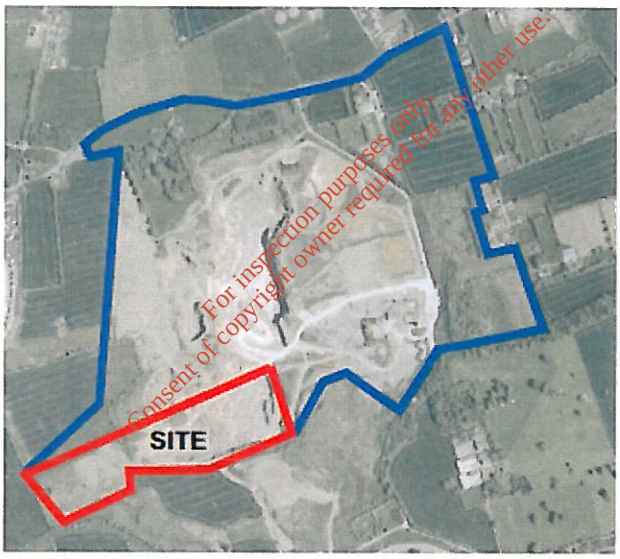
Roadstone JNWOOD

The Right Choice

EIS APPENDICES

WASTE LICENCE APPPLICATION, MULLAGHCRONE, DONORE, CO. MEATH.



APPENDIX 5.1
Ecology Bibliography

Appendix 5.1 Bibliography

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APPENDIX 5.2
Criteria for assessing Site Evaluation

APPENDIX 5.2 CRITERIA FOR ASSESSING SITE EVALUATION

RATING QUALIFYING CRITERIA

International Importance

- 'European Site' including Special Area of Conservation (SAC), Site of Community Importance
- (SCI), Special Protection Area (SPA) or proposed Special Area of Conservation.
- Proposed Special Protection Area (pSPA).
- Site that fulfills the criteria for designation as a 'European Site' (see Annex III of the Habitats
- Directive, as amended).
- Features essential to maintaining the coherence of the Natura 2000 Network.[4]
- Site containing 'best examples' of the habitat types listed in Annex I of the Habitats Directive.
- Resident or regularly occurring populations (assessed to be important at the national level)[5] of
- the following:
- Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
- and/or
- Species of animal and plants listed in Annex II and/or IV of the Habitats Directive.
- Ramsar Site (Convention on Wetlands of International Importance Especially Waterfowl
- Habitat 1971).
- World Heritage Site (Convention for the Protection ofWorld Cultural&Natural Heritage, 1972).
- Biosphere Reserve (UNESCO Man & The Biosphere Programme).
- Site hosting significant species populations under the Bonn Convention (Convention on the
- Conservation of Migratory Species ofWild Animals, 1979).
- Site hosting significant populations under the Berne Convention (Convention on the
- Conservation of European Wildlife and Natural Habitats, 1979).
- Biogenetic Reserve under the Council of Europe.
- European Diploma Site under the Council of Europe.
- Salmonid water designated pursuant to the European Communities (Quality of Salmonid Waters) Regulations, 1988, (S.I. No. 293 of 1988).[6]

National Importance

- Site designated or proposed as a Natural Heritage Area (NHA).
- Statutory Nature Reserve.
- Refuge for Fauna and Flora protected under the Wildlife Acts.
- National Park.
- Undesignated site fulfilling the criteria for designation as a Natural Heritage Area (NHA);
- Statutory Nature Reserve; Refuge for Fauna and Flora protected under the WildlifeAct; and/or
- a National Park.
- Resident or regularly occurring populations (assessed to be important at the national level)[7] of
- the following:
- Species protected under the Wildlife Acts; and/or
- Species listed on the relevant Red Data list.
- Site containing 'viable areas of the habitat types listed in Annex I of the Habitats Directive.

County Importance

- Area of Special Amenity.[9]
- Area subject to a Tree Preservation Order.
- Area of High Amenity, or equivalent, designated under the County Development Plan.
- Resident or regularly occurring populations (assessed to be important at the County level)of the following:
- Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
- Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
- Species protected under the Wildlife Acts; and/or
- Species listed on the relevant Red Data list.
- Site containing area or areas of the habitat types listed in Annex I of the Habitats Directive
- that do not fulfil the criteria for valuation as of International or National importance.
- County important populations of species, or viable areas of semi-natural habitats or natural
- heritage features identified in the National or Local BAP,[11] if this has been prepared.

- Sites containing semi-natural habitat types with high biodiversity in a county context and a
- high degree of naturalness, or populations of species that are uncommon within the county.
- Sites containing habitats and species that are rare or are undergoing a decline in quality or extent at a national level.

Local Importance (Higher Value)

- Locally important populations of priority species or habitats or natural heritage features
- identified in the Local BAP, if this has been prepared;
- Resident or regularly occurring populations (assessed to be important at the Local level)[12] of
- the following:
- Species of bird, listed in Annex I and/or referred to in Article 4(2) of the Birds Directive;
- Species of animal and plants listed in Annex II and/or IV of the Habitats Directive;
- Species protected under theWildlife Acts; and/or
- Species listed on the relevant Red Data list.
- Sites containing semi-natural habitat types with high biodiversity in a local context and a high
- degree of naturalness, or populations of species that are uncommon in the locality;
- Sites or features containing common or lower value habitats, including naturalised species that
- are nevertheless essential in maintaining links and ecological corridors between features of higher ecological value.

Local Importance (Lower Value)

- Sites containing small areas of semi-natural habitat that are of some local importance for
- wildlife;
- Sites or features containing non-native species that are of some importance in maintaining
- habitat links.

APPENDIX 7.1
Groundwater monitoring results

BHP/CL/02C

TEST REPORT

Analysing
Testing
Consulting
Calibrating

BHP
New Road
Thomondgate
Limerick
Ireland
Tel +353 61 455399
Fax + 353 61 455447
E Mail bhpcem2@bhp.ie

Client: **Roadstone Wood Ltd**
Fortunestown
Tallaght
Dublin 24

FTAO: Colin Doyle

BHP Ref. No.: 96660
Order No.:
Date Received: 26/01/11
Date Completed: 09/02/11
Test Specification: Nil
Item :See below

Test	Client Reference	Units	Results	Standard Reference
	Borehole at Mullaghcrone (BH3)			
pH		-	7.15	APHA-4500-H^+-B
Electrical Conductivity		μScm^{-1}	466	APHA - 2510 - B
Sodium		mg/l	7.12	APHA - 3120 - B
Potassium		mg/l	0.98	APHA - 3120 - B
Calcium		mg/l	32.4	APHA - 3120 - B
Magnesium		mg/l	5.62	APHA - 3120 - B
Chloride		mg/l	34.7	APHA - 4110 - B
Sulphate (as SO_4)		mg/l	54.1	APHA - 4110 - B
Total Alkalinity (as $CaCO_3$)		mg/l	114	APHA - 2320 -B
OrthoPhosphate (PO_4)		mg/l	0.03	APHA - 4110 - B
Nitrate (as NO_3)		mg/l	12.4	APHA - 4110 - B
Nitrite (as NO_2)		mg/l	<0.05	APHA - 4110 - B
Total Coliforms		cfu/100mls	4	APHA - 9223 - B
Faecal Coliforms		cfu/100mls	None Found	APHA - 9223 - B
Dissolved Oxygen		% O_2	76.3	APHA - 4500-O-G
Ammoniacal Nitrogen (as NH_4-N)		mg/l	0.08	APHA -4500- NH_3-D

Additional information : All methods are from Standard Methods for the Examination of Water and Wastewater 20th Edition.

For and on behalf of BHP laboratories :

Pat O'Sullivan
Issue Date : 09/02/2011

TEST REPORT

Analysing
Testing
Consulting
Calibrating

BHP
New Road
Thomondgate
Limerick
Ireland
Tel +353 61 455399
Fax + 353 61 455447
E Mail bhpcem2@bhp.ie

Client: **Roadstone Wood Ltd**
Fortunestown
Tallaght
Dublin 24

FTAO: Colin Doyle

BHP Ref. No.: 96660
Order No.:
Date Received: 26/01/11
Date Completed: 09/02/11
Test Specification: Nil
Item :See below

Test	Client Reference	Units	Results	Standard Reference
	Borehole at Mullaghcrone (BH3)			
Iron		mg/l	0.005	APHA - 3120 - B
Manganese		mg/l	0.006	APHA - 3120 - B
Total Phosphorus (as P)		mg/l	0.04	APHA - 4500 - P
Total Petroleum Hydrocarbons				
$>C_6$-C_{40}		mg/l	<0.001	GC-FID
$>C_6$-C_8		mg/l	<0.001	GC-FID
$>C_8$-C_{10}		mg/l	<0.001	GC-FID
$>C_{10}$-C_{12}		mg/l	<0.001	GC-FID
$>C_{12}$-C_{16}		mg/l	<0.001	GC-FID
$>C_{16}$-C_{21}		mg/l	<0.001	GC-FID
$>C_{21}$-C_{40}		mg/l	<0.001	GC-FID
Petroleum Range Organics		mg/l	<0.001	GC-FID
Diesel Range Organics		mg/l	<0.001	GC-FID
BTEX Compounds		mg/l	<0.001	GC-FID
Water Level (from top of casing)		M	>50	ISO 5667 - 11

Additional information : All methods are from Standard Methods for the Examination of Water and Wastewater 20th Edition.

