehicles 3 Casualties 1 Serious
Easting: 442,199 Northing: 402,724
Fine without high winds Road Surface:Dry Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY BROOMHILL 400 YDS FROM A 633
Description:V1 IN SLOW TF, V2 IN SLOW TF ON OPP CARR, V3 BEGAN TO OVERTAKE V1 AS V1 CARRIED OUT A U TURN CLIPPING V3 SENDING IT INTO PATH OF V2.

Vehicle Reference1 Car U turn
First point of impact:Offside
Vehicle direction: SW to NE Journey: Not known
Age of Driver : 26 Breath test:Negative

Contributory Factors : 405

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: NE to SW Journey: Not known
Age of Driver : 57 Breath test:Negative

Contributory Factors : 405

Vehicle Reference3 Motorcycle over 500cc Overtaking moving vehicle on its offside
First point of impact:Front
Vehicle direction: SW to NE Journey: Not known
Age of Driver : 55 Breath test:Negative

Contributory Factors : 405

Casualty Reference 1 Age:55 Male Driver/rider Severity:Serious
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00281-12 28/03/2012 Wednesday Time:1320 Vehicles 2 Casualties 1 Serious
Easting: 442,218 Northing: 402,761
Fine without high winds Road Surface:Dry Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DEARNE VALLEY PARKWAY BROOMHILL 500 MTS FROM BROOMHILL RDBT
Description:VEH'S TR IN SAME DIRECTION, V1 TAKEN WRONG TURN SO PULLED ACC CARR TO LAYBY COLLIDING WITH V2 FOLLOWING.

Vehicle Reference:1 Car U turn
First point of impact:Offside
Vehicle direction: W to E Journey: Not known
Age of Driver : 38 Breath test:Negative

Contributory Factors : 403 405

Vehicle Reference2 Motorcycle over 500cc Going ahead
First point of impact:Nearside
Vehicle direction: N to S Journey: Not known
Age of Driver : 54 Breath test:Negative

Contributory Factors : 403 405

Casualty Reference 1 Age:54 Male Driver/rider Severity:Serious
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00696-12 31/07/2012 Tuesday Time:1520 Vehicles 2 Casualties 1 Slight
Easting: 442,865 Northing: 404,318
Unknown Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 60

Location: DONCASTER RD BARNSLEY J/W CATHILL RNDBT
Description:V1 STATIONARY AT JCT WHEN V2 COLL WITH REAR.

Vehicle Reference:1 Car Moving off
First point of impact:Back
Vehicle direction: W to E Journey: Not known
Age of Driver : 19 Breath test:Not requested

Contributory Factors : 308 408

Casualty Reference 1 Age:19 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: W to E Journey: Not known
Age of Driver : Breath test:Driver not contacted

Contributory Factors : 308 408

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00781-12 30/08/2012 Thursday Time:1220 Vehicles 2 Casualties 1 Slight
Easting: 442,885 Northing: 404,271
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 60

Location: DEARNE VALLEY PARKWAY DARFIELD, BARNSLEY J/W BARNSLEY ROAD
Description:VEH 2 POLICE MCYCLE ENTERING RNDBT INTENDING TO TURN RT. VEH 1 MCAR TV BEHIND VEH 2. VEH 1 COLL REAR VEH 2.

Vehicle Reference:1 Car Moving off
First point of impact:Front
Vehicle direction: S to E Journey: Not known
Age of Driver : 67 Breath test:Negative

Contributory Factors : 405 403

Vehicle Reference2 Motorcycle over 500cc Moving off
First point of impact:Back
Vehicle direction: S to E Journey: Journey as part of work
Age of Driver : 50 Breath test:Negative

Contributory Factors : 405 403

Casualty Reference 1 Age:50 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00955-12 22/10/2012 Monday Time:0720 Vehicles 2 Casualties 1 Slight
Easting: 442,908 Northing: 404,334
Raining without high winds Road Surface:Wet/Damp Darkness: street lights present and lit
Road Type: Roundabout Speed Limit: 60

Location: ROTHERHAM RD BARNSLEY J/W CATHILL R/ABOUT
Description:VEH1 LGV TV ALG ROTHERHAM RD T/W RBOUT COLL REAR VEH2 MCYCLE WHICH WAS STAT WAITING TO ENTER R/ABOUT

Vehicle Reference1 Van or Goods <= 3.5 tonnes m Going ahead
First point of impact:Front
Vehicle direction: N to S Journey: Journey as part of work
Age of Driver : 58 Breath test:Not requested

Contributory Factors : 405

Vehicle Reference2 Motorcycle over 500cc Slowing or Stopping
First point of impact:Back
Vehicle direction: N to S Journey: Not known
Age of Driver : 53 Breath test:Not requested

Contributory Factors : 405

Casualty Reference 1 Age:53 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-00958-12 22/10/2012 Monday Time:1100 Vehicles 2 Casualties 2 Slight
Easting: 442,827 Northing: 404,326
Raining without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DONCASTER RD BARNSLEY
Description:VEH1 MCAR EXITS CATHILL GARAGE TURNING R ONTO DONCASTER RD & IS HIT BY VEH2 MCAR WHICH HAD JUST EXITED THE R.ABOUT ONTO DONCASTER RD

Vehicle Reference1 Car Turning right
First point of impact:Offside
Vehicle direction: Parked to E Journey: Not known
Age of Driver : 49 Breath test:Not requested

Contributory Factors : 405 406 306

Casualty Reference 1 Age:49 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 2 Age:17 Female Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: E to W Journey: Not known
Age of Driver : Breath test:Driver not contacted

Contributory Factors : 405 406 306

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

C-01207-12 09/11/2012 Friday Time:1300 Vehicles 2 Casualties 1 Slight
Easting: 441,980 Northing: 402,362
Fine without high winds Road Surface:Dry Daylight:street lights present
Road Type: Roundabout Speed Limit: 40

Location: PONTEFRACT RD BRAMPTON ROTHERHAM J/W BARNSLEY RD
Description:VH2 M/CAR PULLS ONTO RNDABT FRM PONTEFRACT RD INFRNT OF VH1 M/CAR TRV FRM BARNSLEY RD TWDS WOMBWELL. VH1 COLL OS VH2. VH2 FTS

Vehicle Reference1 Car Going ahead
First point of impact:Front
Vehicle direction: SE to NW Journey: Not known
Age of Driver : 24 Breath test:Not requested

Contributory Factors : 302 405

Casualty Reference 1 Age:24 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Offside
Vehicle direction: NE to SW Journey: Not known
Age of Driver : 74 Breath test:Not requested

Contributory Factors : 302 405

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01058-12 21/11/2012 Wednesday Time:1124 Vehicles 2 Casualties 3 Slight
Easting: 443,725 Northing: 404,110
Raining without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DONCASTER ROAD BARNSLEY 200 METRES BILLINGLY GREEN LANE
Description:V1 TRAV TWDS CATHILL ROUNDABOUT, A LORRY WAS TURNING RIGHT INTO A LAY-BY ACROSS TRAFFIC HOLDING IT UP, V1 STATIONARY AS LORRY TURNED, V2 CAME BEHIND V1 AT SPEED AND FAILED TO STOP COLLIDING WITH ITS REAR, BOTH DRIVERS & PASSENGER IN V1 INJURED

Vehicle Reference:1 Car Waiting to go ahead but held up
First point of impact:Back
Vehicle direction: E to W Journey: Journey as part of work
Age of Driver : 30 Breath test:Negative

Contributory Factors : 406

Casualty Reference 1 Age:30 Female Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Casualty Reference 3 Age:30 Female Passenger Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: E to W Journey: Not known
Age of Driver : 83 Breath test:Negative

Contributory Factors : 406

Casualty Reference 2 Age:83 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01072-12 25/11/2012 Sunday Time:0658 Vehicles 2 Casualties 1 Serious
Easting: 441,760 Northing: 406,741
Raining without high winds Road Surface:Wet/Damp Darkness: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: PARK SPRINGS RD BARNSLEY
Description:V1 HIT FLOW OF WATER RUNNING ACC CARR AND LOST CONTROL COLL WITH UNATTENDED V2.

Vehicle Reference1 Car Going ahead right hand bend
First point of impact:Front
Vehicle direction: N to S Journey: Commuting to/from work
Age of Driver : 18 Breath test:Negative

Contributory Factors : 103

Casualty Reference 1 Age:18 Male Driver/rider Severity:Serious

Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Parked
First point of impact:Offside
Vehicle direction: Parked to Parked Journey: Not known
Age of Driver : 52 Breath test:Driver not contacted

Contributory Factors : 103

Accidents between dates 01/01/2010 and 31/12/2012 (36) months
Selection: **Notes:**
Selected using Build Query : Local_auth = 'BARNSLEY' **SK Transport Ltd**

B-01183-12 19/12/2012 Wednesday Time:1240 Vehicles 2 Casualties 1 Slight
Easting: 442,758 Northing: 404,347
Fine without high winds Road Surface:Wet/Damp Daylight: no street lighting
Road Type: Single carriageway Speed Limit: 60

Location: DONCASTER ROAD DARFIELD, BARNSLEY 100 M EAST DEARNE VALLEY P
Description:VEH 1 MCAR STAT ON DONCASTER RD 100 M EAST OF DERNE VALLEY PARKWAY IN QUEUING TRAFFIC. VEH 2 TV BEHIND VEH 1. VEH 2 COLL REAR VEH 1.

