

North Wales Police

**Proposed Eastern Command & Custody Facility
Davy Way, Llay, Wrexham
Transport Assessment**

July 2015

22 Trinity Lane,
Beverley,
East Riding of Yorkshire,
HU17 0DY

📞 01482 679 911

✉ info@local-transport-projects.co.uk

🌐 www.local-transport-projects.co.uk

Registered No. 5295328

North Wales Police

Proposed Eastern Command & Custody Facility Davy Way, Llay, Wrexham Transport Assessment

July 2015

Client Commission			
Client:	North Wales Police	Date Commissioned:	12 th May 2015
Commissioned By:	Galliford Try (Gary Thorogood)	Order No:	

LTP Quality Control					
Job No:	LTP/15/2074	File Ref:	Proposed Eastern Command & Custody Facility, Llay TA - Final Issue 1		
Issue	Revision	Description	Originated	Checked	Date
1	-	Final Report	JH	SW	23/07/2015
Authorised for Issue:					

LTP PROJECT TEAM

As part of our commitment to quality the following team of transport professionals was assembled specifically for the delivery of this project. Relevant qualifications are shown and CV's are available upon request to demonstrate our experience and credentials.

Team Member	LTP Designation	Qualifications
Tony Kirby	Director (Project Manager)	IEng MSc MCIHT FIHE
Steven Windass	Senior Transport Planner	BSc(Hons) MSc (Eng) MCIHT MIHE
Jack Hearnshaw	Transport Planner	BA(Hons) AMIHE

The contents of this document must not be copied or reproduced, in whole or in part, without the written consent of Local Transport Projects Ltd.

PROPOSED EASTERN COMMAND & CUSTODY FACILITY DAVY WAY, LLAY, WREXHAM TRANSPORT ASSESSMENT

CONTENTS

EXECUTIVE SUMMARY	3
1.0 INTRODUCTION	4
1.1 Background	4
1.2 Scope	4
2.0 SITE BACKGROUND.....	6
2.1 Site Location	6
2.2 Development Proposals.....	6
2.3 Proposed Access and Parking Arrangements.....	7
2.4 Planning History.....	8
3.0 SITE ASSESSMENT.....	9
3.1 Local Highway Network	9
3.2 Pedestrian Provision	10
3.3 Cycling Provision	11
3.4 Public Transport Provision	11
4.0 ROAD CASUALTY APPRAISAL	12
4.1 Collision Record	12
4.2 Collision Conditions	13
4.3 Collision Times	14
4.4 Collision Locations	14
4.5 Road Safety Impact.....	15
5.0 TRIP GENERATION PROJECTIONS.....	16
5.1 Assessment Periods	16
5.2 Baseline Traffic Surveys	16
5.3 Modal Split.....	17
5.4 Proposed Trip Generation – Staff	18
5.5 Proposed Trip Generation – Operational Movements	20
5.6 Consented Site Use - Vehicle Trip Generation	22
5.7 Net Traffic Generation	23
6.0 TRAFFIC IMPACT.....	24
6.1 Traffic Distribution & Assignment.....	24
6.2 Impact on Local Junctions.....	25
7.0 CONCLUSIONS	26
8.0 REFERENCES	28

APPENDICES

- Appendix 1 – Proposed Site Layout
- Appendix 2 – PIC Study Data
- Appendix 3 – PM Peak Traffic Survey
- Appendix 4 – Proposed Operation Trip Generation
- Appendix 5 – TRICS Output (Consented Site Use)
- Appendix 6 – Net Traffic Generation
- Appendix 7 – Network Diagrams

TABLES

Table 1: Collision History	13
Table 2: Collision Conditions	13
Table 3: Collisions by Time of Year	14
Table 4: Collisions by Day and Time	14
Table 5: Predicted Modal Split	17
Table 6: Proposed Staff Shift Times	18
Table 7: Proposed Staff Traffic Generation	19
Table 8: Projected Operational Trip Frequency	20
Table 9: Proposed Operational Traffic Generation	21
Table 10: Total Proposed Vehicle Trip Generation	22
Table 11: Projected Vehicle Trip Generation (Consented Warehouse Use)	23
Table 12: Net Vehicle Trip Generation	23
Table 13: Projected Traffic Impact – Local Junctions	25

FIGURES

Figure 1: Site Location	6
Figure 2: Proposed Access Locations	7
Figure 3: PIC Study Area	12
Figure 4: Weekday PM Peak (16:30-17:30) Traffic Survey Results	16
Figure 5: Projected Davy Way / Rackery Lane Vehicle Turning Distribution	24

EXECUTIVE SUMMARY

This Transport Assessment (TA) provides a detailed appraisal of transport aspects associated with the proposed Eastern Command & Custody Facility for North Wales Police at land south-east of Davy Way, Llay, Wrexham.

The scope of this report has been agreed with the Local Highway Authority as part of pre-application discussions and has been produced in accordance with the relevant local and national guidance. A Travel Plan that provides a strategy for encouraging sustainable travel at the proposed development site has been produced in conjunction with this TA as a separate document.

The proposals involve the demolition of an existing warehouse (formerly occupied by Sharp Electronics) and the construction of offices and a custody facility at the site. Approximately 350 staff are to be based at the site, which is expected to be operational 24 hours a day, 7 days a week. The proposed site will be accessed by all modes via two existing junctions and one new junction with Davy Way. Three separate parking areas are to be provided; a staff car park consisting of 280 spaces, a visitor car park consisting of 31 spaces and an operational vehicle parking area with 61 spaces. Two separate pedestrian and cycle access points are to be provided from Davy Way, one for use by visitors and one for use by staff with cycle shelters provided adjacent to the respective entrances.

The proposed development is considered to be accessible by sustainable modes, with footways provided alongside the carriageway on both sides of Davy Way, providing connections to Llay village and other local pedestrian infrastructure. The site is within a reasonable cycling distance (5km) of a number of settlements including Llay, Hope, Cefn-y-Bedd, Bradley, Rossett and parts of North Wrexham. Two workers bus routes serve Llay Industrial Estate during peak hours, with further bus services available from Rackery Lane and Llay village. The nearest rail station to the site is located in Caergwrle, approximately 2.5km walking/cycling distance to the north-west.

A road casualty study has not revealed any identifiable existing collisions issues associated with the expected movements of the proposed development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site. If the proposed access junctions and internal roads of the proposed development are designed with due consideration to road safety, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of pedestrians and cyclists.

The vehicle trip generation of the proposed development has been projected using information provided by North Wales Police, including shift patterns of staff and the likely frequency of operational vehicle movements the site is expected to generate. The trip generation of the consented (warehouse) use of the site has been projected using the nationally recognised TRICS database and has been deducted as appropriate. The proposed development is expected to generate an additional 34 two-way trips during the AM peak hour (07:30-08:30) and 36 two-way trips during the PM peak hour (16:30-17:30).

Based on the trip generation projections of this TA, it is considered that the proposed development should not have a detrimental impact on the operation of the local highway network, and as such the proposals are in accordance with the local and national policy.

1.0 INTRODUCTION

1.1 Background

- 1.1.1 Local Transport Projects Ltd (LTP) has been commissioned by Galliford Try (Ref: Gary Thorogood) to produce a Transport Assessment (TA) in support of proposals to provide an Eastern Command and Custody Facility for North Wales Police (NWP) on land to the south-east of Davy Way, Llay, Wrexham. A proposed site layout plan is attached as Appendix 1.
- 1.1.2 A Travel Plan (LTP, 2015a) that provides a strategy for encouraging sustainable travel at the proposed development has been produced in conjunction with this TA as a separate document.

1.2 Scope

- 1.2.1 The scope of this TA has been discussed with the Local Highway Authority, Wrexham County Borough Council (WCBC) and is written in accordance with the Welsh Governments' *'Planning Practice Wales: Transport'* (WG, 2014) and *'Technical Advice Note 18: Transport'* (WG, 2007) as outlined below:

- **Executive Summary:** A non-technical summary of the report outlining the key outcomes of the assessment.
- **Introduction & Description of Proposals:**
 - Description of the development site, including location and existing access arrangements;
 - Summary of any planning and allocation history for the site;
 - Description of the proposed development including site layout, pedestrian/cycle facilities and proposed access and parking arrangements.
- **Site Assessment:**
 - Site assessments to determine existing traffic conditions, such as posted speed limits, highway geometry, on-street parking restrictions and any other relevant features of the local area;
 - Assessment of the sustainable transport infrastructure (pedestrian, cycle and public transport) local to the site and identification of any opportunities for enhancing the accessibility of the site by sustainable modes.
- **Road Casualty Appraisal:** Examination of road collision records (5 year study period) and assessment of the road safety impact of the proposed development on the local highway network.
- **Traffic Impact:**
 - Calculation of the projected trip generation for the proposed development;
 - Development of a network model to assess the likely impact of the proposed development on vehicles, pedestrians, cyclists, road safety and the general surrounding infrastructure;
 - Consideration of the impact on the B5373/B5102 Crown Crossroads signal junction.

- **Conclusions:** Conclusions summarising the outcomes of the TA and the suitability of the development proposals in terms of traffic impact and road safety.

1.2.2 This report has been prepared in accordance with the above scope and reference has been made to the following documents where appropriate:

- Planning Policy Wales Chapter 8: Transport (WG, 2014);
- Manual for Streets 2: Wider Application of the Principles (CIHT, 2010);
- North Wales Regional Transport Plan (Taith, 2009);
- Planning Policy Wales Technical Advice Note 18: Transport (WAG, 2007);
- Guidance on Transport Assessment (DfT, 2007a); and
- Manual for Streets (DfT, 2007b).

2.0 SITE BACKGROUND

2.1 Site Location

2.1.1 The proposed development site is located on Davy Way in Llay Industrial Estate to the north-west of the village of Llay. The site is situated approximately 6km north of Wrexham town centre and is bound by Davy Way to the north-west, fields and a small woodland area to the north-east, and existing employment development to the south-east and south-west.

