

New warehouse for Norbert Dentressangle

Plot 3a Bryn Lane

Wrexham Industrial Estate

On behalf of Kingmoor Park Properties Ltd

Transport Assessment

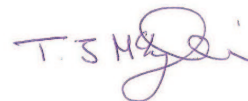
March 2012



Quality Assurance

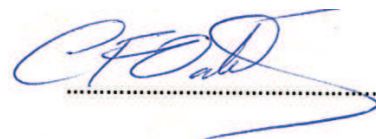
Prepared by:

Tim McLoughlin



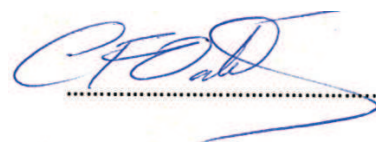
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Executive Summary

- E1. Crowd Dynamics International Ltd was appointed by Kingmoor Park Properties Ltd in August 2011 to provide a Transport Assessment to accompany an outline planning application for the development of a new warehouse for Norbert Dentressangle (formerly TDG) on Plot 3a, Bryn Lane, Wrexham. For company operational reasons, the site is to be connected via an internal private road to the existing ND warehouse but also via a new access onto Bryn Lane, some 130 metres south of the Ridleywood Lane junction.
- E2. This Transport Assessment (TA), including a Travel Plan (TP), identifies the transport implications of this proposed development and the mechanisms to make travel to and from the site as sustainable as possible.
- E3. There is an extant consent for a larger warehouse for ND on the site immediately to the south of Plot 3a on Bryn Lane, which is owned by Kingmoor Park Properties Ltd. This application is to effectively relocate the approved warehouse onto Plot 3a. If approved, the applicant is prepared to extinguish the extant consent on the site to the south. Hence apart from the details of the immediate access onto Bryn Lane, in transport terms this application is identical to that already approved and given it is to replace the extant consent will not generate any additional traffic on the highway network over and above that already consented. Further details as to the context to the proposals is set out in the supporting planning statement.
- E4. This TA has been based upon the previous TA for the ND warehouse development on the site immediately to the south of Plot 3a. The previous TA was developed following consultation with the local Highway Authority, Wrexham County Borough Council. The highway authority raised no highway objections to the previous proposal.
- E5. The proposed development is for an expansion of the ND operation, to provide a further 400,000 sq ft warehouse including associated offices (to be constructed in phases). The expansion site will be linked via private roadway with the existing ND operation to enable the sites to operate as a single entity. This is required for security and operational reasons. It is anticipated that the access to the existing site will be the primary means of access to the joint site with HGVs using the private link road to reach the new warehouse.
- E6. ND currently operate a shift system for the majority of their existing employees from 6.00 to 14.00 and 14.00 to 22.00. In addition, some staff work overnight. Approximately 50 HGV's serve the existing site daily with arrivals and departures evenly spread during the day equating to approximately 5 per hour. The new facility will be smaller than the existing but it has been

assumed for the purposes of the traffic assessment that the additional generation from the new warehouse will be similar in scale to the existing.

- E7. Because of the nature of the operation traffic flows in the typical morning and evening peak hours from the site are small and the additional traffic volumes will not generate any congestion.
- E8. The Wrexham Industrial Estate is an appropriate location for a new warehouse development. The Wrexham Industrial Estate Access Road (WIEAR) is currently under construction and will be completed in 2012 prior to the opening of the proposed development. Following the completion of WIEAR there will be no capacity issues on the wider highway network in this area of Wrexham County Borough. WIEAR will enable the continued expansion of the Industrial Estate without traffic congestion being an issue in the area.
- E9. A Travel Plan will be adopted. This will promote sustainable travel with an emphasis on the promotion of cycling and car sharing. Cycling is a highly appropriate mode of travel for employees due to the proximity of the residential areas of the town of Wrexham and the network of cycle routes which permit cyclists to be segregated from general traffic for much of their journey. Given a large proportion of employees will be arriving together at fixed times car sharing is also an highly appropriate mode of travel.
- E10. A new access onto Bryn Lane for Plot 3a is to be constructed which has ample capacity and satisfactory visibility.
- E11. Hence, there is no transportation reason why the application for this development should not be approved.

1. Introduction

- 1.1. Crowd Dynamics International Ltd was appointed by Kingmoor Park Properties in August 2011 to provide a Transport Assessment to accompany the planning application for the development of a new warehouse for ND on Plot 3a, Bryn Lane, Wrexham.
- 1.2. This Transport Assessment (TA), including a Travel Plan (TP), identifies the transport implications of this proposed development. It has been prepared in line with the 'Guidance on Transport Assessment', issued by the Department for Transport in 2007.
- 1.3. There is an extant consent for a new warehouse for ND on a site immediately south of the proposed development on Bryn Lane. The proposal is for a slightly smaller facility simply relocated some 400m to the north. In transport terms the only change is the details of the proposed access, in all other respects the new development is identical to the one for which planning permission will be extinguished if this application approved. Hence this application represents a zero increase in traffic levels over and above that already approved.
- 1.4. This TA is therefore based upon the earlier TA (2008) for the warehouse to the south for which planning approval was granted. The earlier TA was developed following consultation with the local Highway Authority, Wrexham County Borough Council. The council raised no objections to the earlier application on highways grounds.
- 1.5. The proposals take national and local transport policy into account.
- 1.6. Section 2 describes the site, the local highway network and public transport provision in the neighbourhood.
- 1.7. Section 3 describes the proposed development.
- 1.8. Section 4 describes the transportation impacts of the development and mitigation measures proposed.
- 1.9. Section 5 describes the proposed Travel Plan.
- 1.10. Section 6 provides conclusions.

2. Existing Situation

Road Network

- 2.1. This site is located on Bryn Lane in the eastern sector of the large Wrexham Industrial Estate (WIE), some 6km east of Wrexham Town Centre.
- 2.2. The site location is shown in Figure 1.
- 2.3. Bryn Lane is one of the primary distributor roads within the estate. The estate is currently connected to the wider highway network via a number of accesses:
 - Hugmore Lane: This is the primary access to the industrial estate. It connects at a signalised 'T' Junction to the A534 Wrexham to Nantwich road which is a principal road. Traffic flows towards Nantwich are modest but flows towards Wrexham are substantial. 1.8km west of Hugmore lane the A534 meets the A5156 Acton – Llanypwll Link Road. At this point the A534 leads to Wrexham Town Centre whilst the A5156 leads in a northerly direction to meet the A483 and effectively forms a north-eastern bypass of Wrexham. The A483 is a high quality grade separated dual carriageway giving access in a north-easterly direction to Chester, the M53, and M56 to destinations such as Liverpool, Manchester and the North of England. In a south-westerly direction the A483 gives access to mid and South Wales and the Midlands.
 - Ridley Wood Road gives access to the east via the B5130 which, in turn, joins the A525 near the village of Holt.
 - In the south of WIE, there are two road accesses. One leads to the A525 / Cross Lanes traffic signal controlled junction which gives access to the A525 to Whitchurch and the east. The other is Cefn Road leading to the southern part of the Wrexham urban area.
- 2.4. Hugmore Lane carries the highest traffic flows to WIE, with a daily traffic flow of over 12,000 vehicles.
- 2.5. There is currently peak hour congestion en-route to and from the industrial estate at the Hugmore Lane / A534 junction in the north and to a lesser extent at the A525 / Cross Lanes junction to the south. However the County Borough Council are currently constructing the Wrexham Industrial Estate Access Road (WIEAR) a major highway scheme which will open in 2012 and which remove these problem areas and radically improve access to the industrial estate from both the north and south, removing existing congestion and providing highway capacity for new development.
- 2.6. The development site is located off Bryn Lane on the eastern side of WIE. Bryn Lane forms the eastern element of the signed ring road around the northern part of WIE. At its north western

end Bryn Lane meets Hugmore Lane and in the near future, the WIEAR at a roundabout. At its southern end it meets Oak Road at a priority junction. Ridley Wood Road meets Bryn Lane at a priority junction some 130 metres north of the proposed site access.

- 2.7. Bryn Lane is a two lane road circa 7.3m wide with grass verges and is subject to a 40mph limit. The road serves major nearby industrial units such as Kellogg's. There is a new public recycling facility to the south of the proposed development on the west side of Bryn Lane and on the east side of Bryn Lane an access road serving the existing ND warehousing complex.
- 2.8. Existing traffic flows on Bryn Lane south of the existing access into the ND site are taken from a count on 27th May 2010. This represents a typical weekday for the area. From this data, traffic flows are approximately 2,650 vehicles per day, with peak hour flows of 94 southbound and 152 northbound. The hourly traffic counts are provided in Appendix A.

Existing Modal Shares for Travel to Wrexham Industrial Estate

- 2.9. Travel to work data from the 2001 census for the Holt ward which encompasses the WIE, identifies the modal share for trips of those travelling to work are as follows:
- 2.4% travel by bus/taxi
 - 80.0% travel by car as the driver
 - 13.1% travel by car as a passenger
 - 1.7% travel by motorcycle
 - 1.5% cycle
 - 1.2% walk
- 2.10. Given the nature and location of the industrial estate the majority of workers travel by car (>90%). Car sharing is a popular mode with 13% travelling as a passenger.

Pedestrian, Cycle and Public Transport

- 2.11. There are no footways along Bryn Lane except for a short length of footway adjacent to the new recycling facility. Given the scale and nature of the industrial estate there are limited numbers of pedestrians in this area at the present time. There are few residential properties within 1.5 km of the site so walking to work in the eastern sector of WIE is not a popular mode; similarly there are few retail or leisure opportunities in close proximity to Bryn Lane generating walk trips.

- 2.12. A cycle route connects the WIE with the Wrexham urban area via Brynestyn Lane. This allows cyclists easy access to the whole of the WIE from the northern half of the urban area. The majority of the urban area of Wrexham lies within 5km of the site, i.e. realistic cycle distance. Figure 2 shows the road network within WIE and the cycle route towards the urban area. There is also a cycle route from WIE to the villages of Holt and Farndon to the northeast of the development, (which lie between 3 and 5 km from the development). This cycle route uses lightly trafficked roads.
- 2.13. The no 13 and no 41/42 bus services connect WIE with Wrexham Town Centre, each on a half hourly frequency throughout the day. No 13 serves the northern suburbs and no 41/42 serves the southern suburbs. The hourly service 141/142 operates in the evening. Some evening buses are extended through to Holt. The nearest bus stop to the site for the services 13 and 41/42 is some 1.5km. The evening service 141 operates past the site. Figure 3 illustrates these bus routes. Service 1E operates from Brynteg Shops, via Wrexham Bus station to WIE in the morning, arriving at 07:45 hours, with one return evening service departing from WIE at 16:30. Timetables for all bus routes are attached in Appendix B.

Accidents

- 2.14. Figure 4 highlights the location of the personal injury accidents that have occurred on Bryn Lane in the period January 2005 to April 2010, a period of over 5 years. Details are provided in Appendix C. The data shows the personal injury accidents reported for the section of Bryn Lane, east of its junction with Hugmore Lane in the north to its junction with Oak Road in the south, a distance of 1.9 km. Relevant analysis is as follows:
- 6 accidents
 - Accident rate 0.60 accidents / km / year
 - All accidents except one are slight severity; the one serious one took place at 5:30am.
 - All accidents have occurred at or in close proximity to the junctions with Hugmore Lane, Ridleywood Lane and Oak Road.
- 2.15. Bryn Lane is not considered a high casualty collision site by the highway authority.

3. Proposed Development

- 3.1. The general arrangement of the proposed development is shown in Figure 5. The development is for a 400,000sq ft (37100 sq m) warehouse for ND, to be built in phases. The warehouse shall operate as a single entity with the existing ND warehouse via a private internal road linking the two sites.
- 3.2. A new site access (shown in Figure 6) is proposed on Bryn Lane, some 130 metres south of the Ridleywood junction. This access shall be used employees parking at the new site. It may also be used in the main (for operational and security reasons) by HGV's accessing and egressing the warehouse although it is envisaged at this time that HGV's shall use the existing warehouse entry and exit gates and then via the new private road to reach the new warehouse.
- 3.3. A bus stop and turnaround facility will also be accessed from the new junction.
- 3.4. The junction will be in the form of a priority junction with ghost island right turn facilities. Bryn Lane will be widened on its eastern side to provide such a layout. 4.5m x 120m visibility splays will be provided. Analysis shows that such an arrangement has ample capacity. The principle of this type of junction in this location was agreed with WCBC Highways Development Control as part of the previous application in 2008.
- 3.5. The junction layout will provide through traffic lanes 3.65 metres wide and a right turning lane for traffic into the warehouse from the south 3.65 metres wide and 50 metres long.
- 3.6. Traffic flows will increase to a minor extent at the existing ND access with up to 5 HGV's per hour each way being added. Hence it is proposed that the road markings at this location are amended to form a more conventional priority junction with a ghost island right turn facility from Bryn Lane south as shown in Figure 11. This will remove the acceleration and deceleration lanes, which are not required by current standards. This proposal was agreed with WCBC as part of the earlier application and replicates the junction arrangements at the recycling facility provided by Wrexham County Borough Council five years ago, which is located immediately south of this site.
- 3.7. Parking on site will conform to the County Borough Council's parking standards and will be sufficient to meet demands from the staff on site. 371 parking spaces are to be provided, including 6 disabled spaces.

- 3.8. New access roads to the Industrial Estate have been in the planning process for many years. The Wrexham Industrial Estate Access Road (WIEAR) scheme is now under construction by Wrexham County Borough Council with an anticipated completion in summer 2012. These new access roads are shown on Figure 7. Their impacts have been taken into account in the 'future base' scenario described later.

4. Transport Impacts and Mitigation Measures

- 4.1. This section of the report forecasts the likely transport impacts of the development, and identifies measures to mitigate any adverse impacts and to encourage the use of sustainable modes of travel.

Pedestrian and cycle movement

- 4.2. Cycling is a realistic mode of travel to this development. A considerable proportion of Wrexham's residential areas lie within 5km of the site. Government guidance indicates that for trips of less than 5km cycling should be an important mode for journeys. There is a cycle route from the Industrial Estate to the northern half of the urban area of Wrexham. The route uses Brynestyn Lane along part of which motor vehicle traffic is prohibited. In Wrexham Urban Area there is an extensive network of cycle routes linking to Brynestyn Lane allowing easy cycle access to a large proportion of the urban area and also to the surrounding villages. The whole of the urban area of Wrexham lies within 6km of the site.
- 4.3. It is therefore realistic for employees living in the Wrexham Urban area to cycle to work providing facilities are provided on site and employees are encouraged to cycle. Such measures are identified in the Travel Plan.
- 4.4. As noted earlier it is not expected that any workers will walk from home to this site. However some may and to encourage walking to other facilities within the industrial estate it is proposed that a 2m wide footway will be provided along the eastern side of Bryn Lane from the proposed site access to the existing access for Norbert Dentressangle. At the present time no footway exists.