Vehicle Reference:1 Car Waiting to go ahead but held up
First point of impact:Back
Vehicle direction: W to E Journey: Journey as part of work
Age of Driver : 46 Breath test:Negative

Contributory Factors : 406

Casualty Reference 1 Age:46 Male Driver/rider Severity:Slight
Ped Dir:Pedestrian Di Ped Movement : Not pedestrian
Ped Location:

Vehicle Reference2 Car Going ahead
First point of impact:Front
Vehicle direction: W to E Journey: Journey as part of work
Age of Driver : 44 Breath test:Negative

Contributory Factors : 406

APPENDIX D

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
Category : D - INDUSTRIAL ESTATE

VEHICLES

Selected regions and areas:

02	**SOUTH EAST**		
	ES	EAST SUSSEX	1 days
	EX	ESSEX	1 days
	KC	KENT	1 days
03	**SOUTH WEST**		
	CW	CORNWALL	1 days
	DV	DEVON	1 days
	WL	WILTSHIRE	1 days
04	**EAST ANGLIA**		
	CA	CAMBRIDGESHIRE	1 days
	NF	NORFOLK	1 days
05	**EAST MIDLANDS**		
	NT	NOTTINGHAMSHIRE	1 days
06	**WEST MIDLANDS**		
	WM	WEST MIDLANDS	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NY	NORTH YORKSHIRE	1 days
	WY	WEST YORKSHIRE	1 days
08	**NORTH WEST**		
	CH	CHESHIRE	1 days
	LC	LANCASHIRE	1 days
	MS	MERSEYSIDE	1 days
09	**NORTH**		
	CB	CUMBRIA	1 days
	DH	DURHAM	1 days
	NB	NORTHUMBERLAND	2 days
	TW	TYNE & WEAR	1 days
11	**SCOTLAND**		
	AG	ANGUS	1 days
	HI	HIGHLAND	1 days

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

Filtering Stage 2 selection:

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

Parameter:	Gross floor area
Actual Range:	1197 to 64889 (units: sqm)
Range Selected by User:	552 to 234115 (units: sqm)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 04/10/13

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

Selected survey days:

Monday	6 days
Tuesday	4 days
Wednesday	4 days
Thursday	1 days
Friday	7 days

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

Selected survey types:

Manual count	22 days
Directional ATC Count	0 days

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

Selected Locations:

Edge of Town	19
Free Standing (PPS6 Out of Town)	3

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

Selected Location Sub Categories:

Industrial Zone	9
Residential Zone	6
Out of Town	2
No Sub Category	5

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

Filtering Stage 3 selection:

Use Class:

Not Known	3 days
B1	5 days
B2	10 days
B8	2 days

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

Filtering Stage 3 selection (Cont.):

Population within 1 mile:

1,000 or Less	2 days
1,001 to 5,000	4 days
5,001 to 10,000	5 days
10,001 to 15,000	2 days
15,001 to 20,000	4 days
20,001 to 25,000	2 days
25,001 to 50,000	3 days

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

Population within 5 miles:

5,001 to 25,000	4 days
25,001 to 50,000	3 days
50,001 to 75,000	3 days
75,001 to 100,000	1 days
100,001 to 125,000	1 days
125,001 to 250,000	6 days
250,001 to 500,000	4 days

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

Car ownership within 5 miles:

0.6 to 1.0	7 days
1.1 to 1.5	15 days

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

Travel Plan:

No	22 days

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

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE

VEHICLES

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	22	14667	0.133	22	14667	0.050	22	14667	0.183
07:30 - 08:00	22	14667	0.254	22	14667	0.074	22	14667	0.328
08:00 - 08:30	**22**	**14667**	**0.261**	22	14667	0.110	22	14667	0.371
08:30 - 09:00	22	14667	0.258	22	14667	0.127	**22**	**14667**	**0.385**
09:00 - 09:30	22	14667	0.189	22	14667	0.135	22	14667	0.324
09:30 - 10:00	22	14667	0.164	22	14667	0.137	22	14667	0.301
10:00 - 10:30	22	14667	0.159	22	14667	0.159	22	14667	0.318
10:30 - 11:00	22	14667	0.145	22	14667	0.143	22	14667	0.288
11:00 - 11:30	22	14667	0.159	22	14667	0.158	22	14667	0.317
11:30 - 12:00	22	14667	0.162	22	14667	0.175	22	14667	0.337
12:00 - 12:30	22	14667	0.150	22	14667	0.187	22	14667	0.337
12:30 - 13:00	22	14667	0.171	22	14667	0.184	22	14667	0.355
13:00 - 13:30	22	14667	0.171	22	14667	0.187	22	14667	0.358
13:30 - 14:00	22	14667	0.184	22	14667	0.156	22	14667	0.340
14:00 - 14:30	22	14667	0.148	22	14667	0.143	22	14667	0.291
14:30 - 15:00	22	14667	0.137	22	14667	0.149	22	14667	0.286
15:00 - 15:30	22	14667	0.149	22	14667	0.153	22	14667	0.302
15:30 - 16:00	22	14667	0.137	22	14667	0.166	22	14667	0.303
16:00 - 16:30	22	14667	0.147	22	14667	0.224	22	14667	0.371
16:30 - 17:00	22	14667	0.119	22	14667	0.257	22	14667	0.376
17:00 - 17:30	22	14667	0.073	**22**	**14667**	**0.285**	22	14667	0.358
17:30 - 18:00	22	14667	0.045	22	14667	0.158	22	14667	0.203
18:00 - 18:30	22	14667	0.030	22	14667	0.098	22	14667	0.128
18:30 - 19:00	22	14667	0.022	22	14667	0.054	22	14667	0.076
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			3.567			3.669			7.236

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

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

Parameter summary

Trip rate parameter range selected:	1197 - 64889 (units: sqm)
Survey date date range:	01/01/05 - 04/10/13
Number of weekdays (Monday-Friday):	22
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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

TRIP RATE for Land Use 02 - EMPLOYMENT/D - INDUSTRIAL ESTATE

OGVS

Calculation factor: 100 sqm

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate	No. Days	Ave. GFA	Trip Rate
00:00 - 00:30									
00:30 - 01:00									
01:00 - 01:30									
01:30 - 02:00									
02:00 - 02:30									
02:30 - 03:00									
03:00 - 03:30									
03:30 - 04:00									
04:00 - 04:30									
04:30 - 05:00									
05:00 - 05:30									
05:30 - 06:00									
06:00 - 06:30									
06:30 - 07:00									
07:00 - 07:30	22	14667	0.006	22	14667	0.010	22	14667	0.016
07:30 - 08:00	22	14667	0.008	22	14667	0.014	22	14667	0.022
08:00 - 08:30	22	14667	0.011	22	14667	0.013	22	14667	0.024
08:30 - 09:00	22	14667	0.010	22	14667	0.014	22	14667	0.024
09:00 - 09:30	22	14667	0.012	22	14667	0.012	22	14667	0.024
09:30 - 10:00	22	14667	0.011	22	14667	0.015	22	14667	0.026
10:00 - 10:30	22	14667	0.012	22	14667	0.014	22	14667	0.026
10:30 - 11:00	22	14667	0.012	22	14667	0.013	22	14667	0.025
11:00 - 11:30	**22**	**14667**	**0.017**	**22**	**14667**	**0.017**	**22**	**14667**	**0.034**
11:30 - 12:00	22	14667	0.014	22	14667	0.010	22	14667	0.024
12:00 - 12:30	22	14667	0.011	22	14667	0.010	22	14667	0.021
12:30 - 13:00	22	14667	0.009	22	14667	0.012	22	14667	0.021
13:00 - 13:30	22	14667	0.012	22	14667	0.010	22	14667	0.022
13:30 - 14:00	22	14667	0.012	22	14667	0.013	22	14667	0.025
14:00 - 14:30	22	14667	0.012	22	14667	0.008	22	14667	0.020
14:30 - 15:00	22	14667	0.011	22	14667	0.011	22	14667	0.022
15:00 - 15:30	22	14667	0.015	22	14667	0.013	22	14667	0.028
15:30 - 16:00	22	14667	0.012	22	14667	0.012	22	14667	0.024
16:00 - 16:30	22	14667	0.016	22	14667	0.010	22	14667	0.026
16:30 - 17:00	22	14667	0.012	22	14667	0.007	22	14667	0.019
17:00 - 17:30	22	14667	0.005	22	14667	0.004	22	14667	0.009
17:30 - 18:00	22	14667	0.007	22	14667	0.005	22	14667	0.012
18:00 - 18:30	22	14667	0.002	22	14667	0.001	22	14667	0.003
18:30 - 19:00	22	14667	0.000	22	14667	0.001	22	14667	0.001
19:00 - 19:30									
19:30 - 20:00									
20:00 - 20:30									
20:30 - 21:00									
21:00 - 21:30									
21:30 - 22:00									
22:00 - 22:30									
22:30 - 23:00									
23:00 - 23:30									
23:30 - 24:00									
Total Rates:			0.249			0.249			0.498

