

12

TRAFFIC AND TRANSPORTATION



12 TRAFFIC AND TRANSPORTATION

12.1 INTRODUCTION

12.1.1 GENERAL

This Chapter of the Environmental Impact Assessment Report (EIAR) provides an assessment of the traffic and transportation impacts of the Hudson Brothers Ltd (HBL) Kildare quarry (the 'Site'), an application under Section 37L of the Planning and Development Act, as amended, for continuation and extension of quarrying activities at the Site, in the townlands of Athgarrett, Philipstown and Redbog Co. Kildare.

12.1.2 TECHNICAL SCOPE

The technical scope of this assessment is to consider the potential impacts and effects that activities of the Proposed Development (as detailed in Chapter 2.0, Project Description) may have traffic and transport infrastructure.

This chapter will examine the potential traffic implications associated with the operations at the Site in terms of integration in the area and local roads network during the operational stages of the Proposed Development.

This assessment will determine and quantify the extent of trips generated by the Proposed Development, and the impact on operational performance of these trips on the local road network.

Works being undertaken during the restoration phase will consist of operations internally within the Site and therefore associated traffic and HGV movements will be negligible. As such, assessment of the restoration phase has been scoped out.

12.1.3 GEOGRAPHICAL AND TEMPORAL SCOPE

The geographical extent of this study for the assessment covers the area within the EIA boundary (Site) the connected existing road network to be utilised by the Proposed Development's activities.

The temporal scope of the assessment covers current 'baseline conditions' of the Site and draws on available historical information and a recent traffic survey. The assessment aims to establish the baseline conditions at the Site and then assess what impacts the proposed extension of quarrying activities will have on the Site and surrounding traffic and transport.

Under the current programme of the Proposed Development, the extraction phase will last for 13 - 15 years, which will provide for fluctuations in market demands for the aggregate extracted from the Site. The duration of the extraction phase is therefore classified as 'medium-term' by the Environmental Protection Agency's (EPA) 2022 'Guidelines on the information to be contained in environmental impact assessment reports'.

12.2 GUIDANCE AND PRIMARY SOURCES OF INFORMATION

In preparing this assessment, reference has been made to the following documents:

- "Traffic and Transport Assessment Guidelines" (May 2014) published by Transport Infrastructure Ireland (TII);
- Unit 5.3 (Travel Demand Projections) of the "Project Appraisal Guidelines" (2019) published by TII;

- Traffic count data, TII Count Sites “TMU N81 040.0 N N81” and “TMU N81 010.0 S”, (<https://trafficdata.tii.ie/publicmultinodemap.asp>)
- Traffic Count Data, collected by IDASO Ltd on Thursday 16th November 2023 – included in Appendix A;
- Project Appraisal Guidelines for National Roads Unit 5.3 – Travel Demand Projections, PE-PAG-02017 (2021) Published by TII;
- Unit 16.1 (Expansion Factors for Short Period Traffic Counts) of the “Traffic Appraisal Guidelines” (2016) published by TII;
- TII publications document DN-GEO-03031, “Rural Road Link Design” (June 2017 published by TII);
- TII publications document DN-GEO-03060 “Geometric Design of Junctions (priority junctions, direct accesses, roundabouts, grade-separated and compact grade-separated junctions)” (June 2017) published by TII;
- Golder Associates Ireland Ltd, ‘Further Information Response (Planning Ref. 20/532)’; and
- EPA’s Guidelines on the Information to be Contained in EIARs (EPA, 2022).

12.3 ASSESSMENT METHODOLOGY AND SIGNIFICANCE CRITERIA

The methodology adopted for this appraisal and report involved, in brief:

- Review of previous Traffic and Transport Assessment reports;
- Trip Generation and Trip Assignment – This has been used to derive the expected increase in vehicle trips associated with the continued operation of the site. The analysis undertaken has estimated the trip generation of the site over a 12 hour period, based on historic and projected tonnage of quarry materials excavated. Trip assignment has been determined by existing traffic movements at the site access junction;
- Link Capacity Assessment – To obtain an Annual Average Daily Traffic (AADT) value for the N81 national road and to compare this against standard traffic volume levels on a similar type of road in order to compare the existing traffic on the roads network in the area and define how large of an impact quarry operation will have;
- Localised Junction Modelling – assess the expected performance of the junction associated with the expected increase in quarry traffic in terms of both capacity and queueing as resulting from continued operation; and
- Determination of final significance of impacts in accordance with criteria in the EPA’s Guidelines on the Information to be Contained in EIARs.

12.3.1 ASSUMPTIONS

- Where historical information is not available, assumptions have been made as per the 2007 TTA and 2020 review;
- Extracted Pit Material Trips (Expits) are assumed to be distributed on the basis of the Client assumptions – 78.6% to the north and 21.4% to the south;
- Vehicles used for material transport are assumed as a worst case, being 5 axle hauling vehicles with capacity for 25 tonnes of material due to impact on roads maintenance scheduling by roads authorities;
- Hours of operation are assumed to be 07:00 to 18:00 Monday to Friday and 07:00 to 13:00 Saturday;

- Trips generated are assumed as evenly spread across the year and evenly throughout the day;
- Direct Employee Staff as per Spreadsheet provided by HBL in November 2023;
- Miscellaneous (5) and Contract Staff Trips (26 Contract Staff) as per 2020 traffic review undertaken by client in 2020;
- Staff trips have been captured within the 2023 traffic survey;
- It is assumed for the sake of conservative estimation, that all trips generated are as per the latest information sourced from the 2023 survey and latest information from the client;
- For traffic growth, WSP has assumption is from TII Publications Unit 5.3 – Travel Demand Projections, PE-PAG-02017¹: Central Growth, HV, on basis of location and N81 National Route, Higher value to ensure potential impact maximised.

12.4 BASELINE CONDITIONS

The Site is on lands at Athgarrett, Philipstown and Redbog, Co. Kildare, along the Kildare/Wicklow border. Access to the Site is via the N81 National Road, and through the HBL Wicklow site, to the southeast. Regionally, the nearest town is Blessington, which is located approximately 2 km to the south of the Site. Beyond this there are several other small towns and the suburbs of Dublin.

Three main land uses have been identified surrounding the Site, these are agricultural and single-house residential lands, the R410 road and other quarry operations. The lands to the north and west can be characterised as rural in nature, with land uses in the area being agricultural and single-house residential. The R410 road passes through the 500 m buffer to the southwest of the Site and the lands immediately to the east and south of the Site are largely taken up by quarrying activities operated by unrelated parties.

The activity at the Site involves the extraction of both rock (greywacke) and sand and gravel by dry excavation techniques. The continuation of quarrying proposed to maintain the practices on Site.

The excavated sands and gravels are washed, screened, and processed through a fixed closed-circuit aggregate processing plant, located in the eastern part of the Site. Processed sand and gravel are stockpiled adjacent to the aggregate plant prior to being transported to market by road going trucks.

The excavated rock material is processed on the quarry floor by mobile crushing, screening, and associated plant before being stockpiled into specific graded aggregate stockpiles. Crushed rock aggregate was transported to market by road going trucks.

Vehicles travelling to/from the HBL Quarry travel via the access road highlighted in black in Figure 12-1, below. Access and egress to both quarries are provided to the N81 national road in Co. Wicklow.

¹ <https://www.tiipublications.ie/library/PE-PAG-02017-03.pdf>

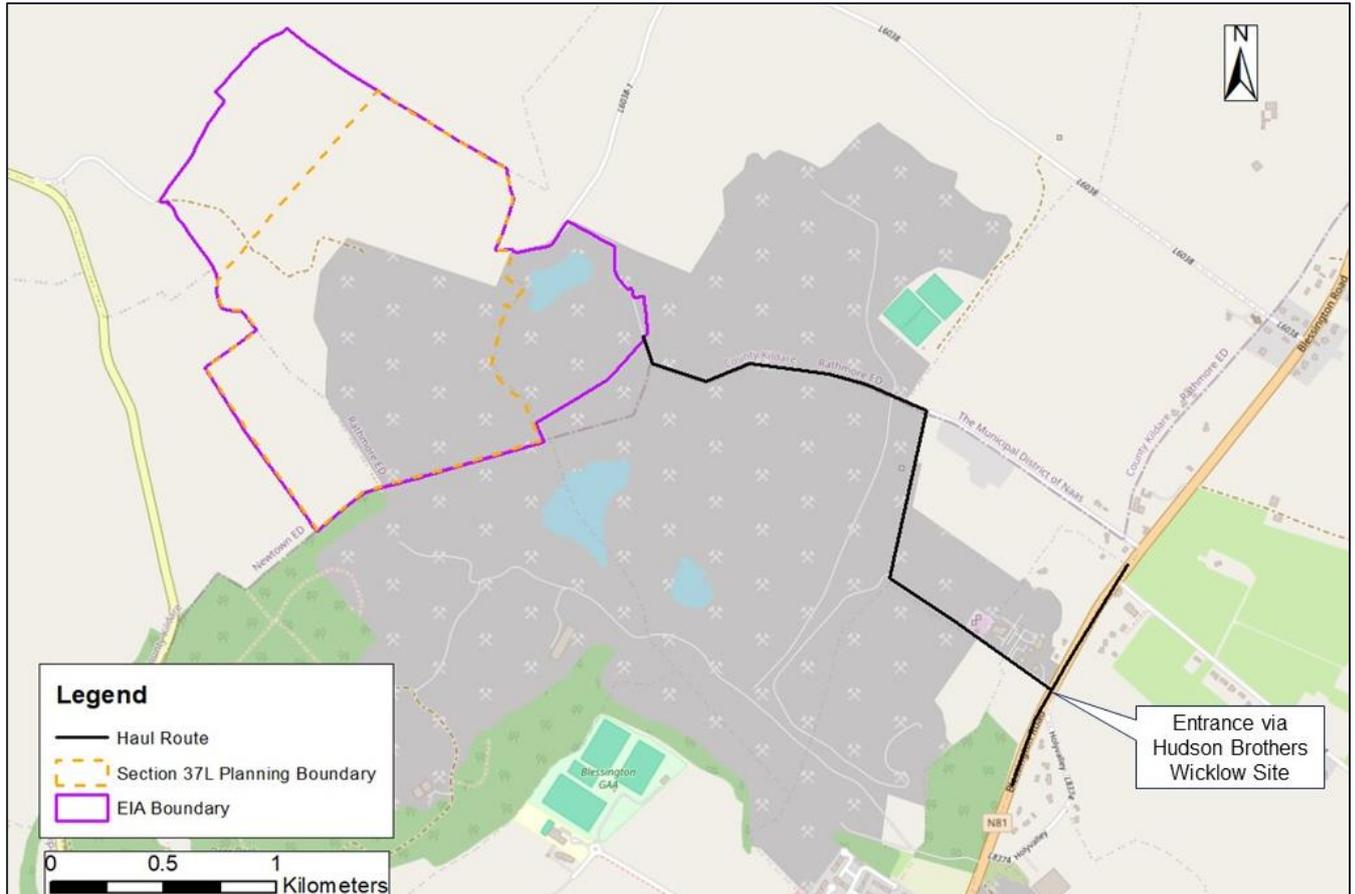


Figure 12-1 - Site location plan showing haul route.



Figure 12.2 – Site Access on N81



Figure 12.3 – N81 Looking South from Quarry Access



Figure 12.4 – L8373 Looking towards N81

12.4.1.1 The N81

The N81 is a National Secondary Road, approximately 77km in length, travelling north-to-south from its junction with the M50 motorway (Junction 11) on the outskirts of Dublin to its junction with the N80 in Clish, Co. Carlow.



The N81 provides dual carriageway standard from its junction with the M50 motorway for approximately 4 km (which includes the Tallaght bypass). Beyond this, the N81 is single carriageway road subject to the national speed limit. At its junction with the access to the HBL Wicklow site, the N81 is a two-way single carriageway road with lane widths of approximately 5.5 m and a hard strip of approximately 0.5 m width on both sides of the carriageway. The N81 also provides a right turn lane for south bound vehicles entering the quarry. Additionally, a footpath is provided on the eastern side of the N81 which extends southwards where it terminates at the L8373, opposite the quarry access. The footpath provides access for pedestrians to a bus stop on the eastern side of the N81, however, no pedestrian crossing is located in this vicinity.

12.4.1.2 The L8373

The quarry access is located on the opposite side of the N81 to the L8373 local road. The L8373 is a single carriageway road, approximately 5 metres wide, subject to a 50 km/h speed limit. The road has no hard shoulder or hard strip facility on either side of the carriageway. The L8373 provides access to several residential properties before connecting back to the N81 further south of the quarry access.

12.4.1.3 Vehicles Transporting Extracted Material

Aside from general traffic accessing the Site, the only vehicles assumed to be normally accessing site are those carrying materials away from the site, assumed to be OGV Class 2 vehicles with 5 axles, capable of transporting 25 tonnes per trip – this is to assume a worst case with regards to roads maintenance planning.

12.4.2 ROAD ACCIDENT DATA

WSP has attempted to collate road traffic collision (RTC) information from the Road Safety Authority (RSA) and TII websites. However, both authorities are in the process of reviewing their RTC data sharing policies and procedures. Record-level RTC data can't be shared until this review is complete and, as such, up to date traffic accident data is currently unavailable.

12.4.3 TRAFFIC VOLUMES

A 12-Hour classified turning count was carried out on Thursday 16 of November 2023, at the N81/L8373/Quarry Access crossroads junction. The count took place between the hours of 07:00 and 19:00 hours, with this time period encompassing the hours of operation of the quarry for material transportation purposes. The time period also encompasses the peak hours on adjacent roads network. Surveyed vehicles were broken down into seven categories as follows:

1. Pedal cycles;
2. Motorcycles;
3. Cars;
4. LGV (Light Goods Vehicles);
5. OGV1 (Two and Three Axle Goods Vehicles);
6. OGV2 (Four and Five Axle Goods Vehicles);
7. Buses.

These figures were factored to give Passenger Car Units (PCUs) by the survey company, utilising industry standard conversion factors.



The detailed results of the Traffic Survey are summarised in Appendix 12B, and a summary of the results has been provided in Table 12.1. The morning and evening peak hours have been established as follows: N81/L8373/Quarry Access crossroad junction – 07:15 to 08:15 (AM Peak) and 16:45 – 17:45 (PM Peak).

Table 12.1 – AADT At Junction – N81/L8373/Local Quarry Access – in Passenger Car Units (PCU)

Hour Ending	N81 (N)	L8373	N81 (S)	Access Road to Quarry
08:00	1,221.4	2	1,172.5	81.9
09:00	1,061.1	6	1,032.1	79.4
10:00	976.7	9.9	904.2	107.2
11:00	729	8	703.8	77
12:00	693	15.5	640.7	93
13:00	752.3	26	698.8	86.5
14:00	768.4	9.3	747.1	71.8
15:00	895.4	11	845.5	90.1
16:00	882.8	4	843.9	76.7
17:00	1,057.9	3	1,033.4	85.3
18:00	1,064.5	4	1,061.5	32.2
19:00	902.5	3	900.2	20.3
Period Total	11,005	101.7	10,583.7	901.4
Period Total HGV	1,948.8	22.1	1,545.7	574.4
% HGVs	17.71%	21.73%	14.60%	63.72%
Total AADT	14,293	132	13,746	1171

12.4.4 LOCAL ROADS IMPROVEMENTS PLANNED IN AREA

No specific roads improvement schemes have been identified in the area of the quarry access onto the N81 as per Kildare County Council Development Plan 2017 – 2023 or the 2021 – 2023 Capital Programme.

12.4.5 TRIP GENERATIONS

12.4.5.1 Quarry Operational Movements

No change in operational times is proposed as part of this application, current operational times are:



- Excavation and processing of material between 0800 hours and 1800 hours, Monday to Friday and between 0800 hours and 1300 hours on Saturdays.
- Loading and transporting of processed material between 0700 hours and 1800 hours: Monday to Friday and between 0700 hours and 1300 hours on Saturdays.
- No activities on Sundays or public holidays

As such, transportation from the quarry is proposed to take place a total of 61 hours per week.

The average rate of extraction (dependent on market conditions) has been provided in Chapter 2.0 (Project Description). These estimates are based on a 5.5 day working week operating for 50 weeks a year and a production rate of ca. 12,796 tonnes per week for sand and gravel, and ca. 7,540 tonnes per week for rock, provides an estimated extraction tonnage of ca. 639,794 tonnes per year for sand and gravel, and ca. 376,989 tonnes per year for rock. The total approximate annual extraction of is estimated to be ca. 1,016,483 tonnes with a life of operations of ca. 13 years (depending on market conditions). This 13 year life-of-quarry requirement is proposed over a period of 13 to 15 years to reflect the potential external market effects and volatility in the construction industry.

The distribution of trips generated by the development have been provided by HBL including a split of vehicle direction on the N81 – approximately 78.66% northbound and approximately 21.34 % southbound.

In determining the rate of extraction, the daily traffic volumes associated with the export of material with regards the average number of loads per day from the site has been calculated for each year, based on the assumptions as set out above.

12.4.5.2 Staff Trips

There are 46 full time staff working at the quarry (as per figures provided by HBL) and, it is assumed based on prior staff survey information, up to 26 contracted drivers (as per past surveys) that work to provide additional cover during periods of high demand. In determining the number of trips generated by staff, it is assumed that most staff will work at the site simultaneously and will arrive during the morning peak hour, also leave during the evening peak hour. Lunch related trips are assumed to be distributed throughout the central part of the day. It is assumed that these trips have been captured as part of the November 2023 traffic survey.

12.4.5.3 Miscellaneous Trips

The trips generated aside from staff and material transport are captured within the traffic survey data and it is not expected that these will increase as part of continued operations at the Site. These miscellaneous trips allow for fuel, operations, meetings, site inspections etc. To allow for a correct assessment, it is assumed that these journeys are also included in the background survey traffic figures.