Public Transport

- 4.5. Given the location of the site relative to the existing bus services and the shift patterns of work, it is unlikely that a significant number of trips will be made by bus. However this development is seeking to improve public transport provision along Bryn Lane by provision of a bus stop, bus turnaround and monies for a bus shelter. In the future bus travel may become more attractive for travel to and from the site, which the main application makes provision for.

Vehicle Trip Generation

- 4.6. The trip generation for the proposed warehouse has been based on surveys of the traffic flows of the existing warehouse. The proposed new warehouse is smaller than the existing but it has been assumed that the new warehouse will generate additional traffic levels similar to the existing warehouse. Updated surveys of the traffic flows from the existing ND operation were taken on the 22nd September 2011. These figures are summarised in Table 1 below.

Table 1: Trip Generation of Proposed warehouse (Existing flows to and from existing ND warehouse)

	AM Peak Hour 07.30-08.30		PM Peak hour 16.00-17.00	
	TO SITE	FROM SITE	TO SITE	FROM SITE
HGVs	7	3	1	2
Cars	35	3	1	49

Trip Distribution

- 4.7. From the surveys the distribution of trips to the south and north along Bryn Lane was ascertained. This is shown in Table 2. The likely travel directions of trips from the new warehouse are shown below.

Table 2: Distribution of trips along Bryn Lane

Direction of Travel along Bryn Lane	Percentage	
	HGV's	Cars
To North	46%	61%
To South	54%	39%

- 4.8. Given the traffic generation is low and with WIEAR completed it is not anticipated that this traffic will have any significant impact on the wider road network. Hence the testing of impacts has only been undertaken at the site access.
- 4.9. The existing peak hour traffic flows on Bryn Lane immediately north of the existing ND site access are 117 vehicles southbound and 80 northbound in the AM peak hour and 127 southbound and 174 northbound in the PM peak Hour. (See Figure 9). Figure 8 highlights the impact of the WIEAR scheme on Bryn Lane. From the figure it can be seen that the WIEAR

scheme has little or no impact on traffic volumes along Bryn Lane. A growth factor of 1.28 has been therefore been applied to existing flow levels to forecast future year assessment (2025) flows for testing purposes. This growth factor has been taken from the Wrexham County Borough Council strategic traffic model used for WIEAR (2010-2025 high growth factor).

4.10. In considering impacts in the assessment year it has been assumed that the new access will be used by both HGV's and cars serving the new warehouse. This is the worst case scenario for testing the operation of this junction. (See Figure 10 for forecast flows)

4.11. A PICADY analysis of the new access junction has been undertaken and is attached in Appendix D. The results are shown in Tables 3 and 4 for the AM and PM peak hours respectively.

Table 3: Capacity and Queue Length at the Proposed Access AM Peak Hour

Ratio of Flow to Capacity (RFC)		0.026
Maximum Queue Length(vehicles)	Access	0
	Bryn Lane (right turn from South)	0

Table 4: Capacity and Queue Length at the Proposed Access PM Peak Hour

Ratio of Flow to Capacity (RFC)		0.068
Maximum Queue Length(vehicles)	Access	0.1
	Bryn Lane (right turn from South)	0.1

4.12. The results show a maximum RFC of 0.068 which is minimal, and no queuing as the flows in and out of the site are small. The proposed access junction therefore operates satisfactorily.

4.13. Given that there is an extant consent for an identical warehouse immediately to the south for which the client is willing to extinguish the consent if this application is approved then in all other aspects the transportation impacts have already been approved by the council.

Impacts on Safety

- 4.14. The existing safety record in the area was presented in Section 2. This shows no accident issues on Bryn Lane in the vicinity of the proposed site access.
- 4.15. Vehicles exiting the site at the proposed site access have at least 120m visibility of traffic on Bryn Lane. Given the limited traffic volumes and no junction capacity issues there is no reason to consider that the proposed development will have an adverse impact on road safety.

5. Travel Plan

- 5.1. This section outlines the proposed Green Travel Plan for the development. The purpose of the plan is to ensure that sustainable transport modes are constantly promoted.
- 5.2. Given the location of the site and the nature of its use, the most appropriate sustainable modes of travel are cycling and car sharing. It is these two modes that the travel plan focuses upon.
- 5.3. The plan is outlined below but will potentially be subject of some refinement as part of the development of the S106 planning contributions process. It includes a sum of £10,000 to support the improvement of bus travel along Bryn Lane.

Draft Travel Plan

Introduction

This TP seeks to reduce single occupancy car travel to the site and to promote more environmentally friendly alternatives, in accordance with national government policy, in particular PPG 13 and the requirements of Wrexham county Borough Council in the granting of planning permission.

Resources

A Travel Plan Coordinator (TPC) will be appointed. This will be a member of staff working on site. The coordinator should service both the existing ND warehouse operation and the new facility.

The TPC will:

- Oversee the development and implementation of the TP including obtaining the commitment of senior management and the necessary financial resources to implement the TP
- Arrange the collection of data as appropriate for monitoring the TP.
- Act as the point of contact for staff requiring information
- Arrange for all new employees to receive TP information prior to commencing employment.
- Set up a Travel Plan Group (TPG) which will meet at a minimum of 6 monthly intervals and comprise:
 - The Site manager
 - Union representative(s)
 - Member(s) of staff with an interest in cycling or other environmental

means of travel

- Liaise with other Travel Plan Officers within the Estate and the council's travel plan officer at least annually

- Provide a "TRAVEL" notice board at a prominent location at both the existing and new site where staff will pass on a daily basis. The notice board is to be approximately 1500mm wide and 1000mm high. The following information is to be displayed;
 - Name of the TPC together with a statement that he/she is available to answer and discuss any travel related issues.
 - Copy of the TP.
 - Copy of the Minutes of the most recent TPG meeting.
 - Plan of Wrexham showing walking and cycling routes and approximate journey times.
 - Plan showing the location of the nearest bus stops and timetable information.
 - Plan showing the location of Wrexham General and Wrexham Central Rail Stations.
 - List of useful telephone numbers, addresses and e-mail addresses, e.g. rail and bus enquires, cycle suppliers and repairers, cycling groups,
 - Car sharing information for the current scheme which is operated throughout the Industrial estate.
 - Special promotions as appropriate.

Showers will be available for all staff with lockable storage to keep cycling clothing, drying area for wet clothes and a hairdryer.

A travel plan induction leaflet will be prepared and regularly updated showing the information listed above and emphasising the health and financial benefits of walking and cycling

New staff will be offered cycle helmet and weatherproof reflective cycling outer clothing on condition that they cycle to work for a minimum of one month.

Following each TPG a newsletter will be circulated to all staff promoting sustainable travel and including a promotion, etc as applicable.

The TPC to be allocated a budget of £500 per annum for the promotion of sustainable travel together with an allowance to purchase cycle clothing to new employees.

TPC will strongly encourage car sharing. TPC will ensure the WIE Car Share Database is readily available to all staff. In the event of WIE car share scheme being withdrawn, on-site car share scheme will be introduced.

Car sharers to be guaranteed a lift home in an emergency.

Senior staff to require staff and encourage visitors to use rail services where applicable.

A sum of £10,000 shall be paid to WCBC for the provision of 2 no. bus stops (including associated signage, footway works and shelters) at an appropriate location along Bryn Lane. This sum shall be paid prior to occupation of the proposed development.

Monitoring

A staff survey is to be organised six months after the initial opening of the premises and yearly thereafter. The results are to be considered by the TPG.

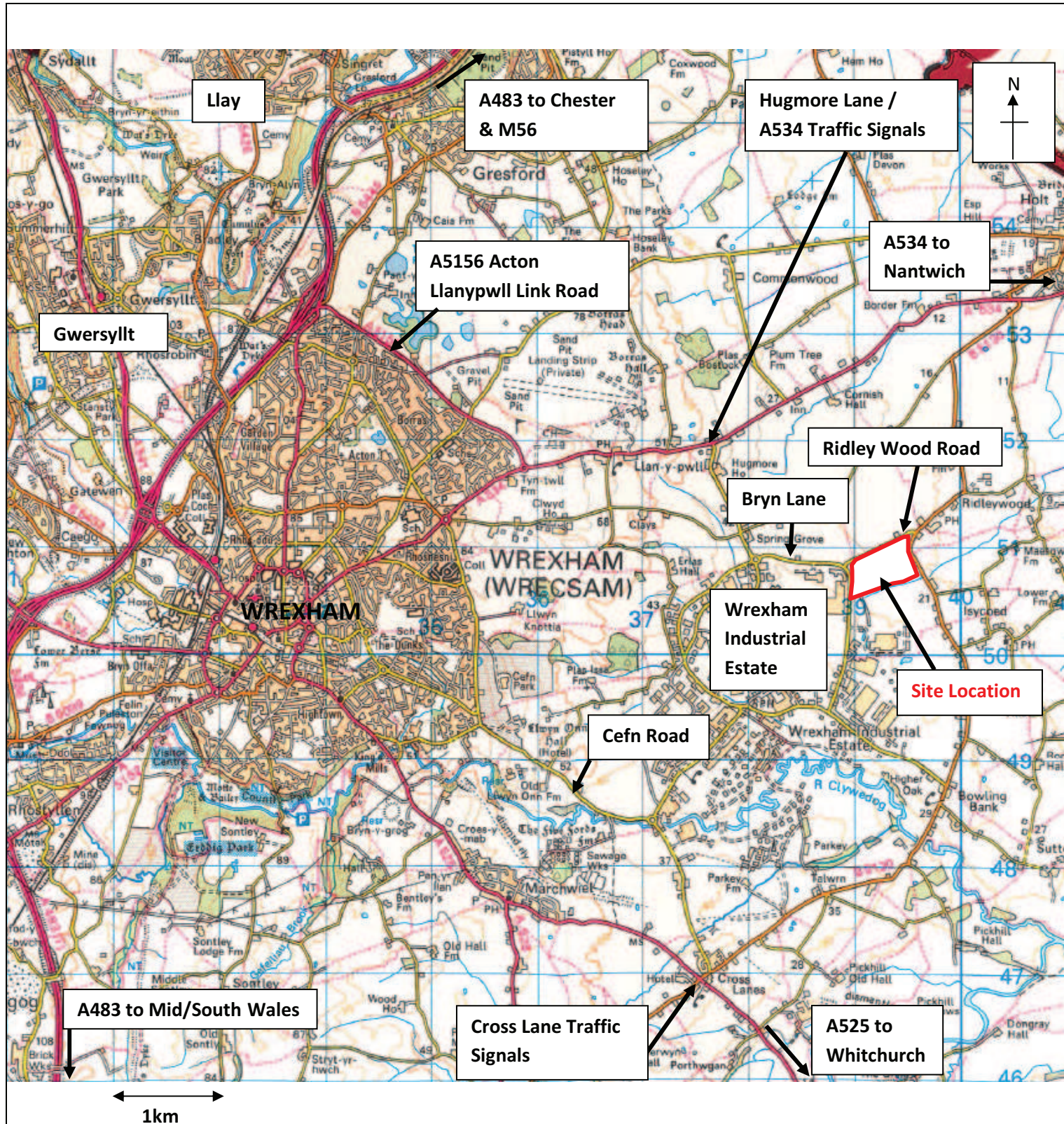
The TPG will:

- Consider a report prepared by the TPC as the first item at each meeting
- Consider the results of staff travel surveys if applicable
- Set dates for actions
- Review progress on the TP
- Develop future initiatives
- Expand objectives and targets
- Consider partnership arrangements e.g. Wrexham CBC, CTC, local bus operator
- Produce an annual report to be submitted to Wrexham CBC and the Board Meeting of the Company detailing the progress of the TP
- Within 5 working days of the meeting the TPC will produce minutes of the meeting and circulate to all TPG members, the site notice board and senior management.