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

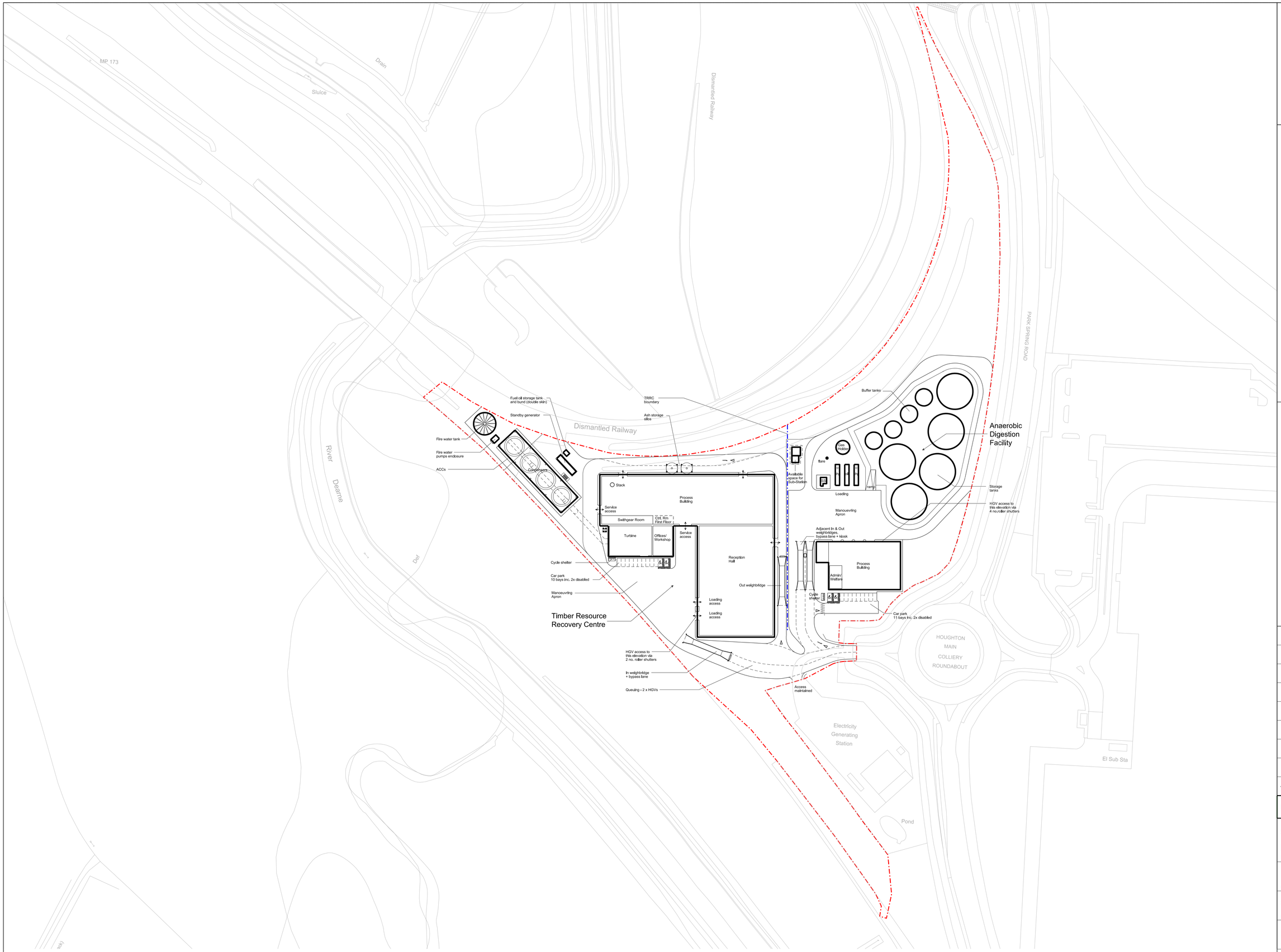
To obtain a trip rate, the average (mean) trip rate parameter value (TRP) is first calculated for all selected survey days that have count data available for the stated time period. The average (mean) number of arrivals, departures or totals (whichever applies) is also calculated (COUNT) for all selected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

Parameter summary

Trip rate parameter range selected:	1197 - 64889 (units: sqm)
Survey date date range:	01/01/05 - 04/10/13
Number of weekdays (Monday-Friday):	22
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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

APPENDIX E



NOTE

1. THIS DRAWING IS COPYRIGHT STUDIO E LLP.
2. THE CONTRACTOR MUST NOT SCALE FROM THE DRAWING ALL DIMENSIONS TO BE TAKEN FROM DIMENSION STRINGS.
3. WHERE ANY DISCREPANCIES ARE FOUND BETWEEN DIMENSIONS THESE MUST BE BROUGHT TO THE ATTENTION OF THE ARCHITECTS FOR RESOLUTION.
4. WHERE DISCREPANCIES EXIST BETWEEN REFERENCE OR ASSEMBLY DRAWINGS & DETAIL DRAWINGS, THE LATTER TAKE PREFERENCE.

NORTH

KEY

– Site boundary

-	NYI	Issued for planning

FOR PLANNING

STUDIO E LLP

Palace Wharf, Rainville Road,
London, W6 9HN
Tel. 020 7385 7126
Fax. 020 7381 4995

HOUGHTON MAIN REP

PROJECT

Site Location Plan

DRAWING

1:1000@A1 NYI

SCALE DATE

1302_PL002 - GS

DWG. NO. REVISION CHECKED

APPENDIX F

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 12 - CIVIC AMENITY SITES
Category : C - LANDFILL

VEHICLES

Selected regions and areas:

03	**SOUTH WEST**		
	WL	WILTSHIRE	1 days
05	**EAST MIDLANDS**		
	NR	NORTHAMPTONSHIRE	1 days
07	**YORKSHIRE & NORTH LINCOLNSHIRE**		
	NY	NORTH YORKSHIRE	2 days
09	**NORTH**		
	TW	TYNE & WEAR	1 days
11	**SCOTLAND**		
	AD	ABERDEEN CITY	1 days
	DG	DUMFRIES & GALLOWAY	1 days
	SL	SOUTH LANARKSHIRE	1 days

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

Filtering Stage 2 selection:

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

Parameter: Site area
Actual Range: 5.07 to 50.00 (units: hect)
Range Selected by User: 5.07 to 65.00 (units: hect)

Public Transport Provision:
Selection by: Include all surveys

Date Range: 01/01/05 to 20/06/13

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

Selected survey days:

Tuesday	2 days
Wednesday	2 days
Thursday	3 days
Friday	1 days

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

Selected survey types:

Manual count	8 days
Directional ATC Count	0 days

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

Selected Locations:

Free Standing (PPS6 Out of Town)	8

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

Selected Location Sub Categories:

Out of Town	8

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

Filtering Stage 3 selection:

Use Class:

Not Known	4 days
B2	1 days

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

Population within 1 mile:

1,000 or Less	4 days
1,001 to 5,000	2 days
5,001 to 10,000	2 days

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

Population within 5 miles:

5,001 to 25,000	1 days
50,001 to 75,000	1 days
75,001 to 100,000	1 days
125,001 to 250,000	4 days
250,001 to 500,000	1 days

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

Car ownership within 5 miles:

0.6 to 1.0	2 days
1.1 to 1.5	6 days

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

Travel Plan:

No	8 days

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

LIST OF SITES relevant to selection parameters

1 **AD-12-C-01** **LANDFILL** **ABERDEEN CITY**
INVERBOYNDIE
BANFF
NEAR ABERDEEN
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 5.07 hect
Survey date: FRIDAY 18/05/12 Survey Type: MANUAL

2 **DG-12-C-01** **LANDFILL** **DUMFRIES & GALLOWAY**
B793

NEAR DALBEATTIE
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 9.45 hect
Survey date: TUESDAY 03/05/05 Survey Type: MANUAL

3 **NR-12-C-01** **LANDFILL** **NORTHAMPTONSHIRE**
OAKLEY ROAD

NEAR KETTERING
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 23.37 hect
Survey date: WEDNESDAY 19/09/12 Survey Type: MANUAL

4 **NY-12-C-02** **LANDFILL** **NORTH YORKSHIRE**
RIDGE ROAD
MICKLEFIELD NR GARFORTH
NEAR LEEDS
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 28.00 hect
Survey date: THURSDAY 21/04/05 Survey Type: MANUAL

5 **NY-12-C-03** **LANDFILL** **NORTH YORKSHIRE**
WETHERBY ROAD
RUFFORTH
NEAR YORK
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 39.70 hect
Survey date: THURSDAY 21/04/05 Survey Type: MANUAL

6 **SL-12-C-01** **LANDFILL** **SOUTH LANARKSHIRE**
CAIRNMUIR ROAD

NEAR EAST KILBRIDE
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 38.00 hect
Survey date: THURSDAY 12/05/05 Survey Type: MANUAL

7 **TW-12-C-02** **LANDFILL** **TYNE & WEAR**
A190
SEGHILL VILLAGE
NEAR CRAMLINGTON
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 33.90 hect
Survey date: WEDNESDAY 21/11/12 Survey Type: MANUAL

8 **WL-12-C-01** **LANDFILL** **WILTSHIRE**
HAY LANE

NEAR SWINDON
Free Standing (PPS6 Out of Town)
Out of Town
Total Site area: 50.00 hect
Survey date: TUESDAY 03/10/06 Survey Type: MANUAL