12.4.5.4 Derived Trip Rate

The total daily trips associate with the quarry operation includes the figures detailed in Table 12.2 and are as follows:



Table 12.2 – AADT At Junction – N81/L8373/Local Quarry Access

	2024	2029	2039
Extraction rate- tonnes per year	1,016,483	1,016,483	1,016,483
Tonnes per week (50 weeks per year)	20,330	20,330	20,330
Loads per week (25 tonnes per load)	813.19	813.19	813.19
Loads per hour (61 hours per week)	13.33	13.33	13.33
Loads per day (Weekday 11 hours)	146.64 (147)	146.64 (147)	146.64 (147)
Trips per day (2 trips per load, in and out)	294 trips per day	294 trips per day	294 trips per day

12.4.6 TRIP DISTRIBUTION

HBL provided distribution data based on their own knowledge of deliveries of materials off site and their destinations. This information was used to obtain a percentage split of 78.66% of trips via the N81 north and 21.34% of trips via the N81 south, with no trips via the L8373.

Total distribution of the development traffic is detailed in Table 12.3:

Table 12.3 – Trip Distribution 2024 to 2039

	2024	2029	2039
Generated Trips, N81 N	186	186	186
Percentage uplift of trips to N81 N	1.24%	1.05%	0.89%
Baseline Trips, N81 N.	15,017	17,681	20,955
Baseline N81 N plus Trips Generated	15203	17867	21140
Generated Trips, N81 S	50	50	50
Percentage uplift of trips to N81 S	0.35%	0.30%	0.25%
Baseline Trips, N81 S.	14314	16876	20024
Baseline N81 S plus Trips Generated	14365	16927	20075
Generated Trips, L8373	0	0	0
Percentage uplift of trips to L8373	0.00%	0.00%	0.00%
Baseline Trips, L8373	137	162	192
Baseline L8373 plus Trips Generated	137	162	192

Generated Trips, Access Rd	236	236	236
Percentage uplift of trips to Access Rd	16.26%	14.14%	11.64%
Baseline Trips, Access Rd	1451	1669	2028
Baseline Access Rd plus Trips Generated	1687	1905	2264

As data provided by the client based on records of journeys to client locations for material delivery, 78.66 % of the traffic approaches from the north on the N81 while 21.34% approaches from the south on the N81. When leaving the site, the traffic uses the assumed split, 80% to the north on N81 and 20% to the south on the N81. No site related traffic utilises the L8373 side road. These splits have been displayed in Figure 12.6. It is assumed that all other trips generated by staff follow the same pattern, and these trips are included in the traffic and turning survey data.

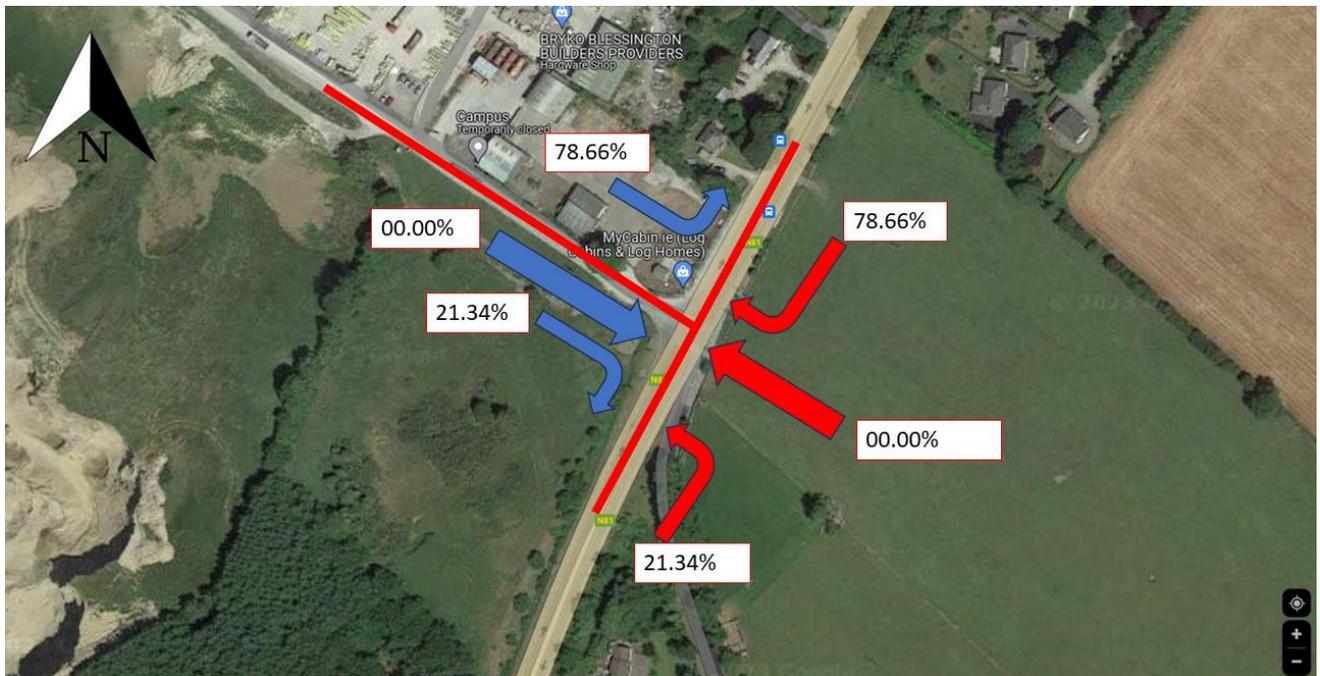


Figure 12.5 – Assignment of Quarry Development Traffic throughout the network

12.4.7 SCOPE OF ASSESSMENT

The proposed continuation of quarry operations will result in an increased traffic volume at the junction of the quarry access with the N81 national road. There is a maximum uplift of 24.20% on the quarry access compared to 2024 traffic levels, which drops to 16.18% against 2039 traffic levels in comparison. On the N81, the maximum impact is in the northern arm of the junction, with 1.44% uplift compared to 2024 traffic levels, dropping to an impact of 1.03% against 2039 traffic levels.

Section 2.1 of the “Traffic and Transport Assessment Guidelines” published by TII recommends that a traffic assessment should cover all of the roads and junctions where the quarry traffic exceeds 10% of the existing or background traffic, or 5% in congested or other sensitive locations, including junctions with national roads.

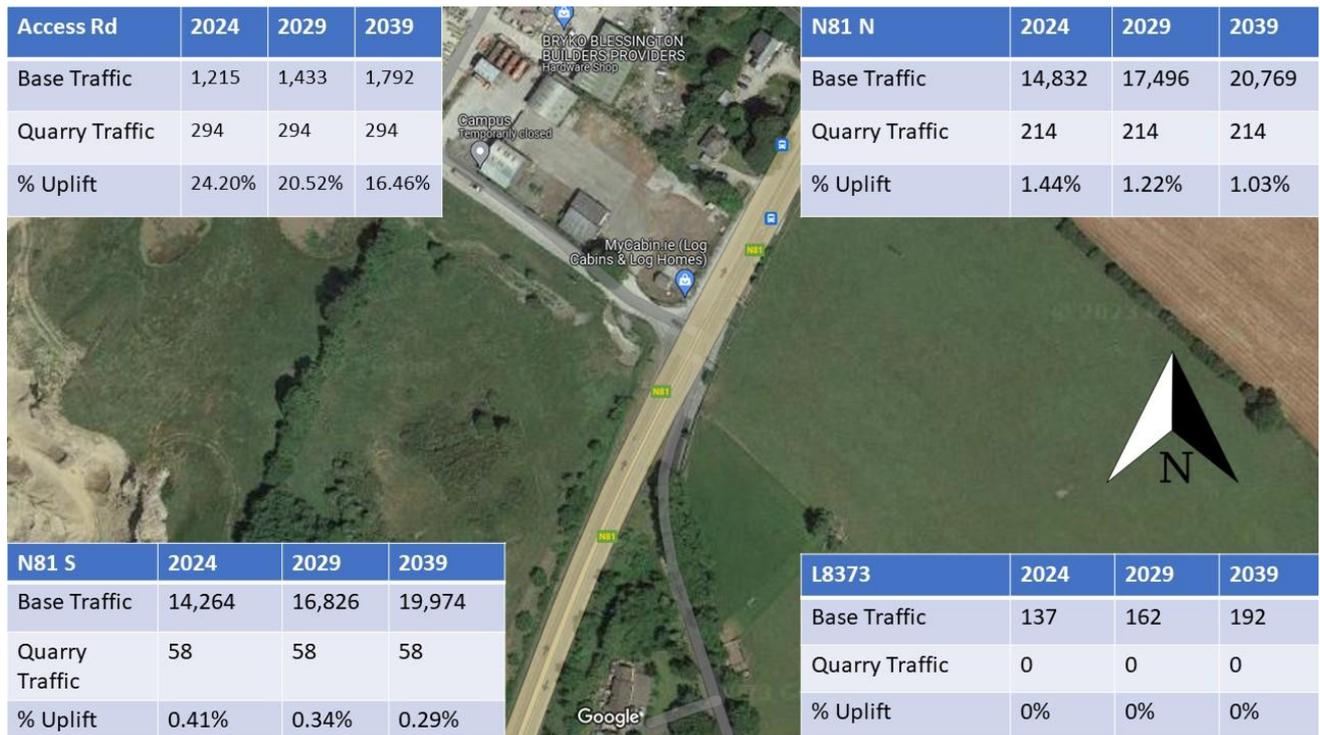


Figure 12.6 – Development traffic as part of the background traffic volumes

Figure 12.7 shows that while the additional traffic generated by the continuous operation of the quarry does not exceed 5% or 10% of the traffic on the N81 – it increases the amount of traffic using the local access road by 15 to 25%, and as a result, the assessment shall undertake a full capacity analysis of the junction by use of a PICADY analysis.

12.5 POTENTIAL EFFECTS

12.5.1 ROAD IMPACTS

Whilst this assessment has been structured with reference to projected travel figures, it should be noted that due to COVID-19, there was a substantial reduction in traffic on the roads network in 2020 and 2021. Examination of TII Counter sites on the N81 indicate traffic values returning to near pre-COVID-19 levels as of November 2023.

12.5.1.1 Assessment years

The “Traffic and Transportation Assessment guidelines” published by TII recommend the assessment of traffic in the initial year of operation (2024), for the Opening Year +5 years (2029) and the Opening Year +15 years (2039).

12.5.1.2 Traffic Growth

Traffic Growth has been utilised as per Table 6.2 of TII Guidance – “Project Appraisal Guidelines for National Roads, Unit 5.3 – Travel Demand Projections.”

12.5.1.3 Link Capacity Assessment

When assessing the link capacity of a road, a Level of Service D has been chosen, according to TII Publications document DN-GEO-03031 “Rural Link Road Design, Table 6.1,” it is at this level that,



“speeds begin to decline slightly with slight increase of flows and density begins to increase somewhat more quickly. Freedom to manoeuvre within the traffic stream is more noticeably limited, and the driver experiences reduced comfort levels.”

N81 National Road

The capacity of the N81 has been assessed in accordance with the TII Publications document DN-GEO-03031 “Rural Link Road Design.”

The ‘Road Type’ selected for the N81, which best describes the road layout at the site location is a “Type 1 Single Carriageway” in accordance with this publication, which represents a 7.3 m wide carriageway with 2.5 m hard shoulders, which minimises the number of accesses to avoid standing vehicles and minimise turning movements. The maximum AADT for a road of this type is 11,600.

The N81 Has a paved carriageway width of 12 m and a pedestrian footpath on its eastern site in the vicinity of the quarry. The forecast two-way AADT for the final forecast year (2024) is 13689 on the northern arm of the junction and 14036 on the southern arm.

Table 12.4 – Combined AADT for Assessment Years 2024, 2029 and 2039, N81 South of Site Access – Vehicle Numbers – Two Way Traffic on Junction Arm

AADT Forecast for Future Years	2024	2029 (+ 5 Years)	2039 (+15 Years)
Background Traffic	14,314	16,876	20,024
Quarry Traffic	50	50	50
Combined Traffic (Background & Quarry)	14,365	16,927	20,075
Quarry Traffic as Percentage of Overall Traffic	0.34%	0.30%	0.25%

Table 12.5 – Combined AADT for Assessment Years 2024, 2029 and 2039, N81 North of Site Access – Vehicle Numbers – Two Way Traffic on Junction Arm

	2024	2029 (+ 5 Years)	2039 (+ 15 Years)
Background Traffic	15,017	17,681	20,955
Quarry Traffic	186	186	186
Combined Traffic (Background & Quarry)	15,203	17867	21,140
Quarry Traffic as Percentage of Overall Traffic	1.22%	1.04%	0.88%



Tables 12.4 and 12.5 indicate that in 2024, the N81 is operating above capacity – as per the 2023 Traffic Survey. Due to COVID-19, a drop in traffic volumes has been noticed on TII traffic counters (TMU N81 010 S and TMU N81 040.0 N) in 2020 and 2021, with traffic levels appearing to be currently returning to pre covid levels. It is noted that the capacity threshold for Level of Service D for a ‘Type 1 Single Carriageway’ as described in TII Publication DN-GEO-03031 ‘Rural Link Design’ is 11,600 passenger car units.

It is of note that northbound on the N81, in 2024, the traffic generated is equivalent to 1.22%, dropping to 0.88% in 2039 as the baseline traffic increases. Southbound N81 impact similarly decreases from 0.34% to 0.25% in the same respective period. The relatively low impact of the traffic generated is therefore not classed as consequential to network operations due to being below 5%.

L8373 Local Road

The capacity of the L8373 has been assessed in accordance with the TII Publications document DN-GEO-03031, “Rural Road Link Design.”

The ‘Road Type’ selected for the road, which best describes the road layout, is a ‘Type 3 Single Carriageway’ in accordance with the above publication, which represents a 6.0m wide carriageway with 0.5m hard strips, cycle facilities and footways which minimises the number of direct accesses, incorporates simple priority junctions with other local roads and priority roads with ghost islands where necessary or roundabouts with major roads. The maximum AADT for this type of road at Level of Service D is 5,000.

The L8373 has a carriageway width of 5 m and it is noted that there are no footpath or cycle facilities on this road. The forecast two-way AADT for this roadway (2024) is 60. This will be compared against the new survey data for confirmation. It is well below the maximum acceptable value, and this road is deemed as having sufficient capacity for this time period.

Table 12.6 – Combined AADT for Assessment Years 2024 - 2039, L8373

AADT Forecast for Future Years	2024	2029 (+ 5 Years)	2039 (+ 15 Years)
Background Traffic	137	162	192
Quarry Traffic	0	0	0
Combined Traffic (Background & Quarry)	137	162	192
Quarry Traffic as Percentage of Overall Traffic	0.00%	0.00%	0.00%
Quarry Traffic as Percentage of Overall Traffic	137	162	192



12.5.1.4 Junction Capacity Analysis

WSP has carried out an initial assessment of the existing junction using the industry standard Junctions 9 program. Junctions 9 provides an indication of the performance of a junction in terms of the Ratio of Flow to Capacity (RFC) and queue length on the approaches to the junction. An RFC value of 0.85 (85%) is considered to indicate a junction which is operating within capacity.

Junction capacity is measured as a RFC. The capacity analysis has been carried out for the peak operational hours for traffic, with assessment years of 2024, 2029 and 2039. A rural junction with an RFC of below 0.85 is considered to be operating within capacity, and an RFC of 0.85 or above indicates a junction operating at or over capacity.

The detailed junction capacity analysis output for the analysed junction, for each of the assessment years, is included with this report, in Appendix 12C.

N81/L8373/Quarry Access Crossroads

The existing N81/L8373/Quarry Access junction has been assessed using Junctions 9. The results of the assessment of the 2024, 2029 and 2039 Base traffic plus quarry development traffic summarised in Table 12.7, Table 12.8 and Table 12.9. Full modelling results are included within Appendix 12C.

Table 12.7 – Junction Capacity Analysis Results for the N81/Quarry Access/L8373 Junction – 2024

	AM Peak – 07:15 – 08:15		PM Peak – 16:45 – 17:45	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2024 (Without Quarry)				
Quarry Access	0.20	0.14	0.10	0.07
N81 North (Right Turn)	0.00	0.03	0.00	0.01
L873	0.00	0.00	0.00	0.00
N81 South (Right Turn)	0.00	0.00	0.00	0.00
2024 (With Quarry)				
Quarry Access	0.20	0.14	0.07	0.10
N81 North (Right Turn)	0.10	0.09	0.06	0.10
L873	0.10	0.10	0.11	0.00
N81 South (Right Turn)	0.00	0.00	0.00	0.00



Table 12.8 – Junction Capacity Analysis Results for the N81/Quarry Access/L8373 Junction + 5 years – 2029

	AM Peak – 07:15 – 08:15		PM Peak – 16:45 – 17:45	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2029 (Without Quarry)				
Quarry Access	0.30	0.21	0.10	0.10
N81 North (Right Turn)	0.00	0.05	0.00	0.04
L873	0.00	0.00	0.00	0.00
N81 South (Right Turn)	0.00	0.00	0.00	0.00
2029 (With Quarry)				
Quarry Access	0.30	0.22	0.10	0.10
N81 North (Right Turn)	0.10	0.11	0.10	0.07
L873	0.10	0.12	0.20	0.1
N81 South (Right Turn)	0.00	0.00	0.00	0.00

Table 12.9 – Junction Capacity Analysis Results for the N81/Quarry Access/L8373 Junction - +15 years – 2039

	AM Peak – 07:15 – 08:15		PM Peak – 16:45 – 17:45	
	Queue (PCU)	RFC	Queue (PCU)	RFC
2039 (Without Quarry)				
Quarry Access	0.50	0.35	0.20	0.14
N81 North (Right Turn)	0.10	0.07	0.00	0.03
L873	0.00	0.00	0.00	0.00
N81 South (Right Turn)	0.00	0.00	0.00	0.00
2039 (With Quarry)				
Quarry Access	0.60	0.39	0.20	0.14
N81 North (Right Turn)	0.20	0.15	0.10	0.08
L873	0.20	0.14	0.20	0.18
N81 South (Right Turn)	0.00	0.00	0.00	0.00



12.5.1.5 Assessment of Significance – Road Impacts

Link capacity analysis was carried out on the N81 national road and the L873 local road within the vicinity of the quarry. It was determined that the L873 continued to operate within capacity for the time period of 2024 to 2039. The N81 historically has been operating over capacity. Checks against TII count sites on the N81 – specifically sites TMU N81 010.0 S (N81 between Blessington and Tallaght, South of R114 Jn, Co. Wicklow) and TMU N81 040.0 N N81 Between Hollywood and Baltinglass, Donard, Co. Wicklow) have demonstrated a significant drop in actual baseline traffic – likely due to COVID-19 lockdowns. On this basis, it is apparent that traffic figures are only now normalising, and the traffic impact has been lower in comparison to the assumptions made in the PMCE 2020 TTA.