2.1.2 The approximate boundary of the development site is highlighted in Figure 1.

Figure 1: Site Location



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

2.2 Development Proposals

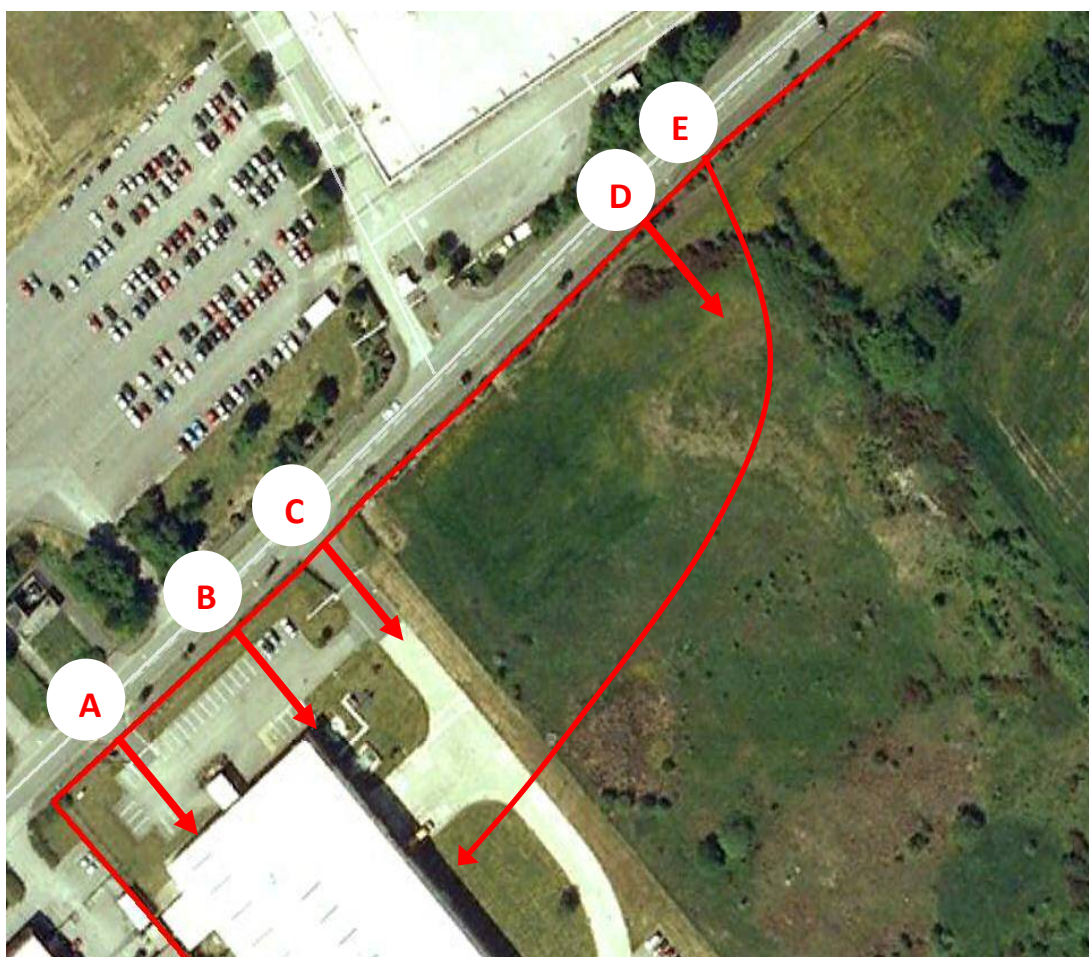
2.2.1 This TA is based upon the proposed site layout plan attached as Appendix 1. The development proposals involve the demolition of an existing warehouse (currently disused but formerly occupied by Sharp Electronics) and the construction of a new three-storey building to provide an Eastern Command and Custody Facility for use by NWP. It is understood that the facility will replace existing NWP offices and custody facilities within the counties of Wrexham and Flintshire.

- 2.2.2 The proposed site is expected to have a Gross Floor Area (GFA) of approximately 8,000m², including office accommodation, a full custody suite and ancillary accommodation (plant room, gym, locker rooms, WC, and showers). Approximately 350 staff are to be based at the site, which will be operational 24 hours a day, seven days a week.

2.3 Proposed Access and Parking Arrangements

- 2.3.1 Access for all modes will be taken from Davy Way to the north-west of the site. It is expected that the two existing vehicular access points to the site will be retained, with the construction of a third vehicular access further to the north-east. Two shared pedestrian and cycle accesses are also to be constructed, one for public use and one for use by staff. The approximate locations of the proposed site access points (A to E) are shown on the plan in Figure 2, with a description of each provided below:

Figure 2: Proposed Access Locations



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

- A) Existing vehicular access to the site is to be retained and will provide two-way access to a visitor car park consisting of 31 spaces (including 4 disabled spaces).
- B) A new pedestrian and cycle access will be provided for use by visitors. Cycle parking shelters are to be provided adjacent to the visitor entrance to the building, although the exact number of spaces is yet to be determined.
- C) Existing vehicular access to the site is to be retained for use by operational, service and custody vehicles. It is expected that security gates will be installed at the access to control the entry and exit of vehicles. An access road will lead to the rear of the building and provide access to 61 parking spaces for operational vehicles (including 2 spaces with charging points for electric vehicles), a vehicle maintenance and service area and a custody vehicle dock.
- D) A new vehicular access is to be constructed to provide two-way access to a staff car park consisting of 280 car spaces (including 17 disabled spaces) and 6 motorcycle spaces.
- E) A new pedestrian and cycle access will be provided for use by staff. A shared foot/cycle path will intersect the staff car park and lead towards the staff entrance to the south of the proposed office building. Cycle shelters for use by staff are to be provided near to this entrance, although the exact number of spaces is yet to be determined.

2.4 Planning History

- 2.4.1 Other than approvals relating to the previous warehouse use, it is understood that there have been no other relevant previous planning applications relating to the proposed development site.

3.0 SITE ASSESSMENT

3.1 Local Highway Network

- 3.1.1 All means of access will be from Davy Way to the north-west of the site. Davy Way is a two-way single carriageway that is approximately 7.5m wide within the vicinity of the site and is subject to a 30mph speed limit throughout (see Photo 1).

Photo 1: Davy Way



- 3.1.2 Davy Way meets Miners Road and Miners Park at a mini-roundabout approximately 250m south-west of the site, and Rackery Lane (B5373) at a priority junction approximately 350m north-east of the site (see Photo 2). Merge and diverge tapers are provided at the Davy Way / Rackery Lane junction and there are two-traffic lanes on the Davy Way approach for approximately 180m, with separate lanes for left and right turning vehicles.

Photo 2: Davy Way / Rackery Lane Priority Junction



- 3.1.3 Rackery Lane forms part of the B5373 which extends from the junction with the A550 Hawarden Road / Wrexham Road in Hope approximately 2.4km north-west of the site to the junction with the B5445 Chester Road in Gresford approximately 3km south-east of the site. Rackery Lane is subject to a 40mph speed limit within the vicinity of the junction with Davy Way, however the speed limit changes to 50mph approximately 170m north-west of the junction.
- 3.1.4 The trunk road network can be accessed from approximately 3.6km east of the site via the A483 which runs south-north through Wales between Neath, Port Talbot and Wrexham, continuing on to Chester. The A483 is largely a two-lane dual carriageway between Chester and Ruabon, and a two-way single carriageway for the remainder of the route.
- 3.1.5 There are No Waiting At Any Time restrictions (NWAAT, double yellow lines) on both sides of Davy Way within the site frontage which cover both existing highway accesses to the site. These restrictions also cover the Davy Way / Rackery Lane junction to the north-east.

3.2 Pedestrian Provision

- 3.2.1 There is good pedestrian infrastructure within Llay Industrial Estate with footways provided on both sides of the carriageway on both Davy Way and Miners Road, largely segregated from the carriageway by grass verges (see Photo 3). There is also a footway on the south-western side of Rackery Lane which provides a pedestrian route towards Llay village and connects with existing pedestrian infrastructure there.

Photo 3: Footways and Verges on Davy Way



- 3.2.2 There are not understood to be any existing Public Rights of Way (PRoW) within the immediate vicinity of the site although a number of routes exist within Llay village which allow for good pedestrian permeability.
- 3.2.3 Measures to promote and encourage users of the proposed development to walk are detailed in the site Travel Plan.

3.3 Cycling Provision

- 3.3.1 Cycling has the potential to substitute for short car trips, particularly those under 5km, and to form part of a longer journey by public transport. There are a number of settlements within a 5km cycle ride of the site, including Llay, Hope, Cefn-y-Bedd, Caergwrle, Abermorddu, Gresford, Rossett, Bradley, Rhosrobin, Gwersyllt, Pentre Broughton and parts of north Wrexham.
- 3.3.2 A shared use off-road cycle path can be accessed from approximately 1.5km south-east of the site at the Llay Road / Llay New Road / First Avenue roundabout. This provides a continuous route to the south and provides access to the villages of Llay, Bradley and Rhosrobin.
- 3.3.3 As previously outlined, a shared use foot/cycle path will be constructed linking Davy Way with the proposed staff entrance to the east of the proposed office building. A similar facility will also be provided for visitor access. Covered and secure cycle parking is to be provided adjacent to both the staff and visitor entrances to the site, although the exact number of spaces is yet to be determined.
- 3.3.4 Measures to promote and encourage users of the proposed development to cycle are detailed in the site Travel Plan.