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

TRIP RATE for Land Use 12 - CIVIC AMENITY SITES/C - LANDFILL

VEHICLES

Calculation factor: 1 hect

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	28.44	0.426	8	28.44	0.154	8	28.44	0.580
08:00 - 09:00	8	28.44	0.453	8	28.44	0.356	8	28.44	0.809
09:00 - 10:00	8	28.44	0.488	8	28.44	0.457	8	28.44	0.945
10:00 - 11:00	8	28.44	0.396	8	28.44	0.426	8	28.44	0.822
11:00 - 12:00	**8**	**28.44**	**0.558**	8	28.44	0.497	**8**	**28.44**	**1.055**
12:00 - 13:00	8	28.44	0.308	8	28.44	0.378	8	28.44	0.686
13:00 - 14:00	8	28.44	0.536	8	28.44	0.418	8	28.44	0.954
14:00 - 15:00	8	28.44	0.536	**8**	**28.44**	**0.514**	8	28.44	1.050
15:00 - 16:00	8	28.44	0.316	8	28.44	0.396	8	28.44	0.712
16:00 - 17:00	8	28.44	0.105	8	28.44	0.308	8	28.44	0.413
17:00 - 18:00	7	27.66	0.036	7	27.66	0.201	7	27.66	0.237
18:00 - 19:00	4	19.40	0.000	4	19.40	0.077	4	19.40	0.077
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			4.158			4.182			8.340

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

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

Parameter summary

Trip rate parameter range selected:	5.07 to 50.00 (units: hect)
Survey date date range:	01/01/05 - 20/06/13
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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

TRIP RATE for Land Use 12 - CIVIC AMENITY SITES/C - LANDFILL

OGVS

Calculation factor: 1 hect

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	28.44	0.268	8	28.44	0.163	8	28.44	0.431
08:00 - 09:00	8	28.44	0.325	8	28.44	0.321	8	28.44	0.646
09:00 - 10:00	8	28.44	0.426	8	28.44	0.396	8	28.44	0.822
10:00 - 11:00	8	28.44	0.312	8	28.44	0.369	8	28.44	0.681
11:00 - 12:00	8	28.44	0.488	8	28.44	0.440	8	28.44	0.928
12:00 - 13:00	8	28.44	0.242	8	28.44	0.290	8	28.44	0.532
13:00 - 14:00	8	28.44	0.426	8	28.44	0.356	8	28.44	0.782
14:00 - 15:00	**8**	**28.44**	**0.492**	**8**	**28.44**	**0.448**	**8**	**28.44**	**0.940**
15:00 - 16:00	8	28.44	0.281	8	28.44	0.321	8	28.44	0.602
16:00 - 17:00	8	28.44	0.062	8	28.44	0.123	8	28.44	0.185
17:00 - 18:00	7	27.66	0.010	7	27.66	0.067	7	27.66	0.077
18:00 - 19:00	4	19.40	0.000	4	19.40	0.000	4	19.40	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			3.332			3.294			6.626

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

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

Parameter summary

Trip rate parameter range selected:	5.07 to 50.00 (units: hect)
Survey date date range:	01/01/05 - 20/06/13
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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

TRIP RATE for Land Use 12 - CIVIC AMENITY SITES/C - LANDFILL

PSVS

Calculation factor: 1 hect

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
08:00 - 09:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
09:00 - 10:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
10:00 - 11:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
11:00 - 12:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
12:00 - 13:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
13:00 - 14:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
14:00 - 15:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
15:00 - 16:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
16:00 - 17:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
17:00 - 18:00	7	27.66	0.000	7	27.66	0.000	7	27.66	0.000
18:00 - 19:00	4	19.40	0.000	4	19.40	0.000	4	19.40	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

Parameter summary

Trip rate parameter range selected:	5.07 to 50.00 (units: hect)
Survey date date range:	01/01/05 - 20/06/13
Number of weekdays (Monday-Friday):	8
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	1

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

TRIP RATE for Land Use 12 - CIVIC AMENITY SITES/C - LANDFILL

CYCLISTS

Calculation factor: 1 hect

BOLD print indicates peak (busiest) period

	ARRIVALS			DEPARTURES			TOTALS		
Time Range	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 01:00									
01:00 - 02:00									
02:00 - 03:00									
03:00 - 04:00									
04:00 - 05:00									
05:00 - 06:00									
06:00 - 07:00									
07:00 - 08:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
08:00 - 09:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
09:00 - 10:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
10:00 - 11:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
11:00 - 12:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
12:00 - 13:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
13:00 - 14:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
14:00 - 15:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
15:00 - 16:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
16:00 - 17:00	8	28.44	0.000	8	28.44	0.000	8	28.44	0.000
17:00 - 18:00	7	27.66	0.000	7	27.66	0.000	7	27.66	0.000
18:00 - 19:00	4	19.40	0.000	4	19.40	0.000	4	19.40	0.000
19:00 - 20:00									
20:00 - 21:00									
21:00 - 22:00									
22:00 - 23:00									
23:00 - 24:00									
Total Rates:			0.000			0.000			0.000

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

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

Parameter summary

Trip rate parameter range selected:	5.07 to 50.00 (units: hect)
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Houghton Colliery, Barnsley: Forecast Development Flows

Development Flows AD (confirmed as appropriate)

AD	TPA	Average Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	**60,000**	10	6000	275	22	44
Digestive Export	51,000	15	3400	275	12	25
General Residue	3,000	10	300	275	1	2
					35	**71**

Forecast Staff 10

	AD HV Traffic			AD Staff Car Traffic			Total AD Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	4	3	7	0	0	0	4	3	7
PM	0	2	2	0	0	0	0	2	2
Daily	35	35	71	4	4	7	39	39	78

5 staff on site at any one time. All start before 7am and finish after 7pm.
Site will operate with a single daily shift between 7am and 7pm.

Development Flows TRRC (confirmed as appropriate)

TRRC	TPA	Veh Payload (t)	Annual HV	Working Days	Daily Load	Daily Trips
Deliveries	**150000**	20	7500	275	27	55
Ash Export	11133	25	445	275	2	3
Fly Ash Export	4500	20	225	275	1	2
					30	**59**

Forecast Staff 25

	TRRC HV Traffic			TRRC Shift Staff Car Traffic			TRRC Management Staff Car Traffic			Total TRRC Traffic		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	3	3	6	0	0	0	3	0	3	6	3	9
PM	0	1	2	0	0	0	0	3	3	0	4	5
Daily	30	30	59	3	3	6	3	3	6	35	35	71

4 Shift staff working between 7am and 7pm

4 Managers working between 8am and 5pm

Study Area & Data Requirements

Access/A5195 MCTC
A5195 N ATC
A5195 S ATC

	Total HV Traffic			Total Staff Car Traffic			Total Traffic			Total Traffic (pcu)		
	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL	IN	OUT	TOTAL
AM	7	6	13	3	0	3	10	6	15	17	11	28
PM	1	3	4	0	3	3	1	6	7	1	9	10
Daily	65	65	130	9	9	18	74	74	148	139	139	278

Comparison With Extant (10607sqm GFA 19 Industrial Units with 204 Parking Spaces)

	Total Daily Vehs	Total Daily HV	Total PCU
Extant	768	53	873
AD	78	71	219
TRRC	71	59	190
Total New	*148*	*130*	*408*

NOTES:
2011 Census BMBC JTW Mode Share (71%) applied to forecast staff vehicle trips

Traffic Distribution

				Total Traffic (LV + HV)			HV Total Traffic		
Route No.	Route Name	2017 AADT	Distribution	AM	PM	Daily	AM	PM	Daily
1	A6195 N Park Spring Road	9349	49%	8	3	73	6	2	64
2	A6195 S Park Spring Road	9583	51%	8	3	75	6	2	66
3	A635 W Doncaster Road	17077	16%	2	1	24	2	1	21
4	A635 E Doncaster Road	13204	12%	2	1	18	2	0	16
5	A6195 S	23515	22%	3	1	33	3	1	29

Houghton Main Renewable Energy Park

Houghton Main Roundabout
Forecast Traffic Flows

2017 Background Flows TEMPRO 1.041 TEMPRO 1.043

	AM Peak: 7.30am- 8.30am				PM Peak: 4.15pm-5.15pm			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	27	415	0	0	12	524	0
ASOS	12	0	14	0	27	0	40	0
A6195 S	491	36	0	0	567	10	0	0
Access	0	0	0	0	0	0	0	0

2019 Background Flows TEMPRO 1.076 TEMPRO 1.080

	AM Peak: 7.30am- 8.30am				PM Peak: 4.15pm-5.15pm			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	28	428	0	0	13	543	0
ASOS	13	0	15	0	28	0	42	0
A6195 S	507	38	0	0	587	11	0	0
Access	0	0	0	0	0	0	0	0

Development Distribution

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N				49%				49%
ASOS								
A6195 S				51%				51%
Access	49%		51%		49%		51%	

Committed Development Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N				28				6
ASOS								
A6195 S				28				7
Access	14		14		23		24	

2017 Base Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	27	415	28	0	12	524	6
ASOS	12	0	14	0	27	0	40	0
A6195 S	491	36	0	28	567	10	0	7
Access	14	0	14	0	23	0	24	0

2019 Base Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	28	428	28	0	13	543	6
ASOS	13	0	15	0	28	0	42	0
A6195 S	507	38	0	28	587	11	0	7
Access	14	0	14	0	23	0	24	0