Junction Capacity Analysis was undertaken at the junction of the N81 and the local access road to the quarry. The results of the Junction Capacity Analysis indicate that the access is operating within capacity for the time period 2024 – 2039.

The effect of operational traffic from the Proposed Development during the assessment periods is considered to be ‘Imperceptible’ or ‘An effect capable of measurement but without significant consequences’, (EPA, 2022). As such road impacts of the Proposed Development are ‘Not Significant’.

12.5.2 ROAD SAFETY

12.5.2.1 Site Access

Currently, there are no road markings or signage at the quarry access to indicate a priority junction. A stop sign and road markings are proposed be installed to before entering the N81 carriageway. As per the recommendation of the 2020 RSA Stage 1 and 2, it is not proposed to place any road signs on the N81 to identify the quarry access road. As the Section 37L application may only propose future development of a quarry as a quarry it is proposed that the aforementioned markings and signage would be proposed under separate permission.

Similarly, a drainage scheme has been designed previously for the access road – to ensure management of any excess surface water flow onto the access road, or from the road access onto adjacent land – this was included in previous transport and traffic correspondence with Kildare County Council, the design is included in Appendix 12E.

It is noted that there is an existing dust reduction system extant on the access road, on the quarry side of the weigh bridge.

12.5.2.2 Sightlines and Visibility

The entrance to the quarry is via a local access road on the western side of the N81. Traffic travelling on the N81 has priority over traffic entering or exiting the site. The posted speed limit for the N81 at this location is 100 kph.

Sightlines have been assessed against Section 5.6.3 of TII Publications document DN-GEO-03060, which requires 215m of unobstructed visibility (where the design speed is 100 kph), viewed from a point 3m back from the edge of the carriageway. It should be noted that in the 2007 TTA, the then NRA standards required a point 4.5 metres back from the edge of major road on the minor arm, and this was also achieved. Road geometry has not changed since then, and the conditions remain unchanged, meaning visibility requirements are satisfied.



The available visibility to the left and to the right exceeds the 215m visibility required for the design speed of 100kph and is deemed to be sufficient for the N81 posted speed limit at this location. The sightlines are illustrated in Appendix 12D of this report.

12.5.2.3 Public Transport

Bus stops are provided within close proximity to the quarry access on the N81. Bus stops identified as 4022 and 4057 are to the north on the N81 within 100 m of the site access. Stops 4055 and 4023, similarly, are within 520m to the south on the N81 road. Best practice for bus stop availability for major developments requires a distance no greater than 400 m where possible. These stops are served by Dublin Bus service route 65 which operates between terminus points in Dublin and Blessington. These bus stops are hardstanding areas with no shelters, hailing poles and raised kerbs, these are hail stops as opposed to scheduled stops.

12.5.2.4 Parking

The quarry employs approximately 46 full-time staff and caters for up to 26 contracted drivers during periods of high demand. There are currently 20 formal parking spaces within the site adjacent to the site offices and a further overflow area for additional parking is also provided. A disabled car parking space (5% requirement as per Kildare County Council Guidance – 1 car parking space in formalised area) can be formally marked up if required. The formal parking provision, combined with the overflow space provides sufficient parking capacity for operations on site. An electric vehicle charging point is to be constructed within the formal car parking area. An electric vehicle charge point is to be built on site adjacent to the site office. Currently demand on parking is eased somewhat by a number of staff car sharing.

12.5.2.5 Pedestrians and Cyclists

A pedestrian footpath is provided on the eastern side of the N81 for approximately 330m between the L8371 and L8373 local roads, linking local residences on the N81 and bus stops. As noted before, no pedestrian crossing facilities are provided across the N81 in the vicinity of the junction. There are areas of hardstanding at the adjacent bus stops on the N81 to the site. Internally to the site, improvements are to be made in order to facilitate movements between formalised car parking area and the site office area – with reduced gradient and appropriate surface material. This is as per the recommendations within the 2020 Stage 1 and 2 Road Safety Audit.

There are no current cycle lanes or other facilities on the N81, nor are there any bespoke cycling facilities on site. It is proposed to construct a covered Sheffield Stand type cycle storage bay adjacent to the site office, with signage on the access road identifying the possibility of cyclists, warning other road users of the hazard. These proposals would be submitted as a separate application.

12.5.2.6 Assessment of Significance – Road Safety

Sightlines have been assessed against Section 5.6.3 of the TII Publications document DN-GEO-03060, which requires a minimum of 215 m of unobstructed visibility (where the design speed is 100 kph) at a point 3.0 metres back from the edge of carriageway. The available visibility exceeds this distance to the left satisfying this requirement. This was confirmed as part of the 2007 Trafficwise Traffic and Transport Assessment.

Between formal parking and overflow parking capacity, there is sufficient parking capacity to allow for staff and visitors to site.



The effect of the Site on road safety of the Proposed Development during the assessment periods is considered to be ‘Imperceptible’ or ‘An effect capable of measurement but without significant consequences’, (EPA, 2022). As such road safety impacts of the Development are ‘Not Significant’.

12.6 CONSIDERATION OF THIRD-PARTY SUBMISSIONS MADE DURING THE HBL 2020 PLANNING APPLICATION (KCC REG. REF.: 20/532)

Following the submission of the 2020 planning application (KCC Reg. Ref.:20/532), a number of third-party submissions were received by KCC. These third party submissions were considered as part of the Further Information response submitted to KCC prior to the invalidation of the application in September 2020. In the compilation of this section these submissions, concerns and points of note have been addressed in this assessment. Table 12.10 below provides a general summary of these submissions, concerns, and details where or how this item has been considered.

Table 11.10 – Third Party Submission Response

Submission Item Summary	Comment
<p>Increase in expected traffic volumes on local roads, prospect of HGVs going through Blessington, and road safety concerns</p>	<p>HGV traffic will follow the established practices and trip distribution for the HBL Quarry. As has been demonstrated in section 11.3.7, northbound traffic amounts to 78.66% of impact on local roads network , with the remainder, 21.34% south bound on the N81 via Blessington.</p> <p>Additionally, this also establishes the percentage impact of the quarry on the N81 southbound at a maximum of 0.41% increase in HGV traffic, reducing over time relative to the baseline traffic conditions.</p> <p>This is not a significant increase in traffic impact.</p>

12.7 MITIGATION MEASURES

Mitigations on site for future operations will include a further planning application for road safety and sustainable active travel measures which should include the following:

- Road markings and stop signage on the access road, approaching the N81. It is not proposed to include warning signs on the N81 itself, as per the 2020 RSA Stage 1 and 2;
- Development of access road drainage as per the 2020 Traffic Audit;
- Footpath routes are to be formalised between parking areas and the site office;
- Electric vehicle charging points should be constructed adjacent to the site office, in accordance with KCC requirements;
- A Sheffield style bicycle stand will be constructed adjacent to the site office, in accordance with KCC requirements; and
- Signage will be erected along the site access route, alerting vehicles of the possible presence of cyclists, in accordance with KCC requirements.



12.8 RESIDUAL EFFECTS

With the employment of the mitigation measures outlined above it considered that there will be no significant residual effects as a result of the Proposed Development.

12.9 CUMULATIVE EFFECTS

Cumulative effects have been considered in the assessment as part of background traffic measured and as part of the AADT for the assessment period.

12.10 MONITORING

Periodic checks of vehicles and internal traffic safety arrangements are undertaken as part of the Site's management. No other monitoring of traffic and transport is recommended.

12.11 DIFFICULTIES ENCOUNTERED

No particular difficulties were encountered in undertaking this assessment of traffic and transport at the Site during the assessment period.

Appendix 12A

TRAFFIC COUNT DATA



Appendix 12B

TRAFFIC SURVEY



Junctions 9

PICADY 9 - Priority Intersection Module

Version: 9.5.1.7462
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Filename: N81_Site Access junction.j9

Path: C:\Users\UKAPS002\Desktop\Hudson Brothers Ltd Quarry - Belfast Work

Report generation date: 22/02/2024 14:08:06

- »N81_L8373_Quarry Access Junction - 2024 (without Quarry), AM
- »N81_L8373_Quarry Access Junction - 2024 (without Quarry), PM
- »N81_L8373_Quarry Access Junction - 2024 (with Quarry), AM
- »N81_L8373_Quarry Access Junction - 2024 (with Quarry), PM
- »N81_L8373_Quarry Access Junction - 2029 (without Quarry), AM
- »N81_L8373_Quarry Access Junction - 2029 (without Quarry), PM
- »N81_L8373_Quarry Access Junction - 2029 (with Quarry), AM
- »N81_L8373_Quarry Access Junction - 2029 (with Quarry), PM
- »N81_L8373_Quarry Access Junction - 2039 (without Quarry), AM
- »N81_L8373_Quarry Access Junction - 2039 (without Quarry), PM
- »N81_L8373_Quarry Access Junction - 2039 (with Quarry), AM
- »N81_L8373_Quarry Access Junction - 2039 (with Quarry), PM

Summary of junction performance

	AM		PM	
	Queue (PCU)	RFC	Queue (PCU)	RFC
N81_L8373_Quarry Access Junction - 2024 (without Quarry)				
Stream B-CD	0.0	0.01	0.1	0.05
Stream B-AD	0.2	0.14	0.1	0.07
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.00	0.0	0.00
Stream D-BC	0.0	0.00	0.0	0.00
Stream C-ABD	0.0	0.03	0.0	0.01
N81_L8373_Quarry Access Junction - 2024 (with Quarry)				
Stream B-CD	0.0	0.01	0.1	0.05
Stream B-AD	0.2	0.14	0.1	0.07
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.02	0.0	0.02
Stream D-BC	0.1	0.10	0.1	0.11
Stream C-ABD	0.1	0.09	0.1	0.06
N81_L8373_Quarry Access Junction - 2029 (without Quarry)				
Stream B-CD	0.0	0.01	0.1	0.06
Stream B-AD	0.3	0.21	0.1	0.10
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.00	0.0	0.00

Stream D-BC	0.0	0.00	0.0	0.00
Stream C-ABD	0.0	0.05	0.0	0.04
N81_L8373_Quarry Access Junction - 2029 (with Quarry)				
Stream B-CD	0.0	0.01	0.1	0.06
Stream B-AD	0.3	0.22	0.1	0.10
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.02	0.0	0.02
Stream D-BC	0.1	0.12	0.2	0.14
Stream C-ABD	0.1	0.11	0.1	0.07
N81_L8373_Quarry Access Junction - 2039 (without Quarry)				
Stream B-CD	0.0	0.02	0.1	0.08
Stream B-AD	0.5	0.35	0.2	0.14
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.00	0.0	0.00
Stream D-BC	0.0	0.00	0.0	0.00
Stream C-ABD	0.1	0.07	0.0	0.03
N81_L8373_Quarry Access Junction - 2039 (with Quarry)				
Stream B-CD	0.0	0.02	0.1	0.08
Stream B-AD	0.6	0.39	0.2	0.14
Stream A-BCD	0.0	0.00	0.0	0.00
Stream D-AB	0.0	0.03	0.0	0.03
Stream D-BC	0.2	0.14	0.2	0.18
Stream C-ABD	0.2	0.15	0.1	0.08

There are warnings associated with one or more model runs - see the 'Data Errors and Warnings' tables for each Analysis or Demand Set.

Values shown are the highest values encountered over all time segments. Delay is the maximum value of average delay per arriving vehicle.

File summary

File Description

Title	
Location	
Site number	
Date	03/12/2023
Version	
Status	(new file)
Identifier	
Client	
Jobnumber	
Enumerator	CORPUKAPS002
Description	

Units

Distance units	Speed units	Traffic units input	Traffic units results	Flow units	Average delay units	Total delay units	Rate of delay units
m	kph	PCU	PCU	perHour	s	-Min	perMin

Analysis Options

Vehicle length (m)	Calculate Queue Percentiles	Calculate detailed queueing delay	Calculate residual capacity	RFC Threshold	Average Delay threshold (s)	Queue threshold (PCU)
5.75				0.85	36.00	20.00

Demand Set Summary

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D2	2024 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓
D3	2024 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D4	2024 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓
D5	2029 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D6	2029 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓
D7	2029 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D8	2029 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓
D9	2039 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D10	2039 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓
D11	2039 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓
D12	2039 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

N81_L8373_Quarry Access Junction - 2024 (without Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.50	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	622	0.100	0.253	0.253	-	-	-	0.159	0.361	-	0.253	0.253	0.126
B-C	613	0.083	0.210	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	495	0.080	0.201	0.201	-	-	-	0.127	0.288	0.127	-	-	-
B-D, offside lane	622	0.100	0.253	0.253	-	-	-	0.159	0.361	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D1	2024 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	981	100.000
B - Quarry Access		ONE HOUR	✓	40	100.000
C - N81 North		ONE HOUR	✓	271	100.000
D - L8373		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	18	963	0
	B - Quarry Access	37	0	3	0
	C - N81 North	256	13	0	2
	D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.01	9.68	0.0	A	3	4
B-AD	0.14	13.80	0.2	B	34	51
A-BCD	0.00	0.00	0.0	A	0	0
A-B					17	25
A-C					884	1325
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0
C-ABD	0.03	7.90	0.0	A	12	18
C-D					2	3
C-A					235	352

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	452	0.005	2	0.0	0.0	8.011	A
B-AD	28	7	403	0.069	28	0.0	0.1	9.592	A
A-BCD	0	0	1227	0.000	0	0.0	0.0	0.000	A
A-B	14	3			14				
A-C	725	181			725				
D-AB	0	0	457	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	365	0.000	0	0.0	0.0	0.000	A

C-ABD	10	2	557	0.018	10	0.0	0.0	6.575	A
C-D	2	0.38			2				
C-A	193	48			193				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	420	0.006	3	0.0	0.0	8.630	A
B-AD	33	8	360	0.092	33	0.1	0.1	10.998	B
A-BCD	0	0	1209	0.000	0	0.0	0.0	0.000	A
A-B	16	4			16				
A-C	866	216			866				
D-AB	0	0	434	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	338	0.000	0	0.0	0.0	0.000	A
C-ABD	12	3	521	0.022	12	0.0	0.0	7.072	A
C-D	2	0.45			2				
C-A	230	58			230				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	375	0.009	3	0.0	0.0	9.673	A
B-AD	41	10	302	0.135	41	0.1	0.2	13.775	B
A-BCD	0	0	1184	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1060	265			1060				
D-AB	0	0	400	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	301	0.000	0	0.0	0.0	0.000	A
C-ABD	14	4	470	0.030	14	0.0	0.0	7.899	A
C-D	2	0.55			2				
C-A	282	70			282				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	375	0.009	3	0.0	0.0	9.676	A
B-AD	41	10	302	0.135	41	0.2	0.2	13.797	B
A-BCD	0	0	1184	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1060	265			1060				
D-AB	0	0	400	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	301	0.000	0	0.0	0.0	0.000	A
C-ABD	14	4	470	0.030	14	0.0	0.0	7.899	A
C-D	2	0.55			2				
C-A	282	70			282				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	420	0.006	3	0.0	0.0	8.633	A
B-AD	33	8	360	0.092	33	0.2	0.1	11.018	B
A-BCD	0	0	1209	0.000	0	0.0	0.0	0.000	A
A-B	16	4			16				
A-C	866	216			866				

D-AB	0	0	434	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	338	0.000	0	0.0	0.0	0.000	A
C-ABD	12	3	521	0.022	12	0.0	0.0	7.076	A
C-D	2	0.45			2				
C-A	230	58			230				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	451	0.005	2	0.0	0.0	8.014	A
B-AD	28	7	403	0.069	28	0.1	0.1	9.606	A
A-BCD	0	0	1227	0.000	0	0.0	0.0	0.000	A
A-B	14	3			14				
A-C	725	181			725				
D-AB	0	0	457	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	365	0.000	0	0.0	0.0	0.000	A
C-ABD	10	2	557	0.018	10	0.0	0.0	6.576	A
C-D	2	0.38			2				
C-A	193	48			193				

N81_L8373_Quarry Access Junction - 2024 (without Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.38	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major

B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	550	0.088	0.224	0.224	-	-	-	0.141	0.319	-	0.224	0.224	0.112
B-C	702	0.095	0.240	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	567	0.091	0.231	0.231	-	-	-	0.145	0.329	0.145	-	-	-
B-D, offside lane	550	0.088	0.224	0.224	-	-	-	0.141	0.319	0.141	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D2	2024 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	375	100.000
B - Quarry Access		ONE HOUR	✓	47	100.000
C - N81 North		ONE HOUR	✓	770	100.000

D - L8373		ONE HOUR	✓	0	100.000
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Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	9	366	0
	B - Quarry Access	21	0	25	1
	C - N81 North	758	8	0	4
	D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.05	6.47	0.1	A	23	35
B-AD	0.07	11.42	0.1	B	20	30
A-BCD	0.00	0.00	0.0	A	0	0
A-B					8	12
A-C					336	504
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0
C-ABD	0.01	5.70	0.0	A	7	11
C-D					4	6
C-A					696	1043

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	5	622	0.031	19	0.0	0.0	5.969	A
B-AD	16	4	405	0.040	16	0.0	0.0	9.241	A