For and on behalf of BHP laboratories :

Pat O'Sullivan
Issue Date : 09/02/2011

TEST REPORT

Analysing
Testing
Consulting
Calibrating

BHP
New Road
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Tel +353 61 455399
Fax + 353 61 455447
E Mail bhpcem2@bhp.ie

Client: **Roadstone Wood Ltd**
Fortunestown
Tallaght
Dublin 24

FTAO: Colin Doyle

BHP Ref. No.: 96660
Order No.:
Date Received: 26/01/11
Date Completed: 09/02/11
Test Specification: Nil
Item :See below

Test	Client Reference	Units	Results	Standard Reference
	Borehole at Mullaghcrone (BH3)			
Cadmium		mg/l	<0.001	APHA - 3120 - B
Chromium		mg/l	0.002	APHA - 3120 - B
Copper		mg/l	<0.001	APHA - 3120 - B
Lead		mg/l	<0.001	APHA - 3120 - B
Mercury		mg/l	<0.0002	APHA - 3120 - B
Nickel		mg/l	0.001	APHA - 3120 - B
Zinc		mg/l	<0.001	APHA - 3120 - B
Arsenic		mg/l	<0.001	APHA - 3120 - B
Barium		mg/l	0.006	APHA - 3120 - B
Boron		mg/l	0.012	APHA - 3120 - B
Selenium		mg/l	<0.001	APHA - 3120 - B
Silver		mg/l	<0.001	APHA - 3120 - B
Fluoride		mg/l	0.16	APHA - 4110 - B
Total Cyanide		mg/l	<0.001	APHA - 4500-CN^- - E
Total Organic Carbon		mg/l	4.6	APHA - 5310 - C
Phenol		mg/l	0.007	APHA- 5530- D

Additional information : All methods are from Standard Methods for the Examination of Water and Wastewater 20th Edition.

For and on behalf of BHP laboratories :

Pat O'Sullivan
Issue Date : 09/02/2011

EURO environmental services

Environmental Science & Management
Water,Soil & Air Testing

Unit 35,
Boyne Business Park,
Drogheda,
Co. Louth
Ireland
Tel: +353 41 9845440
Fax: +353 41 9846171
Web: www.euroenv.ie
email info@euroenv.ie

Customer	Elaine Higgins Irish Cement Platin Works Drogheda Co Louth Ireland	*Lab Report Ref. No.*	0090/507/04
		Date of Receipt	02/12/2010
		Date Testing Commenced	02/12/2010
		Received or Collected	Collected by Euro
		Condition on Receipt	Acceptable
Customer PO	15/66421	*Date of Report*	15/12/2010
Customer Ref	GW1 Bi-annual 01/12/10	*Sample Type*	Groundwater

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Ammonia (Ground Water)	114	Colorimetry	0.011	mg/L as N	UKAS
Bicarbonate	102	Colorimetry	312.29	mg/L HCO3	
Cadmium (Ground Water)	177	ICPMS	<0.09	ug/L	UKAS
Calcium (Ground water)	184	ICPMS	103.80	mg/L	
Chloride (Ground Water)	100	Colorimetry	29.24	mg/L	UKAS
Cobalt (Ground Water)	177	ICPMS	0.04	ug/L	UKAS
Copper (Ground Water)	177	ICPMS	0.6	ug/L	UKAS
Hardness Total (Ground Water)	111	Colorimetry	296	mg/L CaCO3	UKAS
Iron (Ground Water)	177	ICPMS	10.4	ug/L	UKAS
Lead (Ground Water)	177	ICPMS	0.1	ug/L	UKAS
Manganese (Ground Water)	177	ICPMS	2.2	ug/L	UKAS
Nickel (Ground Water)	177	ICPMS	0.2	ug/L	UKAS
Nitrate (Ground Water)	103	Colorimetry	4.750	mg/L as N	UKAS
Nitrite (Ground Water)	118	Colorimetry	<0.002	mg/L as N	UKAS
Potassium (Ground water)	184	ICPMS	5.33	mg/L	UKAS
Sodium (Ground water)	184	ICPMS	16.85	mg/L	UKAS
Sulphate (Ground Water)	119	Colorimetry	24.68	mg/L	UKAS
Tin	177	ICPMS	<2.8	ug/L	

Signed : _____ *Date :* 15/12/10

Katherine McQuillan - Technical Manager

Acc. : Accredited Parameters by ISO 17025:2005

All organic results are analysed as received and all results are corrected for dry weight at 104 C
Results shall not be reproduced, except in full, without the approval of EURO environmental services
Results contained in this report relate only to the samples tested

EURO
environmental
services

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Water,Soil & Air Testing

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Fax: +353 41 9846171
Web: www.euroenv.ie
email info@euroenv.ie

Customer	Elaine Higgins Irish Cement Platin Works Drogheda Co Louth Ireland	*Lab Report Ref. No.*	0090/507/04
		Date of Receipt	02/12/2010
		Date Testing Commenced	02/12/2010
		Received or Collected	Collected by Euro
		Condition on Receipt	Acceptable
Customer PO	15/66421	*Date of Report*	15/12/2010
Customer Ref	GW1 Bi-annual 01/12/10	*Sample Type*	Groundwater

CERTIFICATE OF ANALYSIS

Test Parameter	SOP	Analytical Technique	Result	Units	Acc.
Ammonia (Ground Water)	114	Colorimetry	0.011	mg/L as N	UKAS
Bicarbonate	102	Colorimetry	312.29	mg/L HCO3	
Cadmium (Ground Water)	177	ICPMS	<0.09	ug/L	UKAS
Calcium (Ground water)	184	ICPMS	103.80	mg/L	
Chloride (Ground Water)	100	Colorimetry	29.24	mg/L	UKAS
Cobalt (Ground Water)	177	ICPMS	0.04	ug/L	UKAS
Copper (Ground Water)	177	ICPMS	0.6	ug/L	UKAS
Hardness Total (Ground Water)	111	Colorimetry	296	mg/L CaCO3	UKAS
Iron (Ground Water)	177	ICPMS	10.4	ug/L	UKAS
Lead (Ground Water)	177	ICPMS	0.1	ug/L	UKAS
Manganese (Ground Water)	177	ICPMS	2.2	ug/L	UKAS
Nickel (Ground Water)	177	ICPMS	0.2	ug/L	UKAS
Nitrate (Ground Water)	103	Colorimetry	4.750	mg/L as N	UKAS
Nitrite (Ground Water)	118	Colorimetry	<0.002	mg/L as N	UKAS
Potassium (Ground water)	184	ICPMS	5.33	mg/L	UKAS
Sodium (Ground water)	184	ICPMS	16.85	mg/L	UKAS
Sulphate (Ground Water)	119	Colorimetry	24.68	mg/L	UKAS
Tin	177	ICPMS	<2.8	ug/L	