Houghton Main Renewable Energy Park

Houghton Main Roundabout
Forecast Traffic Flows

Development Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N				8				1
ASOS								
A6195 S				9				1
Access	5		6		4		5	

2017 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	27	415	8	0	12	524	1
ASOS	12	0	14	0	27	0	40	0
A6195 S	491	36	0	9	567	10	0	1
Access	5	0	6	0	4	0	5	0

2019 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	ASOS	A6195 S	Access	A6195 N	ASOS	A6195 S	Access
A6195 N	0	28	428	8	0	13	543	1
ASOS	13	0	15	0	28	0	42	0
A6195 S	507	38	0	9	587	11	0	1
Access	5	0	6	0	4	0	5	0

Houghton Main Renewable Energy Park

Cathill Roundabout
Forecast Traffic Flows

2017 Background Flows TEMPRO 1.041 TEMPRO 1.043

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	137	455	48	0	179	545	121
A635 E	223	0	544	530	200	0	585	690
A6195 S	531	542	0	107	605	337	0	181
A635 W	62	562	228	0	62	496	146	0

2019 Background Flows TEMPRO 1.076 TEMPRO 1.080

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	142	472	50	0	185	565	125
A635 E	231	0	564	550	207	0	606	714
A6195 S	550	562	0	111	627	349	0	187
A635 W	64	583	236	0	65	514	151	0

Development Distribution

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N		12%	22%	16%		12%	22%	16%
A635 E	12%				12%			
A6195 S	22%				22%			
A635 W	16%				16%			

Committed Development Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N		3	6	4		6	10	8
A635 E	7				2			
A6195 S	12				3			
A635 W	9				2			

2017 Base Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	141	461	53	0	185	556	128
A635 E	230	0	544	530	202	0	585	690
A6195 S	543	542	0	107	608	337	0	181
A635 W	71	562	228	0	65	496	146	0

2019 Base Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	146	478	54	0	191	575	133
A635 E	238	0	564	550	209	0	606	714
A6195 S	563	562	0	111	630	349	0	187
A635 W	73	583	236	0	67	514	151	0

Houghton Main Renewable Energy Park

Cathill Roundabout
Forecast Traffic Flows

Development Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N		1	2	2		1	2	1
A635 E	2				0			
A6195 S	4				1			
A635 W	3				0			

2017 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	139	458	50	0	180	547	122
A635 E	225	0	544	530	200	0	585	690
A6195 S	534	542	0	107	606	337	0	181
A635 W	64	562	228	0	63	496	146	0

2019 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	A635 E	A6195 S	A635 W	A6195 N	A635 E	A6195 S	A635 W
A6195 N	0	144	475	52	0	187	567	126
A635 E	233	0	564	550	207	0	606	714
A6195 S	554	562	0	111	628	349	0	187
A635 W	67	583	236	0	65	514	151	0

Houghton Main Renewable Energy Park

Broomhill Roundabout
Forecast Traffic Flows

2017 Background Flows TEMPRO 1.041 TEMPRO 1.043

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	600	575	0	0	555	681	20
Manvers Way	521	0	434	8	520	0	489	60
A6195 S	666	513	0	7	640	527	0	17
Highgate	13	20	12	0	0	1	0	0

2019 Background Flows TEMPRO 1.076 TEMPRO 1.080

	AM Peak: 7.30am- 8.30am				PM Peak: 4.45pm-5.45pm			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	620	594	0	0	575	705	21
Manvers Way	539	0	448	9	538	0	506	63
A6195 S	688	530	0	8	662	546	0	18
Highgate	13	21	13	0	0	1	0	0

Development Distribution

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N			22%				22%	
Manvers Way								
A6195 S	22%					22%		
Highgate								

Committed Development Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N			6				10	
Manvers Way								
A6195 S	12				3			
Highgate								

2017 Base Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	600	581	0	0	555	691	20
Manvers Way	521	0	434	8	520	0	489	60
A6195 S	678	513	0	7	643	527	0	17
Highgate	13	20	12	0	0	1	0	0

2019 Base Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	620	600	0	0	575	716	21
Manvers Way	539	0	448	9	538	0	506	63
A6195 S	701	530	0	8	665	546	0	18
Highgate	13	21	13	0	0	1	0	0

Houghton Main Renewable Energy Park

Broomhill Roundabout
Forecast Traffic Flows

Development Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N			2				2	
Manvers Way								
A6195 S	4				1			
Highgate								

2017 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	600	577	0	0	555	683	20
Manvers Way	521	0	434	8	520	0	489	60
A6195 S	670	513	0	7	641	527	0	17
Highgate	13	20	12	0	0	1	0	0

2019 Base & Development Flows

	AM Peak				PM Peak			
	A6195 N	Manvers Way	A6195 S	Highgate	A6195 N	Manvers Way	A6195 S	Highgate
A6195 N	0	620	597	0	0	575	707	21
Manvers Way	539	0	448	9	538	0	506	63
A6195 S	692	530	0	8	663	546	0	18
Highgate	13	21	13	0	0	1	0	0

APPENDIX G

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2017 AM Base.vai"
(drive-on-the-left) at 12:38:36 on Tuesday, 8 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2017 AM Peak Base

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.88	8.81	5.88
ARM B	15.00	45.00	75.00	0.32	0.49	0.32
ARM C	15.00	45.00	75.00	6.94	10.41	6.94
ARM D	15.00	45.00	75.00	0.35	0.52	0.35

DEMAND SET TITLE: 2017 AM Peak Base

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.15 - 08.45	ARM A	0.000	0.057	0.883	0.060
		0.0	27.0	415.0	28.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.462	0.000	0.538	0.000
		12.0	0.0	14.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.885	0.065	0.000	0.050
		491.0	36.0	0.0	28.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.500	0.000	0.500	0.000
		14.0	0.0	14.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	5.90	24.03	0.245	- - -	0.0	0.3	4.8	-	0.055
ARM B	0.33	21.41	0.015	- - -	0.0	0.0	0.2	-	0.047
ARM C	6.96	27.66	0.252	- - -	0.0	0.3	4.9	-	0.048
ARM D	0.35	21.15	0.017	- - -	0.0	0.0	0.2	-	0.048

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	7.04	23.96	0.294	- - -	0.3	0.4	6.1	-	0.059
ARM B	0.39	20.81	0.019	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.32	27.60	0.301	- - -	0.3	0.4	6.3	-	0.052
ARM D	0.42	20.45	0.021	- - -	0.0	0.0	0.3	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	8.62	23.87	0.361	- - -	0.4	0.6	8.3	-	0.065
ARM B	0.48	20.00	0.024	- - -	0.0	0.0	0.4	-	0.051
ARM C	10.18	27.52	0.370	- - -	0.4	0.6	8.6	-	0.058
ARM D	0.51	19.49	0.026	- - -	0.0	0.0	0.4	-	0.053

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	8.62	23.87	0.361	- - -	0.6	0.6	8.4	-	0.066
ARM B	0.48	20.00	0.024	- - -	0.0	0.0	0.4	-	0.051
ARM C	10.18	27.52	0.370	- - -	0.6	0.6	8.8	-	0.058
ARM D	0.51	19.48	0.026	- - -	0.0	0.0	0.4	-	0.053

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	7.04	23.96	0.294	- - -	0.6	0.4	6.4	-	0.059
ARM B	0.39	20.81	0.019	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.32	27.60	0.301	- - -	0.6	0.4	6.6	-	0.052
ARM D	0.42	20.44	0.021	- - -	0.0	0.0	0.3	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.90	24.03	0.245	- - -	0.4	0.3	5.0	-	0.055
ARM B	0.33	21.40	0.015	- - -	0.0	0.0	0.2	-	0.047
ARM C	6.96	27.65	0.252	- - -	0.4	0.3	5.1	-	0.048
ARM D	0.35	21.14	0.017	- - -	0.0	0.0	0.3	-	0.048

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.0	
08.15	0.0	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	646.9	431.3	38.9	0.06	38.9	0.06
B	35.8	23.9	1.8	0.05	1.8	0.05
C	763.9	509.3	40.4	0.05	40.4	0.05
D	38.5	25.7	1.9	0.05	1.9	0.05
ALL	1485.2	990.1	83.1	0.06	83.1	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 12:38:45 on 08/04/2014]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
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RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2017 AM with Development.vai"
(drive-on-the-left) at 12:49:04 on Tuesday, 8 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2017 AM Peak with Development

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.63	8.44	5.63
ARM B	15.00	45.00	75.00	0.32	0.49	0.32
ARM C	15.00	45.00	75.00	6.70	10.05	6.70
ARM D	15.00	45.00	75.00	0.14	0.21	0.14

DEMAND SET TITLE: 2017 AM Peak with Development

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.15 - 08.45	ARM A	0.000	0.060	0.922	0.018
		0.0	27.0	415.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.462	0.000	0.538	0.000
		12.0	0.0	14.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.916	0.067	0.000	0.017
		491.0	36.0	0.0	9.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.455	0.000	0.545	0.000
		5.0	0.0	6.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	5.65	24.08	0.234	- - -	0.0	0.3	4.5	-	0.054
ARM B	0.33	21.59	0.015	- - -	0.0	0.0	0.2	-	0.047
ARM C	6.73	27.80	0.242	- - -	0.0	0.3	4.7	-	0.047
ARM D	0.14	21.15	0.007	- - -	0.0	0.0	0.1	-	0.048