A-BCD	0	0	1058	0.000	0	0.0	0.0	0.000	A
A-B	7	2			7				
A-C	276	69			276				
D-AB	0	0	418	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	345	0.000	0	0.0	0.0	0.000	A
C-ABD	6	2	674	0.009	6	0.0	0.0	5.391	A
C-D	3	0.75			3				
C-A	571	143			571				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	606	0.038	23	0.0	0.0	6.171	A
B-AD	19	5	377	0.051	19	0.0	0.1	10.048	B
A-BCD	0	0	1007	0.000	0	0.0	0.0	0.000	A
A-B	8	2			8				
A-C	329	82			329				
D-AB	0	0	389	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	315	0.000	0	0.0	0.0	0.000	A
C-ABD	7	2	660	0.011	7	0.0	0.0	5.517	A
C-D	4	0.90			4				
C-A	681	170			681				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	584	0.048	28	0.0	0.1	6.473	A
B-AD	24	6	339	0.070	24	0.1	0.1	11.419	B
A-BCD	0	0	936	0.000	0	0.0	0.0	0.000	A
A-B	10	2			10				
A-C	403	101			403				
D-AB	0	0	347	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	273	0.000	0	0.0	0.0	0.000	A
C-ABD	9	2	640	0.014	9	0.0	0.0	5.700	A
C-D	4	1			4				
C-A	835	209			835				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	584	0.048	28	0.1	0.1	6.475	A
B-AD	24	6	339	0.070	24	0.1	0.1	11.421	B
A-BCD	0	0	936	0.000	0	0.0	0.0	0.000	A
A-B	10	2			10				
A-C	403	101			403				
D-AB	0	0	347	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	273	0.000	0	0.0	0.0	0.000	A
C-ABD	9	2	640	0.014	9	0.0	0.0	5.700	A
C-D	4	1			4				
C-A	835	209			835				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
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B-CD	23	6	606	0.038	23	0.1	0.0	6.177	A
B-AD	19	5	378	0.051	19	0.1	0.1	10.050	B
A-BCD	0	0	1007	0.000	0	0.0	0.0	0.000	A
A-B	8	2			8				
A-C	329	82			329				
D-AB	0	0	389	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	315	0.000	0	0.0	0.0	0.000	A
C-ABD	7	2	660	0.011	7	0.0	0.0	5.517	A
C-D	4	0.90			4				
C-A	681	170			681				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	5	622	0.031	19	0.0	0.0	5.979	A
B-AD	16	4	406	0.040	16	0.1	0.0	9.247	A
A-BCD	0	0	1058	0.000	0	0.0	0.0	0.000	A
A-B	7	2			7				
A-C	276	69			276				
D-AB	0	0	418	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	345	0.000	0	0.0	0.0	0.000	A
C-ABD	6	2	674	0.009	6	0.0	0.0	5.394	A
C-D	3	0.75			3				
C-A	571	143			571				

N81_L8373_Quarry Access Junction - 2024 (with Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.98	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	622	0.100	0.253	0.253	-	-	-	0.159	0.361	-	0.253	0.253	0.126
B-C	613	0.083	0.210	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	495	0.080	0.201	0.201	-	-	-	0.127	0.288	0.127	-	-	-
B-D, offside lane	622	0.100	0.253	0.253	-	-	-	0.159	0.361	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D3	2024 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	988	100.000
B - Quarry Access		ONE HOUR	✓	40	100.000
C - N81 North		ONE HOUR	✓	296	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	25	963	0
	B - Quarry Access	37	0	3	0
	C - N81 North	256	38	0	2
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.01	9.71	0.0	A	3	4
B-AD	0.14	14.72	0.2	B	34	51
A-BCD	0.00	0.00	0.0	A	0	0
A-B					23	34
A-C					884	1325
D-AB	0.02	14.69	0.0	B	3	5
D-BC	0.10	13.25	0.1	B	26	39
C-ABD	0.09	8.45	0.1	A	35	52
C-D					2	3
C-A					235	352

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	451	0.005	2	0.0	0.0	8.023	A
B-AD	28	7	392	0.071	28	0.0	0.1	9.874	A
A-BCD	0	0	1215	0.000	0	0.0	0.0	0.000	A
A-B	19	5			19				
A-C	725	181			725				
D-AB	3	0.69	308	0.009	3	0.0	0.0	11.790	B
D-BC	21	5	370	0.058	21	0.0	0.1	10.307	B
C-ABD	29	7	556	0.051	28	0.0	0.1	6.821	A
C-D	2	0.38			2				
C-A	193	48			193				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	419	0.006	3	0.0	0.0	8.649	A
B-AD	33	8	347	0.096	33	0.1	0.1	11.463	B
A-BCD	0	0	1195	0.000	0	0.0	0.0	0.000	A
A-B	22	6			22				
A-C	866	216			866				
D-AB	3	0.84	283	0.012	3	0.0	0.0	12.856	B
D-BC	25	6	342	0.074	25	0.1	0.1	11.372	B
C-ABD	34	9	519	0.066	34	0.1	0.1	7.424	A
C-D	2	0.45			2				
C-A	230	58			230				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	374	0.009	3	0.0	0.0	9.710	A
B-AD	41	10	285	0.143	41	0.1	0.2	14.690	B
A-BCD	0	0	1166	0.000	0	0.0	0.0	0.000	A
A-B	28	7			28				
A-C	1060	265			1060				
D-AB	4	1	249	0.017	4	0.0	0.0	14.688	B
D-BC	31	8	303	0.102	31	0.1	0.1	13.235	B
C-ABD	42	10	468	0.089	42	0.1	0.1	8.442	A
C-D	2	0.55			2				
C-A	282	70			282				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	374	0.009	3	0.0	0.0	9.712	A
B-AD	41	10	285	0.143	41	0.2	0.2	14.718	B
A-BCD	0	0	1166	0.000	0	0.0	0.0	0.000	A
A-B	28	7			28				
A-C	1060	265			1060				
D-AB	4	1	249	0.017	4	0.0	0.0	14.691	B
D-BC	31	8	303	0.102	31	0.1	0.1	13.250	B
C-ABD	42	10	468	0.089	42	0.1	0.1	8.446	A
C-D	2	0.55			2				
C-A	282	70			282				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	419	0.006	3	0.0	0.0	8.654	A
B-AD	33	8	347	0.096	33	0.2	0.1	11.489	B
A-BCD	0	0	1194	0.000	0	0.0	0.0	0.000	A
A-B	22	6			22				
A-C	866	216			866				
D-AB	3	0.84	283	0.012	3	0.0	0.0	12.863	B
D-BC	25	6	342	0.074	26	0.1	0.1	11.388	B
C-ABD	34	9	519	0.066	34	0.1	0.1	7.430	A
C-D	2	0.45			2				
C-A	230	58			230				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	451	0.005	2	0.0	0.0	8.027	A
B-AD	28	7	392	0.071	28	0.1	0.1	9.900	A
A-BCD	0	0	1215	0.000	0	0.0	0.0	0.000	A
A-B	19	5			19				
A-C	725	181			725				
D-AB	3	0.69	308	0.009	3	0.0	0.0	11.797	B
D-BC	21	5	370	0.058	21	0.1	0.1	10.329	B
C-ABD	29	7	556	0.051	29	0.1	0.1	6.828	A
C-D	2	0.38			2				
C-A	193	48			193				

N81_L8373_Quarry Access Junction - 2024 (with Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.88	A

Junction Network Options

Driving side	Lighting
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Left	Normal/unknown
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Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	550	0.088	0.224	0.224	-	-	-	0.141	0.319	-	0.224	0.224	0.112
B-C	702	0.095	0.240	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	567	0.091	0.231	0.231	-	-	-	0.145	0.329	0.145	-	-	-
B-D, offside lane	550	0.088	0.224	0.224	-	-	-	0.141	0.319	0.141	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D4	2024 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	382	100.000
B - Quarry Access		ONE HOUR	✓	47	100.000
C - N81 North		ONE HOUR	✓	796	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	16	366	0
	B - Quarry Access	21	0	25	1
	C - N81 North	758	34	0	4
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.05	6.50	0.1	A	23	35
B-AD	0.07	11.98	0.1	B	20	30
A-BCD	0.00	0.00	0.0	A	0	0
A-B					15	22
A-C					336	504
D-AB	0.02	16.22	0.0	C	3	5
D-BC	0.11	14.98	0.1	B	26	39
C-ABD	0.06	5.99	0.1	A	31	47
C-D					4	6
C-A					696	1043

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	5	621	0.031	19	0.0	0.0	5.978	A
B-AD	16	4	395	0.041	16	0.0	0.0	9.483	A
A-BCD	0	0	1046	0.000	0	0.0	0.0	0.000	A
A-B	12	3			12				
A-C	276	69			276				
D-AB	3	0.69	292	0.010	3	0.0	0.0	12.429	B
D-BC	21	5	349	0.061	21	0.0	0.1	10.988	B
C-ABD	26	6	672	0.038	25	0.0	0.0	5.563	A
C-D	3	0.75			3				
C-A	571	143			571				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	605	0.038	23	0.0	0.0	6.184	A
B-AD	19	5	366	0.053	19	0.0	0.1	10.394	B
A-BCD	0	0	992	0.000	0	0.0	0.0	0.000	A
A-B	14	4			14				
A-C	329	82			329				
D-AB	3	0.84	265	0.013	3	0.0	0.0	13.779	B
D-BC	25	6	316	0.080	25	0.1	0.1	12.370	B
C-ABD	31	8	658	0.046	31	0.0	0.0	5.736	A
C-D	4	0.90			4				
C-A	681	170			681				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	582	0.048	28	0.0	0.1	6.494	A
B-AD	24	6	324	0.073	24	0.1	0.1	11.973	B
A-BCD	0	0	918	0.000	0	0.0	0.0	0.000	A
A-B	18	4			18				
A-C	403	101			403				
D-AB	4	1	226	0.019	4	0.0	0.0	16.212	C
D-BC	31	8	271	0.114	31	0.1	0.1	14.954	B
C-ABD	37	9	638	0.059	37	0.0	0.1	5.990	A
C-D	4	1			4				
C-A	835	209			835				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	582	0.048	28	0.1	0.1	6.496	A
B-AD	24	6	324	0.073	24	0.1	0.1	11.978	B
A-BCD	0	0	918	0.000	0	0.0	0.0	0.000	A
A-B	18	4			18				
A-C	403	101			403				
D-AB	4	1	226	0.019	4	0.0	0.0	16.218	C
D-BC	31	8	271	0.114	31	0.1	0.1	14.976	B

C-ABD	37	9	638	0.059	37	0.1	0.1	5.990	A
C-D	4	1			4				
C-A	835	209			835				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	605	0.038	23	0.1	0.0	6.191	A
B-AD	19	5	366	0.053	19	0.1	0.1	10.398	B
A-BCD	0	0	992	0.000	0	0.0	0.0	0.000	A
A-B	14	4			14				
A-C	329	82			329				
D-AB	3	0.84	265	0.013	3	0.0	0.0	13.785	B
D-BC	25	6	316	0.080	26	0.1	0.1	12.393	B
C-ABD	31	8	658	0.046	31	0.1	0.0	5.737	A
C-D	4	0.90			4				
C-A	681	170			681				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	19	5	621	0.031	19	0.0	0.0	5.989	A
B-AD	16	4	396	0.041	16	0.1	0.0	9.491	A
A-BCD	0	0	1045	0.000	0	0.0	0.0	0.000	A
A-B	12	3			12				
A-C	276	69			276				
D-AB	3	0.69	292	0.010	3	0.0	0.0	12.439	B
D-BC	21	5	349	0.061	21	0.1	0.1	11.007	B
C-ABD	26	6	672	0.038	26	0.0	0.0	5.566	A
C-D	3	0.75			3				
C-A	571	143			571				

N81_L8373_Quarry Access Junction - 2029 (without Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
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1	untitled	Crossroads	Two-way		0.66	A
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Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	623	0.100	0.253	0.253	-	-	-	0.159	0.362	-	0.253	0.253	0.127
B-C	611	0.083	0.209	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	494	0.079	0.201	0.201	-	-	-	0.126	0.287	0.126	-	-	-
B-D, offside lane	623	0.100	0.253	0.253	-	-	-	0.159	0.362	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D5	2029 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	1181	100.000
B - Quarry Access		ONE HOUR	✓	47	100.000
C - N81 North		ONE HOUR	✓	328	100.000
D - L8373		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

	To			
	A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From A - N81 South	0	22	1159	0
From B - Quarry Access	44	0	3	0
From C - N81 North	309	17	0	2
From D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From A - N81 South	0	0	0	0
From B - Quarry Access	0	0	0	0
From C - N81 North	0	0	0	0
From D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.01	11.22	0.0	B	3	4
B-AD	0.21	19.17	0.3	C	40	61
A-BCD	0.00	0.00	0.0	A	0	0
A-B					20	30
A-C					1064	1595
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0
C-ABD	0.05	9.11	0.0	A	16	23
C-D					2	3
C-A					284	425

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	418	0.005	2	0.0	0.0	8.669	A
B-AD	33	8	358	0.092	33	0.0	0.1	11.038	B
A-BCD	0	0	1207	0.000	0	0.0	0.0	0.000	A
A-B	17	4			17				
A-C	873	218			873				
D-AB	0	0	432	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	337	0.000	0	0.0	0.0	0.000	A
C-ABD	13	3	519	0.025	13	0.0	0.0	7.111	A
C-D	2	0.38			2				
C-A	233	58			233				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	379	0.007	3	0.0	0.0	9.568	A
B-AD	40	10	307	0.129	39	0.1	0.1	13.435	B
A-BCD	0	0	1185	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1042	260			1042				
D-AB	0	0	403	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	305	0.000	0	0.0	0.0	0.000	A
C-ABD	15	4	475	0.032	15	0.0	0.0	7.835	A
C-D	2	0.45			2				
C-A	278	69			278				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	324	0.010	3	0.0	0.0	11.210	B
B-AD	48	12	236	0.205	48	0.1	0.3	19.091	C
A-BCD	0	0	1155	0.000	0	0.0	0.0	0.000	A
A-B	24	6			24				
A-C	1276	319			1276				
D-AB	0	0	360	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	260	0.000	0	0.0	0.0	0.000	A
C-ABD	19	5	414	0.045	19	0.0	0.0	9.109	A
C-D	2	0.55			2				
C-A	340	85			340				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	324	0.010	3	0.0	0.0	11.216	B
B-AD	48	12	236	0.205	48	0.3	0.3	19.174	C

A-BCD	0	0	1155	0.000	0	0.0	0.0	0.000	A
A-B	24	6			24				
A-C	1276	319			1276				
D-AB	0	0	360	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	260	0.000	0	0.0	0.0	0.000	A
C-ABD	19	5	414	0.045	19	0.0	0.0	9.111	A
C-D	2	0.55			2				
C-A	340	85			340				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	379	0.007	3	0.0	0.0	9.576	A
B-AD	40	10	307	0.129	40	0.3	0.2	13.498	B
A-BCD	0	0	1185	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1042	260			1042				
D-AB	0	0	403	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	305	0.000	0	0.0	0.0	0.000	A
C-ABD	15	4	475	0.032	15	0.0	0.0	7.838	A
C-D	2	0.45			2				
C-A	278	69			278				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	417	0.005	2	0.0	0.0	8.675	A
B-AD	33	8	358	0.092	33	0.2	0.1	11.080	B
A-BCD	0	0	1207	0.000	0	0.0	0.0	0.000	A
A-B	17	4			17				
A-C	873	218			873				
D-AB	0	0	432	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	337	0.000	0	0.0	0.0	0.000	A
C-ABD	13	3	519	0.025	13	0.0	0.0	7.115	A
C-D	2	0.38			2				
C-A	233	58			233				

N81_L8373_Quarry Access Junction - 2029 (without Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.47	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	549	0.088	0.223	0.223	-	-	-	0.140	0.319	-	0.223	0.223	0.112
B-C	703	0.095	0.241	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
B-D, offside lane	549	0.088	0.223	0.223	-	-	-	0.140	0.319	0.140	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D6	2029 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	454	100.000
B - Quarry Access		ONE HOUR	✓	56	100.000
C - N81 North		ONE HOUR	✓	937	100.000
D - L8373		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	14	440	0
	B - Quarry Access	25	0	30	1
	C - N81 North	912	20	0	5
	D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.06	6.83	0.1	A	28	42
B-AD	0.10	13.66	0.1	B	23	35
A-BCD	0.00	0.00	0.0	A	0	0
A-B					13	19
A-C					404	606
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0

C-ABD	0.04	6.04	0.0	A	18	28
C-D					5	7
C-A					837	1255

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	608	0.038	23	0.0	0.0	6.152	A
B-AD	19	5	373	0.051	19	0.0	0.1	10.170	B
A-BCD	0	0	1000	0.000	0	0.0	0.0	0.000	A
A-B	11	3			11				
A-C	331	83			331				
D-AB	0	0	386	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	312	0.000	0	0.0	0.0	0.000	A
C-ABD	15	4	658	0.023	15	0.0	0.0	5.594	A
C-D	4	0.94			4				
C-A	687	172			687				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	7	588	0.047	27	0.0	0.0	6.416	A
B-AD	23	6	339	0.068	23	0.1	0.1	11.395	B
A-BCD	0	0	937	0.000	0	0.0	0.0	0.000	A
A-B	13	3			13				
A-C	396	99			396				
D-AB	0	0	349	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	275	0.000	0	0.0	0.0	0.000	A
C-ABD	18	4	642	0.028	18	0.0	0.0	5.772	A
C-D	4	1			4				
C-A	820	205			820				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	34	8	561	0.060	34	0.0	0.1	6.826	A
B-AD	28	7	291	0.096	28	0.1	0.1	13.654	B
A-BCD	0	0	851	0.000	0	0.0	0.0	0.000	A
A-B	15	4			15				
A-C	484	121			484				
D-AB	0	0	297	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	224	0.000	0	0.0	0.0	0.000	A
C-ABD	22	6	618	0.036	22	0.0	0.0	6.038	A
C-D	6	1			6				