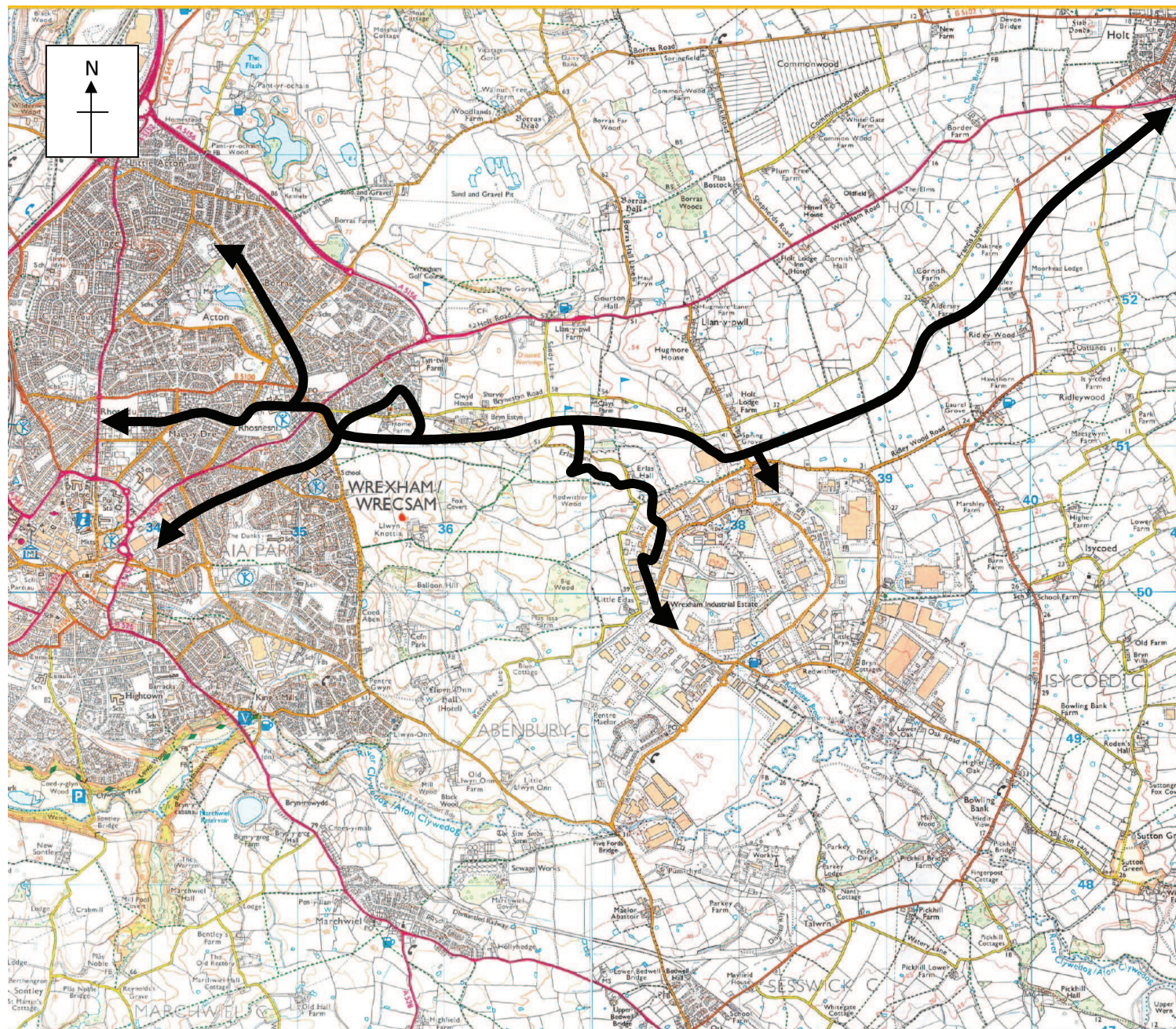
6. Conclusions

- 6.1. The proposed warehouse development effectively represents a relocation of the development with extant consent on the adjacent site to the south. If this application is approved the extant consent will be extinguished. Hence this proposal will generate zero extra traffic over and above that already approved for access onto Bryn lane.
- 6.2. A new site access is to be constructed on Bryn Lane; this will create no safety or capacity concerns.
- 6.3. Sustainable travel will be encouraged, in particular employee travel by cycle or car sharing. A Travel Plan will be put in place.
- 6.4. There is no transportation reason why the application for this development should not be approved.

Figures



	Client: Kingmoor Park Properties			Not to scale	
	Project: New Warehouse for Norbert Dentressangle			Figure 1	Version:
Crowd Dynamics International Ltd. 3A Toft Road, Knutsford Cheshire, WA16 0PE Tel: +44 (0) 1565 658 440 Fax: +44 (0) 8700 510 016 www.crowddynamics.com	Drawing Title: Site Location Plan			Draft	
				Issue	✓
	© Crown copyright 2008 All rights reserved. Licence number WL1005371			Author: PT	Reviewed by: CFO
				Source: OS Mapping	



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 2

Version:

Drawing Title: Wrexham Industrial Estate Access Road

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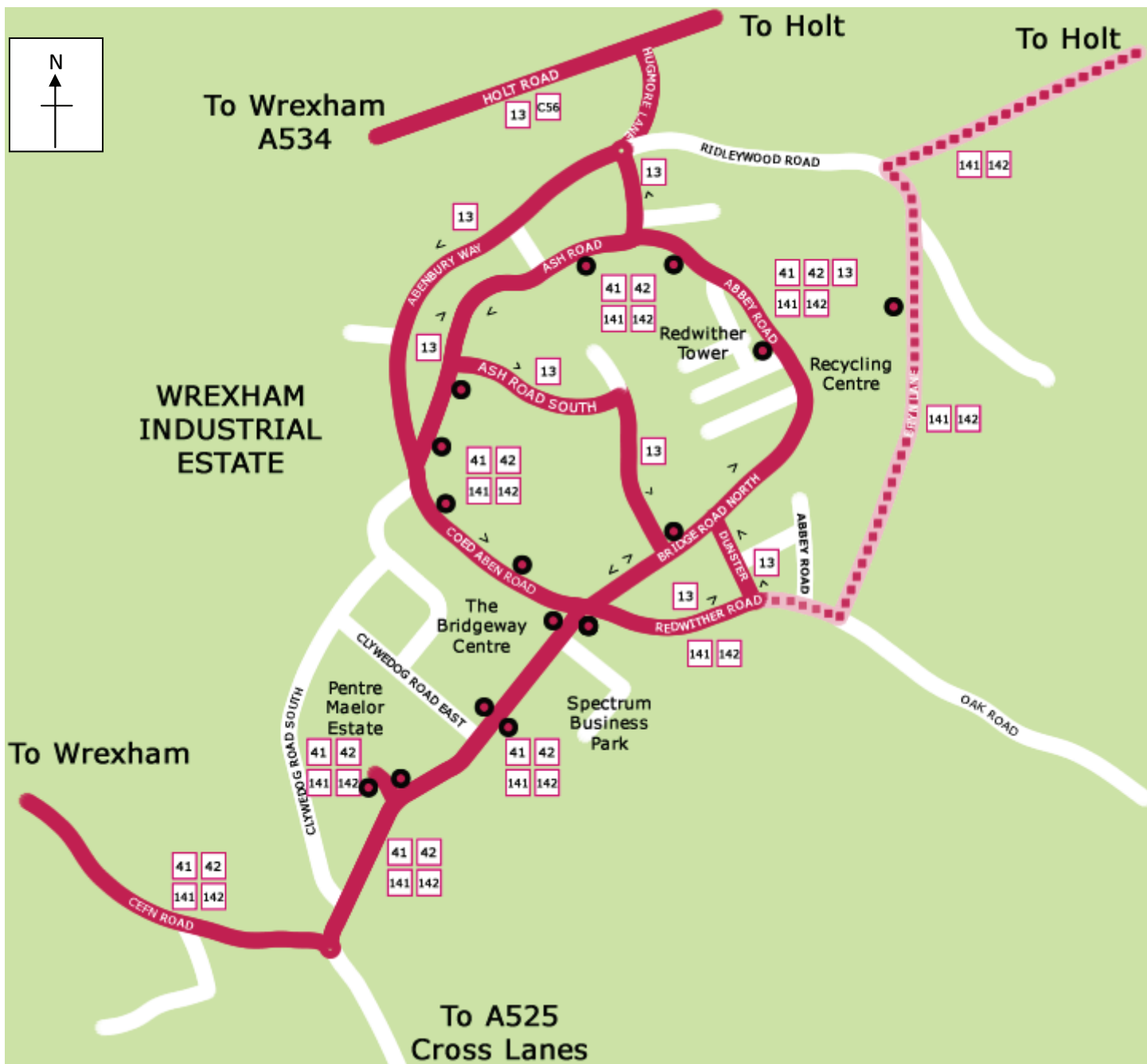
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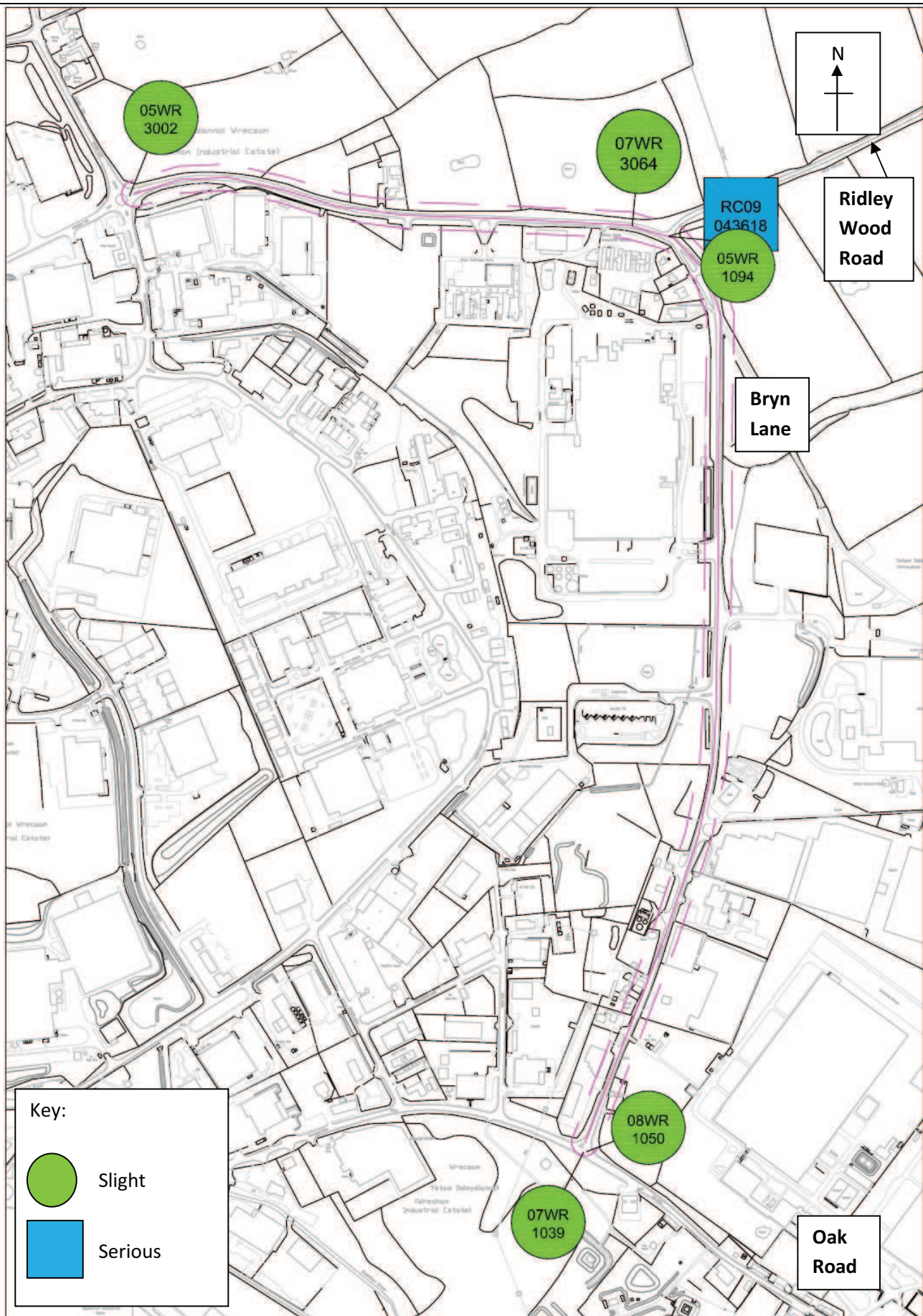
Author: PT

Reviewed by: CFO

Source: OS Mapping



	Client: Kingmoor Park Properties		Not to scale	
	Project: New Warehouse for Norbert Dentressangle		Figure 3	Version:
Crowd Dynamics International Ltd. 3A Toft Road, Knutsford Cheshire, WA16 0PE Tel: +44 (0) 1565 658 440 Fax: +44 (0) 8700 510 016 www.crowddynamics.com	Drawing Title: Existing Bus Services		Draft	
			Issue	✓
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		Source: WCBC		



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 4

Version:

Drawing Title: Location of Personal Injury Traffic Accidents Jan 2005-Apr 2010 (5.3 years)

Draft

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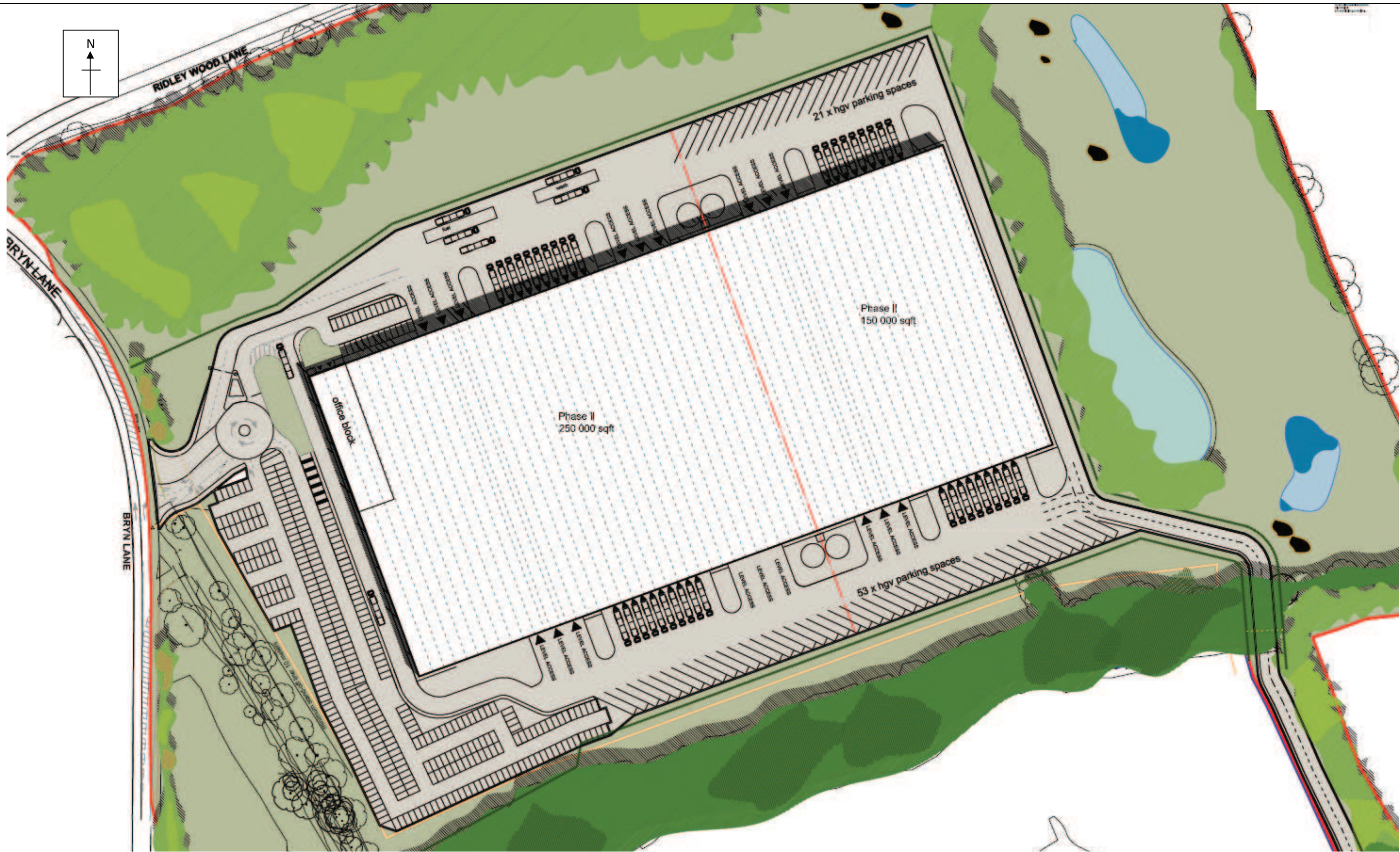
Crowd Dynamics International Ltd.
3A Toft Road, Knutsford Cheshire, WA16 0PE
Tel: +44 (0) 1565 658 440
Fax: +44 (0) 8700 510 016
www.crowddynamics.com