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	6.74	24.03	0.281	- - -	0.3	0.4	5.7	-	0.058
ARM B	0.39	21.04	0.019	- - -	0.0	0.0	0.3	-	0.048
ARM C	8.03	27.77	0.289	- - -	0.3	0.4	6.0	-	0.051
ARM D	0.16	20.45	0.008	- - -	0.0	0.0	0.1	-	0.049

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	8.26	23.95	0.345	- - -	0.4	0.5	7.7	-	0.064
ARM B	0.48	20.28	0.024	- - -	0.0	0.0	0.4	-	0.051
ARM C	9.84	27.73	0.355	- - -	0.4	0.5	8.1	-	0.056
ARM D	0.20	19.49	0.010	- - -	0.0	0.0	0.2	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	8.26	23.95	0.345	- - -	0.5	0.5	7.9	-	0.064
ARM B	0.48	20.27	0.024	- - -	0.0	0.0	0.4	-	0.051
ARM C	9.84	27.73	0.355	- - -	0.5	0.5	8.2	-	0.056
ARM D	0.20	19.48	0.010	- - -	0.0	0.0	0.2	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	6.74	24.02	0.281	- - -	0.5	0.4	6.0	-	0.058
ARM B	0.39	21.03	0.019	- - -	0.0	0.0	0.3	-	0.048
ARM C	8.03	27.77	0.289	- - -	0.5	0.4	6.2	-	0.051
ARM D	0.16	20.44	0.008	- - -	0.0	0.0	0.1	-	0.049

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.65	24.08	0.234	- - -	0.4	0.3	4.7	-	0.054
ARM B	0.33	21.58	0.015	- - -	0.0	0.0	0.2	-	0.047
ARM C	6.73	27.80	0.242	- - -	0.4	0.3	4.9	-	0.047
ARM D	0.14	21.14	0.007	- - -	0.0	0.0	0.1	-	0.048

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.5	*
08.15	0.5	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.0	
08.15	0.0	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.5	*
08.15	0.5	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	619.4	412.9	36.4	0.06	36.4	0.06
B	35.8	23.9	1.7	0.05	1.7	0.05
C	737.8	491.8	38.0	0.05	38.0	0.05
D	15.1	10.1	0.8	0.05	0.8	0.05
ALL	1408.1	938.7	77.0	0.05	77.0	0.05

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 12:49:17 on 08/04/2014]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

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Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2017 PM Base.vai"
(drive-on-the-left) at 12:39:23 on Tuesday, 8 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(16.00)AND ENDS(17.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2017 PM Peak Base

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.78	10.16	6.78
ARM B	15.00	45.00	75.00	0.84	1.26	0.84
ARM C	15.00	45.00	75.00	7.30	10.95	7.30
ARM D	15.00	45.00	75.00	0.59	0.88	0.59

DEMAND SET TITLE: 2017 PM Peak Base

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
16.00 - 17.30	ARM A	0.000	0.022	0.967	0.011
		0.0	12.0	524.0	6.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.403	0.000	0.597	0.000
		27.0	0.0	40.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.971	0.017	0.000	0.012
		567.0	10.0	0.0	7.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.489	0.000	0.511	0.000
		23.0	0.0	24.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
ARM A	6.80	24.13	0.282	- - -	0.0	0.4	5.7	-	0.058
ARM B	0.84	20.77	0.040	- - -	0.0	0.0	0.6	-	0.050
ARM C	7.33	27.71	0.264	- - -	0.0	0.4	5.3	-	0.049
ARM D	0.59	20.72	0.028	- - -	0.0	0.0	0.4	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
ARM A	8.12	24.09	0.337	- - -	0.4	0.5	7.5	-	0.063
ARM B	1.00	20.05	0.050	- - -	0.0	0.1	0.8	-	0.052
ARM C	8.75	27.66	0.316	- - -	0.4	0.5	6.8	-	0.053
ARM D	0.70	19.93	0.035	- - -	0.0	0.0	0.5	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	9.95	24.03	0.414	- - -	0.5	0.7	10.3	-	0.071
ARM B	1.23	19.07	0.064	- - -	0.1	0.1	1.0	-	0.056
ARM C	10.72	27.60	0.388	- - -	0.5	0.6	9.3	-	0.059
ARM D	0.86	18.86	0.046	- - -	0.0	0.0	0.7	-	0.056

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	9.95	24.03	0.414	- - -	0.7	0.7	10.5	-	0.071
ARM B	1.23	19.06	0.065	- - -	0.1	0.1	1.0	-	0.056
ARM C	10.72	27.60	0.388	- - -	0.6	0.6	9.5	-	0.059
ARM D	0.86	18.85	0.046	- - -	0.0	0.0	0.7	-	0.056

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.12	24.09	0.337	- - -	0.7	0.5	7.8	-	0.063
ARM B	1.00	20.04	0.050	- - -	0.1	0.1	0.8	-	0.053
ARM C	8.75	27.66	0.316	- - -	0.6	0.5	7.1	-	0.053
ARM D	0.70	19.92	0.035	- - -	0.0	0.0	0.6	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	6.80	24.13	0.282	- - -	0.5	0.4	6.0	-	0.058
ARM B	0.84	20.75	0.041	- - -	0.1	0.0	0.6	-	0.050
ARM C	7.33	27.70	0.264	- - -	0.5	0.4	5.5	-	0.049
ARM D	0.59	20.71	0.028	- - -	0.0	0.0	0.4	-	0.050

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	*
16.45	0.7	*
17.00	0.7	*
17.15	0.5	*
17.30	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.0	
16.30	0.1	
16.45	0.1	
17.00	0.1	
17.15	0.1	
17.30	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	
16.45	0.6	*
17.00	0.6	*
17.15	0.5	
17.30	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	746.0	497.3	47.8	0.06	47.8	0.06
B	92.2	61.5	4.9	0.05	4.9	0.05
C	803.8	535.9	43.4	0.05	43.4	0.05
D	64.7	43.1	3.4	0.05	3.4	0.05
ALL	1706.8	1137.8	99.6	0.06	99.6	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 12:39:32 on 08/04/2014]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2017 PM with Development.vai"
(drive-on-the-left) at 12:50:08 on Tuesday, 8 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(16.00)AND ENDS(17.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2017 PM Peak with Development

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.71	10.07	6.71
ARM B	15.00	45.00	75.00	0.84	1.26	0.84
ARM C	15.00	45.00	75.00	7.22	10.84	7.22
ARM D	15.00	45.00	75.00	0.11	0.17	0.11

DEMAND SET TITLE: 2017 PM Peak with Development

T33

TIME	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) FROM/T	ARM A	ARM B	ARM C	ARM D
16.00 - 17.30	ARM A	0.000	0.022	0.976	0.002
		0.0	12.0	524.0	1.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.403	0.000	0.597	0.000
		27.0	0.0	40.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.981	0.017	0.000	0.002
		567.0	10.0	0.0	1.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.444	0.000	0.556	0.000
		4.0	0.0	5.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
ARM A	6.74	24.26	0.278	- - -	0.0	0.4	5.6	-	0.057
ARM B	0.84	20.93	0.040	- - -	0.0	0.0	0.6	-	0.050
ARM C	7.25	27.74	0.261	- - -	0.0	0.4	5.2	-	0.049
ARM D	0.11	20.72	0.005	- - -	0.0	0.0	0.1	-	0.049

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
ARM A	8.05	24.24	0.332	- - -	0.4	0.5	7.3	-	0.062
ARM B	1.00	20.24	0.050	- - -	0.0	0.1	0.8	-	0.052
ARM C	8.66	27.70	0.313	- - -	0.4	0.5	6.7	-	0.053
ARM D	0.13	19.93	0.007	- - -	0.0	0.0	0.1	-	0.051

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	9.85	24.21	0.407	- - -	0.5	0.7	10.0	-	0.070
ARM B	1.23	19.30	0.064	- - -	0.1	0.1	1.0	-	0.055
ARM C	10.61	27.65	0.384	- - -	0.5	0.6	9.1	-	0.059
ARM D	0.17	18.86	0.009	- - -	0.0	0.0	0.1	-	0.054

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	9.85	24.21	0.407	- - -	0.7	0.7	10.2	-	0.070
ARM B	1.23	19.29	0.064	- - -	0.1	0.1	1.0	-	0.055
ARM C	10.61	27.65	0.384	- - -	0.6	0.6	9.3	-	0.059
ARM D	0.17	18.85	0.009	- - -	0.0	0.0	0.1	-	0.054

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.05	24.24	0.332	- - -	0.7	0.5	7.6	-	0.062
ARM B	1.00	20.23	0.050	- - -	0.1	0.1	0.8	-	0.052
ARM C	8.66	27.70	0.313	- - -	0.6	0.5	7.0	-	0.053
ARM D	0.13	19.92	0.007	- - -	0.0	0.0	0.1	-	0.051

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	6.74	24.26	0.278	- - -	0.5	0.4	5.9	-	0.057
ARM B	0.84	20.91	0.040	- - -	0.1	0.0	0.6	-	0.050
ARM C	7.25	27.74	0.261	- - -	0.5	0.4	5.4	-	0.049
ARM D	0.11	20.71	0.005	- - -	0.0	0.0	0.1	-	0.049