C-A	1004	251			1004				
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17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	34	8	561	0.060	34	0.1	0.1	6.829	A
B-AD	28	7	291	0.096	28	0.1	0.1	13.662	B
A-BCD	0	0	851	0.000	0	0.0	0.0	0.000	A
A-B	15	4			15				
A-C	484	121			484				
D-AB	0	0	297	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	224	0.000	0	0.0	0.0	0.000	A
C-ABD	22	6	618	0.036	22	0.0	0.0	6.038	A
C-D	6	1			6				
C-A	1004	251			1004				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	7	588	0.047	28	0.1	0.0	6.422	A
B-AD	23	6	339	0.068	23	0.1	0.1	11.404	B
A-BCD	0	0	937	0.000	0	0.0	0.0	0.000	A
A-B	13	3			13				
A-C	396	99			396				
D-AB	0	0	349	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	275	0.000	0	0.0	0.0	0.000	A
C-ABD	18	4	642	0.028	18	0.0	0.0	5.773	A
C-D	4	1			4				
C-A	820	205			820				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	607	0.038	23	0.0	0.0	6.163	A
B-AD	19	5	373	0.051	19	0.1	0.1	10.181	B
A-BCD	0	0	1000	0.000	0	0.0	0.0	0.000	A
A-B	11	3			11				
A-C	331	83			331				
D-AB	0	0	386	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	312	0.000	0	0.0	0.0	0.000	A
C-ABD	15	4	658	0.023	15	0.0	0.0	5.597	A
C-D	4	0.94			4				
C-A	687	172			687				

N81_L8373_Quarry Access Junction - 2029 (with Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.16	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51

D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135
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Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	623	0.100	0.253	0.253	-	-	-	0.159	0.362	-	0.253	0.253	0.127
B-C	611	0.083	0.209	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	494	0.079	0.201	0.201	-	-	-	0.126	0.287	0.126	-	-	-
B-D, offside lane	623	0.100	0.253	0.253	-	-	-	0.159	0.362	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D7	2029 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	1188	100.000
B - Quarry Access		ONE HOUR	✓	47	100.000
C - N81 North		ONE HOUR	✓	353	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	29	1159	0
	B - Quarry Access	44	0	3	0
	C - N81 North	309	42	0	2
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.01	11.29	0.0	B	3	4
B-AD	0.22	21.01	0.3	C	40	61
A-BCD	0.00	0.00	0.0	A	0	0
A-B					27	40
A-C					1064	1595
D-AB	0.02	17.20	0.0	C	3	5
D-BC	0.12	15.70	0.1	C	26	39
C-ABD	0.11	9.85	0.1	A	39	58
C-D					2	3
C-A					284	425

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	417	0.005	2	0.0	0.0	8.684	A
B-AD	33	8	347	0.095	33	0.0	0.1	11.424	B
A-BCD	0	0	1195	0.000	0	0.0	0.0	0.000	A
A-B	22	5			22				
A-C	873	218			873				
D-AB	3	0.70	284	0.010	3	0.0	0.0	12.812	B
D-BC	21	5	341	0.062	21	0.0	0.1	11.237	B
C-ABD	32	8	517	0.061	31	0.0	0.1	7.403	A
C-D	2	0.38			2				
C-A	233	58			233				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	378	0.007	3	0.0	0.0	9.596	A
B-AD	40	10	294	0.135	39	0.1	0.2	14.125	B
A-BCD	0	0	1171	0.000	0	0.0	0.0	0.000	A
A-B	26	7			26				
A-C	1042	260			1042				
D-AB	3	0.84	254	0.013	3	0.0	0.0	14.347	B
D-BC	25	6	307	0.083	25	0.1	0.1	12.767	B
C-ABD	38	9	473	0.080	38	0.1	0.1	8.264	A
C-D	2	0.45			2				
C-A	278	69			278				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	322	0.010	3	0.0	0.0	11.280	B
B-AD	48	12	220	0.220	48	0.2	0.3	20.883	C
A-BCD	0	0	1137	0.000	0	0.0	0.0	0.000	A
A-B	32	8			32				
A-C	1276	319			1276				
D-AB	4	1	214	0.020	4	0.0	0.0	17.192	C
D-BC	31	8	260	0.119	31	0.1	0.1	15.686	C
C-ABD	46	12	412	0.112	46	0.1	0.1	9.838	A
C-D	2	0.55			2				
C-A	340	85			340				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.83	322	0.010	3	0.0	0.0	11.288	B
B-AD	48	12	220	0.220	48	0.3	0.3	21.005	C
A-BCD	0	0	1137	0.000	0	0.0	0.0	0.000	A
A-B	32	8			32				
A-C	1276	319			1276				
D-AB	4	1	214	0.020	4	0.0	0.0	17.202	C
D-BC	31	8	260	0.119	31	0.1	0.1	15.703	C
C-ABD	46	12	412	0.112	46	0.1	0.1	9.846	A
C-D	2	0.55			2				
C-A	340	85			340				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.67	378	0.007	3	0.0	0.0	9.604	A
B-AD	40	10	294	0.135	40	0.3	0.2	14.216	B
A-BCD	0	0	1170	0.000	0	0.0	0.0	0.000	A

A-B	26	7			26				
A-C	1042	260			1042				
D-AB	3	0.85	254	0.013	3	0.0	0.0	14.356	B
D-BC	25	6	307	0.083	26	0.1	0.1	12.795	B
C-ABD	38	9	473	0.080	38	0.1	0.1	8.274	A
C-D	2	0.45			2				
C-A	278	69			278				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	2	0.56	417	0.005	2	0.0	0.0	8.689	A
B-AD	33	8	347	0.095	33	0.2	0.1	11.474	B
A-BCD	0	0	1195	0.000	0	0.0	0.0	0.000	A
A-B	22	5			22				
A-C	873	218			873				
D-AB	3	0.70	284	0.010	3	0.0	0.0	12.824	B
D-BC	21	5	341	0.062	21	0.1	0.1	11.267	B
C-ABD	32	8	517	0.061	32	0.1	0.1	7.412	A
C-D	2	0.38			2				
C-A	233	58			233				

N81_L8373_Quarry Access Junction - 2029 (with Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.94	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	549	0.088	0.223	0.223	-	-	-	0.140	0.319	-	0.223	0.223	0.112
B-C	703	0.095	0.241	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
B-D, offside lane	549	0.088	0.223	0.223	-	-	-	0.140	0.319	0.140	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D8	2029 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	459	100.000
B - Quarry Access		ONE HOUR	✓	56	100.000
C - N81 North		ONE HOUR	✓	954	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

	To				
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	19	440	0
	B - Quarry Access	25	0	30	1
	C - N81 North	912	37	0	5
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

	To				
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.06	6.85	0.1	A	28	42
B-AD	0.10	14.27	0.1	B	23	35
A-BCD	0.00	0.00	0.0	A	0	0
A-B					17	26
A-C					404	606
D-AB	0.02	19.82	0.0	C	4	5
D-BC	0.14	18.77	0.2	C	26	39
C-ABD	0.07	6.25	0.1	A	34	51
C-D					5	7
C-A					837	1255

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	607	0.038	23	0.0	0.0	6.159	A
B-AD	19	5	365	0.053	19	0.0	0.1	10.394	B
A-BCD	0	0	991	0.000	0	0.0	0.0	0.000	A
A-B	14	4			14				
A-C	331	83			331				
D-AB	3	0.70	265	0.011	3	0.0	0.0	13.729	B
D-BC	21	5	315	0.068	21	0.0	0.1	12.215	B
C-ABD	28	7	657	0.042	28	0.0	0.0	5.714	A
C-D	4	0.94			4				
C-A	687	172			687				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	7	587	0.047	27	0.0	0.0	6.427	A
B-AD	23	6	329	0.069	23	0.1	0.1	11.736	B
A-BCD	0	0	927	0.000	0	0.0	0.0	0.000	A
A-B	17	4			17				
A-C	396	99			396				
D-AB	3	0.85	232	0.015	3	0.0	0.0	15.756	C
D-BC	25	6	277	0.092	25	0.1	0.1	14.321	B
C-ABD	33	8	640	0.052	33	0.0	0.1	5.929	A
C-D	4	1			4				
C-A	820	205			820				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	34	8	559	0.060	34	0.0	0.1	6.846	A
B-AD	28	7	280	0.100	28	0.1	0.1	14.263	B
A-BCD	0	0	838	0.000	0	0.0	0.0	0.000	A
A-B	21	5			21				
A-C	484	121			484				
D-AB	4	1	186	0.023	4	0.0	0.0	19.813	C
D-BC	31	8	223	0.139	31	0.1	0.2	18.718	C
C-ABD	41	10	617	0.066	41	0.1	0.1	6.249	A
C-D	6	1			6				
C-A	1004	251			1004				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	34	8	559	0.060	34	0.1	0.1	6.849	A
B-AD	28	7	280	0.100	28	0.1	0.1	14.274	B
A-BCD	0	0	838	0.000	0	0.0	0.0	0.000	A
A-B	21	5			21				
A-C	484	121			484				
D-AB	4	1	186	0.023	4	0.0	0.0	19.824	C
D-BC	31	8	223	0.139	31	0.2	0.2	18.766	C
C-ABD	41	10	617	0.066	41	0.1	0.1	6.249	A
C-D	6	1			6				
C-A	1004	251			1004				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	27	7	587	0.047	28	0.1	0.0	6.437	A
B-AD	23	6	330	0.069	23	0.1	0.1	11.748	B
A-BCD	0	0	927	0.000	0	0.0	0.0	0.000	A
A-B	17	4			17				
A-C	396	99			396				
D-AB	3	0.85	232	0.015	3	0.0	0.0	15.771	C
D-BC	25	6	276	0.092	26	0.2	0.1	14.361	B
C-ABD	33	8	640	0.052	33	0.1	0.1	5.930	A
C-D	4	1			4				
C-A	820	205			820				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	23	6	607	0.038	23	0.0	0.0	6.171	A
B-AD	19	5	365	0.053	19	0.1	0.1	10.406	B
A-BCD	0	0	991	0.000	0	0.0	0.0	0.000	A
A-B	14	4			14				
A-C	331	83			331				
D-AB	3	0.70	265	0.011	3	0.0	0.0	13.742	B
D-BC	21	5	315	0.068	21	0.1	0.1	12.251	B
C-ABD	28	7	657	0.042	28	0.1	0.0	5.717	A
C-D	4	0.94			4				
C-A	687	172			687				

N81_L8373_Quarry Access Junction - 2039 (without Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.12	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	622	0.100	0.253	0.253	-	-	-	0.159	0.361	-	0.253	0.253	0.127
B-C	612	0.083	0.210	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	495	0.080	0.201	0.201	-	-	-	0.127	0.287	0.127	-	-	-
B-D, offside lane	622	0.100	0.253	0.253	-	-	-	0.159	0.361	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D9	2039 (without Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	1402	100.000
B - Quarry Access		ONE HOUR	✓	56	100.000
C - N81 North		ONE HOUR	✓	391	100.000
D - L8373		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	26	1376	0
	B - Quarry Access	52	0	4	0
	C - N81 North	366	22	0	3
	D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From				
A - N81 South	0	0	0	0
B - Quarry Access	0	0	0	0
C - N81 North	0	0	0	0
D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.02	13.86	0.0	B	4	6
B-AD	0.35	33.99	0.5	D	48	72
A-BCD	0.00	0.00	0.0	A	0	0
A-B					24	36
A-C					1263	1894
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0
C-ABD	0.07	10.99	0.1	B	20	30
C-D					3	4
C-A					336	504

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.75	381	0.008	3	0.0	0.0	9.522	A
B-AD	39	10	308	0.127	39	0.0	0.1	13.323	B
A-BCD	0	0	1185	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1036	259			1036				
D-AB	0	0	404	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	306	0.000	0	0.0	0.0	0.000	A
C-ABD	17	4	476	0.035	16	0.0	0.0	7.825	A
C-D	2	0.56			2				
C-A	276	69			276				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
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B-CD	4	0.90	334	0.011	4	0.0	0.0	10.888	B
B-AD	47	12	247	0.189	46	0.1	0.2	17.895	C
A-BCD	0	0	1159	0.000	0	0.0	0.0	0.000	A
A-B	23	6			23				
A-C	1237	309			1237				
D-AB	0	0	367	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	267	0.000	0	0.0	0.0	0.000	A
C-ABD	20	5	424	0.047	20	0.0	0.0	8.903	A
C-D	3	0.67			3				
C-A	329	82			329				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	1	265	0.017	4	0.0	0.0	13.823	B
B-AD	57	14	163	0.351	56	0.2	0.5	33.338	D
A-BCD	0	0	1122	0.000	0	0.0	0.0	0.000	A
A-B	29	7			29				
A-C	1515	379			1515				
D-AB	0	0	312	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	215	0.000	0	0.0	0.0	0.000	A
C-ABD	24	6	352	0.069	24	0.0	0.1	10.985	B
C-D	3	0.83			3				
C-A	403	101			403				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	1	264	0.017	4	0.0	0.0	13.860	B
B-AD	57	14	163	0.351	57	0.5	0.5	33.987	D
A-BCD	0	0	1122	0.000	0	0.0	0.0	0.000	A
A-B	29	7			29				
A-C	1515	379			1515				
D-AB	0	0	312	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	215	0.000	0	0.0	0.0	0.000	A
C-ABD	24	6	352	0.069	24	0.1	0.1	10.992	B
C-D	3	0.83			3				
C-A	403	101			403				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	0.90	334	0.011	4	0.0	0.0	10.913	B
B-AD	47	12	247	0.189	48	0.5	0.2	18.159	C
A-BCD	0	0	1159	0.000	0	0.0	0.0	0.000	A
A-B	23	6			23				
A-C	1237	309			1237				

D-AB	0	0	367	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	267	0.000	0	0.0	0.0	0.000	A
C-ABD	20	5	424	0.047	20	0.1	0.0	8.909	A
C-D	3	0.67			3				
C-A	329	82			329				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.75	381	0.008	3	0.0	0.0	9.532	A
B-AD	39	10	308	0.127	40	0.2	0.1	13.419	B
A-BCD	0	0	1185	0.000	0	0.0	0.0	0.000	A
A-B	20	5			20				
A-C	1036	259			1036				
D-AB	0	0	404	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	306	0.000	0	0.0	0.0	0.000	A
C-ABD	17	4	476	0.035	17	0.0	0.0	7.832	A
C-D	2	0.56			2				
C-A	276	69			276				

N81_L8373_Quarry Access Junction - 2039 (without Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		0.52	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	548	0.088	0.223	0.223	-	-	-	0.140	0.319	-	0.223	0.223	0.112
B-C	704	0.095	0.241	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
B-D, offside lane	548	0.088	0.223	0.223	-	-	-	0.140	0.319	0.140	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	652	-	-	-	-	-	-	0.223	-	0.088	-	-	-
D-B, nearside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-B, offside lane	502	0.128	0.128	0.292	-	-	-	0.204	0.204	0.081	-	-	-
D-C	502	-	0.128	0.292	0.102	0.204	0.204	0.204	0.204	0.081	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D10	2039 (without Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
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✓	✓	HV Percentages	2.00
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Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	536	100.000
B - Quarry Access		ONE HOUR	✓	67	100.000
C - N81 North		ONE HOUR	✓	1104	100.000
D - L8373		ONE HOUR	✓	0	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	14	522	0
	B - Quarry Access	30	0	36	1
	C - N81 North	1082	16	0	6
	D - L8373	0	0	0	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.08	7.30	0.1	A	34	50
B-AD	0.14	16.91	0.2	C	28	42
A-BCD	0.00	0.00	0.0	A	0	0
A-B					13	19
A-C					479	718
D-AB	0.00	0.00	0.0	A	0	0
D-BC	0.00	0.00	0.0	A	0	0
C-ABD	0.03	6.23	0.0	A	15	22
C-D					6	8
C-A					993	1489

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	591	0.047	27	0.0	0.0	6.379	A
B-AD	23	6	342	0.067	23	0.0	0.1	11.276	B
A-BCD	0	0	943	0.000	0	0.0	0.0	0.000	A
A-B	11	3			11				
A-C	393	98			393				
D-AB	0	0	352	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	278	0.000	0	0.0	0.0	0.000	A
C-ABD	12	3	643	0.019	12	0.0	0.0	5.707	A
C-D	5	1			5				
C-A	815	204			815				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	8	568	0.058	33	0.0	0.1	6.726	A
B-AD	27	7	302	0.091	27	0.1	0.1	13.113	B
A-BCD	0	0	870	0.000	0	0.0	0.0	0.000	A
A-B	13	3			13				
A-C	469	117			469				
D-AB	0	0	308	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	234	0.000	0	0.0	0.0	0.000	A
C-ABD	14	4	623	0.023	14	0.0	0.0	5.917	A
C-D	5	1			5				
C-A	973	243			973				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	40	10	534	0.075	40	0.1	0.1	7.293	A
B-AD	34	8	246	0.136	33	0.1	0.2	16.891	C
A-BCD	0	0	768	0.000	0	0.0	0.0	0.000	A
A-B	15	4			15				
A-C	575	144			575				
D-AB	0	0	244	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	174	0.000	0	0.0	0.0	0.000	A
C-ABD	18	4	595	0.030	18	0.0	0.0	6.233	A
C-D	7	2			7				
C-A	1191	298			1191				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	40	10	533	0.075	40	0.1	0.1	7.299	A
B-AD	34	8	246	0.136	33	0.2	0.2	16.913	C
A-BCD	0	0	768	0.000	0	0.0	0.0	0.000	A
A-B	15	4			15				
A-C	575	144			575				
D-AB	0	0	244	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	174	0.000	0	0.0	0.0	0.000	A
C-ABD	18	4	595	0.030	18	0.0	0.0	6.233	A
C-D	7	2			7				
C-A	1191	298			1191				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	8	567	0.058	33	0.1	0.1	6.737	A
B-AD	27	7	302	0.091	28	0.2	0.1	13.133	B
A-BCD	0	0	870	0.000	0	0.0	0.0	0.000	A
A-B	13	3			13				
A-C	469	117			469				
D-AB	0	0	308	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	234	0.000	0	0.0	0.0	0.000	A
C-ABD	14	4	623	0.023	14	0.0	0.0	5.920	A
C-D	5	1			5				
C-A	973	243			973				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	591	0.047	28	0.1	0.0	6.392	A
B-AD	23	6	342	0.067	23	0.1	0.1	11.293	B
A-BCD	0	0	943	0.000	0	0.0	0.0	0.000	A
A-B	11	3			11				
A-C	393	98			393				
D-AB	0	0	352	0.000	0	0.0	0.0	0.000	A
D-BC	0	0	278	0.000	0	0.0	0.0	0.000	A
C-ABD	12	3	643	0.019	12	0.0	0.0	5.710	A
C-D	5	1			5				
C-A	815	204			815				