3.4 Public Transport Provision

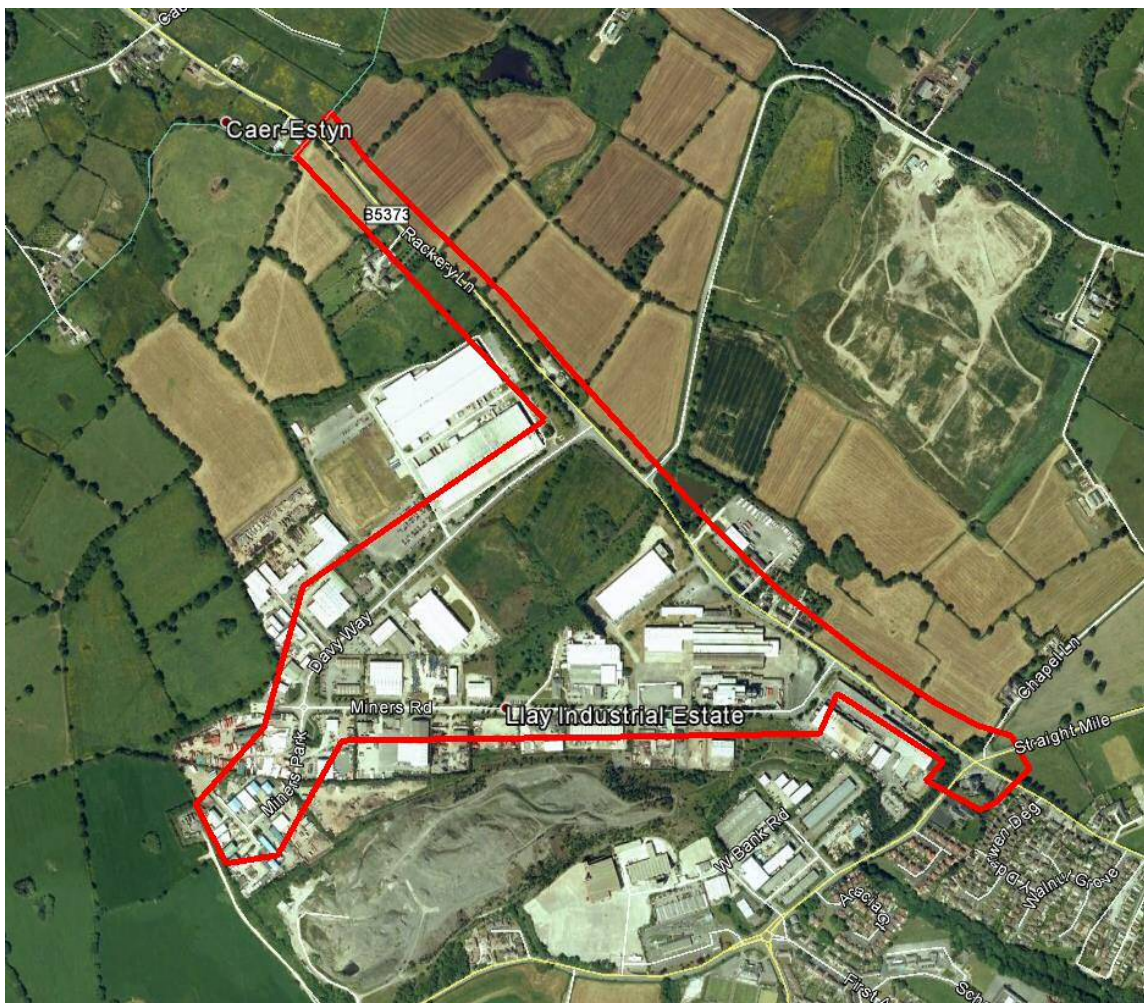
- 3.4.1 Llay Industrial Estate is served by two infrequent bus services which primarily provide workers services. The services stop on Davy Way within the site frontage and arrive at 07:35, departing at 16:35 Monday to Friday only. The routes of these services are outlined below:
 - PC1: Southsea – Coedpoeth – Brynteg – Gwersyllt – Bradley – **Llay Industrial Estate**
 - PC2: Gatewen – Brook Street – Hightown – The Queensway – Wrexham Bus Station – Rhosddu – **Llay Industrial Estate**
- 3.4.2 There are other bus services available in the local area, including services from stops on Rackery Lane (within 750m) and First Avenue, Llay (within 1.6km), these include:
 - 28a: Wrexham – Bradley – Llay – **Rackery Lane** – Hope – Penyfford – Mold – Northop – Flint
 - 32/33: Wrexham – Rhosddu – Rhosrobin – Gwersyllt – Bradley – **Llay** (circular route in Llay)
- 3.4.3 The nearest railway stations to the application site are Caergwrle and Cefn-y-bedd which are located within a 2.5km and 3.5km walk/cycle of the site respectively. Both stations are located on the Wrexham to Bidston line with hourly services available in each direction. Connections to Liverpool are available from Bidston and connections to Chester, Cardiff and Birmingham are available from Wrexham General.
- 3.4.4 Measures to promote and encourage users of the proposed development to use public transport are detailed in the site Travel Plan.

4.0 ROAD CASUALTY APPRAISAL

4.1 Collision Record

- 4.1.1 Personal Injury Collision (PIC) data for the highway network local to the proposed development site for the most recent available 5 year study period (27/12/2009 to 26/12/2014) was obtained from WCBC for analysis. A total of 5 collisions occurred within the study area, which includes Davy Way and Miners Road along with Rackery Lane (B5373) between the Wrexham / Flintshire County border and the Straight Mile / Llay Road / Chapel Lane / Gresford Road signal junction. The study area is shown in Figure 3 and the locations of the collisions are indicated on the plan attached as Appendix 2.

Figure 3: PIC Study Area



Source Imagery: Copyright Google Earth Pro (License Key-JCPMR5M58LXF2GE)

4.1.2 A total of 5 collisions have occurred during the study period, as outlined within Table 1:

Table 1: Collision History

Year	1	2	3	4	5	Total
From	27/12/2009	27/12/2010	27/12/2011	27/12/2012	27/12/2013	
To	26/12/2010	26/12/2011	26/12/2012	26/12/2013	26/12/2014	
Fatal	-	-	-	-	-	-
Serious	-	-	-	1	-	1
Slight	-	-	2	1	1	4
Total	-	-	2	2	1	5

4.1.3 The collision records show that all recorded collisions occurred within the most recent 3-year period. There has been 1 KSI collision (Killed or Seriously Injured), therefore the severity ratio is 20%.

4.2 Collision Conditions

4.2.1 Table 2 below summarises the collisions by road surface, weather and lighting conditions:

Table 2: Collision Conditions

Road Surface	Collisions	%
Dry	1	20%
Wet	1	20%
Snow/Ice	3	60%
Weather	Collisions	%
Fine	2	40%
Rain	1	20%
Snow	1	20%
Other	1	20%
Lighting Condition	Collisions	%
Daylight	3	60%
Dark / Lit	2	40%

4.2.2 Table 2 shows that 3 of the 5 recorded collisions (60%) occurred on a road surface covered with ice or snow.

4.3 Collision Times

4.3.1 Table 3 below summarises the collisions by time of year:

Table 3: Collisions by Time of Year

Time of Year	Collisions	%
Winter (Dec-Feb)	4	80%
Spring (Mar-May)	0	-
Summer (Jun-Aug)	1	20%
Autumn (Sep-Nov)	0	-

4.3.2 Table 3 shows that the majority of collisions occurred during the winter months with no collisions recorded during the spring or autumn months.

4.3.3 Table 4 below summarises the collisions by day of week and also the time of day:

Table 4: Collisions by Day and Time

	Morning (06:00- 11:00)	Lunch (11:00- 14:00)	Afternoon (14:00- 19:00)	Evening (19:00- 01:00)	Night (01:00- 06:00)	Total	%
Monday						0	-
Tuesday				1		1	20%
Wednesday						0	-
Thursday						0	-
Friday	2					2	40%
Saturday	1				1	2	40%
Sunday						0	-
Total	3	0	0	1	1	5	
%	60%	-	-	20%	20%		

4.3.4 Table 4 shows that the majority of collisions (60%) occurred during the morning (06:00-11:00) period. 4 out of the 5 recorded collisions (80%) occurred on a Friday or a Saturday.

4.4 Collision Locations

4.4.1 The locations of the 5 study collisions (shown on the plot attached as Appendix 2) can be summarised as follows:

- 3 occurred on Rackery Lane (not at a junction);
- 1 occurred at the Davy Way / Rackery Lane priority junction; and
- 1 occurred at the Davy Way / Miners Road mini-roundabout.

4.4.2 No collisions have occurred within the immediate vicinity of the proposed site access locations on Davy Way.

4.5 Road Safety Impact

- 4.5.1 A total of 5 collisions have occurred within the study area during the 5-year study period, with 1 KSI collision. All recorded collisions have occurred within the most recent 3 year period. The highest proportion of collisions occurred during the winter months (4 collisions), with 3 of these collisions occurring on a road surface covered in ice or snow.
- 4.5.2 Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements of the proposed development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site. If the proposed site access points and internal roads are designed with due consideration to road safety, with appropriate highway design features incorporated into the detailed design, then the proposals should not have a detrimental road safety impact on the local transport network and should not adversely affect the safety of pedestrians and cyclists.

5.0 TRIP GENERATION PROJECTIONS

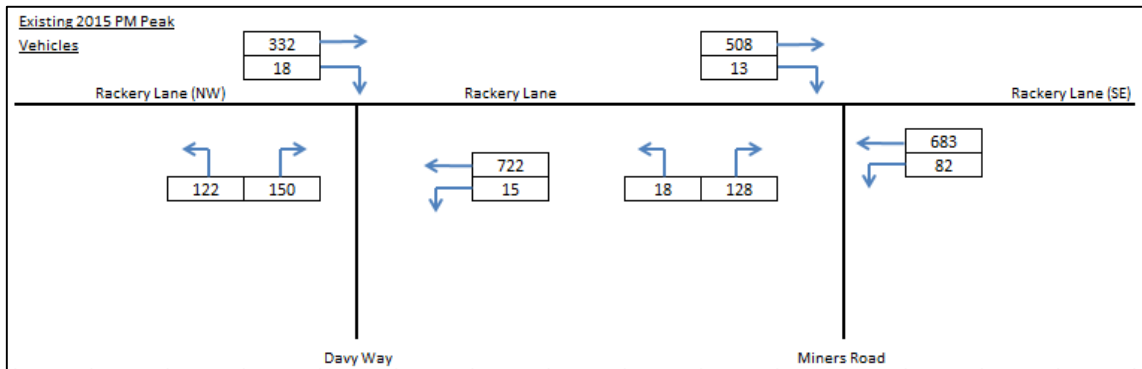
5.1 Assessment Periods

- 5.1.1 As previously outlined, the proposed Eastern Command & Custody Facility is expected to be operational 24 hours a day, 7 days a week. To ensure that the impact of the proposals has been tested against the worst-case scenario, the weekday peak hours of the highway network within the vicinity of the site have been assessed. It is understood that the peak hours of the local highway network are 07:30-08:30 (AM) and 16:30-17:30 (PM).

5.2 Baseline Traffic Surveys

- 5.2.1 In order to establish the baseline traffic situation in the vicinity of the proposed development, a PM peak traffic survey was undertaken on a neutral weekday, Tuesday 2nd June 2015, between 16:30 and 17:30 at the Davy Way / Rackery Lane and Miners Road / Rackery Lane priority junctions.
- 5.2.2 The total vehicle movements recorded at the above junctions during the survey period are summarised within Figure 4, with the full results included as Appendix 3.

Figure 4: Weekday PM Peak (16:30-17:30) Traffic Survey Results



- 5.2.3 Figure 4 demonstrates that a total of 1,432 vehicle movements were recorded across the Miners Road / Rackery Lane junction during the weekday PM peak hour (16:30-17:30) whilst 1,359 vehicle movements were recorded at the Davy Way / Rackery Lane junction. The dominant traffic flow on Rackery Lane appeared to be in a north-westbound direction.
- 5.2.4 The majority of vehicles turning out of Miners Road were observed to turn out to the right, whilst there was a relatively even split of left and right turners out of Davy Way. Turning movements at the Davy Way / Rackery Lane junction appeared to be tidal, with a much higher number of turning movements occurring during the 16:30-16:45 and 17:00-17:15 periods (to coincide with shift end times of 16:30 and 17:00) in comparison to the 16:45-17:00 and 17:15-17:30 periods. Turning movements at the Miners Road / Rackery Lane junction appeared to be relatively evenly spread across each 15 minute period.