Signed : Katherine McQuillan *Date :* 15/12/10

Katherine McQuillan - Technical Manager

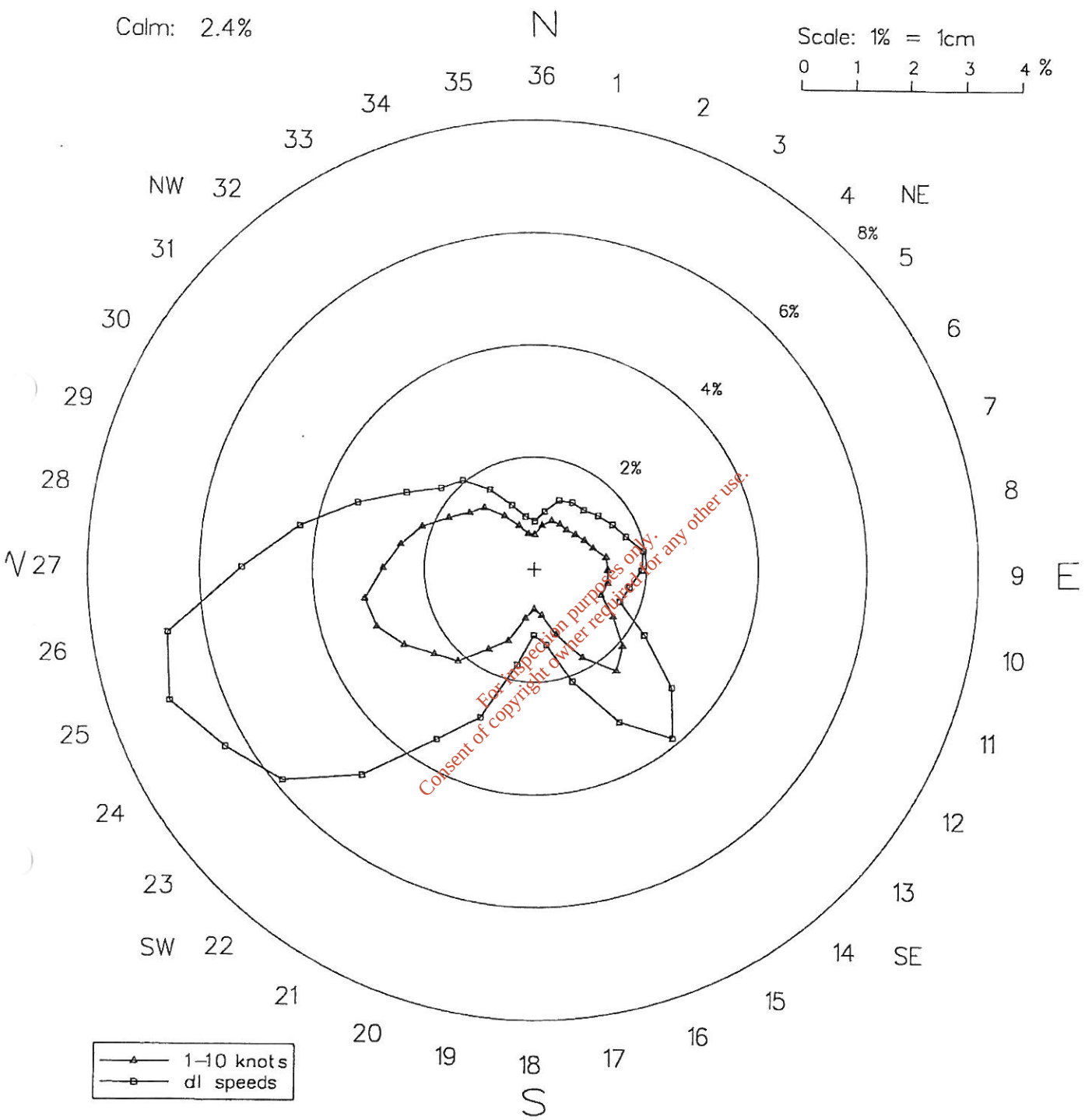
Acc. : Accredited Parameters by ISO 17025:2005

All organic results are analysed as received and all results are corrected for dry weight at 104 C
Results shall not be reproduced, except in full, without the approval of EURO environmental services
Results contained in this report relate only to the samples tested

APPENDIX 8.1
Dublin Airport Wind Rose

DUBLIN AIRPORT 1970–1999

Percentage Frequency of Occurrence of Wind Directions



Percentage Frequency of Occurrence of Wind Speeds

+ less than 0.1

0	1–3	4–6	7–10	11–16	17–21	22–27	28–33	34–40	41–47	over 48	knots
2.4	10.3	17.7	27.1	28.3	9.9	3.5	0.6	+	+	0.0	%

mean wind speed: 10.0 knots

standard deviation: 5.9 knots

anemometer height: 12m

Meteorological Service, Glasnevin Hill, Dublin 9.

APPENDIX 11.1
Archaeological References

List of References Consulted

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APPENDIX 11.2
RMP sites

Appendix 11.2
Sites in the study area listed in the Record of Monuments and Places listed in the Sites and Monuments Database

ME027-002--- Cruicerath Earthwork
Described in the Archaeological Survey of County Meath as earthwork situated on rock outcrop. Quarry to the west. High embankment with berm at base on east (diameter 29m northwest-south-east. Possible entrance at southeast. Moore 1987, No. 1132.

Fig. Captions

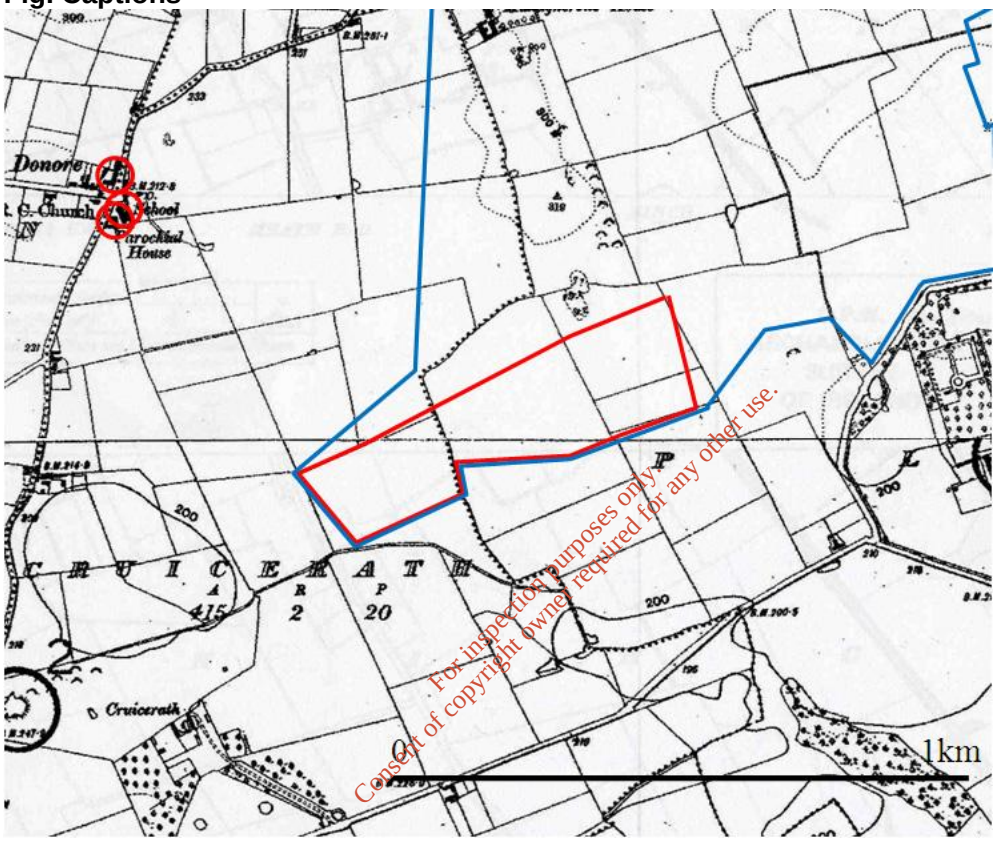

Fig. 11.1. View of the Record of Monuments and Places map for Co. Meath sheets 20 and 27 indicating the proposed application area (in red) situated within the Mullaghcrone quarry (blue line) and the full extent of the square study area. Protected structures are circled in red. There are no structures on the 1901-5 edition of the OS six inch map within 100m of the application area.

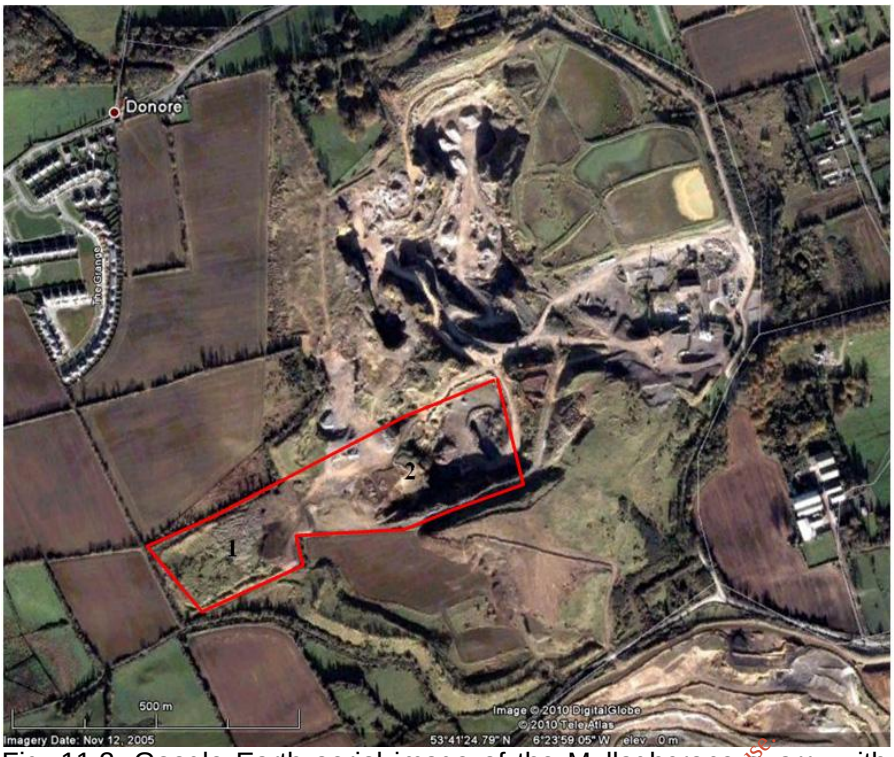

Fig. 11.2. Google Earth aerial image of the Mullaghcrone quarry with the development outline indicated in red. Note that most of the application area has been quarried removing the top and subsoil.