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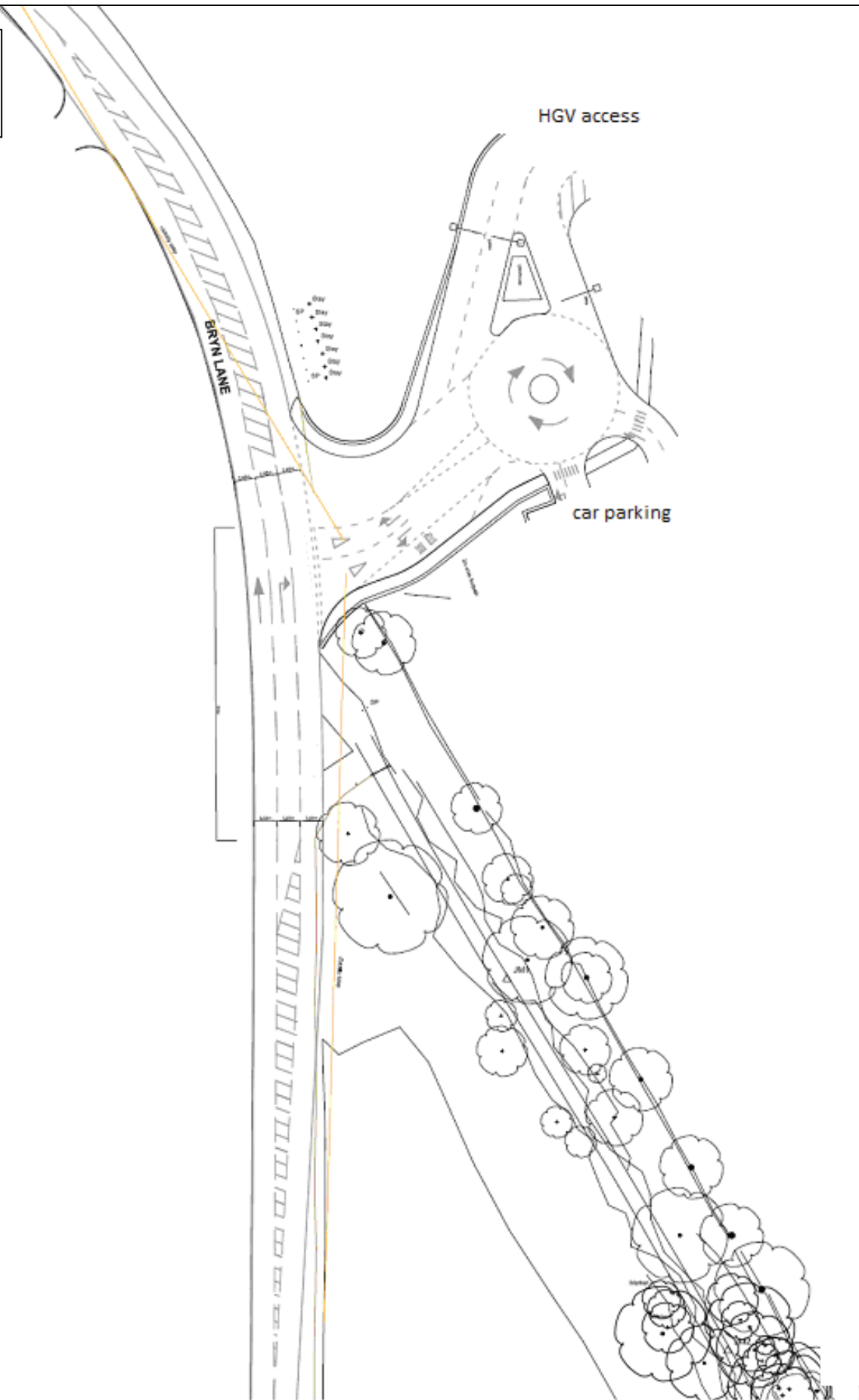
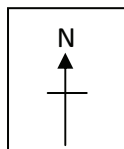
Author: PT

Reviewed by: CFO

Source: WCBC



 Crowd Dynamics International Ltd. 3A Toft Road, Knutsford Cheshire, WA16 0PE Tel: +44 (0) 1565 658 440 Fax: +44 (0) 8700 510 016 www.crowddynamics.com	Drawing by Antonio Garcia Architecture Proposed Site Entrance Study	Client: Kingmoor Park Properties			
		Project: New Warehouse for Norbert Dentressangle		Figure 5	Version: C
		Drawing Title: General Layout of Proposed Development		Draft	
				Issue	✓
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		Source: Antonio Garcia Architecture			



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 6

Version:
B

Drawing Title: Proposed access arrangements

Draft

Issue



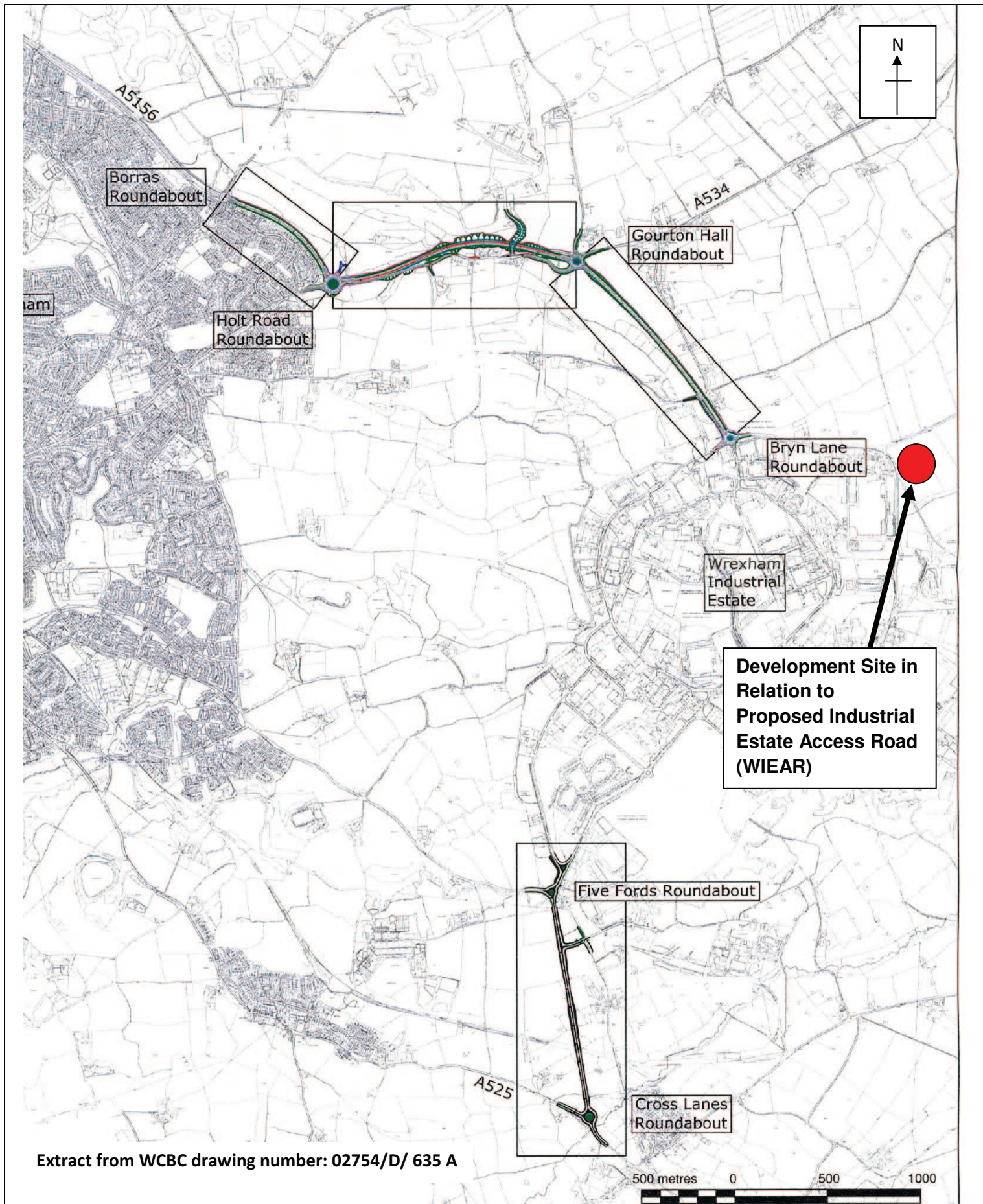
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Author:

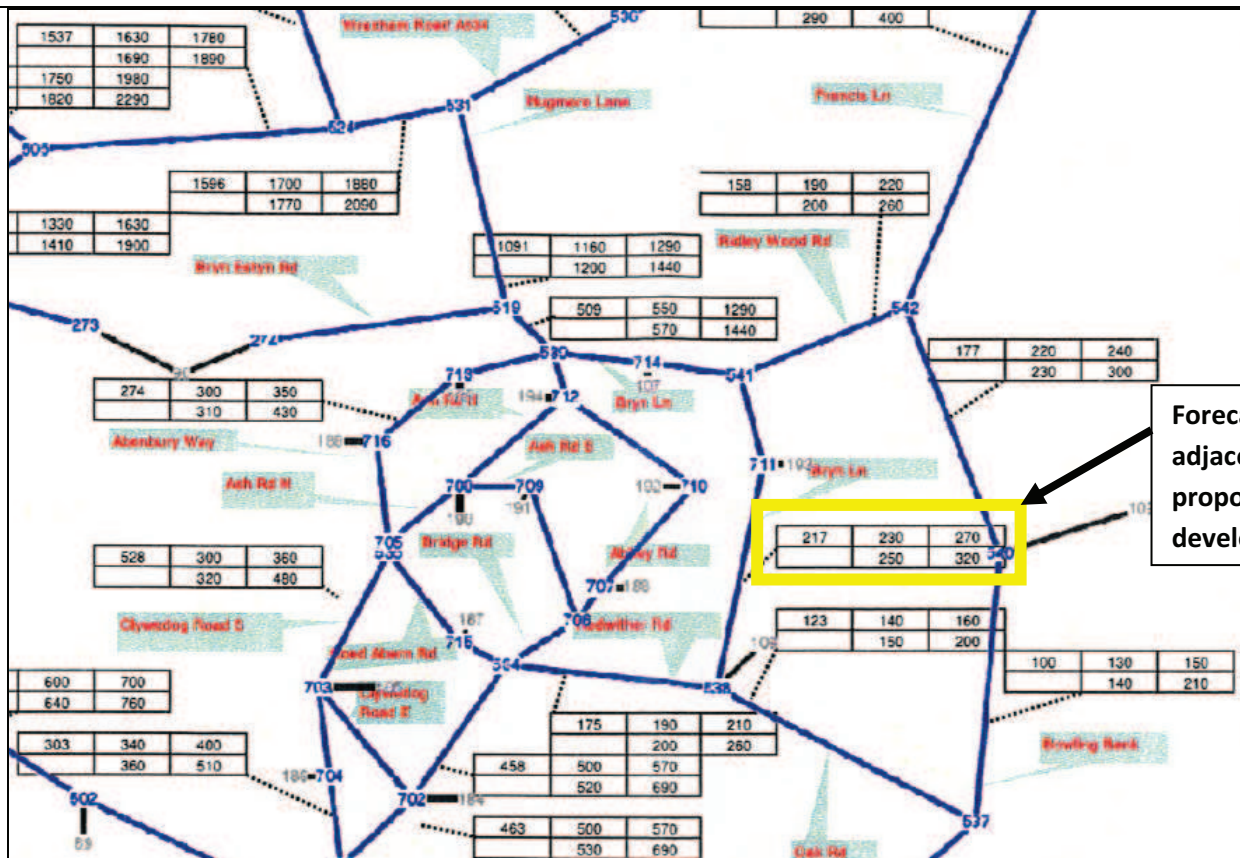
Reviewed by:

Source: WCBC

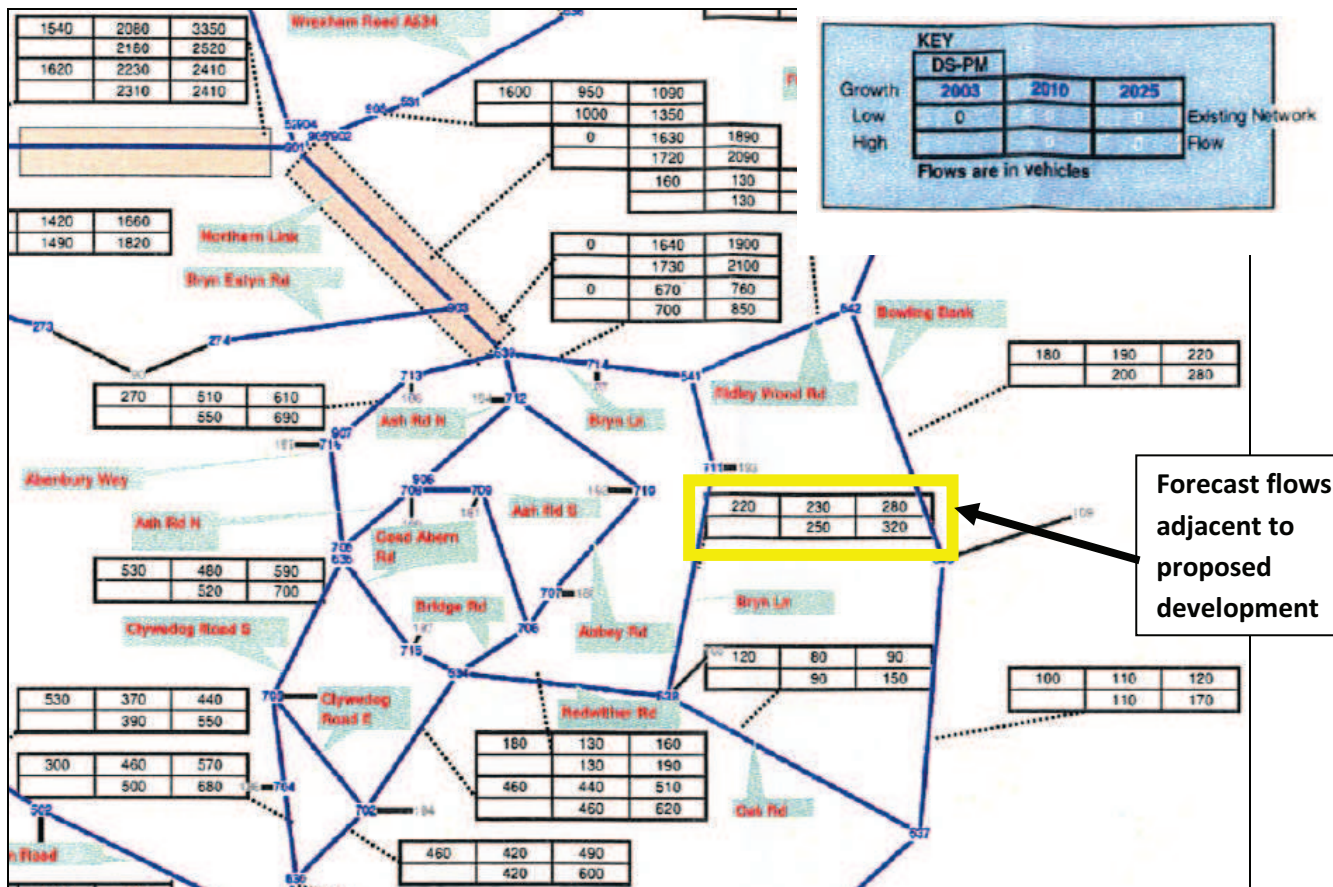
Crowd Dynamics International Ltd.
3A Toft Road, Knutsford Cheshire, WA16 0PE
Tel: +44 (0) 1565 658 440
Fax: +44 (0) 8700 510 016
www.crowddynamics.com



	Client: Kingmoor Park Properties		Not to scale	
	Project: New Warehouse for Norbert Dentressangle		Figure 7	Version:
Crowd Dynamics International Ltd. 3A Toft Road, Knutsford Cheshire, WA16 0PE Tel: +44 (0) 1565 658 440 Fax: +44 (0) 8700 510 016 www.crowddynamics.com	Drawing Title: Wrexham Industrial Estate Access Road (WIEAR)		Draft	
			Issue	✓
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Without WIEAR Scheme



With WIEAR Scheme



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 8

Version:

Drawing Title: Forecast peak hour traffic 2010 and 2025 With and Without WIEAR

Draft

Issue

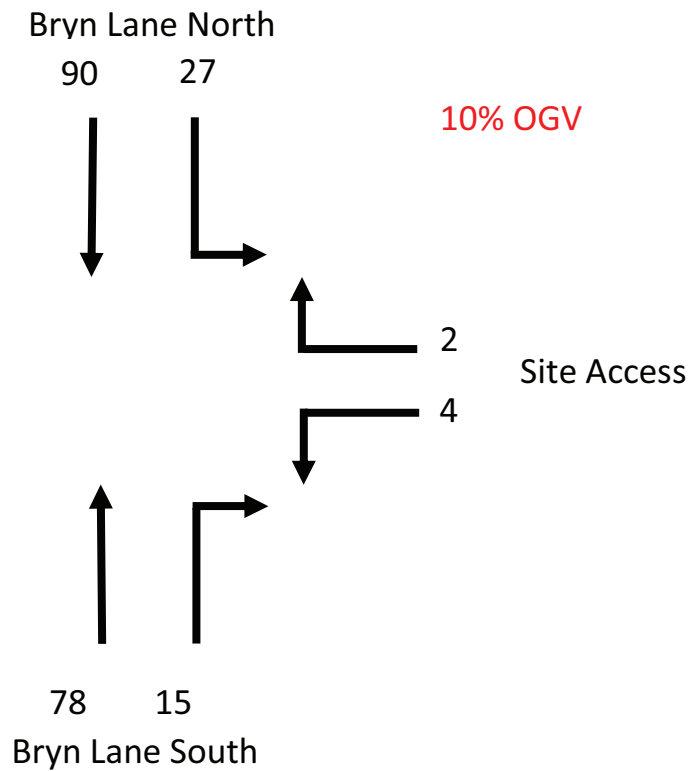
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Author:

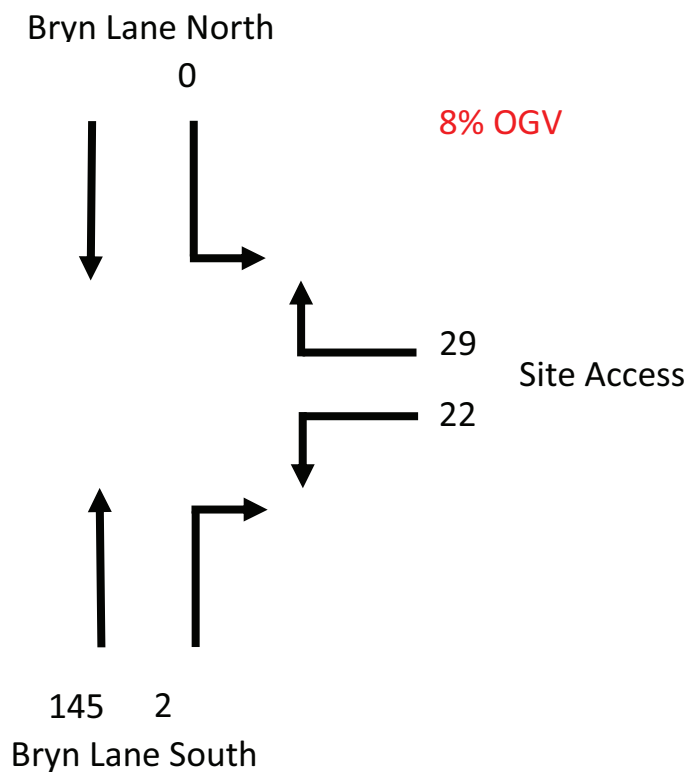
Reviewed by:

Source: Capita Symonds

AM Peak Flows (07:30 - 08:30)



PM Peak Flows (16:00 - 17:00)



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 9

Version:

Crowd Dynamics International Ltd.
3A Toft Road, Knutsford Cheshire, WA16 0PE
Tel: +44 (0) 1565 658 440
Fax: +44 (0) 8700 510 016
www.crowddynamics.com

Drawing Title: Base Traffic Flows (No Development)

Draft

Issue

✓

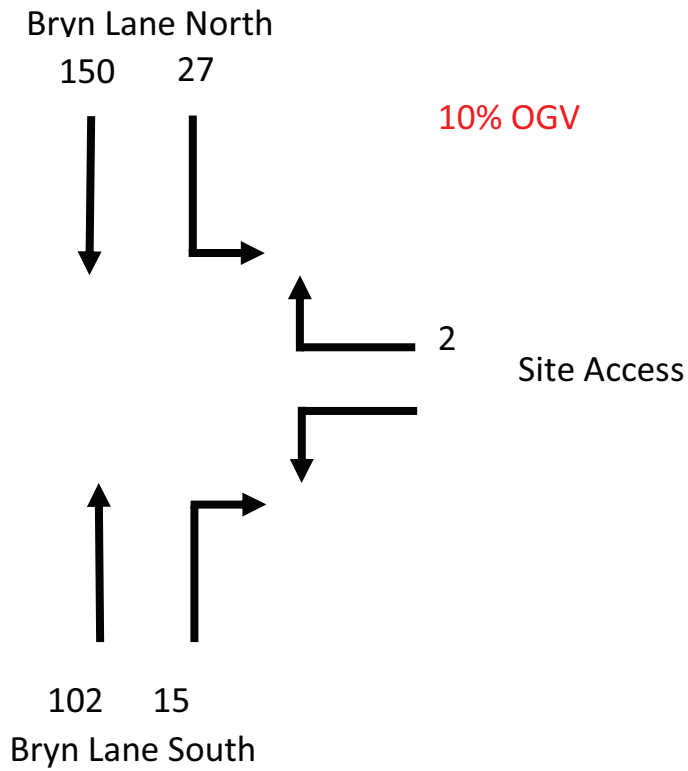
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Author: PT

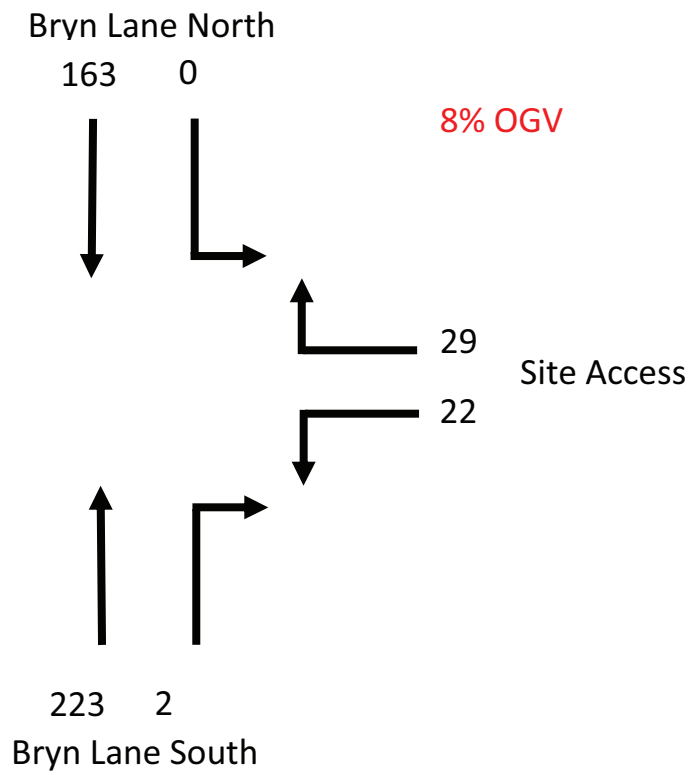
Reviewed by: CFO

Source:

AM Peak Flows



PM Peak Flows



Client: Kingmoor Park Properties

Not to scale

Project: New Warehouse for Norbert Dentressangle

Figure 10

Version:

Crowd Dynamics International Ltd.
3A Toft Road, Knutsford Cheshire, WA16 0PE
Tel: +44 (0) 1565 658 440
Fax: +44 (0) 8700 510 016
www.crowddynamics.com

Drawing Title: Forecast Traffic Flows

Draft

Issue

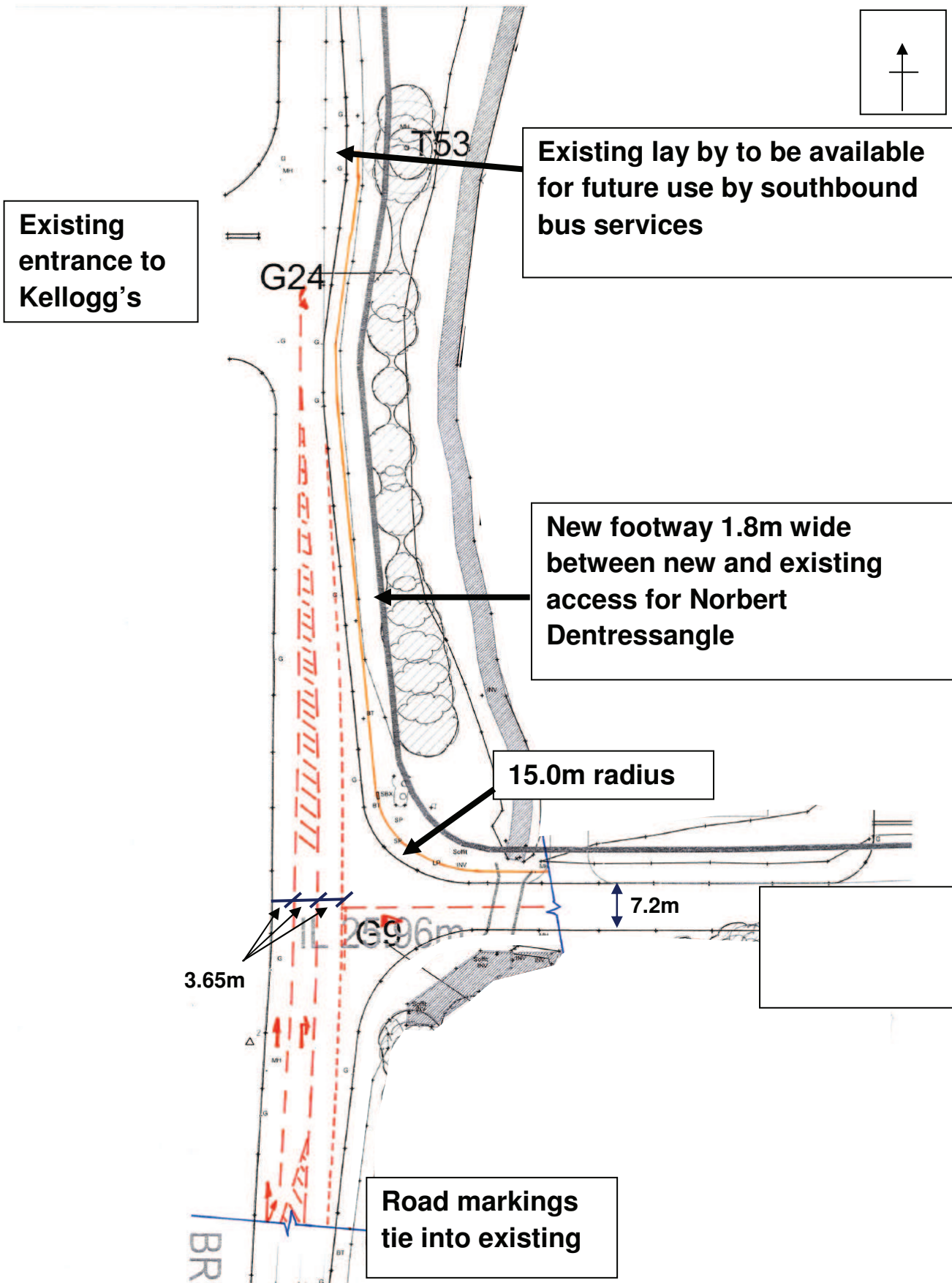
✓

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Author: PT

Reviewed by: CFO

Source:



	Client: Kingmoor Park Properties		Not to scale	
	Project: New Warehouse for Norbert Dentressangle		Figure 11	Version:
Crowd Dynamics International Ltd. 3A Toft Road, Knutsford Cheshire, WA16 0PE Tel: +44 (0) 1565 658 440 Fax: +44 (0) 8700 510 016 www.crowddynamics.com	Drawing Title: Proposed amendments to road markings at existing access junction for Norbert Dentressangle		Draft	
			Issue	✓
	© Crown copyright 2008 All rights reserved. Licence number WL1005371		Author: PT Reviewed by: CFO Source: OS Mapping	

Appendix A: Traffic Counts

Automatic Classified Counts, Wrexham

DATE: THURSDAY 27/05/2010

LOCATION: BRYN LANE

Direction : SOUTHBOUND

TIME PERIOD	VEHICLE CLASSIFICATION													TOTAL
	CAR / LGV / TAXI	2 AXLE RIGID	3 AXLE RIGID	2 AXLE RIGID + TRAILER	2 AXLE RIGID + TRAILER	3 AXLE RIGID + TRAILER	2 AXLE ARTIC + 1 AXLE	2 AXLE ARTIC + 2 AXLE	2 AXLE ARTIC + 3 AXLE	3 AXLE ARTIC + 1 2 AXLE	3 AXLE ARTIC + 3 AXLE	BUS / COACH	7+ AXLES	
00:00 - 01:00	3	1	0	0	0	0	0	0	1	0	0	0	0	5
01:00 - 02:00	1	0	0	0	1	0	0	0	1	0	0	0	0	3
02:00 - 03:00	3	1	0	0	0	0	0	0	0	0	0	0	0	4
03:00 - 04:00	0	0	0	0	0	0	0	0	1	0	1	0	0	2
04:00 - 05:00	2	0	1	0	0	0	0	0	2	0	0	1	0	6
05:00 - 06:00	36	0	0	0	0	0	0	0	1	0	0	1	0	38
06:00 - 07:00	50	3	1	1	1	0	0	0	2	0	1	0	0	59
07:00 - 08:00	97	9	1	0	0	0	0	0	1	0	1	2	0	111
08:00 - 09:00	110	8	0	1	2	0	0	0	2	0	0	2	0	125
09:00 - 10:00	64	15	0	0	1	0	0	0	2	0	3	1	0	86
10:00 - 11:00	53	17	1	1	0	0	0	0	1	0	1	5	0	79
11:00 - 12:00	59	13	1	1	2	0	0	2	3	0	1	2	0	84
12:00 - 13:00	58	13	0	0	1	0	0	0	3	0	0	2	0	77
13:00 - 14:00	72	13	2	0	1	0	0	1	2	0	3	3	0	97
14:00 - 15:00	100	7	2	1	1	0	0	0	1	0	1	7	0	120
15:00 - 16:00	62	22	0	0	2	0	0	0	2	0	1	8	0	97
16:00 - 17:00	77	6	2	1	1	0	0	1	1	0	2	3	0	94
17:00 - 18:00	63	8	0	0	1	0	0	0	2	0	1	0	0	75
18:00 - 19:00	59	4	0	0	2	0	0	0	0	0	1	0	0	66
19:00 - 20:00	33	2	1	0	0	0	0	0	2	0	0	1	0	39
20:00 - 21:00	15	2	0	0	1	0	0	0	0	0	0	0	0	18
21:00 - 22:00	13	0	0	0	0	0	0	0	0	0	0	0	0	13
22:00 - 23:00	27	0	0	0	1	0	0	0	0	0	0	1	0	29
23:00 - 00:00	1	0	0	0	0	0	0	0	1	0	0	0	0	2

7-19	874	135	9	5	14	0	0	4	20	0	15	35	0	1111
6-22	985	142	11	6	16	0	0	4	24	0	16	36	0	1240
6-24	1013	142	11	6	17	0	0	4	25	0	16	37	0	1271
0-24	1058	144	12	6	18	0	0	4	31	0	17	39	0	1329

Direction : NORTHBOUND

TIME PERIOD	VEHICLE CLASSIFICATION													TOTAL
	CAR / LGV / TAXI	2 AXLE RIGID	3 AXLE RIGID	2 AXLE RIGID + TRAILER	2 AXLE RIGID + TRAILER	3 AXLE RIGID + TRAILER	2 AXLE ARTIC + 1 AXLE	2 AXLE ARTIC + 2 AXLE	2 AXLE ARTIC + 3 AXLE	3 AXLE ARTIC + 1 2 AXLE	3 AXLE ARTIC + 3 AXLE	BUS / COACH	7+ AXLES	
00:00 - 01:00	3	0	0	0	0	0	0	0	0	0	0	0	0	3
01:00 - 02:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
02:00 - 03:00	1	0	0	0	0	0	0	0	0	0	0	0	0	1
03:00 - 04:00	0	0	0	0	0	0	0	0	1	0	0	0	0	1
04:00 - 05:00	1	0	1	0	0	0	0	0	0	0	0	0	0	2
05:00 - 06:00	41	4	0	0	2	0	0	0	0	0	0	2	0	49
06:00 - 07:00	40	1	0	0	2	0	0	0	4	0	1	1	0	49
07:00 - 08:00	50	13	1	0	4	0	0	0	2	0	3	3	0	76
08:00 - 09:00	67	8	1	0	1	0	0	0	0	0	0	1	0	78
09:00 - 10:00	54	12	0	0	1	0	0	1	1	0	4	4	0	77
10:00 - 11:00	44	14	2	1	2	0	0	1	2	0	1	1	0	68
11:00 - 12:00	55	13	3	0	0	0	0	1	4	0	0	3	0	79
12:00 - 13:00	70	9	1	0	2	0	0	0	2	0	3	3	0	90
13:00 - 14:00	95	12	0	1	0	0	0	0	3	0	0	3	0	114
14:00 - 15:00	56	11	1	1	1	0	0	0	2	0	2	6	0	80
15:00 - 16:00	73	14	0	0	1	0	0	0	5	0	0	5	0	98
16:00 - 17:00	140	7	0	0	1	0	0	0	2	0	0	2	0	152
17:00 - 18:00	130	4	1	0	0	0	2	0	2	0	1	0	0	140
18:00 - 19:00	61	2	0	0	1	0	0	0	2	0	1	0	0	67
19:00 - 20:00	22	1	0	0	1	0	0	0	0	0	0	0	0	24
20:00 - 21:00	15	1	0	0	0	0	0	0	2	0	1	0	0	19
21:00 - 22:00	22	0	0	0	0	0	0	0	0	0	1	1	0	24
22:00 - 23:00	25	0	0	0	0	0	0	0	0	0	0	0	0	25
23:00 - 00:00	2	0	0	0	0	0	0	0	0	0	0	0	0	2

7-19	895	119	10	3	14	0	2	3	27	0	15	31	0	1119
6-22	994	122	10	3	17	0	2	3	33	0	18	33	0	1235
6-24	1021	122	10	3	17	0	2	3	33	0	18	33	0	1262
0-24	1067	126	11	3	19	0	2	3	35	0	18	35	0	1319

survey and presentation by **trafficsense** Ltd.

Appendix B: Bus Timetables for Wrexham Industrial Estate

WREXHAM INDUSTRIAL ESTATE - WREXHAM - BRYMBO via Borras, Rhosddu, Plas Coch & Brynteg

13

Monday to Saturday except Bank Holidays : Llun i Sadwrn henblaw Gwyliau Cyhoeddus

Service No	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Redwither Tower			0819	0849	0719	0749	0819	0849	0919	0949	1019	1049	1119	1149	1219	1249	1319	1349
C P Pharmaceuticals			0820	0850	0720	0750	0820	0850	0920	0950	1020	1050	1120	1150	1220	1250	1320	1350
Dean Road			0828	0858	0728	0758	0828	0858	0928	0958	1028	1058	1128	1158	1228	1258	1328	1358
Priores Lane			0833	0703														
Sandway Road					0732	0802	0832	0902	0932	1002	1032	1102	1132	1202	1232	1302	1332	1402
Osbourne Road					0734	0804	0834	0904	0934	1004	1034	1104	1134	1204	1234	1304	1334	1404
Wrexham, Bus Station 8	0540	0610	0640	0710	0740	0810	0840	0910	0940	1010	1040	1110	1140	1210	1240	1310	1340	1410
Mold Road, Glyndwr University	0545	0615	0645	0715	0745	0815	0845	0915	0945	1015	1045	1115	1145	1215	1245	1315	1345	1415
Plas Coch Retail Park	0546	0616	0646	0716	0746	0816	0846	0916	0946	1016	1046	1116	1146	1216	1246	1316	1346	1416
New Broughton	0552	0622	0652	0722	0752	0822	0852	0922	0952	1022	1052	1122	1152	1222	1252	1322	1352	1422
Brynteg Shops	0555	0625	0655	0725	0755	0825	0855	0925	0955	1025	1055	1125	1155	1225	1255	1325	1355	1425
Pentre Broughton, Gwalia Road	0601	0631	0701	0731	0801	0831	0901	0931	1001	1031	1101	1131	1201	1231	1301	1331	1401	1431
Clayton Road	0602	0632	0702	0732	0802	0832	0902	0932	1002	1032	1102	1132	1202	1232	1302	1332	1402	1432
Brymbo, Post Office	0606	0636	0706	0736	0806	0836	0906	0936	1006	1036	1106	1136	1206	1236	1306	1336	1406	1436
Brymbo, Offa Street	0608	0638	0708	0738	0808	0838	0908	0938	1008	1038	1108	1138	1208	1238	1308	1338	1408	1438

Monday to Saturday except Bank Holidays : Llun i Sadwrn henblaw Gwyliau Cyhoeddus (continued)

Service No	13	13	13	13	13	13	13	13	13
Redwither Tower	1419	1449	1519	1549	1619	1649	1719	1749	1819
C P Pharmaceuticals	1420	1450	1520	1550	1620	1650	1720	1750	1820
Dean Road	1426	1456	1526	1556	1626	1656	1726	1756	1826
Priores Lane									
Sandway Road	1432	1502	1532	1602	1632	1702	1732	1802	1832
Osbourne Road	1434	1504	1534	1604	1634	1704	1734	1804	1834
Wrexham, Bus Station 8	1440	1510	1540	1610	1640	1710	1740	1810	1840
Mold Road, Glyndwr University	1445	1515	1545	1615	1645	1715	1745	1815	1845
Plas Coch Retail Park	1446	1516	1546	1616	1646	1716	1746	1816	1846
New Broughton	1452	1522	1552	1622	1652	1722	1752	1822	1852
Brynteg Shops	1455	1525	1555	1625	1655	1725	1755	1825	1855
Pentre Broughton, Gwalia Road	1501	1531	1601	1631	1701	1731	1801	1831	1901
Clayton Road	1502	1532	1602	1632	1702	1732	1802	1832	1902
Brymbo, Post Office	1506	1536	1606	1636	1706	1736	1806	1836	1906
Brymbo, Offa Street	1508	1538	1608	1638	1708	1738	1808	1838	1908

Monday to Saturday except Bank Holidays : Llun i Sadwrn henblaw Gwyliau Cyhoeddus

Service No	13A	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
Brymbo, Offa Street	0550	0620	0650	0720	0750	0820	0850	0920	0950	1020	1050	1120	1150	1220	1250	1320	1350	
Brymbo Post Office	0552	0622	0652	0722	0752	0822	0852	0922	0952	1022	1052	1122	1152	1222	1252	1322	1352	
Pentre Broughton, Gwalia Road	0557	0627	0657	0727	0757	0827	0857	0927	0957	1027	1057	1127	1157	1227	1257	1327	1357	
Brynteg, Shops	0603	0633	0703	0733	0803	0833	0903	0933	1003	1033	1103	1133	1203	1233	1303	1333	1403	
New Broughton	0606	0636	0706	0736	0806	0836	0906	0936	1006	1036	1106	1136	1206	1236	1306	1336	1406	
Plas Coch Retail Park	0611	0641	0711	0741	0811	0841	0911	0941	1011	1041	1111	1141	1211	1241	1311	1341	1411	
Mold Road, Glyndwr University	0613	0643	0713	0743	0813	0843	0913	0943	1013	1043	1113	1143	1213	1243	1313	1343	1413	
Wrexham, Bus Station (Stand 5)	0620	0650	0720	0750	0820	0850	0920	0950	1020	1050	1120	1150	1220	1250	1320	1350	1420	
Priores Lane	0624	0624																
Osbourne Road			0654	0724	0754	0824	0854	0924	0954	1024	1054	1124	1154	1224	1254	1324	1354	1424
Jeffreys Road	0629	0629	0659	0729	0759	0829	0859	0929	0959	1029	1059	1129	1159	1229	1259	1329	1359	1429
Dean Road	0631	0631	0701	0731	0801	0831	0901	0931	1001	1031	1101	1131	1201	1231	1301	1331	1401	1431
Aberbury Way	0636	0636	0706	0736	0806	0836	0906	0936	1006	1036	1106	1136	1206	1236	1306	1336	1406	1436
Redwither Road, Dunster Road	0645	0645	0715	0745	0815	0845	0915	0945	1015	1045	1115	1145	1215	1245	1315	1345	1415	1445
Redwither Tower	0648	0648	0718	0748	0818	0848	0918	0948	1018	1048	1118	1148	1218	1248	1318	1348	1418	1448

BRYMBO - WREXHAM - WREXHAM INDUSTRIAL ESTATE via Brynteg, Plas Coch, Rhosddu & Borras

13

BRYMBO - WREXHAM - WREXHAM INDUSTRIAL ESTATE via Brynteg, Plas Coch & Borras

13A

Monday to Saturday except Bank Holidays : Llun i Sadwrn henblaw Gwyliau Cyhoeddus (continued)