5.3 Modal Split

- 5.3.1 In order to predict the modal split of the person trips generated by the proposed Eastern Command and Custody Facility, local travel patterns have been interrogated using 'Method of Travel to Work' data from the 2011 National Census (ONS, 2013). The site modal split has been predicted based upon the travel patterns of those working within Middle Super Output Area (MSOA) 'Wrexham 020' within which the proposed development is located, as shown within Table 5:

Table 5: Predicted Modal Split

Mode of Travel	Mode Split	
Car Driver	78.9%	80.3%
Taxi	0.4%	
Powered Two-Wheeler (PTW)	1.0%	
Public Transport	3.9%	
Car Passenger	10.3%	
Pedestrian	3.0%	
Pedal-cycle	2.3%	
Other	0.2%	
ALL MODES	100%	

- 5.3.2 The modal split shown in Table 5 indicates that 80.3% of the workforce of MSOA 'Wrexham 020' travel to work by a vehicle trip generating mode, with 19.7% travelling by more sustainable modes of transport.

5.4 Proposed Trip Generation – Staff

- 5.4.1 It is understood that the proposed site is likely to generate a slightly different number of staff trips each day due to varying shift patterns. North Wales Police (NWP) have provided details of the shifts worked during June 2015 by all employees to be based at the site and the average number of employees that could be expected on site per weekday has been extracted. A total of 184 staff members are expected to be on site on an average weekday, generating up to 368 daily staff person trips.
- 5.4.2 Table 6 shows the number of staff members expected to start/finish work at each time on an average weekday:

Table 6: Proposed Staff Shift Times

Shift Start/End Time	No. Employee Arrivals	No. Employee Departures
01:00	0	1
02:00	0	1
03:00	0	2
04:00	0	2
05:00	0	0
06:00	30	0
06:30	4	0
07:00	10	4
08:00	50	0
08:30	7	0
09:00	38	0
09:15	1	0
10:00	8	0
11:00	2	0
12:00	2	0
13:00	15	0
14:00	5	27
15:00	0	4
16:00	4	26
16:30	0	4
17:00	2	49
17:30	0	7
18:00	0	31
18:15	0	1
19:00	1	0
20:00	0	1
21:00	2	3
22:00	4	15
23:00	0	1
00:00	0	3
TOTAL	185	182

- 5.4.3 In order to determine the number of vehicle trips likely to be generated by staff on an average weekday, the modal split figures outlined within Table 5 have been applied to the number of staff arriving and departing at the shift start/end times shown within Table 6. For the purposes of this assessment it is assumed that staff arriving will do so within the 15 minutes prior to their shift starting and staff departing will do so within the 15 minutes of their shift ending.
- 5.4.4 Table 7 outlines the expected number of vehicle trips likely to be generated by staff commuting trips during each hourly period on an average weekday. The number of vehicle trips generated between the hours of 07:30-08:30 and 16:30-17:30 have also been included as this is understood to reflect the AM and PM peak hours of the local highway network:

Table 7: Proposed Staff Traffic Generation

Time	Arrivals	Departures	Two-Way
00:00-01:00	0	2	2
01:00-02:00	0	1	1
02:00-03:00	0	1	1
03:00-04:00	0	2	2
04:00-05:00	0	2	2
05:00-06:00	24	0	24
06:00-07:00	12	0	12
07:00-08:00	40	3	43
07:30-08:30*	46	0	46
08:00-09:00	36	0	36
09:00-10:00	7	0	7
10:00-11:00	2	0	2
11:00-12:00	2	0	2
12:00-13:00	12	0	12
13:00-14:00	4	0	4
14:00-15:00	0	22	22
15:00-16:00	3	3	6
16:00-17:00	2	23	25
16:30-17:30*	2	42	44
17:00-18:00	0	45	45
18:00-19:00	1	26	27
19:00-20:00	0	0	0
20:00-21:00	1	1	2
21:00-22:00	3	2	5
22:00-23:00	0	12	12
23:00-00:00	0	1	1
Total Vehicle Trips	149	146	295

*Included for reference only, figures are not included as part of the overall total due to data overlap with surrounding time periods.

- 5.4.5 Table 7 demonstrates that the proposed staff vehicle trip generation of the site would be relatively evenly spread throughout the day, but with peaks occurring during the typical AM and PM peak periods. The proposed site is expected to generate 46 two-way staff vehicle trips during the network AM peak period (07:30-08:30) and 44 two-way vehicle trips during the network PM peak period (16:30-17:30).

5.5 Proposed Trip Generation – Operational Movements

- 5.5.1 NWP have provided detailed information with regards to the number and frequency of operational trips likely to be generated by the proposed development. Each department to be based at the site would be expected to generate a different number of operational trips based upon their function, with some departments generating no operational trips. Table 8 outlines the projected frequency of operational trips per department/function.

Table 8: Projected Operational Trip Frequency

Department/Function	Frequency of Operational Trips
Prison Van	Expected to visit the site twice a day, once at around 08:00 and again at around 17:00, generating 4 daily two-way trips.
CSI & WECTU	4 two-way movements per CSI staff per shift. 2 two-way movements per WECTU staff per shift.
CID	40 two-way movements per day.
AJD	No trips to and from station.
PCSO	4-6 two-way movements per person per shift.
Intel & Prisoner Handling	No trips to and from station.
RPU	6 two-way movements per person per shift.
Community Safety	2 two-way movements per person per shift.
Crime Services	2 two-way movements per person per shift.
Command Team	4 two-way movements per person (except admin) per shift.
Seized Property	Caretaker to generate 8 two-way movements. Rest of department to generate 4 two-way movements.
Training & Diversity	1 two-way movement per person per shift.
Operational Planning	1 two-way movement per shift.
MASH & WISDOM	0.2 two-way movements per person per shift.
Deliveries & Post	6 two-way movements per day.

- 5.5.2 In order to determine the number of operational vehicle trips generated by the custody facility, data outlining the total number of detainee arrivals and departures generated during each hourly period by the existing Wrexham custody suite between August 2011 and July 2012 was provided by NWP. This data was analysed to determine the number of custody arrivals and departures likely to occur each day at the proposed site and revealed that a total of 20 two-way trips per day (10 arrivals & 10 departures) are likely to be generated, resulting in 1 trip during each hourly period, except during the period 03:00-07:00 when no trips are likely to be made.

- 5.5.3 The information outlined within Table 8 has been analysed alongside shift start and end times to determine approximate timings of the operational trips to be generated by the site. Typically, staff operational departures will be made an hour after the shift begins with arrivals occurring an hour prior to the shift ending. Where a department generates multiple trips per staff member per day, assumptions have been made as to the timings of these trips, although it is noted that trips are often limited by purpose (i.e. response to an emergency or incident) and as such may not occur during the same hourly period each day.
- 5.5.4 Table 9 outlines the total number of operational vehicle trips (including custody detainee trips and deliveries) likely to be generated by the site during each hourly period on a typical weekday. Detailed projections as to the number of operational trips likely to be generated by each department are included as Appendix 4.

Table 9: Proposed Operational Traffic Generation

Time	Arrivals	Departures	Two-Way
00:00-01:00	1	2	3
01:00-02:00	3	0	3
02:00-03:00	0	2	2
03:00-04:00	2	0	2
04:00-05:00	0	0	0
05:00-06:00	0	0	0
06:00-07:00	0	1	1
07:00-08:00	1	7	8
07:30-08:30*	1	8	9
08:00-09:00	1	9	10
09:00-10:00	3	21	24
10:00-11:00	7	19	26
11:00-12:00	13	14	27
12:00-13:00	17	14	31
13:00-14:00	9	14	23
14:00-15:00	16	16	32
15:00-16:00	28	5	33
16:00-17:00	7	5	12
16:30-17:30*	7	6	13
17:00-18:00	8	7	15
18:00-19:00	5	5	10
19:00-20:00	5	3	8
20:00-21:00	13	2	15
21:00-22:00	3	3	6
22:00-23:00	2	2	4
23:00-00:00	3	0	3
Total	147	151	298

*Included for reference only, figures are not included as part of the overall total due to data overlap with surrounding time periods.

- 5.5.5 Table 9 demonstrates that operational vehicle movements are likely to be spread across the 24-hour period, but with most trips likely to be generated during the daytime (07:00-19:00). The site is likely to generate 9 two-way operational vehicle movements during the AM peak hour (07:30-08:30) and 13 two-way operational movements during the PM peak hour (16:30-17:30).
- 5.5.6 The total proposed vehicle trip generation of the site (including staff and operational movements) during the respective AM and PM peak hours is shown within Table 10:

Table 10: Total Proposed Vehicle Trip Generation

	AM Peak (07:30-08:30)			PM Peak (16:30-17:30)		
	Arr.	Dep.	Total	Arr.	Dep.	Total
Staff Traffic Generation	46	0	46	2	42	44
Operational Traffic Generation	1	8	9	7	6	13
Total Proposed Traffic Generation	47	8	55	9	48	57

5.6 Consented Site Use - Vehicle Trip Generation

- 5.6.1 As previously outlined, the site was previously used as a warehouse by Sharp Electronics and it is understood that the site has consented planning permission for use as a warehouse. The level of trip generation the consented use of the site could be expected to generate has therefore been interrogated utilising the TRICS (Trip Rate Information Computer System) database (v7.1.2).
- 5.6.2 To ensure that only trip generation statistics for comparable sites were used in calculations, the TRICS 'Warehousing (Commercial)' (02-F) sites were filtered to the following criteria:
- Survey type: Vehicle surveys;
 - Size: 1,000m² to 15,000m² GFA;
 - Location type: Edge of Town Centre, Free Standing and Suburban Area;
 - Regions: England (excluding Greater London sites) and Wales;
 - Weekday survey data only (exclusion of Saturday and Sunday surveys); and
 - Recent survey data only (exclusion of surveys undertaken prior to 01/01/07).
- 5.6.3 As there were less than 20 comparable sites in the database after filtering (6 survey sites), mean trip rates (as weighted and calculated by the TRICS software) have been used to project the vehicle trip generation of the consented development, in accordance with good practice guidelines (JMP, 2013). Details of the site selection and trip rates taken from the TRICS database are attached in full within Appendix 5, with rounded projected vehicle trip rates and generation summarised in Table 11:

Table 11: Projected Vehicle Trip Generation (Consented Warehouse Use)

	AM Peak (07:30-08:30)			PM Peak (16:30-17:30)			Daily (07:00-19:00)		
	Arr.	Dep.	Total	Arr.	Dep.	Total	Arr.	Dep.	Total
Vehicle Trip Rates (per 100m ² GFA)	0.246	0.127	0.373	0.134	0.254	0.388	1.727	1.737	3.464
Vehicle Trips for 5,550m² GFA	14	7	21	7	14	21	93	95	188

- 5.6.4 Table 11 estimates that the consented use of the site could be expected to generate 21 two-way vehicle trips during the weekday AM peak hour, 21 two-way trips during the weekday PM peak hour and 188 two-way trips during the 12-hour weekday period (07:00-19:00).