N81_L8373_Quarry Access Junction - 2039 (with Quarry), AM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.75	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carrieway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	622	0.100	0.253	0.253	-	-	-	0.159	0.361	-	0.253	0.253	0.127
B-C	612	0.083	0.210	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	495	0.080	0.201	0.201	-	-	-	0.127	0.287	0.127	-	-	-
B-D, offside lane	622	0.100	0.253	0.253	-	-	-	0.159	0.361	0.159	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.
Streams may be combined, in which case capacity will be adjusted.
Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D11	2039 (with Quarry)	AM	ONE HOUR	07:00	08:30	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
✓	✓	HV Percentages	2.00

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	1409	100.000
B - Quarry Access		ONE HOUR	✓	56	100.000
C - N81 North		ONE HOUR	✓	416	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	33	1376	0
	B - Quarry Access	52	0	4	0
	C - N81 North	366	47	0	3
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

	To			
	A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From				
A - N81 South	0	0	0	0
B - Quarry Access	0	0	0	0
C - N81 North	0	0	0	0
D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.02	14.13	0.0	B	4	6
B-AD	0.39	40.18	0.6	E	48	72
A-BCD	0.00	0.00	0.0	A	0	0
A-B					30	45
A-C					1263	1894
D-AB	0.03	21.21	0.0	C	4	5
D-BC	0.14	19.76	0.2	C	26	39
C-ABD	0.15	12.08	0.2	B	43	65
C-D					3	4
C-A					336	504

Main Results for each time segment

07:00 - 07:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.75	380	0.008	3	0.0	0.0	9.545	A
B-AD	39	10	297	0.132	39	0.0	0.1	13.888	B
A-BCD	0	0	1173	0.000	0	0.0	0.0	0.000	A
A-B	25	6			25				
A-C	1036	259			1036				
D-AB	3	0.70	257	0.011	3	0.0	0.0	14.165	B
D-BC	21	5	309	0.069	21	0.0	0.1	12.488	B
C-ABD	35	9	475	0.075	35	0.0	0.1	8.178	A
C-D	2	0.56			2				
C-A	276	69			276				

07:15 - 07:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
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B-CD	4	0.90	333	0.011	4	0.0	0.0	10.937	B
B-AD	47	12	234	0.200	46	0.1	0.2	19.154	C
A-BCD	0	0	1144	0.000	0	0.0	0.0	0.000	A
A-B	30	7			30				
A-C	1237	309			1237				
D-AB	3	0.85	222	0.015	3	0.0	0.0	16.450	C
D-BC	25	6	269	0.094	25	0.1	0.1	14.775	B
C-ABD	42	11	422	0.100	42	0.1	0.1	9.464	A
C-D	3	0.67			3				
C-A	329	82			329				

07:30 - 07:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	1	260	0.017	4	0.0	0.0	14.067	B
B-AD	57	14	147	0.390	56	0.2	0.6	39.047	E
A-BCD	0	0	1104	0.000	0	0.0	0.0	0.000	A
A-B	36	9			36				
A-C	1515	379			1515				
D-AB	4	1	174	0.025	4	0.0	0.0	21.184	C
D-BC	31	8	213	0.145	31	0.1	0.2	19.689	C
C-ABD	52	13	350	0.148	52	0.1	0.2	12.061	B
C-D	3	0.83			3				
C-A	403	101			403				

07:45 - 08:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	1	259	0.017	4	0.0	0.0	14.128	B
B-AD	57	14	147	0.391	57	0.6	0.6	40.175	E
A-BCD	0	0	1104	0.000	0	0.0	0.0	0.000	A
A-B	36	9			36				
A-C	1515	379			1515				
D-AB	4	1	174	0.025	4	0.0	0.0	21.206	C
D-BC	31	8	213	0.145	31	0.2	0.2	19.761	C
C-ABD	52	13	350	0.148	52	0.2	0.2	12.080	B
C-D	3	0.83			3				
C-A	403	101			403				

08:00 - 08:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	4	0.90	332	0.011	4	0.0	0.0	10.968	B
B-AD	47	12	234	0.200	48	0.6	0.3	19.536	C
A-BCD	0	0	1144	0.000	0	0.0	0.0	0.000	A
A-B	30	7			30				
A-C	1237	309			1237				

D-AB	3	0.85	222	0.015	3	0.0	0.0	16.471	C
D-BC	25	6	268	0.094	26	0.2	0.1	14.838	B
C-ABD	42	11	422	0.100	42	0.2	0.1	9.481	A
C-D	3	0.67			3				
C-A	329	82			329				

08:15 - 08:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	3	0.75	380	0.008	3	0.0	0.0	9.557	A
B-AD	39	10	297	0.132	40	0.3	0.2	14.006	B
A-BCD	0	0	1173	0.000	0	0.0	0.0	0.000	A
A-B	25	6			25				
A-C	1036	259			1036				
D-AB	3	0.70	257	0.011	3	0.0	0.0	14.181	B
D-BC	21	5	309	0.069	21	0.1	0.1	12.532	B
C-ABD	35	9	475	0.075	36	0.1	0.1	8.195	A
C-D	2	0.56			2				
C-A	276	69			276				

N81_L8373_Quarry Access Junction - 2039 (with Quarry), PM

Data Errors and Warnings

Severity	Area	Item	Description
Warning	Minor arm flare	D - L8373 - Minor arm geometry	Is flare very short? Estimated flare length is zero but has been increased to 1 because a zero flare length is not allowed.
Warning	Vehicle Mix		HV% is zero for all movements / time segments. Vehicle Mix matrix should be completed whether working in PCUs or Vehs. If HV% at the junction is genuinely zero, please ignore this warning.

Analysis Set Details

ID	Name	Include in report	Network flow scaling factor (%)	Network capacity scaling factor (%)
A2	N81_L8373_Quarry Access Junction	✓	100.000	100.000

Junction Network

Junctions

Junction	Name	Junction type	Major road direction	Use circulating lanes	Junction Delay (s)	Junction LOS
1	untitled	Crossroads	Two-way		1.09	A

Junction Network Options

Driving side	Lighting
Left	Normal/unknown

Arms

Arms

Arm	Name	Description	Arm type
A	N81 South		Major
B	Quarry Access		Minor
C	N81 North		Major
D	L8373		Minor

Major Arm Geometry

Arm	Width of carriageway (m)	Has kerbed central reserve	Has right turn bay	Width for right turn (m)	Visibility for right turn (m)	Blocks?	Blocking queue (PCU)
A - N81 South	8.68				150.0	✓	2.00
C - N81 North	8.68		✓	3.38	150.0	✓	9.00

Geometries for Arm C are measured opposite Arm B. Geometries for Arm A (if relevant) are measured opposite Arm D.

Minor Arm Geometry

Arm	Minor arm type	Width at give-way (m)	Width at 5m (m)	Width at 10m (m)	Width at 15m (m)	Width at 20m (m)	Estimate flare length	Flare length (PCU)	Visibility to left (m)	Visibility to right (m)
B - Quarry Access	One lane plus flare	10.00	9.00	7.00	4.86	4.48	✓	3.00	83	51
D - L8373	One lane plus flare	4.40	2.20	2.20	2.20	2.20	✓	1.00	8	135

Slope / Intercept / Capacity

Priority Intersection Slopes and Intercepts

Stream	Intercept (PCU/hr)	Slope for A-B	Slope for A-C	Slope for A-D	Slope for B-A	Slope for B-C	Slope for B-D	Slope for C-A	Slope for C-B	Slope for C-D	Slope for D-A	Slope for D-B	Slope for D-C
A-D	661	-	-	-	-	-	-	0.226	0.323	0.226	-	-	-
B-A	548	0.088	0.223	0.223	-	-	-	0.140	0.319	-	0.223	0.223	0.112
B-C	704	0.095	0.241	-	-	-	-	-	-	-	-	-	-
B-D, nearside lane	568	0.091	0.231	0.231	-	-	-	0.145	0.330	0.145	-	-	-
B-D, offside lane	548	0.088	0.223	0.223	-	-	-	0.140	0.319	0.140	-	-	-
C-B	746	0.255	0.255	0.365	-	-	-	-	-	-	-	-	-
D-A	564	-	-	-	-	-	-	0.193	-	0.076	-	-	-
D-B, nearside lane	434	0.111	0.111	0.252	-	-	-	0.177	0.177	0.070	-	-	-
D-B, offside lane	516	0.132	0.132	0.300	-	-	-	0.210	0.210	0.083	-	-	-
D-C	516	-	0.132	0.300	0.105	0.210	0.210	0.210	0.210	0.083	-	-	-

The slopes and intercepts shown above do NOT include any corrections or adjustments.

Streams may be combined, in which case capacity will be adjusted.

Values are shown for the first time segment only; they may differ for subsequent time segments.

Traffic Demand

Demand Set Details

ID	Scenario name	Time Period name	Traffic profile type	Start time (HH:mm)	Finish time (HH:mm)	Time segment length (min)	Run automatically
D12	2039 (with Quarry)	PM	ONE HOUR	16:15	17:45	15	✓

Vehicle mix varies over turn	Vehicle mix varies over entry	Vehicle mix source	PCU Factor for a HV (PCU)
------------------------------	-------------------------------	--------------------	---------------------------

✓	✓	HV Percentages	2.00
---	---	----------------	------

Demand overview (Traffic)

Arm	Linked arm	Profile type	Use O-D data	Average Demand (PCU/hr)	Scaling Factor (%)
A - N81 South		ONE HOUR	✓	543	100.000
B - Quarry Access		ONE HOUR	✓	67	100.000
C - N81 North		ONE HOUR	✓	1129	100.000
D - L8373		ONE HOUR	✓	32	100.000

Origin-Destination Data

Demand (PCU/hr)

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	21	522	0
	B - Quarry Access	30	0	36	1
	C - N81 North	1082	41	0	6
	D - L8373	0	7	25	0

Vehicle Mix

Heavy Vehicle Percentages

		To			
		A - N81 South	B - Quarry Access	C - N81 North	D - L8373
From	A - N81 South	0	0	0	0
	B - Quarry Access	0	0	0	0
	C - N81 North	0	0	0	0
	D - L8373	0	0	0	0

Results

Results Summary for whole modelled period

Stream	Max RFC	Max Delay (s)	Max Queue (PCU)	Max LOS	Average Demand (PCU/hr)	Total Junction Arrivals (PCU)
B-CD	0.08	7.34	0.1	A	34	50
B-AD	0.14	18.14	0.2	C	28	42
A-BCD	0.00	0.00	0.0	A	0	0
A-B					19	29
A-C					479	718
D-AB	0.03	26.33	0.0	D	4	5
D-BC	0.18	26.09	0.2	D	26	39
C-ABD	0.08	6.57	0.1	A	38	56
C-D					6	8
C-A					993	1489

Main Results for each time segment

16:15 - 16:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	590	0.047	27	0.0	0.0	6.392	A
B-AD	23	6	332	0.069	23	0.0	0.1	11.627	B
A-BCD	0	0	931	0.000	0	0.0	0.0	0.000	A
A-B	16	4			16				
A-C	393	98			393				
D-AB	3	0.70	235	0.012	3	0.0	0.0	15.519	C
D-BC	21	5	279	0.076	21	0.0	0.1	13.957	B
C-ABD	31	8	641	0.048	31	0.0	0.1	5.893	A
C-D	5	1			5				
C-A	815	204			815				

16:30 - 16:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	8	566	0.058	33	0.0	0.1	6.746	A
B-AD	27	7	290	0.094	27	0.1	0.1	13.695	B
A-BCD	0	0	855	0.000	0	0.0	0.0	0.000	A
A-B	19	5			19				
A-C	469	117			469				
D-AB	3	0.86	196	0.018	3	0.0	0.0	18.728	C
D-BC	25	6	232	0.109	25	0.1	0.1	17.355	C
C-ABD	37	9	621	0.059	37	0.1	0.1	6.161	A
C-D	5	1			5				
C-A	973	243			973				

16:45 - 17:00

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	40	10	531	0.076	40	0.1	0.1	7.333	A
B-AD	34	8	232	0.144	33	0.1	0.2	18.097	C
A-BCD	0	0	750	0.000	0	0.0	0.0	0.000	A
A-B	23	6			23				
A-C	575	144			575				
D-AB	4	1	141	0.032	4	0.0	0.0	26.286	D
D-BC	31	8	169	0.182	30	0.1	0.2	25.953	D
C-ABD	45	11	593	0.076	45	0.1	0.1	6.569	A
C-D	7	2			7				
C-A	1191	298			1191				

17:00 - 17:15

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	40	10	531	0.076	40	0.1	0.1	7.340	A
B-AD	34	8	232	0.144	33	0.2	0.2	18.136	C
A-BCD	0	0	750	0.000	0	0.0	0.0	0.000	A
A-B	23	6			23				
A-C	575	144			575				
D-AB	5	1	141	0.032	5	0.0	0.0	26.334	D
D-BC	31	8	169	0.182	31	0.2	0.2	26.091	D
C-ABD	45	11	593	0.076	45	0.1	0.1	6.569	A
C-D	7	2			7				
C-A	1191	298			1191				

17:15 - 17:30

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	33	8	566	0.058	33	0.1	0.1	6.758	A
B-AD	27	7	290	0.094	28	0.2	0.1	13.720	B
A-BCD	0	0	855	0.000	0	0.0	0.0	0.000	A
A-B	19	5			19				
A-C	469	117			469				
D-AB	3	0.87	195	0.018	4	0.0	0.0	18.762	C
D-BC	25	6	232	0.109	26	0.2	0.1	17.451	C
C-ABD	37	9	621	0.059	37	0.1	0.1	6.162	A
C-D	5	1			5				
C-A	973	243			973				

17:30 - 17:45

Stream	Total Demand (PCU/hr)	Junction Arrivals (PCU)	Capacity (PCU/hr)	RFC	Throughput (PCU/hr)	Start queue (PCU)	End queue (PCU)	Delay (s)	Unsignalised level of service
B-CD	28	7	590	0.047	28	0.1	0.0	6.405	A
B-AD	23	6	332	0.069	23	0.1	0.1	11.651	B
A-BCD	0	0	931	0.000	0	0.0	0.0	0.000	A
A-B	16	4			16				
A-C	393	98			393				
D-AB	3	0.70	235	0.012	3	0.0	0.0	15.541	C
D-BC	21	5	278	0.076	21	0.1	0.1	14.018	B
C-ABD	31	8	641	0.048	31	0.1	0.1	5.899	A
C-D	5	1			5				
C-A	815	204			815				

Appendix 12C

JUNCTION CAPACITY ANALYSIS



TRIP RATE CALCULATION SELECTION PARAMETERS:

Land Use : 02 - EMPLOYMENT
 Category : H - QUARRY

VEHICLESSelected regions and areas:

03 SOUTH WEST	
DC DORSET	1 days
05 EAST MIDLANDS	
NR NORTHAMPTONSHIRE	1 days
08 NORTH WEST	
GM GREATER MANCHESTER	1 days
09 NORTH	
DH DURHAM	2 days

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

Secondary Filtering selection:

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

Parameter: Site area
 Actual Range: 10.00 to 40.00 (units: hect)
 Range Selected by User: 10.00 to 40.00 (units: hect)

Parking Spaces Range: All Surveys Included

Public Transport Provision:

Selection by: Include all surveys

Date Range: 01/01/86 to 09/11/10

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

Selected survey days:

Tuesday	2 days
Wednesday	2 days
Friday	1 days

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

Selected survey types:

Manual count	5 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:

Edge of Town	1
Free Standing (PPS6 Out of Town)	4

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

Selected Location Sub Categories:

Out of Town	4
No Sub Category	1

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.

Secondary Filtering selection:Use Class:

B2	5 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®.

Secondary Filtering selection (Cont.):Population within 1 mile:

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

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

Population within 5 miles:

25,001 to 50,000	1 days
50,001 to 75,000	2 days
75,001 to 100,000	1 days
125,001 to 250,000	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	4 days
1.1 to 1.5	1 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:

Not Known	2 days
No	3 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.

PTAL Rating:

No PTAL Present	5 days
-----------------	--------

This data displays the number of selected surveys with PTAL Ratings.

LIST OF SITES relevant to selection parameters

1	DC-02-H-02	STONE QUARRY	DORSET
	SOUTHWELL STREET NEAR PORTLAND SOUTHWELL Free Standing (PPS6 Out of Town) Out of Town Total Site area: 40.00 hect Survey date: WEDNESDAY 03/09/97		Survey Type: MANUAL
2	DH-02-H-01	LIMESTONE QUARRY	DURHAM
	STONYBECK LANE NEAR DURHAM BISHOP MIDDLEHAM Free Standing (PPS6 Out of Town) Out of Town Total Site area: 10.00 hect Survey date: TUESDAY 02/12/08		Survey Type: MANUAL
3	DH-02-H-02	QUARRY	DURHAM
	HART VILLAGE HARTLEPOOL Free Standing (PPS6 Out of Town) Out of Town Total Site area: 22.80 hect Survey date: TUESDAY 09/11/10		Survey Type: MANUAL
4	GM-02-H-01	STONE QUARRY	GREATER MANCHESTER
	GEORGE'S LANE HORWICH Edge of Town No Sub Category Total Site area: 17.00 hect Survey date: FRIDAY 09/08/91		Survey Type: MANUAL
5	NR-02-H-01	GRAVEL QUARRY	NORTHAMPTONSHIRE
	WOLLASTON ROAD BOZEAT WELLINGBOROUGH Free Standing (PPS6 Out of Town) Out of Town Total Site area: 14.50 hect Survey date: WEDNESDAY 26/11/08		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/H - QUARRY

VEHICLES

Calculation factor: 1 hect

BOLD print indicates peak (busiest) period

Time Range	ARRIVALS			DEPARTURES			TOTALS		
	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate	No. Days	Ave. AREA	Trip Rate
00:00 - 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	5	20.86	0.393	5	20.86	0.153	5	20.86	0.546
07:30 - 08:00	5	20.86	0.249	5	20.86	0.211	5	20.86	0.460
08:00 - 08:30	5	20.86	0.230	5	20.86	0.163	5	20.86	0.393
08:30 - 09:00	5	20.86	0.201	5	20.86	0.221	5	20.86	0.422
09:00 - 09:30	5	20.86	0.259	5	20.86	0.240	5	20.86	0.499
09:30 - 10:00	5	20.86	0.268	5	20.86	0.192	5	20.86	0.460
10:00 - 10:30	5	20.86	0.153	5	20.86	0.173	5	20.86	0.326
10:30 - 11:00	5	20.86	0.182	5	20.86	0.182	5	20.86	0.364
11:00 - 11:30	5	20.86	0.173	5	20.86	0.163	5	20.86	0.336
11:30 - 12:00	5	20.86	0.173	5	20.86	0.153	5	20.86	0.326
12:00 - 12:30	5	20.86	0.105	5	20.86	0.153	5	20.86	0.258
12:30 - 13:00	5	20.86	0.153	5	20.86	0.163	5	20.86	0.316
13:00 - 13:30	5	20.86	0.192	5	20.86	0.201	5	20.86	0.393
13:30 - 14:00	5	20.86	0.230	5	20.86	0.240	5	20.86	0.470
14:00 - 14:30	5	20.86	0.249	5	20.86	0.211	5	20.86	0.460
14:30 - 15:00	5	20.86	0.221	5	20.86	0.259	5	20.86	0.480
15:00 - 15:30	5	20.86	0.192	5	20.86	0.182	5	20.86	0.374
15:30 - 16:00	5	20.86	0.182	5	20.86	0.125	5	20.86	0.307
16:00 - 16:30	4	22.45	0.156	4	22.45	0.134	4	22.45	0.290
16:30 - 17:00	4	22.45	0.134	4	22.45	0.156	4	22.45	0.290
17:00 - 17:30	4	22.45	0.067	4	22.45	0.111	4	22.45	0.178
17:30 - 18:00	4	22.45	0.033	4	22.45	0.234	4	22.45	0.267
18:00 - 18:30	4	22.45	0.011	4	22.45	0.089	4	22.45	0.100
18:30 - 19:00	4	22.45	0.011	4	22.45	0.011	4	22.45	0.022
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:			4.217			4.120			8.337

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.