Service No	13	13	13	13	13	13	13	13	13
Brymbo, Offa Street	1420	1450	1520	1550	1620	1650	1720	1750	1850
Brymbo Post Office	1422	1452	1522	1552	1622	1652	1722	1752	1852
Pentre Broughton, Gwalia Road	1427	1457	1527	1557	1627	1657	1727	1757	1857
Brynteg, Shops	1433	1503	1533	1603	1633	1703	1733	1803	1833
New Broughton	1436	1506	1536	1606	1636	1706	1736	1806	1836
Plas Coch Retail Park	1441	1511	1541	1611	1641	1711	1741	1811	1841
Mold Road, Glyndwr University	1443	1513	1543	1613	1643	1713	1743	1813	1843
Wrexham, Bus Station (Stand 5)	1450	1520	1550	1620	1650	1720	1750	1818	1848
Priores Lane									
Osbourne Road	1454	1524	1554	1624	1654	1724	1754		
Jeffreys Road	1459	1529	1559	1629	1659	1729	1759		
Dean Road	1501	1531	1601	1631	1701	1731	1801		
Aberbury Way	1506	1536	1606	1636	1706	1736	1806		
Redwither Road, Dunster Road	1515	1545	1615	1645	1715	1745	1815		
Redwither Tower	1518	1548	1618	1648	1718	1748	1818		

41 WREXHAM - WREXHAM INDUSTRIAL ESTATE

GHA Coaches

Amserlen Cludiant Cyhoeddus - a ddarparwyd gan Gyngor Bwrdeistref Sirol Wrecsam

via / trwy Smithfield - The Queensway - Pentre Maelor

Monday to Saturday except Bank Holidays / Llun i Sadwrn heblaw Gwyliau Cyhoeddus



 141A 141A

Vauxhall Industrial Estate	5:15	.....	7:15	7:35	.....	.....	.....	.....	.....	.....	.....
Johnstown	5:17	.....	7:17	7:37	.....	.....	.....	.....	.....	.....	.....
WREXHAM Bus Station(S2)	5:30	6:30	7:30	7:50	8:20	9:20	then	:20		16:20	17:20
Brook Street	5:32	6:32	.....	.....	.....	.....	at	.....	.....	.....	.....
High Street	5:33	6:33	.....	.....	.....	.....	these	.....	.....	.....	.....
Market Street	.....	.....	7:34	7:54	8:24	9:24	mins	:24		16:24	17:24
Eagles Meadow	5:36	6:36	7:36	7:56	8:26	9:26	past	:26	until	16:26	17:26
Smithfield	5:38	6:38	7:38	7:58	8:28	9:28	each	:28		16:28	17:28
The Queensway	5:42	6:42	7:42	8:02	8:32	9:32	hour	:32		16:32	17:32
Pentre Maelor	5:47	6:47	7:47	8:07	8:37	9:37		:37		16:37	17:37
REDWITHER TOWER	5:50	6:50	7:50	8:10	8:40	9:40		:40		16:40	17:40

41 WREXHAM INDUSTRIAL ESTATE - WREXHAM

GHA Coaches

Amserlen Cludiant Cyhoeddus - a ddarparwyd gan Gyngor Bwrdeistref Sirol Wrecsam

via / trwy Pentre Maelor - The Queensway - Smithfield

Monday to Saturday except Bank Holidays / Llun i Sadwrn heblaw Gwyliau Cyhoeddus



 141A 141A

REDWITHER TOWER	6:06	7:06	7:50	8:40	9:16		:16		16:16	16:40	17:05	17:16
Coed Aben Road	6:10	7:10	7:56	8:46	9:22	then	:22		16:22	16:46	17:11	17:22
Pentre Maelor	6:12	7:12	7:59	8:49	9:25	at	:25		16:25	16:49	17:14	17:25
The Queensway	6:17	7:17	8:04	8:54	9:30	these	:30		16:30	16:54	17:19	17:30
Smithfield	6:20	7:20	8:08	8:58	9:34	mins	:34	until	16:34	16:58	17:23	17:34
Eagles Meadow	6:21	7:21	8:10	9:00	9:36	past	:36		16:36	17:00	17:25	17:36
Market Street	.....	.....	8:12	9:02	9:38	each	:38		16:38	17:02	17:27	17:38
High Street	6:24	7:24	.....	.....	.....	hour	.....		.....	.....	.....	.....
WREXHAM Bus Station	6:26	7:26	8:16	9:06	9:42		:42		16:42	17:06	17:31	17:42
Johnstown	.....	.....	.....	.....	.....	.....	.....		.....	.....	17:16	17:41
Vauxhall Industrial Estate	.....	.....	.....	.....	.....	.....	.....		.....	.....	17:21	17:46

42 WREXHAM - WREXHAM INDUSTRIAL ESTATE

GHA Coaches

Amserlen Cludiant Cyhoeddus - a ddarparwyd gan Gyngor Bwrdeistref Sirol Wrecsam

via / trwy Stockwell Grove - Barracks Field Estate - Kings Mills - Pentre Gwyn - Pentre Maelor

Monday to Saturday except Bank Holidays / Llun i Sadwrn heblaw Gwylian Cyhoeddus

WREXHAM Bus Station (S2)	8:50	9:50		:50	16:50	17:50
Market Street	8:54	9:54		:54	16:54	17:54
Eagles Meadow	8:56	9:56	then	:56	16:56	17:56
Salop Road	8:57	9:57	at	:57	16:57	17:57
Stockwell Grove	9:01	10:01	these	:01	17:01	18:01
Hightown Farmfoods	9:04	10:04	mins	:04	until	17:04 18:04
Hightown Monger Road	9:06	10:06	past	:06	17:06	18:06
Kings Mills	9:07	10:07	each	:07	17:07	18:07
Pentre Gwyn	9:09	10:09	hour	:09	17:09	18:09
Pentre Maelor (Main Road)	9:13	10:13		:13	17:13	18:13
REDWITHER TOWER	9:16	10:16		:16	17:16	18:16

42 WREXHAM INDUSTRIAL ESTATE - WREXHAM

GHA Coaches

Amserlen Cludiant Cyhoeddus - a ddarparwyd gan Gyngor Bwrdeistref Sirol Wrecsam

via / trwy Pentre Maelor - Pentre Gwyn - Kings Mills - Monger Road - Stockwell Grove

Monday to Saturday except Bank Holidays / Llun i Sadwrn heblaw Gwylian Cyhoeddus

REDWITHER TOWER	8:10	9:40		:40	15:40
Coed Aben Road	8:16	9:46		:46	15:46
Pentre Maelor Estate	8:19	9:49	then	:49	15:49
Pentre Gwyn	8:23	9:53	at	:53	15:53
Kings Mills	8:24	9:54	these	:54	15:54
Hightown Monger Road	8:26	9:55	mins	:55	until 15:55
Hightown Flats	8:29	9:57	past	:57	15:57
Stockwell Grove	8:33	9:59	each	:59	15:59
Salop Road	8:37	10:03	hour	:03	16:03
Eagles Meadow	8:38	10:04		:04	16:04
Market Street	8:40	10:06		:06	16:06
WREXHAM Bus Station	8:45	10:10		:10	16:10

1E BRYNTEG - WREXHAM INDUSTRIAL ESTATE

Price Coaches

New Broughton - The Queensway

Monday to Friday except Bank Holidays

Brynteg Shops	7:20
New Broughton	7:25
Mold Road, Glyndwr	7:28
Wrexham Bus Station (St2)	7:30
Montgomery Road	7:35
The Queensway	7:40
Industrial Estate	7:45

Llun I Gwener heblaw Gwylian Cyhoeddus

Industrial Estate	16:30
The Queensway	16:35
Montgomery Road	16:40
Wrexham Bus Station	16:45
Mold Road, Glyndwr	16:47
New Broughton	16:50
Brynteg Shops	16:53

Appendix C: Personal Injury Accidents 2005-2010

Bryn Lane Jan 2005 to Apr 2010

Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street					
725	05WR3002	Slight	Monday	10/01/2005	07:10	338088/350887							
Location: HUGMORE LANE AT J/W BRYN LANE, WREXHAM 1st Rd: U 2nd Rd: U													
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy	Fac Special	Hazard				
40MPH	Roundabout	R'dabt Give	Dark/lights lit	Fine	Dry	None	None	None	None				
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B
1	Car	No	Going ahead	S N	On main	Mid junction	No	None	None	None	Male	52	N
2	Car	No	Going ahead	W E	On main	Ent r'about	No	None	None	None	Male	51	N
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil			
1	1	Drv/Rider	Male	52	Slight	No	Not ped	Not ped	Not ped				
Description: VEH2 ENTERED ROUNDABOUT FAILING TO GIVE WAY. VEH1 THEN COLLIDED WITH VEH2.													
User Information: Contributory Factors: 302V2A													
725	07WR1039	Slight	Monday	05/02/2007	07:55	338765/349451							
Location: REDWITHER ROAD AT J/W BRYN LANE, WREXHAM IND EST. 1st Rd: U 2nd Rd: U													
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy	Fac Special	Hazard				
40MPH	Single c'way T/Stag	Give	Light/with lights	Fine	Wet	None	None	None	None				
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B
1	Car	No	Start	SE NW	On main	Mid junction	No	None	None	None	Male	42	-
2	Car	No	Going ahead	NW SE	On main	Mid junction	No	None	None	None	Female	53	-
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil			
1	2	Drv/Rider	Female	53	Slight	No	Not ped	Not ped	Not ped				
Description: VEH 1 ON REDWITHER ROAD TRAV TOWARDS JNC WITH BRYN LANE. VEH 2 IN OPPOSITE DIRECTION GOING STRAIGHT AHEAD. AS VEH 2 PASSES JNC. VEH 1 TURNS RIGHT INTO THE PATH OF VEH 2.													
User Information: Contributory Factors: 405V1A 602V1A 402V1A 302V1B													
725	08WR1050	Slight	Tuesday	05/02/2008	14:25	338770/349452							
Location: OAK ROAD AT J/W BRYN LANE, WREXHAM 1st Rd: U 2nd Rd: U													
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy	Fac Special	Hazard				
40MPH	Single c'way T/Stag	Give	Light/with lights	Fine	Wet	None	None	None	None				
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B
1	Other M.veh	No	Right turn	N W	On main	Enter main	No	None	None	None	Male	18	-
2	Car	No	Going ahead	W E	On main	Junt appr	No	None	None	None	Male	40	-
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil			
1	1	Drv/Rider	Male	18	Slight	No	Not ped	Not ped	Not ped				
2	2	Drv/Rider	Male	40	Slight	No	Not ped	Not ped	Not ped				
Description: VEH1 PULLS OUT OF 'T' JUNCTION INTO PATH OF ONCOMING VEH2 AND COLLIDES WITH SAME.													
User Information: Contributory Factors: 302V1A 406V1A													
725	07WR3064	Slight	Thursday	06/09/2007	18:26	338838/350842							
Location: BRYN LANE, NORTH OF KELLOGS, WREXHAM 1st Rd: U 2nd Rd:													
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy	Fac Special	Hazard				
40MPH	Single c'way NotJCT		Light/with lights	Fine	Dry	None	None	None	None				
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B
1	Goods > 7.5t	Art	Lt hand ben	W E	On main	Not at	No	None	None	None	Male	38	-
2	Car	No	Rt hand ben	E W	On main	Not at	Yes	None	None	None	Male	53	-
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil			
1	2	Drv/Rider	Male	53	Slight	No	Not ped	Not ped	Not ped				
Description: VEH1 CAME OUT OF KELLOGS IND EST ONTO WRONG SIDE OF ROAD. TRAVELLED APPROX 600M AND COLLIDED WITH ON COMING VEH2 ON LEFT HAND BEND. DRIVER OF VEH1 IS FOREIGN NATIONAL.													
User Information: Contributory Factors: 999V1A 403V1B													

Bryn Lane Jan 2005 to Apr 2010

Area L/A	Reference	Severity	Day	Date	Time	Grid Coords	Link/Node	Street					
725	RC09043618	Serious	Wednesday	11/03/2009	05:30	338893/350826							
Location: BRYN LANE AT J/W RIDLEY LANE , WREXHAM 1st Rd: U 2nd Rd: U													
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard				
40MPH	Single	c'way T/Stag	Give	Dark/lights lit	Fine	Dry	None	None	None				
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age	B
1	Car	No	Start	NE W	On main	Junt appr	No	None	None	Female	40	N	
2	Pedal Cycle	No	Lt hand ben	S W	On main	Junt appr	No	None	None	Male	44	N	
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil			
1	2	Drv/Rider	Male	44	Serious	No	Not ped	Not ped	Not ped				

Description: VEH 1 EMERGES FROM JUNCTION INTO PATH OF VEH 2.

User Information:

Contributory Factors: 405V1A 406V1A

725	05WR1094	Slight	Thursday	07/04/2005	08:20	338894/350825						
Location: U/C BRYN LANE AT JUNCTION WITH U/C OAK ROAD, WREXHAM. 1st Rd: U 2nd Rd: U												
Speed	C'Way	Jct Det/Ctrl	Lighting	Weather	Rd Surf	PedX - Human	- Phy Fac	Special	Hazard			
40MPH	Single	c'way T/Stag	Give	Light/with lights	Rain	Wet	None	None	None			
Veh	Vehicle type	Towing	Manoeuvre	Dir	Veh loc	Junct. loc	Skidding	Hit obj in	Left cway	Hit obj off	Sex	Age
1	Car	No	Right turn	N W	On main	Mid junction	No	None		None	Female	23
2	Other M.veh	No	Going ahead	W E	On main	Junt appr	No	None		None	Male	48
Cas	NoVeh ref	Cas Class	Sex	Age	Severity	Car Pass	Ped Direction	Ped Movement	Ped location	School Pupil		
1	2	Drv/Rider	Male	48	Slight	No	Not ped	Not ped	Not ped			

Description: V1 WAS TRAVELLING ALONG BRYN LANE TOWARDS JUNCT OF OAK ROAD. V1 HAS THEN PULLED OUT OF THE JUNCTION INTO OAK ROAD WHERE V2 COLLIDED WITH IT.

User Information:

Contributory Factors: 401V1A 302V1A

Appendix D: PICADY Results for Proposed Site Access

.RUN INFORMATION *****

```
RUN TITLE      : Plot 3 Wrexham Bryn Lane New Access
LOCATION        : Bryn Lane, Wrexham Industrial Estate
DATE          : 28/09/11
CLIENT        :
ENUMERATOR    : chris [CRD-W01]
JOB NUMBER    : PCD 1032
STATUS        :
DESCRIPTION    :
```

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY *****

INPUT DATA

```

MAJOR ROAD (ARM C) ----- MAJOR ROAD (ARM A)
                        I
                        I
                        I
                        I
                        I
                        I
                        I
MINOR ROAD (ARM B)
```

```
ARM A IS Bryn Lane North
ARM B IS Site Access
ARM C IS Bryn Lane South
```

.STREAM LABELLING CONVENTION -----

STREAM A-B CONTAINS TRAFFIC GOING FROM ARM A TO ARM B
ETC.