5.7 Net Traffic Generation

- 5.7.1 The existing (consented) and proposed trip generation of the site has been compared to determine the net number of additional trips likely to be generated by the proposals. Table 12 outlines the projected net vehicle trip generation of the site during the respective network AM and PM peak hours, with the net trips generated during each hourly period attached as Appendix 6:

Table 12: Net Vehicle Trip Generation

	AM Peak (07:30-08:30)			PM Peak (16:30-17:30)		
	Arr.	Dep.	Total	Arr.	Dep.	Total
Consented Warehouse Use	14	7	21	7	14	21
Proposed Staff Trips	46	0	46	2	42	44
Proposed Operational Trips	1	8	9	7	6	13
Total Proposed Trip Generation	47	8	55	9	48	57
Net Vehicle Trip Generation	+33	+1	+34	+2	+34	+36

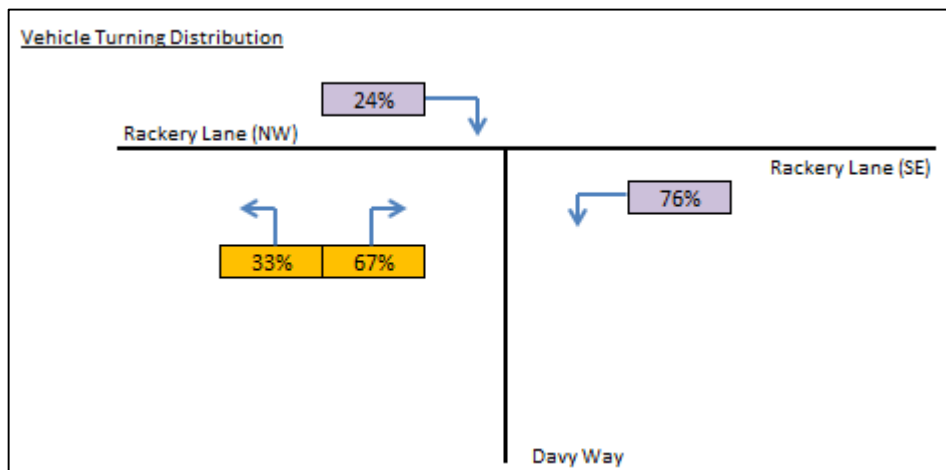
- 5.7.2 Table 12 identifies that the proposed development is likely to result in an additional 34 two-way vehicle movements during the AM peak hour (07:30-08:30) and an additional 36 during the PM peak hour (16:30-17:30).

6.0 TRAFFIC IMPACT

6.1 Traffic Distribution & Assignment

- 6.1.1 As Llay Industrial Estate does not provide a through-route for vehicles, all existing vehicle trips generated by the estate travel via Davy Way or Miners Road to their junctions with Rackery Lane, with a directional split of movements at these junctions.
- 6.1.2 Analysis of existing turning distributions derived from surveys of traffic movements at the above junctions have been used to determine the likely distribution of vehicle trips generated by the proposed development. For the purposes of this assessment, it is assumed that all vehicle trips generated by the site will access the wider highway network via the Davy Way / Rackery Lane junction. The projected vehicle turning distributions at the junction are shown within Figure 5:

Figure 5: Projected Davy Way / Rackery Lane Vehicle Turning Distribution



- 6.1.3 Figure 5 demonstrates that there is expected to be a split of 33% of vehicles turning left out of Davy Way with 67% of vehicles turning out to the right. Approximately 76% of vehicles are expected to turn left in to Davy Way from Rackery Lane, with 24% turning in from the right.
- 6.1.4 All vehicles arriving/departing along Rackery Lane to the south-east would be expected to pass through the Rackery Lane / Llay Road / Gresford Road / Straight Mile / Chapel Lane signalised junction (herein referred to as 'Crown Crossroads') whilst vehicles arriving and departing to the north-west would be expected to disperse across a number of available routes. The traffic impact of the proposed development on the Davy Way / Rackery Lane and Crown Crossroads junctions has therefore been assessed further within the following section.

6.2 Impact on Local Junctions

- 6.2.1 The predicted increase in traffic across local junctions during the respective AM and PM peak hours is illustrated in the network diagrams attached as Appendix 7 and is summarised in Table 13:

Table 13: Projected Traffic Impact – Local Junctions

Junction	Projected Increase in Vehicle Movements
AM Peak (07:30-08:30)	
Davy Way / Rackery Lane	+34
Crown Crossroads	+26
PM Peak (16:30-17:30)	
Davy Way / Rackery Lane	+36
Crown Crossroads	+25

- 6.2.2 Although it is recognised that the development may generate a higher number of trips outside of the network peak hours, it is not expected to generate significantly above 30 two-way trips during any hourly period. The above is therefore considered to represent a robust worst-case in terms of both the network and development peak hours.
- 6.2.3 The Department for Transport (DfT, 2007a) has previously issued guidance that transport assessment of development impacts could be based on a threshold of “30 two-way peak hour vehicle trips”. This guidance acknowledged that this threshold was not to be applied rigidly, but rather that it provided “a useful point of reference from which to commence discussions”.
- 6.2.4 Based on the trip generation projections detailed in this TA, it is considered that the proposed development should not have a detrimental impact on the operation of the local highway network. Therefore, as the impact of the proposals is not expected to be severe, the proposals are considered to be in accordance with local and national planning policy.

7.0 CONCLUSIONS

- 7.1.1 This Transport Assessment (TA) provides a detailed appraisal of the transport aspects associated with the proposals to provide an Eastern Command and Custody Facility for North Wales Police on land to the south-east of Davy Way, Llay, Wrexham.
- 7.1.2 The proposals involve the demolition of an existing warehouse (currently disused but formerly occupied by Sharp Electronics) and the construction of a new three-storey building to provide offices and a custody facility. The facility is expected to be operational 24 hours a day, 7 days a week and it is understood that approximately 350 staff are to be based at the site.
- 7.1.3 The proposed site will be accessed by all modes via two existing junctions and one new junction with Davy Way. Three separate parking areas are to be provided; a staff car park consisting of 280 spaces, a visitor car park consisting of 31 spaces and an operational vehicle parking area with 61 spaces. Two separate pedestrian and cycle access points are to be provided from Davy Way, one for use by visitors and one for use by staff with cycle shelters provided adjacent to the respective entrances.
- 7.1.4 The application site is considered to be accessible by sustainable modes of travel. Footways are provided on both sides of the carriageway within Llay Industrial Estate, with access to Llay village available via a footway on the south-western side of Rackery Lane. There are a number of settlements considered to be within a suitable cycling distance of the site (5km), including Llay, Hope, Cefn-y-Bedd, Bradley, Rossett and parts of North Wrexham. Two workers bus routes serve Llay Industrial Estate during peak hours, with further bus services available from Rackery Lane and Llay village. The nearest rail station to the site is located in Caergwrle, approximately 2.5km walking/cycling distance to the north-west.
- 7.1.5 A road casualty study showed that 5 PICs occurred within the study area around the proposed development site during the 5-year study period. Analysis of the study collisions has not revealed any identifiable existing collision issues associated with the expected movements generated by the proposed development, therefore it is considered that there are no existing road safety issues pertinent to the development of the site.
- 7.1.6 The baseline traffic scenario within the vicinity of the site has been established through classified vehicle turning count surveys undertaken during the network PM peak hour (16:30-17:30) at key local junctions including the Davy Way / Rackery Lane and Miners Road / Rackery Lane priority junctions, both of which provide access to Llay Industrial Estate.
- 7.1.7 Taking into account the consented traffic generation and the proposed staff and operational traffic generation, the proposed development is expected to generate an additional 34 two-way vehicle trips during the AM peak hour (07:30-08:30) and 36 two-way trips during the PM peak hour (16:30-17:30).

- 7.1.8 Based on the trip generation projections of this TA, it is considered that the proposed development should not have a detrimental impact on the operation of the local highway network.
- 7.1.9 It is concluded from the assessments of this TA that the proposed development would not be expected to have a detrimental impact in road safety, traffic and highway terms.

8.0 REFERENCES

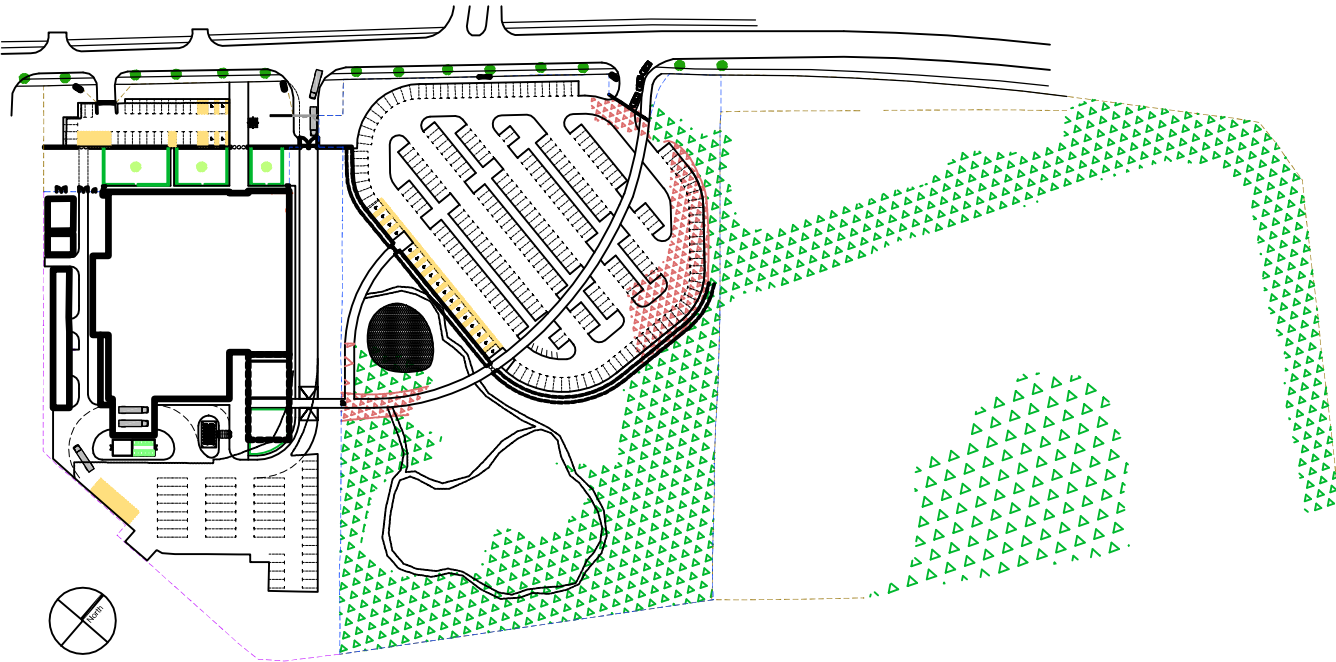
- CIHT (Chartered Institution of Highways and Transportation), 2010. **Manual for Streets 2: Wider Application of the Principles.**
- DfT, 2007a. **Guidance on Transport Assessment.**
- DfT, 2007b. **Manual for Streets.**
- DfT, 2002. **Inclusive Mobility.**
- IHT (Institution of Highways and Transportation), 2000. **Guidelines for Providing for Journeys on Foot.**
- IHT, 1999. **Guidelines for Public Transport in Development.**
- JMP, 2013. **TRICS Good Practice Guide 2013.**
- LTP (Local Transport Projects), 2015a. **Proposed Eastern Command & Custody Facility, Llay - Travel Plan.**
- LTP (Local Transport Projects), 2015b. **Proposed Eastern Command & Custody Facility, Llay – Operational Traffic Management Plan.**
- ONS (Office for National Statistics), 2014. **England & Wales National Census 2011, Origin-Destination Statistics (released 25/07/2014).**
- Taith, 2009. **North Wales Regional Transport Plan.**
- WG (Welsh Government), 2014. **Planning Policy Wales Chapter 8: Transport.**
- WAG (Welsh Assembly Government), 2007. **Planning Policy Wales Technical Advice Note 18: Transport.**
- WCBC (Wrexham County Borough Council), 2011. **Local Planning Guidance Note No.16 – Parking Standards.**