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	
16.45	0.7	*
17.00	0.7	*
17.15	0.5	
17.30	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.0	
16.30	0.1	
16.45	0.1	
17.00	0.1	
17.15	0.1	
17.30	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	
16.45	0.6	*
17.00	0.6	*
17.15	0.5	
17.30	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	739.1	492.8	46.7	0.06	46.7	0.06
B	92.2	61.5	4.8	0.05	4.8	0.05
C	795.6	530.4	42.7	0.05	42.7	0.05
D	12.4	8.3	0.6	0.05	0.6	0.05
ALL	1639.3	1092.9	94.8	0.06	94.8	0.06

T75

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 12:50:18 on 08/04/2014]

APPENDIX H

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
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RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2019 AM Base.vai"
(drive-on-the-left) at 12:05:19 on Thursday, 17 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 AM Peak Base

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.05	9.08	6.05
ARM B	15.00	45.00	75.00	0.35	0.52	0.35
ARM C	15.00	45.00	75.00	7.16	10.74	7.16
ARM D	15.00	45.00	75.00	0.35	0.52	0.35

DEMAND SET TITLE: 2019 AM Peak Base

T33

TIME	FROM/T	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C	ARM D
07.15 - 08.45	ARM A	0.000	0.058	0.884	0.058
		0.0	28.0	428.0	28.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.464	0.000	0.536	0.000
		13.0	0.0	15.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.885	0.066	0.000	0.049
		507.0	38.0	0.0	28.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.500	0.000	0.500	0.000
		14.0	0.0	14.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	6.07	24.01	0.253	- -	- 0.0	0.3	4.9	-	0.056
ARM B	0.35	21.32	0.016	- -	- 0.0	0.0	0.2	-	0.048
ARM C	7.19	27.65	0.260	- -	- 0.0	0.3	5.1	-	0.049
ARM D	0.35	21.03	0.017	- -	- 0.0	0.0	0.3	-	0.048

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	7.25	23.95	0.303	- - -	0.3	0.4	6.4	-	0.060
ARM B	0.42	20.71	0.020	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.59	27.59	0.311	- - -	0.3	0.4	6.6	-	0.053
ARM D	0.42	20.30	0.021	- - -	0.0	0.0	0.3	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	8.88	23.86	0.372	- - -	0.4	0.6	8.7	-	0.067
ARM B	0.51	19.88	0.026	- - -	0.0	0.0	0.4	-	0.052
ARM C	10.51	27.51	0.382	- - -	0.4	0.6	9.1	-	0.059
ARM D	0.51	19.31	0.027	- - -	0.0	0.0	0.4	-	0.053

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	8.88	23.86	0.372	- - -	0.6	0.6	8.9	-	0.067
ARM B	0.51	19.87	0.026	- - -	0.0	0.0	0.4	-	0.052
ARM C	10.51	27.51	0.382	- - -	0.6	0.6	9.2	-	0.059
ARM D	0.51	19.30	0.027	- - -	0.0	0.0	0.4	-	0.053

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	7.25	23.95	0.303	- - -	0.6	0.4	6.7	-	0.060
ARM B	0.42	20.70	0.020	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.59	27.59	0.311	- - -	0.6	0.5	6.9	-	0.053
ARM D	0.42	20.29	0.021	- - -	0.0	0.0	0.3	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	6.07	24.01	0.253	- - -	0.4	0.3	5.2	-	0.056
ARM B	0.35	21.31	0.016	- - -	0.0	0.0	0.3	-	0.048
ARM C	7.19	27.65	0.260	- - -	0.5	0.4	5.4	-	0.049
ARM D	0.35	21.01	0.017	- - -	0.0	0.0	0.3	-	0.048

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.0	
08.15	0.0	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.5	
08.45	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	666.2	444.1	40.7	0.06	40.7	0.06
B	38.5	25.7	1.9	0.05	1.9	0.05
C	788.7	525.8	42.4	0.05	42.4	0.05
D	38.5	25.7	2.0	0.05	2.0	0.05
ALL	1532.0	1021.3	86.9	0.06	87.0	0.06

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

========== end of file ==========

Printed at 12:05:32 on 17/04/2014]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2019 AM with Development.vai"
(drive-on-the-left) at 12:07:38 on Thursday, 17 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(07.15)AND ENDS(08.45)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 AM Peak with Development

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.80	8.70	5.80
ARM B	15.00	45.00	75.00	0.35	0.52	0.35
ARM C	15.00	45.00	75.00	6.93	10.39	6.93
ARM D	15.00	45.00	75.00	0.14	0.21	0.14

DEMAND SET TITLE: 2019 AM Peak with Development

T33

TIME	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) FROM/T	ARM A	ARM B	ARM C	ARM D
07.15 - 08.45	ARM A	0.000	0.060	0.922	0.017
		0.0	28.0	428.0	8.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.464	0.000	0.536	0.000
		13.0	0.0	15.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.915	0.069	0.000	0.016
		507.0	38.0	0.0	9.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.455	0.000	0.545	0.000
		5.0	0.0	6.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.15-07.30									
ARM A	5.82	24.07	0.242	- - -	0.0	0.3	4.7	-	0.055
ARM B	0.35	21.51	0.016	- - -	0.0	0.0	0.2	-	0.047
ARM C	6.95	27.79	0.250	- - -	0.0	0.3	4.9	-	0.048
ARM D	0.14	21.03	0.007	- - -	0.0	0.0	0.1	-	0.048

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.30-07.45									
ARM A	6.95	24.01	0.290	- - -	0.3	0.4	6.0	-	0.059
ARM B	0.42	20.93	0.020	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.30	27.76	0.299	- - -	0.3	0.4	6.3	-	0.051
ARM D	0.16	20.30	0.008	- - -	0.0	0.0	0.1	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
ARM A	8.51	23.93	0.356	- - -	0.4	0.5	8.1	-	0.065
ARM B	0.51	20.15	0.025	- - -	0.0	0.0	0.4	-	0.051
ARM C	10.17	27.72	0.367	- - -	0.4	0.6	8.5	-	0.057
ARM D	0.20	19.31	0.010	- - -	0.0	0.0	0.2	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
ARM A	8.51	23.93	0.356	- - -	0.5	0.6	8.2	-	0.065
ARM B	0.51	20.14	0.026	- - -	0.0	0.0	0.4	-	0.051
ARM C	10.17	27.72	0.367	- - -	0.6	0.6	8.7	-	0.057
ARM D	0.20	19.30	0.010	- - -	0.0	0.0	0.2	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
ARM A	6.95	24.01	0.290	- - -	0.6	0.4	6.3	-	0.059
ARM B	0.42	20.93	0.020	- - -	0.0	0.0	0.3	-	0.049
ARM C	8.30	27.76	0.299	- - -	0.6	0.4	6.5	-	0.051
ARM D	0.16	20.29	0.008	- - -	0.0	0.0	0.1	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
ARM A	5.82	24.07	0.242	- - -	0.4	0.3	4.9	-	0.055
ARM B	0.35	21.49	0.016	- - -	0.0	0.0	0.3	-	0.047
ARM C	6.95	27.79	0.250	- - -	0.4	0.3	5.1	-	0.048
ARM D	0.14	21.01	0.007	- - -	0.0	0.0	0.1	-	0.048

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.5	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.0	
07.45	0.0	
08.00	0.0	
08.15	0.0	
08.30	0.0	
08.45	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
07.30	0.3	
07.45	0.4	
08.00	0.6	*
08.15	0.6	*
08.30	0.4	
08.45	0.3	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
07.30	0.0
07.45	0.0
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
A	638.7	425.8	38.1	0.06	38.1	0.06
B	38.5	25.7	1.9	0.05	1.9	0.05
C	762.5	508.4	39.9	0.05	39.9	0.05
D	15.1	10.1	0.8	0.05	0.8	0.05
ALL	1454.9	969.9	80.7	0.06	80.7	0.06

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END OF JOB

========== end of file ==========

Printed at 12:07:56 on 17/04/2014]

ARCADY 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
program advice and maintenance, contact:

TRL Limited Tel: +44 (0) 1344 770758
Crowthorne House Fax: +44 (0) 1344 770356
Nine Mile Ride Email: software@trl.co.uk
Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
"C:\Users\Thompson\Documents\SKTP\SK21341 Houghton EfW Barnsley\Junction Assessments\ARCADY\
HMCR 2019 PM Base.vai"
(drive-on-the-left) at 12:09:21 on Thursday, 17 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(16.00)AND ENDS(17.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 PM Peak Base

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	7.03	10.54	7.03
ARM B	15.00	45.00	75.00	0.88	1.31	0.88
ARM C	15.00	45.00	75.00	7.56	11.34	7.56
ARM D	15.00	45.00	75.00	0.59	0.88	0.59

DEMAND SET TITLE: 2019 PM Peak Base

T33

TIME	FROM/T	ARM A	ARM B	ARM C	ARM D
16.00 - 17.30					
	ARM A	0.000	0.023	0.966	0.011
		0.0	13.0	543.0	6.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.400	0.000	0.600	0.000
		28.0	0.0	42.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.970	0.018	0.000	0.012
		587.0	11.0	0.0	7.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.489	0.000	0.511	0.000
		23.0	0.0	24.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
ARM A	7.05	24.13	0.292	- -	0.0	0.4	6.0	-	0.058
ARM B	0.88	20.65	0.043	- -	0.0	0.0	0.7	-	0.051
ARM C	7.59	27.70	0.274	- -	0.0	0.4	5.5	-	0.050
ARM D	0.59	20.58	0.029	- -	0.0	0.0	0.4	-	0.050