.GEOMETRIC DATA -----

I	DATA ITEM	I	MINOR ROAD B	I
I	TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	I	(W) 7.30 M.	I
I	CENTRAL RESERVE WIDTH	I	(WCR) 0.00 M.	I
I		I		I
I	MAJOR ROAD RIGHT TURN - WIDTH	I	(WC-B) 3.70 M.	I
I	- VISIBILITY	I	(VC-B) 120.00 M.	I
I	- BLOCKS TRAFFIC (SPACES)	I	NO (0)	I
I		I		I
I	MINOR ROAD - VISIBILITY TO LEFT	I	(VB-C) 120.0 M.	I
I	- VISIBILITY TO RIGHT	I	(VB-A) 120.0 M.	I
I	- LANE 1 WIDTH	I	(WB-C) 3.65 M.	I
I	- LANE 2 WIDTH	I	(WB-A) 3.65 M.	I

.SLOPES AND INTERCEPT -----

(NB:Streams may be combined, in which case capacity will be adjusted)

I	Intercept For	Slope For	Opposing	Slope For	Opposing	I
I	STREAM B-C	STREAM A-C	STREAM A-B	STREAM A-B	STREAM A-B	I
I	745.00	0.27	0.11			I

I	Intercept For	Slope For	Opposing	Slope For	Opposing	Slope For	Opposing	I
I	STREAM B-A	STREAM A-C	STREAM A-B	STREAM C-A	STREAM C-B	STREAM C-B	STREAM C-B	I
I	615.71	0.27	0.11	0.17	0.38			I

I	Intercept For	Slope For	Opposing	Slope For	Opposing	I
I	STREAM C-B	STREAM A-C	STREAM A-B	STREAM A-B	STREAM A-B	I
I	748.50	0.27	0.27			I

(NB These values do not allow for any site specific corrections)

.TRAFFIC DEMAND DATA

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

.Demand set: Plot 3 Wrexham Bryn Lane New Access

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

LENGTH OF TIME PERIOD - 90 MIN.
LENGTH OF TIME SEGMENT - 15 MIN.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	ARM	I	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	I	TOP OF PEAK IS REACHED	I	FLOW STOPS FALLING	I	RATE OF FLOW (VEH/MIN) BEFORE PEAK	I	AT TOP OF PEAK	I	AFTER PEAK	I
I	ARM A	I	15.00	I	45.00	I	75.00	I	2.21	I	3.32	I	2.21	I
I	ARM B	I	15.00	I	45.00	I	75.00	I	0.08	I	0.11	I	0.08	I
I	ARM C	I	15.00	I	45.00	I	75.00	I	1.46	I	2.19	I	1.46	I

.Demand set: Plot 3 Wrexham Bryn Lane New Access

I	TIME	I	FROM/TO	I	ARM	A	I	ARM	B	I	ARM	C	I
I	07.45 - 09.15	I	ARM A	I	0.000	I	0.153	I	0.847	I			I
I		I		I	0.0	I	27.0	I	150.0	I			I
I		I	(0.0)	I	(10.0)	I	(10.0)	I	(10.0)	I			I
I		I	ARM B	I	0.333	I	0.000	I	0.667	I			I
I		I		I	2.0	I	0.0	I	4.0	I			I
I		I	(10.0)	I	(0.0)	I	(10.0)	I	(10.0)	I			I
I		I	ARM C	I	0.872	I	0.128	I	0.000	I			I
I		I		I	102.0	I	15.0	I	0.0	I			I
I		I	(10.0)	I	(10.0)	I	(0.0)	I	(0.0)	I			I
I		I		I		I		I		I			I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 1

I	TIME	I	DEMAND (VEH/MIN)	I	CAPACITY (VEH/MIN)	I	DEMAND/ CAPACITY (RFC)	I	PEDESTRIAN FLOW (PEDS/MIN)	I	START QUEUE (VEHS)	I	END QUEUE (VEHS)	I	DELAY (VEH.MIN/ TIME SEGMENT)	I	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	07.45-08.00	I		I		I		I		I		I		I		I		I		I
I	B-C	I	0.05	I	10.73	I	0.005	I		I	0.00	I	0.00	I	0.1	I		I	0.09	I
I	B-A	I	0.03	I	8.50	I	0.003	I		I	0.00	I	0.00	I	0.0	I		I	0.12	I
I	C-A	I	1.28	I		I		I		I		I		I		I		I		I
I	C-B	I	0.19	I	10.73	I	0.018	I		I	0.00	I	0.02	I	0.3	I		I	0.09	I
I	A-B	I	0.34	I		I		I		I		I		I		I		I		I
I	A-C	I	1.88	I		I		I		I		I		I		I		I		I

I	TIME	I	DEMAND (VEH/MIN)	I	CAPACITY (VEH/MIN)	I	DEMAND/ CAPACITY (RFC)	I	PEDESTRIAN FLOW (PEDS/MIN)	I	START QUEUE (VEHS)	I	END QUEUE (VEHS)	I	DELAY (VEH.MIN/ TIME SEGMENT)	I	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	I	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)	I
I	08.00-08.15	I		I		I		I		I		I		I		I		I		I
I	B-C	I	0.06	I	10.62	I	0.006	I		I	0.00	I	0.01	I	0.1	I		I	0.09	I
I	B-A	I	0.03	I	8.34	I	0.004	I		I	0.00	I	0.00	I	0.1	I		I	0.12	I
I	C-A	I	1.53	I		I		I		I		I		I		I		I		I
I	C-B	I	0.22	I	10.62	I	0.021	I		I	0.02	I	0.02	I	0.3	I		I	0.10	I
I	A-B	I	0.40	I		I		I		I		I		I		I		I		I
I	A-C	I	2.25	I		I		I		I		I		I		I		I		I

I	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)	I
I	08.15-08.30										I
I	B-C	0.07	10.47	0.007		0.01	0.01	0.1		0.10	I
I	B-A	0.04	8.12	0.005		0.00	0.00	0.1		0.12	I
I	C-A	1.87									I
I	C-B	0.28	10.45	0.026		0.02	0.03	0.4		0.10	I
I	A-B	0.50									I
I	A-C	2.75									I

I	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)	I
I	08.30-08.45										I
I	B-C	0.07	10.47	0.007		0.01	0.01	0.1		0.10	I
I	B-A	0.04	8.12	0.005		0.00	0.00	0.1		0.12	I
I	C-A	1.87									I
I	C-B	0.28	10.45	0.026		0.03	0.03	0.4		0.10	I
I	A-B	0.50									I
I	A-C	2.75									I

I	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)	I
I	08.45-09.00										I
I	B-C	0.06	10.62	0.006		0.01	0.01	0.1		0.09	I
I	B-A	0.03	8.34	0.004		0.00	0.00	0.1		0.12	I
I	C-A	1.53									I
I	C-B	0.22	10.62	0.021		0.03	0.02	0.3		0.10	I
I	A-B	0.40									I
I	A-C	2.25									I

I	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)	I
I	09.00-09.15										I
I	B-C	0.05	10.73	0.005		0.01	0.00	0.1		0.09	I
I	B-A	0.03	8.50	0.003		0.00	0.00	0.0		0.12	I
I	C-A	1.28									I
I	C-B	0.19	10.73	0.018		0.02	0.02	0.3		0.09	I
I	A-B	0.34									I
I	A-C	1.88									I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUE FOR STREAM C-B

TIME	NO. OF
SEGMENT	VEHICLES
ENDING	IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

I	STREAM	I	TOTAL DEMAND		I	* QUEUEING *		I	* INCLUSIVE QUEUEING *		I
I		I			I	* DELAY *		I	* DELAY *		I
I		I	-----		I	-----		I	-----		I
I		I	(VEH)	(VEH/H)	I	(MIN)	(MIN/VEH)	I	(MIN)	(MIN/VEH)	I
I	B-C	I	5.5	3.7	I	0.5	0.09	I	0.5	0.09	I
I	B-A	I	2.8	1.8	I	0.3	0.12	I	0.3	0.12	I
I	C-A	I	140.4	93.6	I			I			I
I	C-B	I	20.6	13.8	I	2.0	0.10	I	2.0	0.10	I
I	A-B	I	37.2	24.8	I			I			I
I	A-C	I	206.5	137.6	I			I			I
I	ALL	I	412.9	275.3	I	2.8	0.01	I	2.8	0.01	I

* 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 RUN*****

SLOPES AND INTERCEPT

(NB:Streams may be combined, in which case capacity will be adjusted)

I	Intercept For	Slope For Opposing	Slope For Opposing	I
I	STREAM B-C	STREAM A-C	STREAM A-B	I
I	745.00	0.27	0.11	I

I	Intercept For	Slope For Opposing	Slope For Opposing	Slope For Opposing	Slope For Opposing	I
I	STREAM B-A	STREAM A-C	STREAM A-B	STREAM C-A	STREAM C-B	I
I	615.71	0.27	0.11	0.17	0.38	I

I	Intercept For	Slope For Opposing	Slope For Opposing	I
I	STREAM C-B	STREAM A-C	STREAM A-B	I
I	748.50	0.27	0.27	I

(NB These values do not allow for any site specific corrections)

TRAFFIC DEMAND DATA

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

.Demand set: Plot 3 Wrexham Bryn Lane New Access Demand Set

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

LENGTH OF TIME PERIOD - 90 MIN.
 LENGTH OF TIME SEGMENT - 15 MIN.

.DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

I	ARM	NUMBER OF MINUTES FROM START WHEN				RATE OF FLOW (VEH/MIN)				I					
		I	FLOW STARTS	I	TOP OF PEAK	I	FLOW STOPS	I	BEFORE		I	AT TOP	I	AFTER	
I	I	TO RISE	I	IS REACHED	I	FALLING	I	PEAK	I	OF PEAK	I	PEAK	I		
I	I	I	I	I	I	I	I	I	I	I	I	I	I		
I	ARM	A	I	15.00	I	45.00	I	75.00	I	2.04	I	3.06	I	2.04	I
I	ARM	B	I	15.00	I	45.00	I	75.00	I	0.64	I	0.96	I	0.64	I
I	ARM	C	I	15.00	I	45.00	I	75.00	I	2.81	I	4.22	I	2.81	I

.Demand set: Plot 3 Wrexham Bryn Lane New Access Demand Set

I		I	TURNING PROPORTIONS						I				
I		I	TURNING COUNTS						I				
I		I	(PERCENTAGE OF H.V.S)						I				
I			-----										
I	TIME	I	FROM/TO	I	ARM	A	I	ARM	B	I	ARM	C	I
I	16.45 - 18.15	I		I		I		I		I		I	
I		I	ARM	A	I	0.000	I	0.000	I	1.000	I		I
I		I			I	0.0	I	0.0	I	163.0	I		I
I		I			I	(0.0)	I	(10.0)	I	(10.0)	I		I
I		I			I		I		I		I		I
I		I	ARM	B	I	0.569	I	0.000	I	0.431	I		I
I		I			I	29.0	I	0.0	I	22.0	I		I
I		I			I	(10.0)	I	(0.0)	I	(10.0)	I		I
I		I			I		I		I		I		I
I		I	ARM	C	I	0.991	I	0.009	I	0.000	I		I
I		I			I	223.0	I	2.0	I	0.0	I		I
I		I			I	(10.0)	I	(10.0)	I	(0.0)	I		I
I		I			I		I		I		I		I

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA
DEFAULT PROPORTIONS OF HEAVY VEHICLES ARE USED

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR COMBINED DEMAND SETS
AND FOR TIME PERIOD 2

I	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)	I
I	16.45-17.00										I
I	B-C	0.28	10.61	0.026		0.00	0.03	0.4		0.10	I
I	B-A	0.36	8.30	0.044		0.00	0.05	0.7		0.13	I
I	C-A	2.80									I
I	C-B	0.03	10.78	0.002		0.00	0.00	0.0		0.09	I
I	A-B	0.00									I
I	A-C	2.05									I

I	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)	I
I	17.00-17.15										I
I	B-C	0.33	10.48	0.031		0.03	0.03	0.5		0.10	I
I	B-A	0.43	8.10	0.054		0.05	0.06	0.8		0.13	I
I	C-A	3.34									I
I	C-B	0.03	10.67	0.003		0.00	0.00	0.0		0.09	I
I	A-B	0.00									I
I	A-C	2.44									I

I	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)	I
I	17.15-17.30										I
I	B-C	0.40	10.29	0.039		0.03	0.04	0.6		0.10	I
I	B-A	0.53	7.83	0.068		0.06	0.07	1.1		0.14	I
I	C-A	4.09									I
I	C-B	0.04	10.52	0.003		0.00	0.00	0.1		0.10	I
I	A-B	0.00									I
I	A-C	2.99									I

I	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)	I
I	17.30-17.45										I
I	B-C	0.40	10.29	0.039		0.04	0.04	0.6		0.10	I
I	B-A	0.53	7.83	0.068		0.07	0.07	1.1		0.14	I
I	C-A	4.09									I
I	C-B	0.04	10.52	0.003		0.00	0.00	0.1		0.10	I
I	A-B	0.00									I
I	A-C	2.99									I

I	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)	I
I	17.45-18.00										I
I	B-C	0.33	10.48	0.031		0.04	0.03	0.5		0.10	I
I	B-A	0.43	8.10	0.054		0.07	0.06	0.9		0.13	I
I	C-A	3.34									I
I	C-B	0.03	10.67	0.003		0.00	0.00	0.0		0.09	I
I	A-B	0.00									I
I	A-C	2.44									I

I	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)	I
I	18.00-18.15										I
I	B-C	0.28	10.61	0.026		0.03	0.03	0.4		0.10	I
I	B-A	0.36	8.30	0.044		0.06	0.05	0.7		0.13	I
I	C-A	2.80									I
I	C-B	0.03	10.78	0.002		0.00	0.00	0.0		0.09	I
I	A-B	0.00									I
I	A-C	2.05									I

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1
18.15	0.0

QUEUE FOR STREAM C-B

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND	* QUEUEING * * DELAY *	* INCLUSIVE QUEUEING * * DELAY *
(VEH)	(VEH/H)	(MIN)	(MIN/VEH)
B-C	30.3	3.0	0.10
B-A	39.9	5.2	0.13
C-A	306.9		
C-B	2.8	0.3	0.09
A-B	0.0		
A-C	224.4		
ALL	604.3	8.5	0.01

* 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.