Fig. 11.3. The red line indicates the northern haul route from the quarry entrance to the M1 Rathmullan interchange superimposed on the 1909 OS map. Non-designated structures are numbered. Note the remaining structures indicated along the route have been levelled.

Fig. 11.4. View of structure 1 on Donore Road.

Fig. 11.5. View of structure 2 on Donore Road.

Fig. 11.6. View of structure 3 on Donore Road.

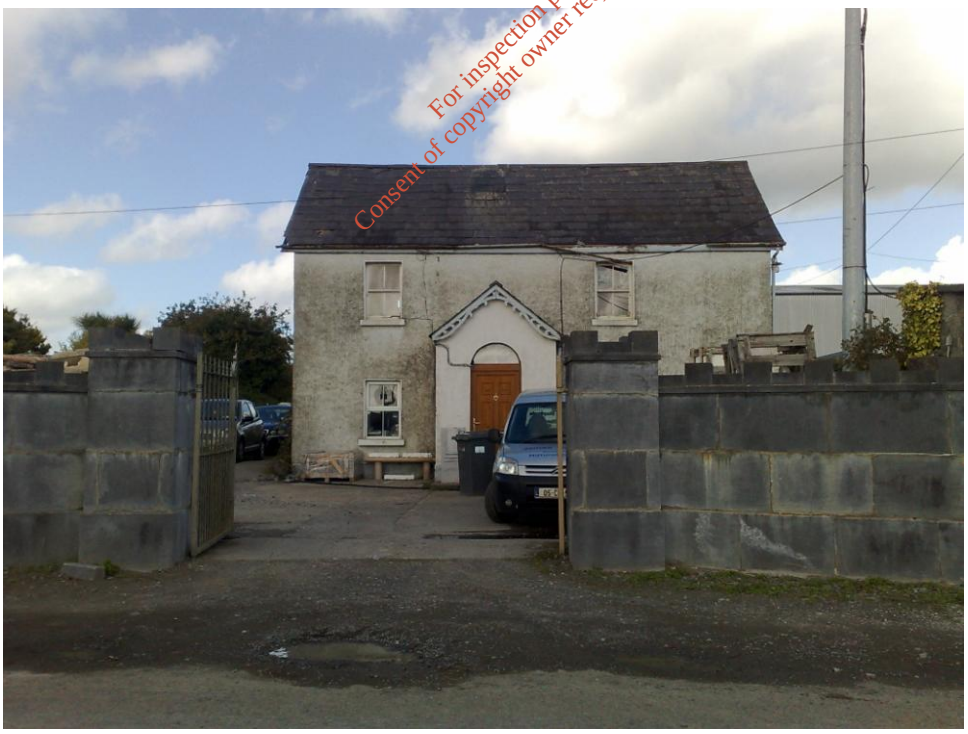

Fig. 11.7. View of structure 4 on Donore Road.

Fig. 11.8. Area 1 looking south-west across its length.

Fig. 11.9. Area 1 looking north-east across its length.

Fig. 11.10. Area 2 looking south-west.

Fig. 11.11. Area 2 looking north-east across it length across its length.

APPENDIX 13.1
Traffic Survey Results

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

ADAPTED FROM PICADY/3 WHICH IS CROWN COPYRIGHT
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PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

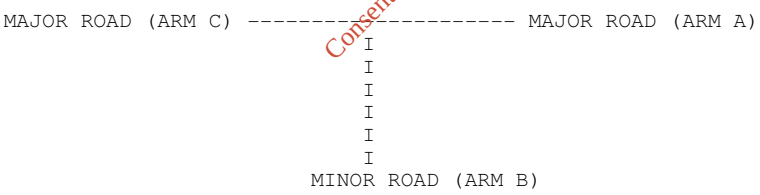
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\
Donore Road Access AM.vpi"
(drive-on-the-left) at 15:08:15 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: Donore Road Quarry Access
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS Donore Road East
ARM B IS Quarry Access
ARM C IS Donore Road West

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	7.40 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	225.0 M.
- BLOCKS TRAFFIC		YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	30.0 M.
- VISIBILITY TO RIGHT	(VB-A)	25.0 M.
- LANE 1 WIDTH	(WB-C)	-
- LANE 2 WIDTH	(WB-A)	-
- WIDTH AT 0 M FROM JUNC.		10.00 M.
- WIDTH AT 5 M FROM JUNC.		10.00 M.
- WIDTH AT 10 M FROM JUNC.		10.00 M.
- WIDTH AT 15 M FROM JUNC.		9.20 M.
- WIDTH AT 20 M FROM JUNC.		5.60 M.
- LENGTH OF FLARED SECTION	DERIVED:	3 PCU

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: Baseline 2010

TIME PERIOD BEGINS 08.15 AND ENDS 09.45

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.09	1.63	1.09
ARM B	15.00	45.00	75.00	0.09	0.13	0.09
ARM C	15.00	45.00	75.00	1.59	2.38	1.59

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C
08.15 - 09.45	ARM A	0.000	0.103	0.897
		0.0	9.0	78.0
		(0.0)	(100.0)	(5.1)
	ARM B	0.857	0.000	0.143
		6.0	0.0	1.0
		(100.0)	(0.0)	(100.0)
	ARM C	0.992	0.008	0.000
		126.0	1.0	0.0
		(1.6)	(100.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET Baseline 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.01	5.70	0.002		0.00	0.00	0.0		0.18
B-A	0.08	4.70	0.016		0.00	0.02	0.2		0.22
C-AB	0.02	6.97	0.002		0.00	0.00	0.0		0.14
C-A	1.58								
A-B	0.11								
A-C	0.98								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.01	5.67	0.003		0.00	0.00	0.0		0.18
B-A	0.09	4.65	0.019		0.02	0.02	0.3		0.22
C-AB	0.02	7.18	0.003		0.00	0.00	0.0		0.14
C-A	1.88								
A-B	0.13								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.02	5.62	0.003		0.00	0.00	0.0		0.18
B-A	0.11	4.57	0.024		0.02	0.02	0.4		0.22
C-AB	0.03	7.47	0.004		0.00	0.00	0.1		0.13
C-A	2.30								
A-B	0.17								
A-C	1.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.02	5.62	0.003		0.00	0.00	0.0		0.18
B-A	0.11	4.57	0.024		0.02	0.02	0.4		0.22
C-AB	0.03	7.47	0.004		0.00	0.00	0.1		0.13
C-A	2.30								
A-B	0.17								
A-C	1.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-C	0.01	5.67	0.003		0.00	0.00	0.0		0.18
B-A	0.09	4.65	0.019		0.02	0.02	0.3		0.22
C-AB	0.02	7.18	0.003		0.00	0.00	0.0		0.14
C-A	1.88								
A-B	0.13								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.30-09.45									
B-C	0.01	5.70	0.002		0.00	0.00	0.0		0.18
B-A	0.08	4.70	0.016		0.02	0.02	0.3		0.22
C-AB	0.02	6.97	0.002		0.00	0.00	0.0		0.14
C-A	1.58								
A-B	0.11								
A-C	0.98								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	1.4	0.9	0.2	0.18	0.2	0.18
B-A	8.3	5.5	1.8	0.22	1.8	0.22
C-AB	1.9	1.3	0.3	0.14	0.3	0.14
C-A	172.9	115.3				
A-B	12.4	8.3				
A-C	107.4	71.6				
ALL	304.2	202.8	2.3	0.01	2.3	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 08.15 AND ENDS 09.45

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.10	1.65	1.10
ARM B	15.00	45.00	75.00	0.10	0.15	0.10
ARM C	15.00	45.00	75.00	1.59	2.38	1.59

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.15 - 09.45	ARM A	0.000	0.114	0.886
		0.0	10.0	78.0
		(0.0)	(100.0)	(0.0)
	ARM B	0.875	0.000	0.125
		7.0	0.0	1.0
		(100.0)	(0.0)	(100.0)
	ARM C	0.992	0.008	0.000
		126.0	1.0	0.0
		(1.6)	(100.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.01	5.68	0.002		0.00	0.00	0.0		0.18
B-A	0.09	4.71	0.019		0.00	0.02	0.3		0.22
C-AB	0.02	6.96	0.002		0.00	0.00	0.0		0.14
C-A	1.58								
A-B	0.13								
A-C	0.98								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.01	5.65	0.003		0.00	0.00	0.0		0.18
B-A	0.10	4.65	0.023		0.02	0.02	0.3		0.22
C-AB	0.02	7.17	0.003		0.00	0.00	0.0		0.14
C-A	1.88								
A-B	0.15								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.02	5.60	0.003		0.00	0.00	0.0		0.18
B-A	0.13	4.58	0.028		0.02	0.03	0.4		0.22
C-AB	0.03	7.46	0.004		0.00	0.00	0.1		0.13
C-A	2.30								
A-B	0.18								
A-C	1.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.02	5.60	0.003		0.00	0.00	0.0		0.18
B-A	0.13	4.58	0.028		0.03	0.03	0.4		0.22
C-AB	0.03	7.46	0.004		0.00	0.00	0.1		0.13
C-A	2.30								
A-B	0.18								
A-C	1.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-C	0.01	5.65	0.003		0.00	0.00	0.0		0.18
B-A	0.10	4.65	0.023		0.03	0.02	0.4		0.22
C-AB	0.02	7.17	0.003		0.00	0.00	0.0		0.14
C-A	1.88								
A-B	0.15								
A-C	1.17								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.30-09.45									
B-C	0.01	5.68	0.002		0.00	0.00	0.0		0.18
B-A	0.09	4.71	0.019		0.02	0.02	0.3		0.22
C-AB	0.02	6.96	0.002		0.00	0.00	0.0		0.14
C-A	1.58								
A-B	0.13								
A-C	0.98								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	1.4	0.9	0.2	0.18	0.2	0.18
B-A	9.6	6.4	2.1	0.22	2.1	0.22
C-AB	1.9	1.3	0.3	0.14	0.3	0.14
C-A	172.9	115.3				
A-B	13.8	9.2				
A-C	107.4	71.6				
ALL	306.9	204.6	2.6	0.01	2.6	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 08.15 AND ENDS 09.45