Appendix I – Proposed Site Layout

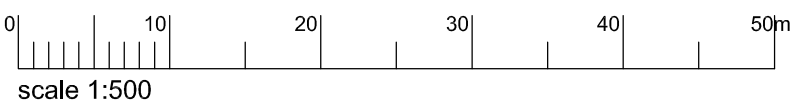


SAFETY, HEALTH AND ENVIRONMENTAL INFORMATION	
In addition to the hazards/risks normally associated with the types of work detailed on the drawing, note the following:	
CONSTRUCTION	MAINTENANCE
	DECOMMISSIONING/ DEMOLITION
	ENVIRONMENT
It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved Method Statement.	

- NOTES:**
- All dimensions are to be checked on site prior to preparing any working or shop drawings or commencing work on site.
 - This drawing is to be read in conjunction with all relevant Architect's, M&E and Structural Engineers' drawings and specifications.



1 Full Site Key Plan
NTS



Rev	Rev Date	Purpose of revision	Drawn	Check'd	Review	Appr'd
P4	15.07.2015	ISSUE FOR CLIENT APPROVAL FOLLOWING SECURITY MEETING	JW	ST	DH	DH
P3	03.12.2014	ISSUE FOR CLIENT COMMENT	RB	JW	ST	DH
P2	24.11.2014	Issue for presentation	RB	JW	ST	DH
P1	24.10.2014	Issue for Stage 3 Report	ST	JW	RB	DH

JACOBS

Client
NORTH WALES POLICE

Project
EASTERN COMMAND AND CUSTODY FACILITY

Drawing title
PROPOSED SITE PLAN

Drawing Status
PRELIMINARY

Scale
1 : 200 @ A1 DO NOT SCALE

Jacobs No.
B1305210

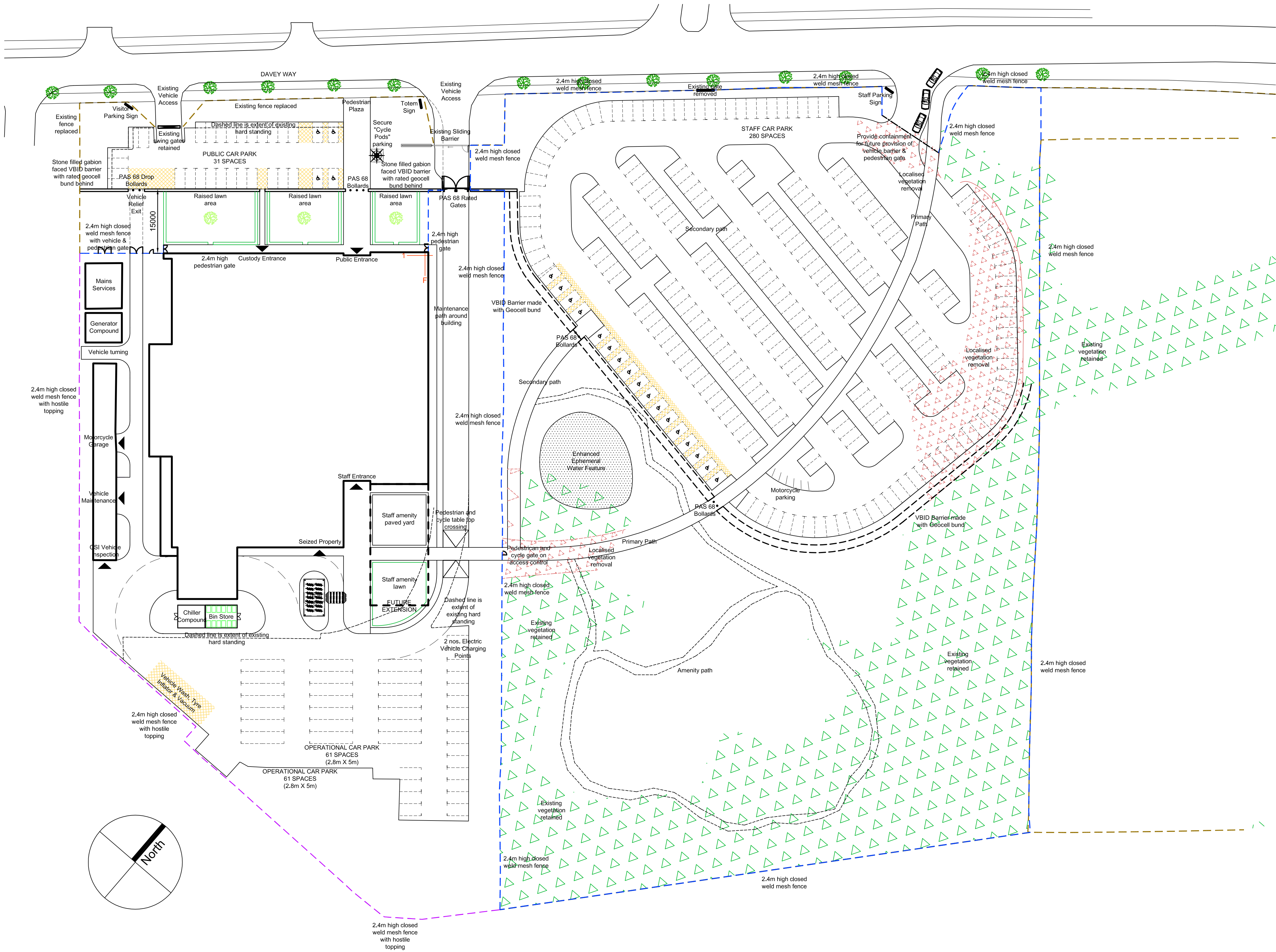
JPI No.

Drawing Number
B1305210/AR/050.001

Sheet No.
P4

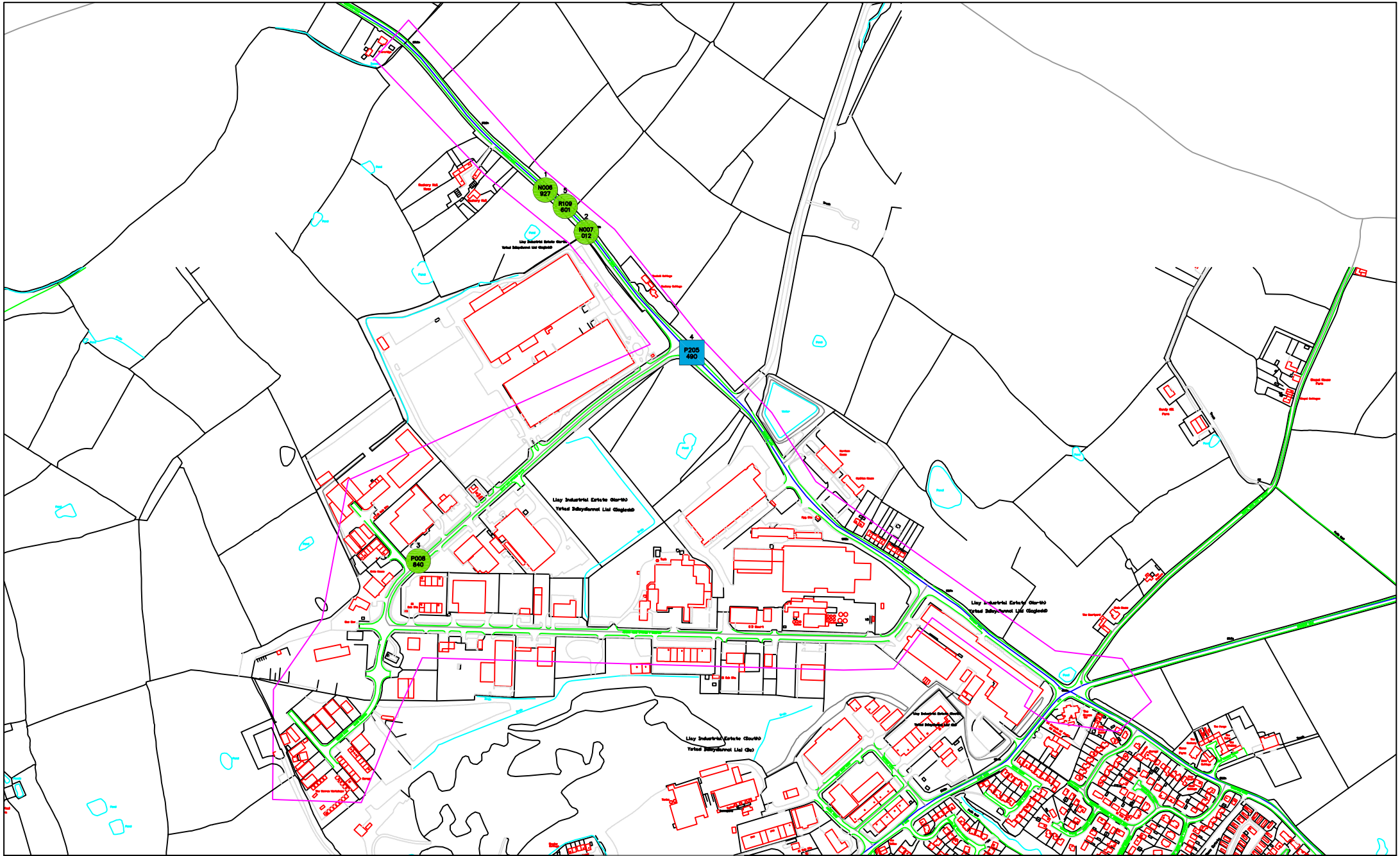
Rev

This drawing is not to be used in whole or part other than for the intended purpose and project as defined on this drawing. Refer to the contract for full terms and conditions.