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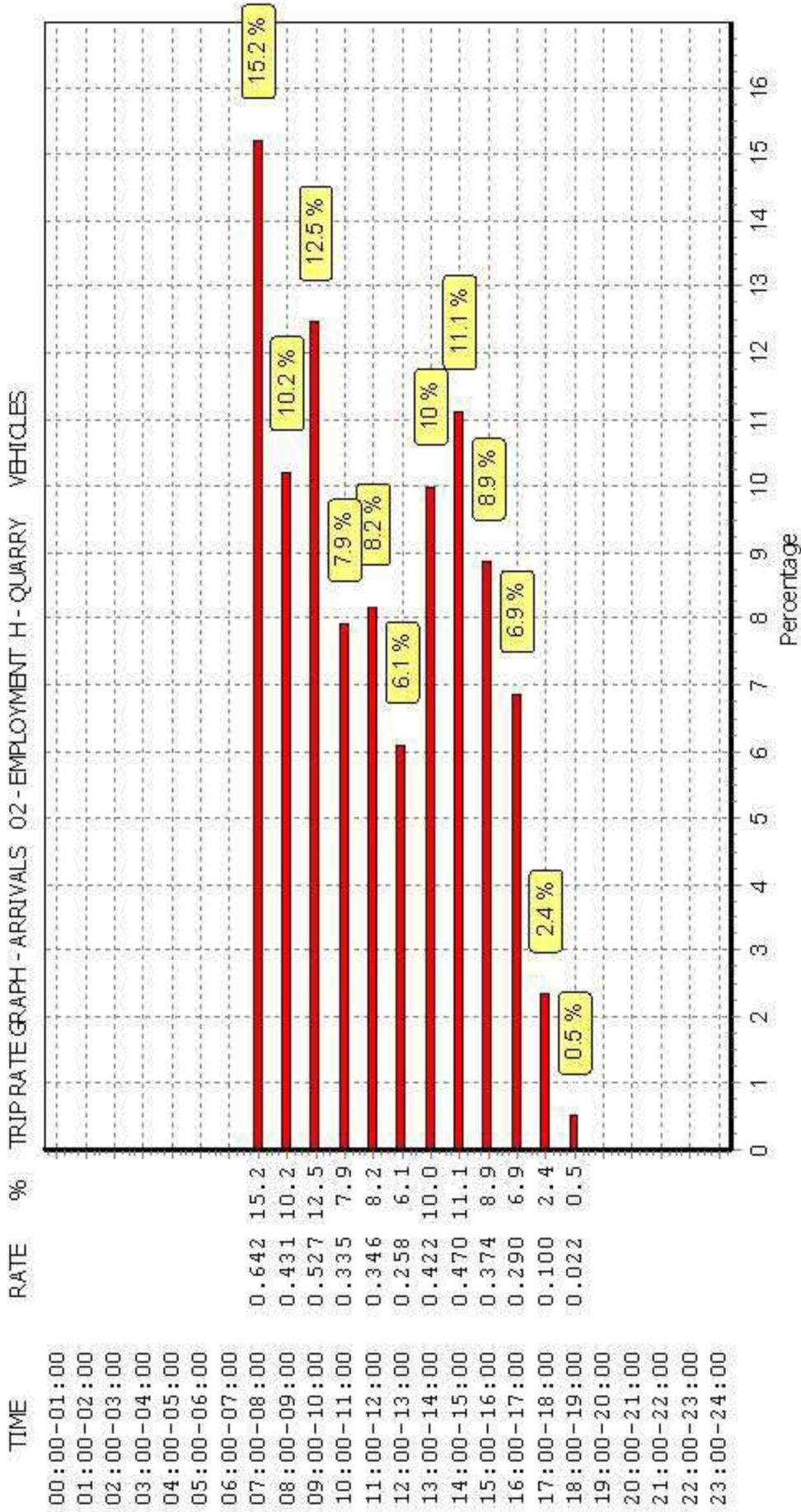
Parameter summary

Trip rate parameter range selected:	10.00 to 40.00 (units: hect)
Survey date date range:	01/01/86 - 09/11/10
Number of weekdays (Monday-Friday):	5
Number of Saturdays:	0
Number of Sundays:	0
Surveys automatically removed from selection:	1
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 show. Finally, the number of survey days that have been manually removed from the selected set outside of the standard filtering procedure are displayed.

Licence No: 261601

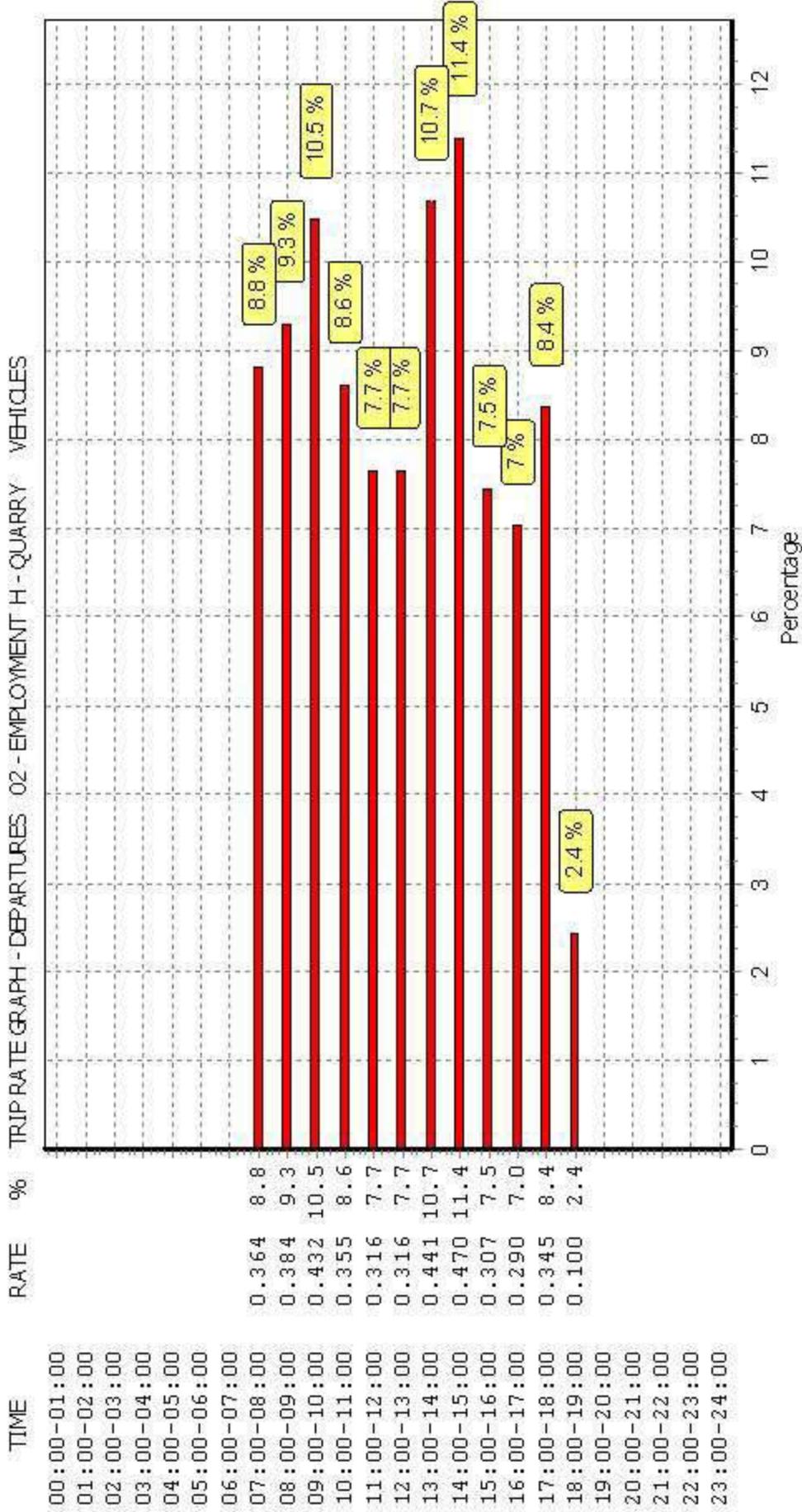
ICE Ltd Lower Commons Road Dublin 22



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Licence No: 261601

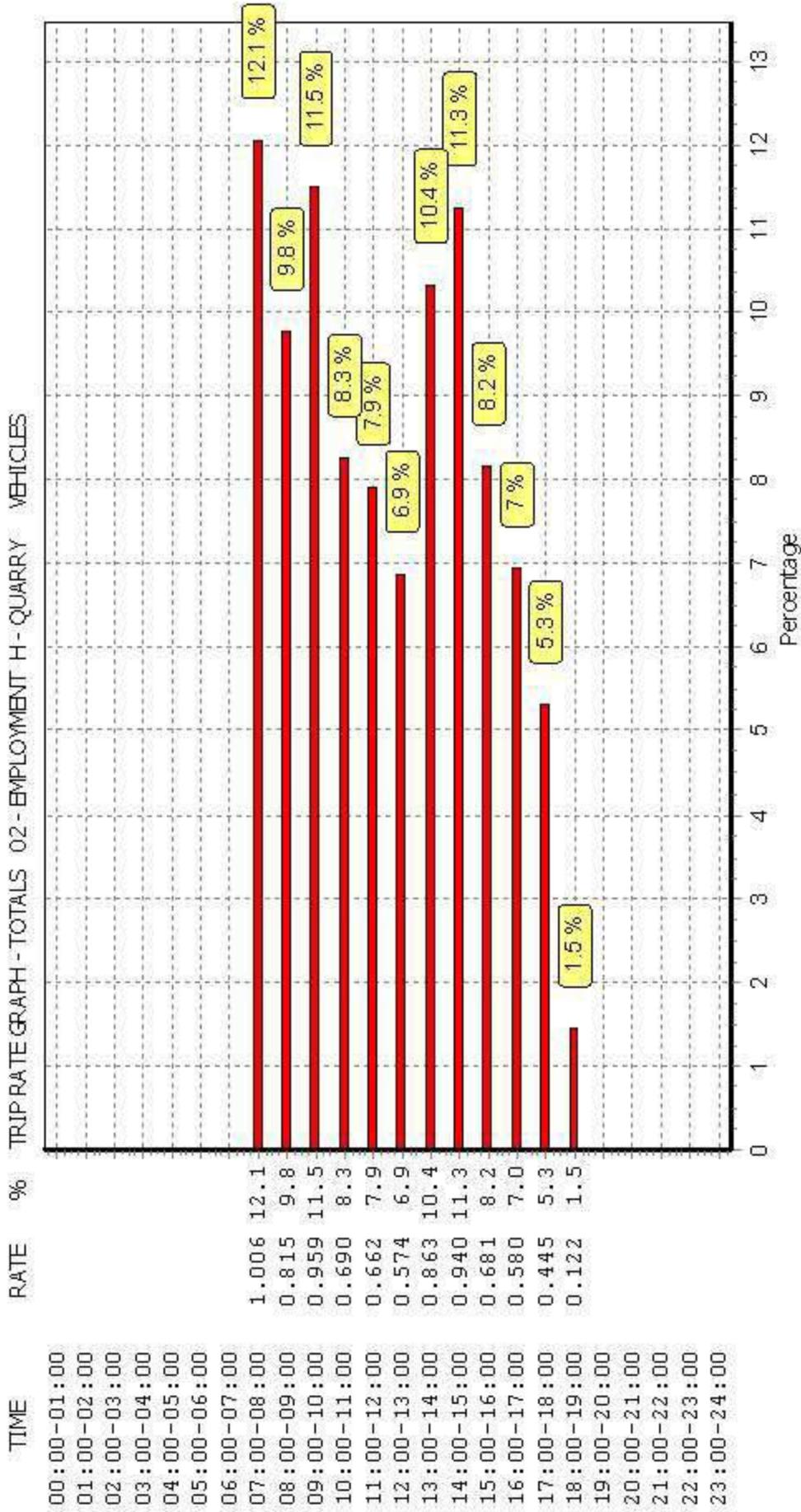
ICE Ltd Lower Commons Road Dublin 22



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Licence No: 261601

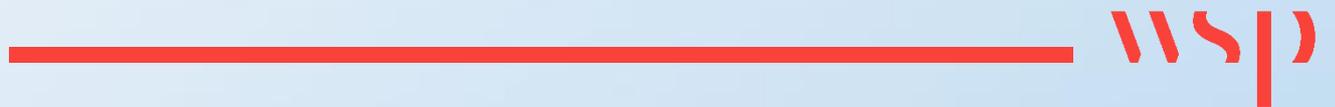
ICE Ltd Lower Commons Road Dublin 22



This graph is a visual representation of the trip rate calculation results screen. The same time periods and trip rates are displayed, but in addition there is an additional column showing the percentage of the total trip rate by individual time period, allowing peak periods to be easily identified through observation. Note that the type of count and the selected direction is shown at the top of the graph.

Appendix 12D

SIGHTLINES

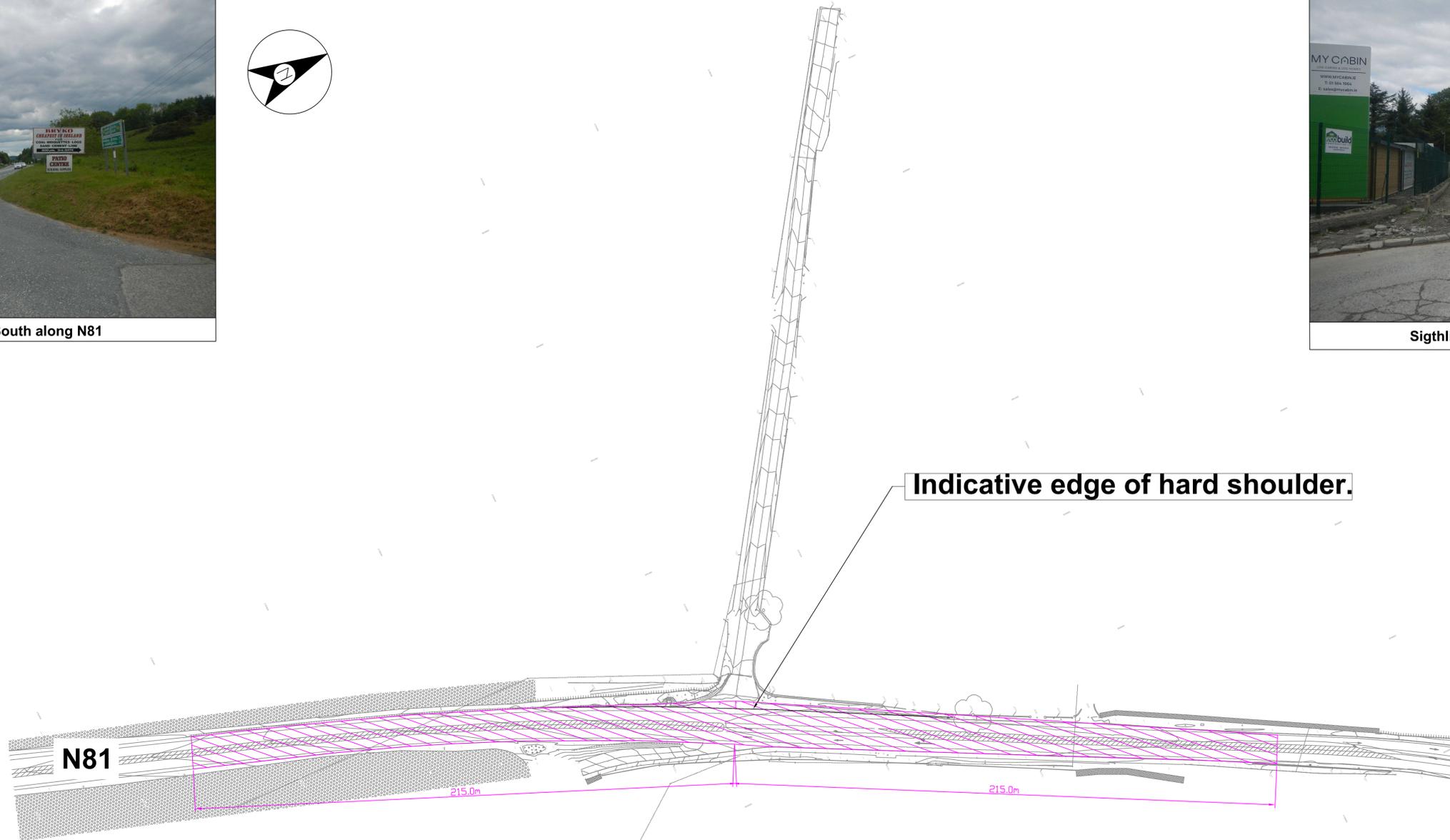




Sightlines looking South along N81



Sightlines looking North along N81



Indicative edge of hard shoulder.