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.16	1.74	1.16
ARM B	15.00	45.00	75.00	0.10	0.15	0.10
ARM C	15.00	45.00	75.00	1.67	2.51	1.67

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.15 - 09.45	ARM A	0.000	0.118	0.882
		0.0	11.0	82.0
		(0.0)	(100.0)	(4.9)
	ARM B	0.875	0.000	0.125
		7.0	0.0	1.0
		(100.0)	(0.0)	(100.0)
	ARM C	0.993	0.007	0.000
		133.0	1.0	0.0
		(1.5)	(100.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-C	0.01	5.68	0.002		0.00	0.00	0.0		0.18
B-A	0.09	4.69	0.019		0.00	0.02	0.3		0.22
C-AB	0.02	7.02	0.002		0.00	0.00	0.0		0.14
C-A	1.67								
A-B	0.14								
A-C	1.03								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-C	0.01	5.64	0.003		0.00	0.00	0.0		0.18
B-A	0.10	4.63	0.023		0.02	0.02	0.3		0.22
C-AB	0.02	7.24	0.003		0.00	0.00	0.0		0.14
C-A	1.99								
A-B	0.16								
A-C	1.23								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-C	0.02	5.59	0.003		0.00	0.00	0.0		0.18
B-A	0.13	4.56	0.028		0.02	0.03	0.4		0.23
C-AB	0.03	7.55	0.004		0.00	0.00	0.1		0.13
C-A	2.43								
A-B	0.20								
A-C	1.50								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-C	0.02	5.59	0.003		0.00	0.00	0.0		0.18
B-A	0.13	4.56	0.028		0.03	0.03	0.4		0.23
C-AB	0.03	7.55	0.004		0.00	0.00	0.1		0.13
C-A	2.43								
A-B	0.20								
A-C	1.50								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.15-09.30									
B-C	0.01	5.64	0.003		0.00	0.00	0.0		0.18
B-A	0.10	4.63	0.023		0.03	0.02	0.4		0.22
C-AB	0.02	7.24	0.003		0.00	0.00	0.0		0.14
C-A	1.99								
A-B	0.16								
A-C	1.23								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.30-09.45									
B-C	0.01	5.67	0.002		0.00	0.00	0.0		0.18
B-A	0.09	4.69	0.019		0.02	0.02	0.3		0.22
C-AB	0.02	7.02	0.002		0.00	0.00	0.0		0.14
C-A	1.66								
A-B	0.14								
A-C	1.03								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.30	0.0
08.45	0.0
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	1.4	0.9	0.2	0.18	0.2	0.18
B-A	9.6	6.4	2.1	0.22	2.1	0.22
C-AB	1.9	1.3	0.3	0.14	0.3	0.14
C-A	182.5	121.7				
A-B	15.1	10.1				
A-C	112.9	75.2				
ALL	323.5	215.6	2.6	0.01	2.6	0.01

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

END OF JOB

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

[Printed at 15:08:25 on 10/09/2010]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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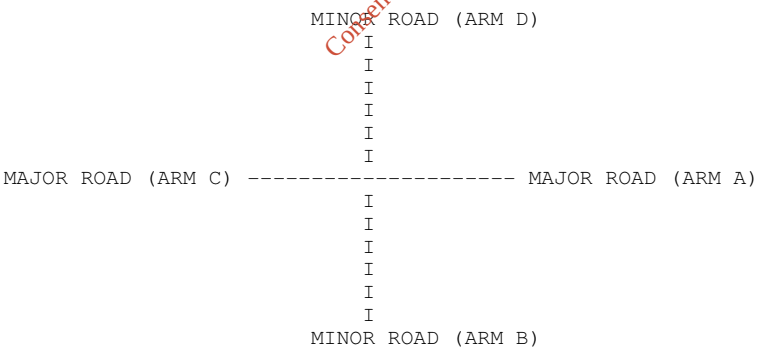
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\
R152 Crossroads AM.vpi"
(drive-on-the-left) at 16:04:07 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: R152 Crossroads
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS R152 North
ARM B IS Gaffney Road
ARM C IS R152 South
ARM D IS Platin Road

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 225.0 M.	(VA-D) 225.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 20.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
704.26	0.26	0.37

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B

704.26	0.26	0.37	

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
482.67	0.21	0.21	0.08	0.30

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.13	0.13		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
482.67	0.21	0.21	0.08	0.30

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.13	0.13		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
592.82	0.26	0.26	0.10	0.37

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.16	0.16		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
592.82	0.26	0.26	0.10	0.37

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.16	0.16		

TRAFFIC DEMAND DATA

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

Demand set: Baseflow 2010

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.49	8.23	5.49
ARM B	15.00	45.00	75.00	0.95	1.42	0.95
ARM C	15.00	45.00	75.00	5.61	8.42	5.61
ARM D	15.00	45.00	75.00	0.61	0.92	0.61

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15	ARM A	0.000	0.066	0.902	0.032
		0.0	29.0	396.0	14.0
		(0.0)	(0.0)	(7.8)	(7.1)
	ARM B	0.750	0.000	0.000	0.250
		57.0	0.0	0.0	19.0
		(7.0)	(0.0)	(0.0)	(0.0)
	ARM C	0.955	0.000	0.000	0.045
		429.0	0.0	0.0	20.0
		(7.5)	(0.0)	(0.0)	(20.0)
	ARM D	0.408	0.429	0.163	0.000
		20.0	21.0	8.0	0.0
		(5.0)	(0.0)	(50.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR DEMAND SET Baseflow 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-ACD	0.95	5.66	0.169		0.00	0.20	2.8		0.21
A-BCD	0.28	12.90	0.022		0.00	0.03	0.4		0.08
A-B	0.36								
A-C	4.87								
D-AB	0.39	9.05	0.043		0.00	0.04	0.6		0.12
D-BC	0.23	5.97	0.038		0.00	0.04	0.6		0.17
C-ABD	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-D	0.25								
C-A	5.38								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-ACD	1.14	5.27	0.216		0.20	0.27	3.9		0.24
A-BCD	0.37	13.29	0.028		0.03	0.04	0.5		0.08
A-B	0.42								
A-C	5.78								
D-AB	0.46	8.60	0.054		0.04	0.06	0.8		0.12
D-BC	0.27	5.55	0.049		0.04	0.05	0.7		0.19
C-ABD	0.00	8.97	0.000		0.00	0.00	0.0		0.00
C-D	0.30								
C-A	6.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-ACD	1.39	4.74	0.294		0.27	0.41	5.8		0.30
A-BCD	0.52	13.83	0.037		0.04	0.05	0.8		0.08
A-B	0.51								
A-C	7.02								
D-AB	0.57	7.96	0.071		0.06	0.08	1.1		0.14
D-BC	0.33	4.96	0.067		0.05	0.07	1.0		0.22
C-ABD	0.00	8.59	0.000		0.00	0.00	0.0		0.00
C-D	0.37								
C-A	7.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-ACD	1.39	4.74	0.294		0.41	0.41	6.1		0.30
A-BCD	0.52	13.83	0.037		0.04	0.05	0.8		0.08
A-B	0.51								
A-C	7.02								
D-AB	0.57	7.96	0.071		0.08	0.08	1.1		0.14
D-BC	0.33	4.96	0.067		0.07	0.07	1.1		0.22
C-ABD	0.00	8.59	0.000		0.00	0.00	0.0		0.00
C-D	0.37								
C-A	7.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-ACD	1.14	5.28	0.216		0.41	0.28	4.4		0.24
A-BCD	0.37	13.29	0.028		0.05	0.04	0.5		0.08
A-B	0.42								
A-C	5.78								
D-AB	0.46	8.60	0.054		0.08	0.06	0.9		0.12
D-BC	0.27	5.54	0.049		0.07	0.05	0.8		0.19
C-ABD	0.00	8.97	0.000		0.00	0.00	0.0		0.00
C-D	0.30								
C-A	6.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-ACD	0.95	5.66	0.168		0.28	0.21	3.2		0.21
A-BCD	0.29	12.90	0.022		0.04	0.03	0.4		0.08
A-B	0.36								
A-C	4.87								
D-AB	0.39	9.05	0.043		0.06	0.04	0.7		0.12
D-BC	0.23	5.96	0.038		0.05	0.04	0.6		0.17
C-ABD	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-D	0.25								
C-A	5.38								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.1
08.45	0.1
09.00	0.0
09.15	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM C-ABD