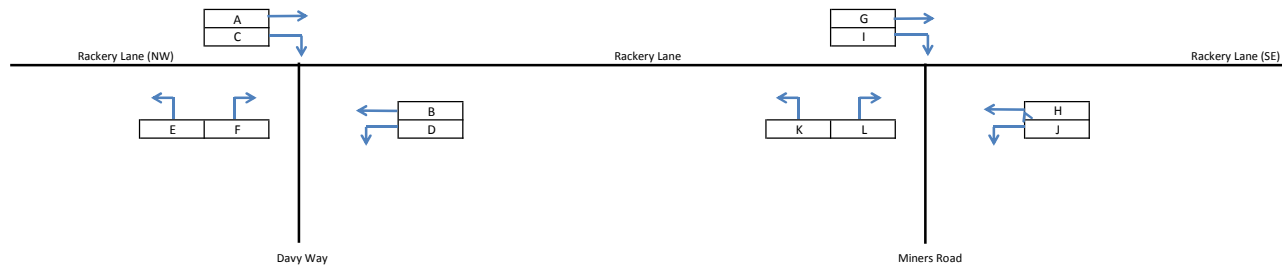
1 Proposed Site Plan
1 : 500

Appendix 2 – PIC Study Data



DRAWING NUMBER: WREXHAM COUNTY BOROUGH COUNCIL ABBEY ROAD DEPOT, WREXHAM INDUSTRIAL ESTATE, WREXHAM LL13 9PW. ANDY LEWIS HEAD OF HOUSING, PUBLIC PROTECTION & ENVIRONMENT Tel. (01978) 315500 Fax. (01978) 729601	JOB NUMBER:		SCALES:	AMENDMENTS:	DATE:	SCHEME TITLE:
	DCDIV GROUP: Streetscene		Not to Scale			Personal Injury Collisions 27.12.2009 – 27.12.2014
	DRAWN BY: Janine C Smith		NATIONAL GRID REF:			DRAWING TITLE:
	CHECKED BY:		STATUS:			DRAWING NUMBER:
			REPORT			

Appendix 3 – PM Peak Traffic Survey



16:30-17:30 Car/Van/P2W Movements

Movement	A	B	C	D	E	F	Total
16:30-16:45	84	157	4	1	44	73	363
16:45-17:00	71	165	1	6	20	18	281
17:00-17:15	75	190	8	7	32	44	356
17:15-17:30	90	192	4	1	23	12	322
Hourly Total	320	704	17	15	119	147	1,322

16:30-17:30 HGV/Bus Movements

Movement	A	B	C	D	E	F	Total
16:30-16:45	4	8	0	0	1	1	14
16:45-17:00	1	8	0	0	0	0	9
17:00-17:15	2	2	0	0	2	2	8
17:15-17:30	5	0	1	0	0	0	6
Hourly Total	12	18	1	0	3	3	37

16:30-17:30 Cycle Movements

Movement	A	B	C	D	E	F	Total
16:30-16:45	0	0	0	0	0	0	0
16:45-17:00	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0
Hourly Total	0	0	0	0	0	0	0

16:30-17:30 All Vehicle Movements

Movement	A	B	C	D	E	F	Total
16:30-16:45	88	165	4	1	45	74	377
16:45-17:00	72	173	1	6	20	18	290
17:00-17:15	77	192	8	7	34	46	364
17:15-17:30	95	192	5	1	23	12	328
Hourly Total	332	722	18	15	122	150	1,359

16:30-17:30 Car/Van/P2W Movements

Movement	G	H	I	J	K	L	Total
16:30-16:45	140	130	2	16	4	36	328
16:45-17:00	94	169	3	24	2	40	332
17:00-17:15	151	171	2	13	9	35	381
17:15-17:30	110	193	4	19	3	12	341
Hourly Total	495	663	11	72	18	123	1,382

16:30-17:30 HGV/Bus Movements

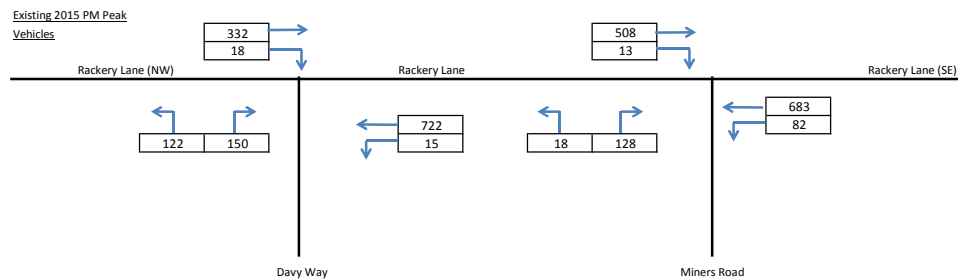
Movement	G	H	I	J	K	L	Total
16:30-16:45	5	9	2	4	0	2	22
16:45-17:00	1	8	0	3	0	1	13
17:00-17:15	2	2	0	2	0	0	6
17:15-17:30	5	1	0	1	0	2	9
Hourly Total	13	20	2	10	0	5	50

16:30-17:30 Cycle Movements

Movement	G	H	I	J	K	L	Total
16:30-16:45	0	1	0	0	0	0	1
16:45-17:00	0	0	0	0	0	0	0
17:00-17:15	0	0	0	0	0	0	0
17:15-17:30	0	0	0	0	0	0	0
Hourly Total	0	1	0	0	0	0	1

16:30-17:30 All Vehicle Movements

Movement	G	H	I	J	K	L	Total
16:30-16:45	145	139	4	20	4	38	350
16:45-17:00	95	177	3	27	2	41	345
17:00-17:15	153	173	2	15	9	35	387
17:15-17:30	115	194	4	20	3	14	350
Hourly Total	508	683	13	82	18	128	1,432



Appendix 4 – Proposed Operation Trip Generation

		<u>Custody Detainee</u>			<u>Prison Van</u>			<u>CSI & WECTU</u>		
Monday to Friday										
Hour Start	Hour End	Average Arrivals	Average Departures	Ave. Two-Way Trips	Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips
00:00	00:59	1	0	1						
01:00	01:59	1	0	1						
02:00	02:59	0	0	1						
03:00	03:59	0	0	0						
04:00	04:59	0	0	0						
05:00	05:59	0	0	0						
06:00	06:59	0	0	0						
07:00	07:59	0	0	0					1	1
08:00	08:59	0	0	1	1	1	2			
09:00	09:59	0	1	1					5	5
10:00	10:59	0	1	2				1		1
11:00	11:59	1	0	1				5	1	6
12:00	12:59	0	1	1					5	5
13:00	13:59	0	1	1				1		1
14:00	14:59	0	1	1					3	3
15:00	15:59	0	1	1				5		5
16:00	16:59	0	1	1				3		3
17:00	17:59	1	0	1	1	1	2		3	3
18:00	18:59	1	0	1						
19:00	19:59	0	0	1						
20:00	20:59	0	1	1				3		3
21:00	21:59	0	1	1						
22:00	22:59	0	0	1						
23:00	23:59	1	0	1						
Daily		10	10	20	2	2	4	18	18	36

<u>CID</u>			<u>PCSO</u>			<u>RPU</u>			<u>Community Safety</u>		
Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips
						2	2	2			
							2	2			
						2		2			
										2	2
	2	2		1	1		3	3		1	1
	3	3		3	3		2	2		2	2
1	2	3	1		1	3		3		3	3
1	2	3	3	1	4	2	3	5			
2	1	3	3		3	3	3	6	2		2
1	2	3	1	5	6	3	3	6	1		1
1	2	3		3	3	3	3	6	2		2
2	1	3	5	3	8	2		2	3		3
1	1	2	1	3	4						
2	1	3	3		3	1	2	3			
2	1	3		3	3	2	1	3			
2	1	3	2		2	1	2	3			
2	1	3	3		3	2		2			
3		3					2	2			
						2	2	4			
						2		2			
20	20	40	22	22	44	30	30	60	8	8	16

<u>Crime Services</u>			<u>Command Team</u>			<u>Seized Property</u>			<u>Training & Diversity</u>		
Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips	Arrivals	Departures	Two-Way Trips
							1	1			
	2	2		1	1	1	1	2			
							1	1			
	3	3	1		1	2		2		1	1
	6	6		4	4		1	1			
	4	4				1	1	2			
2	2	4	4		4		1	1			
				3	3	2		2			
7	3	10							1		1
7		7	3		3						
1		1									
3		3									
20	20	40	8	8	16	6	6	12	1	1	2

Appendix 5 – TRICS Output (Consented Site Use)

Calculation Reference: AUDIT-342901-150611-0636

TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : F - WAREHOUSING (COMMERCIAL)

VEHICLES

Selected regions and areas:

02 SOUTH EAST	
HC HAMPSHIRE	1 days
SC SURREY	1 days
03 SOUTH WEST	
CW CORNWALL	1 days
08 NORTH WEST	
LC LANCASHIRE	1 days
10 WALES	
BG BRIDGEND	1 days
WR WREXHAM	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: 1200 to 9000 (units: sqm)
 Range Selected by User: 1000 to 15000 (units: sqm)

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/07 to 13/10/14

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	1 days
Tuesday	3 days
Wednesday	1 days
Friday	1 days

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

Selected survey types:

Manual count	6 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 undertaken using machines.