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
ARM A	8.42	24.08	0.350	- - -	0.4	0.5	7.9	-	0.064
ARM B	1.05	19.90	0.053	- - -	0.0	0.1	0.8	-	0.053
ARM C	9.06	27.65	0.328	- - -	0.4	0.5	7.2	-	0.054
ARM D	0.70	19.76	0.036	- - -	0.0	0.0	0.5	-	0.052

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	10.31	24.02	0.429	- - -	0.5	0.7	10.9	-	0.073
ARM B	1.28	18.88	0.068	- - -	0.1	0.1	1.1	-	0.057
ARM C	11.10	27.59	0.402	- - -	0.5	0.7	9.8	-	0.061
ARM D	0.86	18.65	0.046	- - -	0.0	0.0	0.7	-	0.056

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	10.31	24.02	0.429	- - -	0.7	0.7	11.2	-	0.073
ARM B	1.28	18.88	0.068	- - -	0.1	0.1	1.1	-	0.057
ARM C	11.10	27.58	0.402	- - -	0.7	0.7	10.1	-	0.061
ARM D	0.86	18.64	0.046	- - -	0.0	0.0	0.7	-	0.056

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
ARM A	8.42	24.08	0.350	- - -	0.7	0.5	8.3	-	0.064
ARM B	1.05	19.89	0.053	- - -	0.1	0.1	0.8	-	0.053
ARM C	9.06	27.65	0.328	- - -	0.7	0.5	7.5	-	0.054
ARM D	0.70	19.75	0.036	- - -	0.0	0.0	0.6	-	0.053

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	7.05	24.12	0.292	- - -	0.5	0.4	6.3	-	0.059
ARM B	0.88	20.63	0.043	- - -	0.1	0.0	0.7	-	0.051
ARM C	7.59	27.70	0.274	- - -	0.5	0.4	5.8	-	0.050
ARM D	0.59	20.56	0.029	- - -	0.0	0.0	0.4	-	0.050

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	*
16.45	0.7	*
17.00	0.7	*
17.15	0.5	*
17.30	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.0	
16.30	0.1	
16.45	0.1	
17.00	0.1	
17.15	0.1	
17.30	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	
16.45	0.7	*
17.00	0.7	*
17.15	0.5	
17.30	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

T75

ARM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
A	773.6	515.7	50.7	0.07	50.7	0.07
B	96.3	64.2	5.2	0.05	5.2	0.05
C	832.7	555.2	45.9	0.06	45.9	0.06
D	64.7	43.1	3.4	0.05	3.4	0.05
ALL	1767.3	1178.2	105.1	0.06	105.1	0.06

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END OF JOB

========== end of file ==========

Printed at 12:09:35 on 17/04/2014]

A R C A D Y 6

ASSESSMENT OF ROUNDABOUT CAPACITY AND DELAY

Analysis Program: Release 7.0 (FEBRUARY 2010)

For sales and distribution information,
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Wokingham, Berks. Web: www.trlsoftware.co.uk
RG40 3GA,UK

Run with file:-
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HMCR 2019 PM with Development.vai"
(drive-on-the-left) at 12:10:21 on Thursday, 17 April 2014

FILE PROPERTIES

RUN TITLE: Houghton Main Colliery Roundabout
LOCATION: Barnsley
DATE: 03/04/14
CLIENT: Peel Environmental Ltd
ENUMERATOR: Thompson [THOMPSON-HP]
JOB NUMBER: SK21341
STATUS: TIA
DESCRIPTION:

INPUT DATA

ARM A - A6195 (north)
ARM B - ASOS
ARM C - A6195 (south)
ARM D - Site Access

GEOMETRIC DATA

ARM	V (M)	E (M)	L (M)	R (M)	D (M)	PHI (DEG)	SLOPE	INTERCEPT (PCU/MIN)
ARM A	3.65	6.20	5.50	20.00	60.00	21.0	0.524	24.355
ARM B	3.65	6.00	5.50	20.00	60.00	18.0	0.527	24.422
ARM C	3.65	7.00	9.00	30.00	60.00	15.0	0.571	27.941
ARM D	3.65	7.00	5.00	20.00	60.00	19.0	0.530	24.722

V = approach half-width L = effective flare length D = inscribed circle diameter
E = entry width R = entry radius PHI = entry angle

TRAFFIC DEMAND DATA

Only sets included in the current run are shown

SCALING FACTORS

T13

ARM	FLOW SCALE(%)
A	100
B	100
C	100
D	100

TIME PERIOD BEGINS(16.00)AND ENDS(17.30)

LENGTH OF TIME PERIOD -(90) MINUTES

LENGTH OF TIME SEGMENT - (15) MINUTES

DEMAND FLOW PROFILES ARE SYNTHESISED FROM THE TURNING COUNT DATA

DEMAND SET TITLE: 2019 PM Peak with Development

T15

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.96	10.44	6.96
ARM B	15.00	45.00	75.00	0.88	1.31	0.88
ARM C	15.00	45.00	75.00	7.49	11.23	7.49
ARM D	15.00	45.00	75.00	0.11	0.17	0.11

DEMAND SET TITLE: 2019 PM Peak with Development

T33

TIME	TURNING PROPORTIONS / TURNING COUNTS (PERCENTAGE OF H.V.S) FROM/T	ARM A	ARM B	ARM C	ARM D
16.00 - 17.30	ARM A	0.000	0.023	0.975	0.002
		0.0	13.0	543.0	1.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM B	0.400	0.000	0.600	0.000
		28.0	0.0	42.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.980	0.018	0.000	0.002
		587.0	11.0	0.0	1.0
		(0.0)	(0.0)	(0.0)	(0.0)
	ARM D	0.444	0.000	0.556	0.000
		4.0	0.0	5.0	0.0
		(0.0)	(0.0)	(0.0)	(0.0)

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

T70

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.00-16.15									
ARM A	6.99	24.25	0.288	- -	- 0.0	0.4	5.9	-	0.058
ARM B	0.88	20.80	0.042	- -	- 0.0	0.0	0.6	-	0.050
ARM C	7.52	27.73	0.271	- -	- 0.0	0.4	5.4	-	0.049
ARM D	0.11	20.58	0.005	- -	- 0.0	0.0	0.1	-	0.049

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.15-16.30									
ARM A	8.35	24.23	0.344	- - -	0.4	0.5	7.7	-	0.063
ARM B	1.05	20.09	0.052	- - -	0.0	0.1	0.8	-	0.052
ARM C	8.97	27.69	0.324	- - -	0.4	0.5	7.0	-	0.053
ARM D	0.13	19.76	0.007	- - -	0.0	0.0	0.1	-	0.051

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
ARM A	10.22	24.20	0.422	- - -	0.5	0.7	10.6	-	0.071
ARM B	1.28	19.12	0.067	- - -	0.1	0.1	1.1	-	0.056
ARM C	10.99	27.64	0.398	- - -	0.5	0.7	9.7	-	0.060
ARM D	0.17	18.65	0.009	- - -	0.0	0.0	0.1	-	0.054

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
ARM A	10.22	24.20	0.422	- - -	0.7	0.7	10.9	-	0.071
ARM B	1.28	19.11	0.067	- - -	0.1	0.1	1.1	-	0.056
ARM C	10.99	27.64	0.398	- - -	0.7	0.7	9.9	-	0.060
ARM D	0.17	18.64	0.009	- - -	0.0	0.0	0.1	-	0.054

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
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ARM A	8.35	24.23	0.344	- - -	0.7	0.5	8.1	-	0.063
ARM B	1.05	20.08	0.052	- - -	0.1	0.1	0.8	-	0.053
ARM C	8.97	27.69	0.324	- - -	0.7	0.5	7.4	-	0.054
ARM D	0.13	19.75	0.007	- - -	0.0	0.0	0.1	-	0.051

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
ARM A	6.99	24.25	0.288	- - -	0.5	0.4	6.2	-	0.058
ARM B	0.88	20.79	0.042	- - -	0.1	0.0	0.7	-	0.050
ARM C	7.52	27.73	0.271	- - -	0.5	0.4	5.7	-	0.050
ARM D	0.11	20.56	0.005	- - -	0.0	0.0	0.1	-	0.049

QUEUE AT ARM A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	*
16.45	0.7	*
17.00	0.7	*
17.15	0.5	*
17.30	0.4	

QUEUE AT ARM B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.0	
16.30	0.1	
16.45	0.1	
17.00	0.1	
17.15	0.1	
17.30	0.0	

QUEUE AT ARM C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE	
16.15	0.4	
16.30	0.5	
16.45	0.7	*
17.00	0.7	*
17.15	0.5	
17.30	0.4	

QUEUE AT ARM D

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.15	0.0
16.30	0.0
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

ARM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *		T75
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)	
A	766.7	511.1	49.4	0.06	49.5	0.06	
B	96.3	64.2	5.1	0.05	5.1	0.05	
C	824.5	549.7	45.0	0.05	45.0	0.05	
D	12.4	8.3	0.6	0.05	0.6	0.05	
ALL	1699.9	1133.3	100.2	0.06	100.3	0.06	

* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD.
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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