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	104.6	69.7	26.3	0.25	26.3	0.25
A-BCD	35.3	23.5	3.5	0.10	3.5	0.10
A-B	38.8	25.9				
A-C	530.1	353.4				
D-AB	42.4	28.3	5.3	0.12	5.3	0.12
D-BC	25.0	16.7	4.8	0.19	4.8	0.19
C-ABD	0.0	0.0	0.0	0.00	0.0	0.00
C-D	27.5	18.4				
C-A	590.5	393.7				
ALL	1394.3	929.5	39.9	0.03	39.9	0.03

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

END OF JOB

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

I Intercept For Slope For Opposing Slope For Opposing I

I Stream C-B	Stream A-C	Stream A-D	I
I 704.26	0.26	0.37	I

A-D Stream

I Intercept For I Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	I
I 704.26	0.26	0.37	I

B-D Stream From Left Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

B-D Stream From Right Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

D-B Stream From Left Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

D-B Stream From Right Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.49	8.23	5.49
ARM B	15.00	45.00	75.00	0.96	1.44	0.96
ARM C	15.00	45.00	75.00	5.63	8.44	5.63
ARM D	15.00	45.00	75.00	0.64	0.96	0.64

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15	ARM A	0.000	0.066	0.902	0.032
		0.0	29.0	396.0	14.0
		(0.0)	(0.0)	(7.8)	(7.1)
	ARM B	0.740	0.000	0.000	0.260
		57.0	0.0	0.0	20.0
		(7.0)	(0.0)	(0.0)	(5.0)
	ARM C	0.953	0.000	0.000	0.047
		429.0	0.0	0.0	21.0
		(7.5)	(0.0)	(0.0)	(23.8)
	ARM D	0.392	0.431	0.176	0.000
		20.0	22.0	9.0	0.0
		(5.0)	(4.5)	(55.6)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-ACD	0.97	5.59	0.173		0.00	0.21	2.9		0.22
A-BCD	0.28	12.89	0.022		0.00	0.03	0.4		0.08
A-B	0.36								
A-C	4.87								
D-AB	0.39	8.82	0.044		0.00	0.05	0.7		0.12
D-BC	0.25	5.68	0.044		0.00	0.04	0.6		0.18
C-ABD	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-D	0.26								
C-A	5.38								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-ACD	1.15	5.21	0.222		0.21	0.28	4.0		0.25
A-BCD	0.37	13.29	0.028		0.03	0.04	0.5		0.08
A-B	0.42								
A-C	5.78								
D-AB	0.47	8.37	0.056		0.05	0.06	0.9		0.13
D-BC	0.29	5.28	0.056		0.04	0.06	0.8		0.20
C-ABD	0.00	8.97	0.000		0.00	0.00	0.0		0.00
C-D	0.31								
C-A	6.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-ACD	1.41	4.68	0.302		0.28	0.42	6.0		0.30
A-BCD	0.52	13.83	0.038		0.04	0.05	0.8		0.08
A-B	0.51								
A-C	7.02								
D-AB	0.58	7.73	0.075		0.06	0.08	1.2		0.14
D-BC	0.36	4.72	0.076		0.06	0.08	1.2		0.23
C-ABD	0.00	8.59	0.000		0.00	0.00	0.0		0.00
C-D	0.39								
C-A	7.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-ACD	1.41	4.68	0.302		0.42	0.43	6.4		0.31
A-BCD	0.52	13.83	0.038		0.04	0.05	0.8		0.08
A-B	0.51								
A-C	7.02								
D-AB	0.58	7.73	0.075		0.08	0.08	1.2		0.14
D-BC	0.36	4.72	0.076		0.08	0.08	1.2		0.23
C-ABD	0.00	8.59	0.000		0.00	0.00	0.0		0.00
C-D	0.39								
C-A	7.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-ACD	1.15	5.21	0.222		0.43	0.29	4.6		0.25
A-BCD	0.37	13.29	0.028		0.05	0.04	0.5		0.08
A-B	0.42								
A-C	5.78								
D-AB	0.47	8.36	0.056		0.08	0.06	0.9		0.13
D-BC	0.29	5.28	0.056		0.08	0.06	0.9		0.20
C-ABD	0.00	8.97	0.000		0.00	0.00	0.0		0.00
C-D	0.31								
C-A	6.43								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-ACD	0.97	5.59	0.173		0.29	0.21	3.3		0.22
A-BCD	0.29	12.89	0.022		0.04	0.03	0.4		0.08
A-B	0.36								
A-C	4.87								
D-AB	0.39	8.82	0.045		0.06	0.05	0.7		0.12
D-BC	0.25	5.68	0.044		0.06	0.05	0.7		0.18
C-ABD	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-D	0.26								
C-A	5.38								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.4
08.45	0.4
09.00	0.3
09.15	0.2

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.1
08.45	0.1
09.00	0.0
09.15	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM C-ABD

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	106.0	70.7	27.2	0.26	27.2	0.26
A-BCD	35.3	23.6	3.5	0.10	3.5	0.10
A-B	38.8	25.9				
A-C	530.1	353.4				
D-AB	43.2	28.8	5.6	0.13	5.6	0.13
D-BC	27.0	18.0	5.5	0.20	5.5	0.20
C-ABD	0.0	0.0	0.0	0.00	0.0	0.00
C-D	28.9	19.3				
C-A	590.5	393.7				
ALL	1399.8	933.2	41.7	0.03	41.7	0.03

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

END OF JOB

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

I Intercept For Slope For Opposing Slope For Opposing I

I Stream C-B	Stream A-C	Stream A-D	I
I 704.26	0.26	0.37	I

A-D Stream

I Intercept For I Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	I
I 704.26	0.26	0.37	I

B-D Stream From Left Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

B-D Stream From Right Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

D-B Stream From Left Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

D-B Stream From Right Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.82	8.74	5.82
ARM B	15.00	45.00	75.00	1.01	1.52	1.01
ARM C	15.00	45.00	75.00	5.96	8.94	5.96
ARM D	15.00	45.00	75.00	0.66	0.99	0.66

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
07.45 - 09.15	ARM A	0.000	0.067	0.901	0.032
		0.0	31.0	420.0	15.0
		(0.0)	(0.0)	(7.9)	(6.7)
	ARM B	0.741	0.000	0.000	0.259
		60.0	0.0	0.0	21.0
		(6.7)	(0.0)	(0.0)	(4.8)
	ARM C	0.954	0.000	0.000	0.046
		455.0	0.0	0.0	22.0
		(7.5)	(0.0)	(0.0)	(22.7)
	ARM D	0.396	0.434	0.170	0.000
		21.0	23.0	9.0	0.0
		(4.8)	(4.3)	(55.6)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-ACD	1.02	5.48	0.185		0.00	0.22	3.2		0.22
A-BCD	0.31	13.05	0.024		0.00	0.03	0.4		0.08
A-B	0.38								
A-C	5.15								
D-AB	0.41	8.71	0.047		0.00	0.05	0.7		0.12
D-BC	0.25	5.59	0.045		0.00	0.05	0.7		0.19
C-ABD	0.00	9.16	0.000		0.00	0.00	0.0		0.00
C-D	0.28								
C-A	5.71								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-ACD	1.21	5.08	0.239		0.22	0.31	4.4		0.26
A-BCD	0.41	13.46	0.031		0.03	0.04	0.6		0.08
A-B	0.45								
A-C	6.12								
D-AB	0.49	8.22	0.060		0.05	0.06	0.9		0.13
D-BC	0.30	5.16	0.058		0.05	0.06	0.9		0.21
C-ABD	0.00	8.87	0.000		0.00	0.00	0.0		0.00
C-D	0.33								
C-A	6.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-ACD	1.49	4.51	0.329		0.31	0.48	6.8		0.33
A-BCD	0.58	14.03	0.041		0.04	0.06	0.9		0.07
A-B	0.55								
A-C	7.43								
D-AB	0.61	7.54	0.080		0.06	0.09	1.3		0.14
D-BC	0.37	4.57	0.080		0.06	0.09	1.2		0.24
C-ABD	0.00	8.46	0.000		0.00	0.00	0.0		0.00
C-D	0.40								
C-A	8.35								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-ACD	1.49	4.51	0.329		0.48	0.48	7.2		0.33
A-BCD	0.58	14.03	0.041		0.06	0.06	0.9		0.07
A-B	0.55								
A-C	7.42								
D-AB	0.61	7.54	0.080		0.09	0.09	1.3		0.14
D-BC	0.37	4.56	0.080		0.09	0.09	1.3		0.24
C-ABD	0.00	8.46	0.000		0.00	0.00	0.0		0.00
C-D	0.40								
C-A	8.35								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-ACD	1.21	5.08	0.239		0.48	0.32	5.1		0.26
A-BCD	0.41	13.46	0.031		0.06	0.04	0.6		0.08
A-B	0.45								
A-C	6.12								
D-AB	0.49	8.22	0.060		0.09	0.06	1.0		0.13
D-BC	0.30	5.16	0.058		0.09	0.06	1.0		0.21
C-ABD	0.00	8.87	0.000		0.00	0.00	0.0		0.00
C-D	0.33								
C-A	6.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-ACD	1.02	5.48	0.185		0.32	0.23	3.6		0.22
A-BCD	0.31	13.05	0.024		0.04	0.03	0.5		0.08
A-B	0.38								
A-C	5.15								
D-AB	0.41	8.70	0.047		0.06	0.05	0.8		0.12
D-BC	0.25	5.59	0.045		0.06	0.05	0.7		0.19
C-ABD	0.00	9.16	0.000		0.00	0.00	0.0		0.00
C-D	0.28								
C-A	5.71								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.2
08.15	0.3
08.30	0.5
08.45	0.5
09.00	0.3
09.15	0.2