N81

215.0m

215.0m

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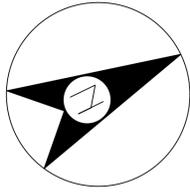
Rev.	Comment	Date
1.0	Draft	26/02/20

Notes:
 1. Do Not Scale - use figured dimensions only.
 2. Drawing is the property of PMCE Ltd.

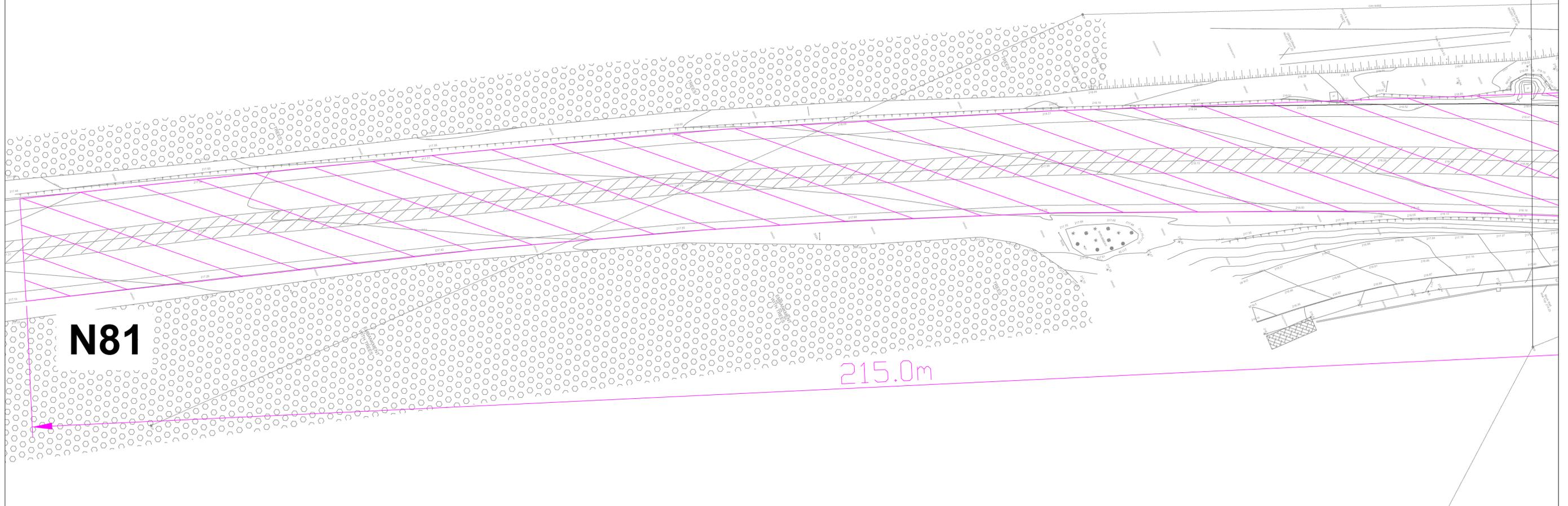
Project:
**Hudson Brothers Quarry
 Pit Extension, Co. Wicklow**

Drawing Title:
**Quarry Access
 Sightlines**

Drawn: AP	Date: 26/02/2020
Checked: AOR	Scale: 1:1000 A1
Approved: PJM	Status: Draft
Drawing No: P19-057-DG-001	Revision: 1.0



Sheet 1



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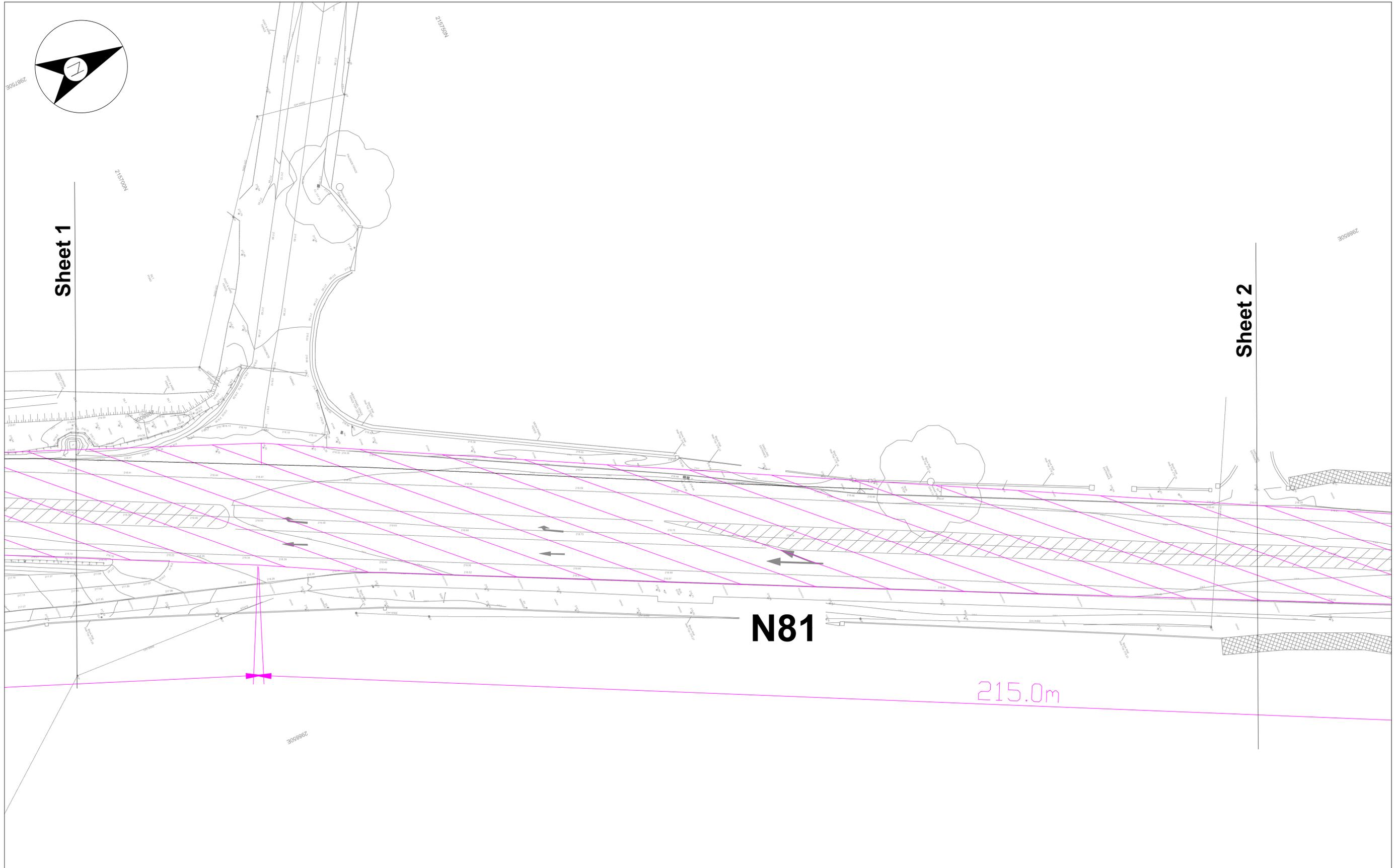
Rev.	Comment	Date
1.0	Draft	26/02/20

Notes:
 1. Do Not Scale - use figured dimensions only.
 2. Drawing is the property of PMCE Ltd.

Project:
**Hudson Brothers Quarry
 Pit Extension, Co. Wicklow**

Drawing Title:
**Quarry Access
 Sightlines**

Drawn: AP	Date: 26/02/2020
Checked: AOR	Scale: 1:250 A1
Approved: PJM	Status: Draft
Drawing No: P19-057-DG-002	Revision: 1.0



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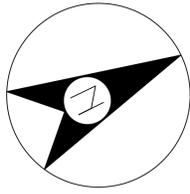
Rev.	Comment	Date
1.0	Draft	26/02/20

Notes:
 1. Do Not Scale - use figured dimensions only.
 2. Drawing is the property of PMCE Ltd.

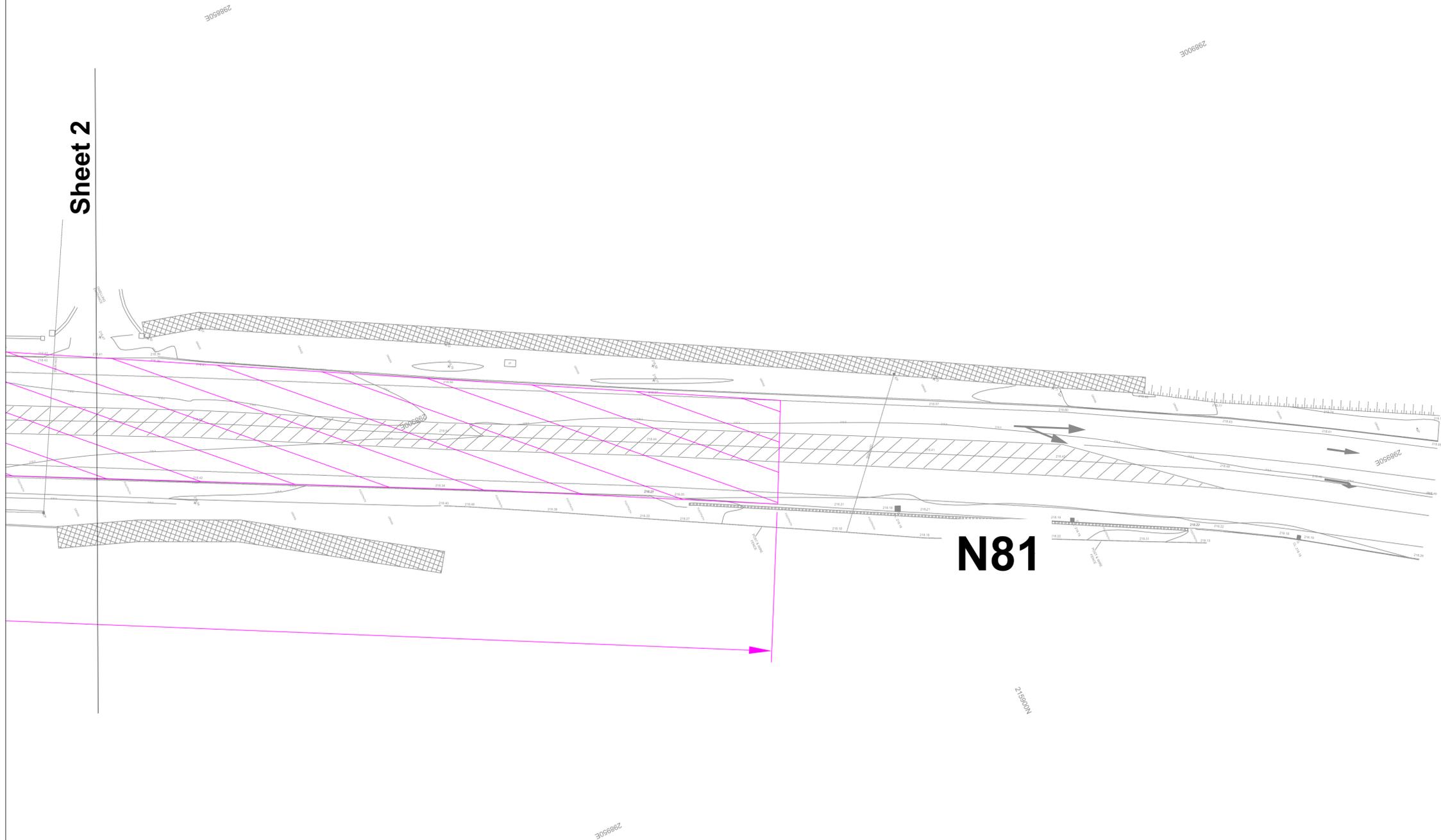
Project:
**Hudson Brothers Quarry
 Pit Extension, Co. Wicklow**

Drawing Title:
**Quarry Access
 Sightlines**

Drawn: AP	Date: 26/02/2020
Checked: AOR	Scale: 1:250 A1
Approved: PJM	Status: Draft
Drawing No: P19-057-DG-003	Revision: 1.0



Sheet 2



P M C E
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Rev.	Comment	Date
1.0	Draft	26/02/20

Notes:
 1 Do Not Scale - use figured dimensions only.
 2. Drawing is the property of PMCE Ltd.

Project:
**Hudson Brothers Quarry
 Pit Extension, Co. Wicklow**

Drawing Title:
**Quarry Access
 Sightlines**

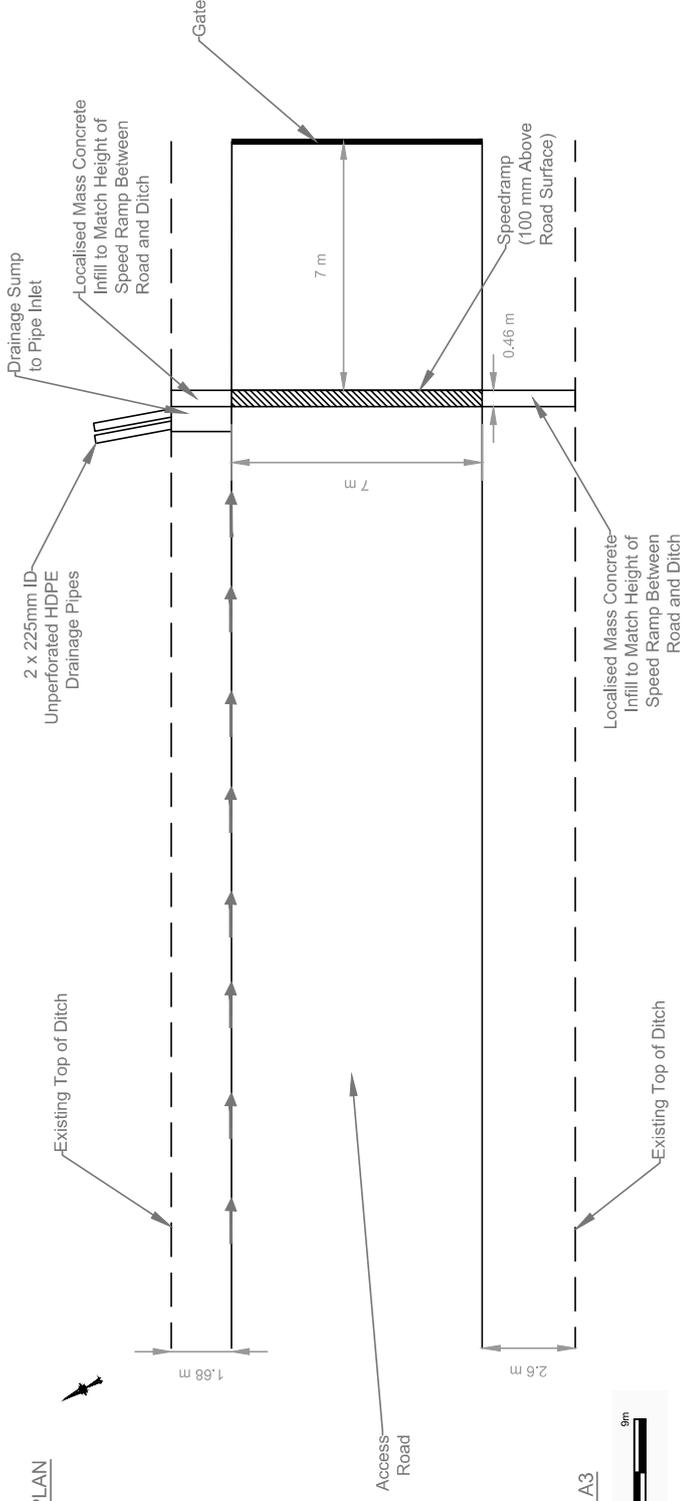
Drawn: AP	Date: 26/02/2020
Checked: AOR	Scale: 1:250 A1
Approved: PJM	Status: Draft
Drawing No: P19-057-DG-004	Revision: 1.0

Appendix 12E

DRAINAGE DESIGN



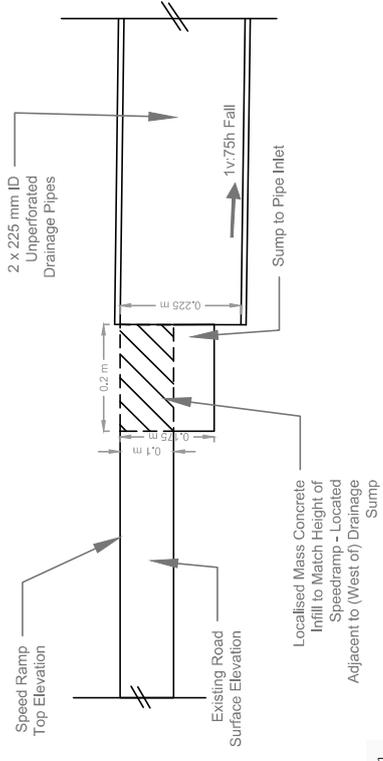
PLAN



1:150 A3



CROSS SECTION



1:10 A3



CLIENT	HUDSON BROTHERS LTD.	CONSULTANT	YYM-MDD	2020-Sep-22
PROJECT	PLANNING APPLICATION HUDSON BROTHERS LTD., PHILIPSTOWN, REDBOG, ATHGARRETT, CO. KILDARE	PREPARED	HMC	HMC
TITLE	RFI ITEM 4F: SURFACE WATER DRAINAGE WICKLOW SITE	DESIGN	HMC	HMC
PROJECT NO.	19115799	REVIEW	KMG	KMG
DRAWING NO.	RFI ITEM 4Fb	APPROVED	BB	BB
Rev.	A	SCALE	As shown A3	