Selected Locations:

Suburban Area (PPS6 Out of Centre)	1
Edge of Town	4
Free Standing (PPS6 Out of Town)	1

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

Selected Location Sub Categories:

Industrial Zone	3
Residential Zone	1
No Sub Category	2

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:

B8

6 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

2 days

1,001 to 5,000

2 days

10,001 to 15,000

2 days

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

Population within 5 miles:

50,001 to 75,000

2 days

75,001 to 100,000

1 days

125,001 to 250,000

2 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

1 days

1.1 to 1.5

5 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

6 days

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

LIST OF SITES relevant to selection parameters

1	BG-02-F-01	LOGISTICS COMPANY	BRIDGEND
	PARC CRESCENT		
	WATERTON IND. EST.		
	BRIDGEND		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	3050 sqm	
	Survey date: MONDAY	13/10/14	Survey Type: MANUAL
2	CW-02-F-01	WAREHOUSING	CORNWALL
	A390		
	THREEMILESTONE		
	NEAR TRURO		
	Edge of Town		
	No Sub Category		
	Total Gross floor area:	5150 sqm	
	Survey date: TUESDAY	18/09/07	Survey Type: MANUAL
3	HC-02-F-01	WAREHOUSING	HAMPSHIRE
	MAURETANIA ROAD		
	NURSLING INDUSTRIAL ESTATE		
	SOUTHAMPTON		
	Edge of Town		
	Industrial Zone		
	Total Gross floor area:	4000 sqm	
	Survey date: WEDNESDAY	21/11/07	Survey Type: MANUAL
4	LC-02-F-02	WAREHOUSING	LANCASHIRE
	CHORLEY ROAD		
	WALTON-LE-DALE		
	PRESTON		
	Suburban Area (PPS6 Out of Centre)		
	Residential Zone		
	Total Gross floor area:	1200 sqm	
	Survey date: FRIDAY	22/06/07	Survey Type: MANUAL
5	SC-02-F-04	WAREHOUSING	SURREY
	PRETORIA ROAD		
	CHERTSEY		
	Edge of Town		
	No Sub Category		
	Total Gross floor area:	4460 sqm	
	Survey date: TUESDAY	27/11/07	Survey Type: MANUAL
6	WR-02-F-01	WAREHOUSE	WREXHAM
	UNIT 1-2 PACIFIC PARK		
	WREXHAM IND. ESTATE		
	NEAR WREXHAM		
	Free Standing (PPS6 Out of Town)		
	Industrial Zone		
	Total Gross floor area:	9000 sqm	
	Survey date: TUESDAY	18/10/11	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 02 - EMPLOYMENT/F - WAREHOUSING (COMMERCIAL)

VEHICLES**Calculation factor: 100 sqm****BOLD print indicates peak (busiest) period**

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	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	6	4477	0.060	6	4477	0.026	6	4477	0.086
07:30 - 08:00	6	4477	0.119	6	4477	0.056	6	4477	0.175
08:00 - 08:30	6	4477	0.127	6	4477	0.071	6	4477	0.198
08:30 - 09:00	6	4477	0.149	6	4477	0.093	6	4477	0.242
09:00 - 09:30	6	4477	0.093	6	4477	0.089	6	4477	0.182
09:30 - 10:00	6	4477	0.063	6	4477	0.052	6	4477	0.115
10:00 - 10:30	6	4477	0.063	6	4477	0.071	6	4477	0.134
10:30 - 11:00	6	4477	0.056	6	4477	0.048	6	4477	0.104
11:00 - 11:30	6	4477	0.078	6	4477	0.060	6	4477	0.138
11:30 - 12:00	6	4477	0.048	6	4477	0.060	6	4477	0.108
12:00 - 12:30	6	4477	0.052	6	4477	0.056	6	4477	0.108
12:30 - 13:00	6	4477	0.078	6	4477	0.060	6	4477	0.138
13:00 - 13:30	6	4477	0.071	6	4477	0.086	6	4477	0.157
13:30 - 14:00	6	4477	0.056	6	4477	0.052	6	4477	0.108
14:00 - 14:30	6	4477	0.078	6	4477	0.086	6	4477	0.164
14:30 - 15:00	6	4477	0.086	6	4477	0.052	6	4477	0.138
15:00 - 15:30	6	4477	0.063	6	4477	0.086	6	4477	0.149
15:30 - 16:00	6	4477	0.097	6	4477	0.093	6	4477	0.190
16:00 - 16:30	6	4477	0.104	6	4477	0.089	6	4477	0.193
16:30 - 17:00	6	4477	0.060	6	4477	0.127	6	4477	0.187
17:00 - 17:30	6	4477	0.074	6	4477	0.127	6	4477	0.201
17:30 - 18:00	6	4477	0.026	6	4477	0.108	6	4477	0.134
18:00 - 18:30	6	4477	0.011	6	4477	0.063	6	4477	0.074
18:30 - 19:00	6	4477	0.015	6	4477	0.026	6	4477	0.041
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:			1.727			1.737			3.464

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:	1200 - 9000 (units: sqm)
Survey date date range:	01/01/07 - 13/10/14
Number of weekdays (Monday-Friday):	6
Number of Saturdays:	0
Number of Sundays:	0
Surveys manually removed from selection:	0

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 shown. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Appendix 6 – Net Traffic Generation

Proposed Staff Traffic Generation

Time		IN	OUT	TWO-WAY
00:00	00:59	0	2	2
01:00	01:59	0	1	1
02:00	02:59	0	1	1
03:00	03:59	0	2	2
04:00	04:59	0	2	2
05:00	05:59	24	0	24
06:00	06:59	12	0	12
07:00	07:59	40	3	43
07:30	08:30	46	0	46
08:00	08:59	36	0	36
09:00	09:59	7	0	7
10:00	10:59	2	0	2
11:00	11:59	2	0	2
12:00	12:59	12	0	12
13:00	13:59	4	0	4
14:00	14:59	0	22	22
15:00	15:59	3	3	6
16:00	16:59	2	23	25
16:30	17:30	2	42	44
17:00	17:59	0	45	45
18:00	18:59	1	26	27
19:00	19:59	0	0	0
20:00	20:59	1	1	2
21:00	21:59	3	2	5
22:00	22:59	0	12	12
23:00	23:59	0	1	1

Proposed Operational Traffic Generation

Time		IN	OUT	TWO-WAY
00:00	00:59	1	2	3
01:00	01:59	3	0	3
02:00	02:59	0	2	2
03:00	03:59	2	0	2
04:00	04:59	0	0	0
05:00	05:59	0	0	0
06:00	06:59	0	1	1
07:00	07:59	1	7	8
07:30	08:30	1	8	9
08:00	08:59	1	9	10
09:00	09:59	3	21	24
10:00	10:59	7	19	26
11:00	11:59	13	14	27
12:00	12:59	17	14	31
13:00	13:59	9	14	23
14:00	14:59	16	16	32
15:00	15:59	28	5	33
16:00	16:59	7	5	12
16:30	17:30	7	6	13
17:00	17:59	8	7	15
18:00	18:59	5	5	10
19:00	19:59	5	3	8
20:00	20:59	13	2	15
21:00	21:59	3	3	6
22:00	22:59	2	2	4
23:00	23:59	3	0	3

Consented Traffic Generation

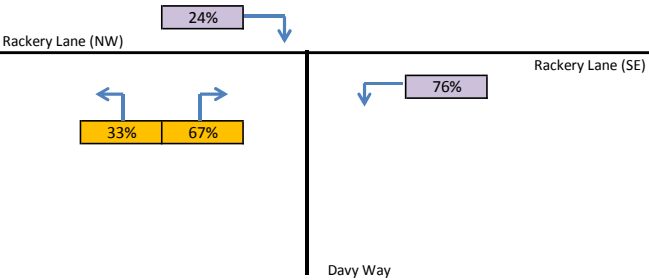
Time		IN	OUT	TWO-WAY
00:00	00:59	0	0	0
01:00	01:59	0	0	0
02:00	02:59	0	0	0
03:00	03:59	0	0	0
04:00	04:59	0	0	0
05:00	05:59	0	0	0
06:00	06:59	0	0	0
07:00	07:59	10	4	14
07:30	08:30	14	7	21
08:00	08:59	13	10	23
09:00	09:59	8	8	16
10:00	10:59	6	7	13
11:00	11:59	7	6	13
12:00	12:59	7	6	13
13:00	13:59	7	8	15
14:00	14:59	9	8	17
15:00	15:59	8	10	18
16:00	16:59	9	12	21
16:30	17:30	7	14	21
17:00	17:59	5	13	18
18:00	18:59	2	4	6
19:00	19:59	0	0	0
20:00	20:59	0	0	0
21:00	21:59	0	0	0
22:00	22:59	0	0	0
23:00	23:59	0	0	0

Net Traffic Generation

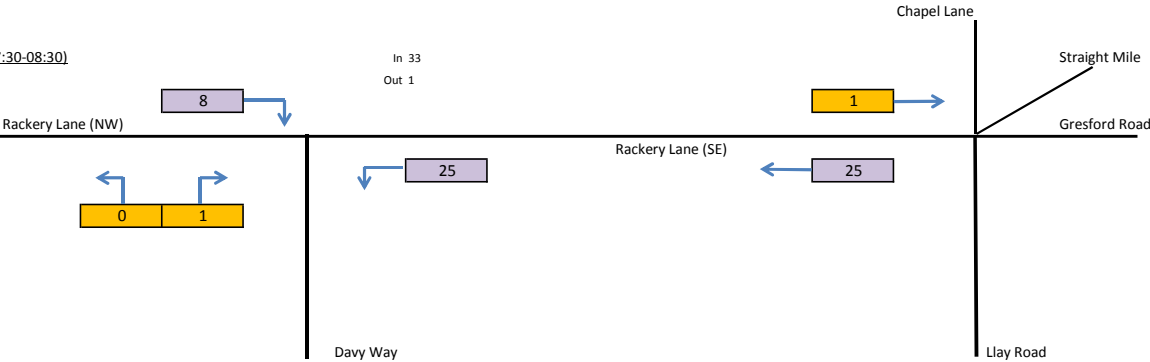
Time		IN	OUT	TWO-WAY
00:00	00:59	1	4	5
01:00	01:59	3	1	4
02:00	02:59	0	3	3
03:00	03:59	2	2	4
04:00	04:59	0	2	2
05:00	05:59	24	0	24
06:00	06:59	12	1	13
07:00	07:59	31	6	37
07:30	08:30	33	1	34
08:00	08:59	24	-1	23
09:00	09:59	2	13	15
10:00	10:59	3	12	15
11:00	11:59	8	8	16
12:00	12:59	22	8	30
13:00	13:59	6	6	12
14:00	14:59	7	30	37
15:00	15:59	23	-2	21
16:00	16:59	0	16	16
16:30	17:30	2	34	36
17:00	17:59	3	39	42
18:00	18:59	4	27	31
19:00	19:59	5	3	8
20:00	20:59	14	3	17
21:00	21:59	6	5	11
22:00	22:59	2	14	16
23:00	23:59	3	1	4

Appendix 7 – Network Diagrams

Vehicle Turning Distribution



AM Peak (07:30-08:30)



PM Peak (16:30-17:30)