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.0
08.30	0.1
08.45	0.1
09.00	0.0
09.15	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.1

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
08.00	0.0
08.15	0.1
08.30	0.1
08.45	0.1
09.00	0.1
09.15	0.0

QUEUE FOR STREAM C-ABD

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	111.5	74.3	30.2	0.27	30.2	0.27
A-BCD	39.2	26.1	3.9	0.10	3.9	0.10
A-B	41.4	27.6				
A-C	560.8	373.9				
D-AB	45.3	30.2	6.0	0.13	6.0	0.13
D-BC	27.7	18.4	5.8	0.21	5.8	0.21
C-ABD	0.0	0.0	0.0	0.00	0.0	0.00
C-D	30.3	20.2				
C-A	626.3	417.5				
ALL	1482.4	988.3	45.9	0.03	45.9	0.03

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

END OF JOB

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

[Printed at 16:04:15 on 10/09/2010]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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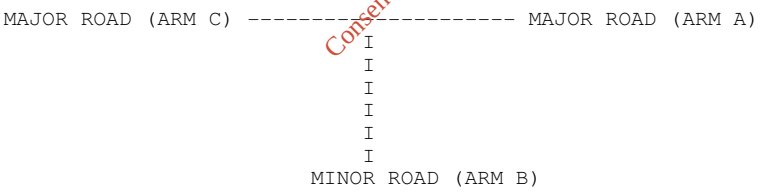
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\
Platin Road Access PM.vpi"
(drive-on-the-left) at 15:21:01 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: Donore Road Quarry Access
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS Platin Road South
ARM B IS Quarry Access
ARM C IS Platin Road North

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 6.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 160.0 M.
- BLOCKS TRAFFIC	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 20.0 M.
- VISIBILITY TO RIGHT	(VB-A) 40.0 M.
- LANE 1 WIDTH	(WB-C) 3.30 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: Baseline 2010

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.75	1.13	0.75
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	0.63	0.94	0.63

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00				
	ARM A	0.000	0.133	0.867
		0.0	8.0	52.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		6.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		50.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET Baseline 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-AC	0.08	4.19	0.018		0.00	0.02	0.3		0.24
C-AB	0.00	9.90	0.000		0.00	0.00	0.0		0.00
C-A	0.63								
A-B	0.10								
A-C	0.65								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-AC	0.09	4.16	0.022		0.02	0.02	0.3		0.25
C-AB	0.00	9.86	0.000		0.00	0.00	0.0		0.00
C-A	0.75								
A-B	0.12								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	0.11	4.13	0.027		0.02	0.03	0.4		0.25
C-AB	0.00	9.81	0.000		0.00	0.00	0.0		0.00
C-A	0.92								
A-B	0.15								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	0.11	4.13	0.027		0.03	0.03	0.4		0.25
C-AB	0.00	9.81	0.000		0.00	0.00	0.0		0.00
C-A	0.92								
A-B	0.15								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	0.09	4.16	0.022		0.03	0.02	0.3		0.25
C-AB	0.00	9.86	0.000		0.00	0.00	0.0		0.00
C-A	0.75								
A-B	0.12								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	0.08	4.19	0.018		0.02	0.02	0.3		0.24
C-AB	0.00	9.90	0.000		0.00	0.00	0.0		0.00
C-A	0.63								
A-B	0.10								
A-C	0.65								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	8.3	5.5	2.0	0.24	2.0	0.24
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	68.8	45.9				
A-B	11.0	7.3				
A-C	71.6	47.7				
ALL	159.7	106.4	2.0	0.01	2.0	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.77	1.16	0.77
ARM B	15.00	45.00	75.00	0.10	0.15	0.10
ARM C	15.00	45.00	75.00	0.63	0.94	0.63

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00	ARM A	0.000	0.161	0.839
		0.0	10.0	52.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		8.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		50.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT
FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-AC	0.10	4.19	0.024		0.00	0.02	0.3		0.24
C-AB	0.00	9.89	0.000		0.00	0.00	0.0		0.00
C-A	0.63								
A-B	0.13								
A-C	0.65								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-AC	0.12	4.16	0.029		0.02	0.03	0.4		0.25
C-AB	0.00	9.85	0.000		0.00	0.00	0.0		0.00
C-A	0.75								
A-B	0.15								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	0.15	4.12	0.036		0.03	0.04	0.5		0.25
C-AB	0.00	9.79	0.000		0.00	0.00	0.0		0.00
C-A	0.92								
A-B	0.18								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	0.15	4.12	0.036		0.04	0.04	0.5		0.25
C-AB	0.00	9.79	0.000		0.00	0.00	0.0		0.00
C-A	0.92								
A-B	0.18								
A-C	0.95								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	0.12	4.16	0.029		0.04	0.03	0.5		0.25
C-AB	0.00	9.85	0.000		0.00	0.00	0.0		0.00
C-A	0.75								
A-B	0.15								
A-C	0.78								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	0.10	4.19	0.024		0.03	0.02	0.4		0.24
C-AB	0.00	9.89	0.000		0.00	0.00	0.0		0.00
C-A	0.63								
A-B	0.13								
A-C	0.65								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	11.0	7.3	2.7	0.24	2.7	0.24
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	68.8	45.9				
A-B	13.8	9.2				
A-C	71.6	47.7				
ALL	165.2	110.1	2.7	0.02	2.7	0.02

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.81	1.22	0.81
ARM B	15.00	45.00	75.00	0.10	0.15	0.10
ARM C	15.00	45.00	75.00	0.66	0.99	0.66

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C
16.30 - 18.00	ARM A	0.000	0.154	0.846
		0.0	10.0	55.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		8.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		53.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-AC	0.10	4.18	0.024		0.00	0.02	0.3		0.24
C-AB	0.00	9.88	0.000		0.00	0.00	0.0		0.00
C-A	0.67								
A-B	0.13								
A-C	0.69								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-AC	0.12	4.15	0.029		0.02	0.03	0.4		0.25
C-AB	0.00	9.84	0.000		0.00	0.00	0.0		0.00
C-A	0.79								
A-B	0.15								
A-C	0.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-AC	0.15	4.11	0.036		0.03	0.04	0.5		0.25
C-AB	0.00	9.78	0.000		0.00	0.00	0.0		0.00
C-A	0.97								
A-B	0.18								
A-C	1.01								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-AC	0.15	4.11	0.036		0.04	0.04	0.5		0.25
C-AB	0.00	9.78	0.000		0.00	0.00	0.0		0.00
C-A	0.97								
A-B	0.18								
A-C	1.01								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-AC	0.12	4.15	0.029		0.04	0.03	0.5		0.25
C-AB	0.00	9.84	0.000		0.00	0.00	0.0		0.00
C-A	0.79								
A-B	0.15								
A-C	0.82								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-AC	0.10	4.18	0.024		0.03	0.02	0.4		0.25
C-AB	0.00	9.88	0.000		0.00	0.00	0.0		0.00
C-A	0.67								
A-B	0.13								
A-C	0.69								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	11.0	7.3	2.7	0.25	2.7	0.25
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	73.0	48.6				
A-B	13.8	9.2				
A-C	75.7	50.5				
ALL	173.4	115.6	2.7	0.02	2.7	0.02

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

END OF JOB

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

[Printed at 15:21:17 on 10/09/2010]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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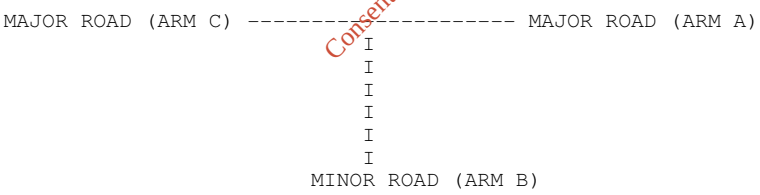
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\
Platin Road Access AM.vpi"
(drive-on-the-left) at 15:18:12 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: Donore Road Quarry Access
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS Platin Road South
ARM B IS Quarry Access
ARM C IS Platin Road North

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 6.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.
- VISIBILITY	(VC-B) 160.0 M.
- BLOCKS TRAFFIC	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 20.0 M.
- VISIBILITY TO RIGHT	(VB-A) 40.0 M.
- LANE 1 WIDTH	(WB-C) 3.30 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: Baseline 2010

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.66	0.99	0.66
ARM B	15.00	45.00	75.00	0.06	0.09	0.06
ARM C	15.00	45.00	75.00	0.55	0.83	0.55

TIME	FROM/TO	ARM A	ARM B	ARM C
07.45 - 09.15				
	ARM A	0.000	0.094	0.906
		0.0	5.0	48.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		5.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		44.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET Baseline 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-AC	0.06	4.20	0.015		0.00	0.01	0.2		0.24
C-AB	0.00	9.93	0.000		0.00	0.00	0.0		0.00
C-A	0.55								
A-B	0.06								
A-C	0.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	0.07	4.18	0.018		0.01	0.02	0.3		0.24
C-AB	0.00	9.90	0.000		0.00	0.00	0.0		0.00
C-A	0.66								
A-B	0.07								
A-C	0.72								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	0.09	4.15	0.022		0.02	0.02	0.3		0.25
C-AB	0.00	9.85	0.000		0.00	0.00	0.0		0.00
C-A	0.81								
A-B	0.09								
A-C	0.88								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.09	4.15	0.022		0.02	0.02	0.3		0.25
C-AB	0.00	9.85	0.000		0.00	0.00	0.0		0.00
C-A	0.81								
A-B	0.09								
A-C	0.88								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.07	4.18	0.018		0.02	0.02	0.3		0.24
C-AB	0.00	9.90	0.000		0.00	0.00	0.0		0.00
C-A	0.66								
A-B	0.07								
A-C	0.72								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.06	4.20	0.015		0.02	0.02	0.2		0.24
C-AB	0.00	9.93	0.000		0.00	0.00	0.0		0.00
C-A	0.55								
A-B	0.06								
A-C	0.60								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	6.9	4.6	1.7	0.24	1.7	0.24
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	60.6	40.4				
A-B	6.9	4.6				
A-C	66.1	44.0				
ALL	140.4	93.6	1.7	0.01	1.7	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.69	1.03	0.69
ARM B	15.00	45.00	75.00	0.09	0.13	0.09
ARM C	15.00	45.00	75.00	0.55	0.83	0.55

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C
07.45 - 09.15	ARM A	0.000	0.127	0.873
		0.0	7.0	48.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		7.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		44.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-AC	0.09	4.20	0.021		0.00	0.02	0.3		0.24
C-AB	0.00	9.92	0.000		0.00	0.00	0.0		0.00
C-A	0.55								
A-B	0.09								
A-C	0.60								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	0.10	4.18	0.025		0.02	0.03	0.4		0.25
C-AB	0.00	9.88	0.000		0.00	0.00	0.0		0.00
C-A	0.66								
A-B	0.10								
A-C	0.72								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	0.13	4.15	0.031		0.03	0.03	0.5		0.25
C-AB	0.00	9.83	0.000		0.00	0.00	0.0		0.00
C-A	0.81								
A-B	0.13								
A-C	0.88								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.13	4.15	0.031		0.03	0.03	0.5		0.25
C-AB	0.00	9.83	0.000		0.00	0.00	0.0		0.00
C-A	0.81								
A-B	0.13								
A-C	0.88								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.10	4.18	0.025		0.03	0.03	0.4		0.25
C-AB	0.00	9.88	0.000		0.00	0.00	0.0		0.00
C-A	0.66								
A-B	0.10								
A-C	0.72								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.09	4.20	0.021		0.03	0.02	0.3		0.24
C-AB	0.00	9.92	0.000		0.00	0.00	0.0		0.00
C-A	0.55								
A-B	0.09								
A-C	0.60								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-AC	9.6	6.4	2.3	0.24	2.3	0.24
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	60.6	40.4				
A-B	9.6	6.4				
A-C	66.1	44.0				
ALL	145.9	97.3	2.3	0.02	2.3	0.02

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
668.61	0.26	0.10

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
518.82	0.24	0.09	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
666.62	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 07.45 AND ENDS 09.15

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	TOP OF PEAK IS REACHED	FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	AT TOP OF PEAK	AFTER PEAK
ARM A	15.00	45.00	75.00	0.73	1.09	0.73
ARM B	15.00	45.00	75.00	0.09	0.13	0.09
ARM C	15.00	45.00	75.00	0.59	0.88	0.59

TIME	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) FROM/TO	ARM A	ARM B	ARM C
07.45 - 09.15	ARM A	0.000	0.121	0.879
		0.0	7.0	51.0
		(0.0)	(100.0)	(0.0)
	ARM B	1.000	0.000	0.000
		7.0	0.0	0.0
		(100.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		47.0	0.0	0.0
		(0.0)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
07.45-08.00									
B-AC	0.09	4.19	0.021		0.00	0.02	0.3		0.24
C-AB	0.00	9.91	0.000		0.00	0.00	0.0		0.00
C-A	0.59								
A-B	0.09								
A-C	0.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.00-08.15									
B-AC	0.10	4.17	0.025		0.02	0.03	0.4		0.25
C-AB	0.00	9.87	0.000		0.00	0.00	0.0		0.00
C-A	0.70								
A-B	0.10								
A-C	0.76								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.15-08.30									
B-AC	0.13	4.13	0.031		0.03	0.03	0.5		0.25
C-AB	0.00	9.82	0.000		0.00	0.00	0.0		0.00
C-A	0.86								
A-B	0.13								
A-C	0.94								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.30-08.45									
B-AC	0.13	4.13	0.031		0.03	0.03	0.5		0.25
C-AB	0.00	9.82	0.000		0.00	0.00	0.0		0.00
C-A	0.86								
A-B	0.13								
A-C	0.94								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
08.45-09.00									
B-AC	0.10	4.17	0.025		0.03	0.03	0.4		0.25
C-AB	0.00	9.87	0.000		0.00	0.00	0.0		0.00
C-A	0.70								
A-B	0.10								
A-C	0.76								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
09.00-09.15									
B-AC	0.09	4.19	0.021		0.03	0.02	0.3		0.24
C-AB	0.00	9.91	0.000		0.00	0.00	0.0		0.00
C-A	0.59								
A-B	0.09								
A-C	0.64								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-AC

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-AC	9.6	6.4	2.3	0.24	2.3	0.24
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	64.7	43.1				
A-B	9.6	6.4				
A-C	70.2	46.8				
ALL	154.2	102.8	2.3	0.02	2.3	0.02

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

END OF JOB

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

[Printed at 15:18:21 on 10/09/2010]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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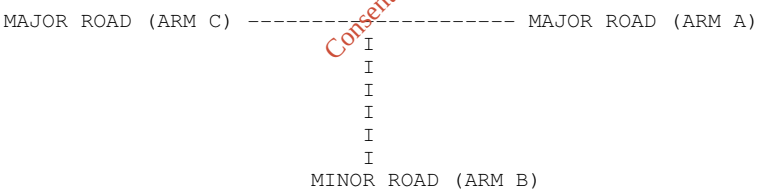
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\
Donore Road Access PM.vpi"
(drive-on-the-left) at 15:11:10 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: Donore Road Quarry Access
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS Donore Road East
ARM B IS Quarry Access
ARM C IS Donore Road West

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM		MINOR ROAD B
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W)	7.40 M.
CENTRAL RESERVE WIDTH	(WCR)	0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B)	2.20 M.
- VISIBILITY	(VC-B)	225.0 M.
- BLOCKS TRAFFIC		YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C)	30.0 M.
- VISIBILITY TO RIGHT	(VB-A)	25.0 M.
- LANE 1 WIDTH	(WB-C)	-
- LANE 2 WIDTH	(WB-A)	-
- WIDTH AT 0 M FROM JUNC.		10.00 M.
- WIDTH AT 5 M FROM JUNC.		10.00 M.
- WIDTH AT 10 M FROM JUNC.		10.00 M.
- WIDTH AT 15 M FROM JUNC.		9.20 M.
- WIDTH AT 20 M FROM JUNC.		5.60 M.
- LENGTH OF FLARED SECTION	DERIVED:	3 PCU

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: Baseline 2010

TIME PERIOD BEGINS 14.30 AND ENDS 16.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.66	2.49	1.66
ARM B	15.00	45.00	75.00	0.13	0.19	0.13
ARM C	15.00	45.00	75.00	1.64	2.46	1.64

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
		ARM A	ARM B	ARM C
14.30 - 16.00	ARM A	0.000 0.0 (0.0)	0.060 8.0 (75.0)	0.940 125.0 (3.2)
	ARM B	0.800 8.0 (87.5)	0.000 0.0 (0.0)	0.200 2.0 (50.0)
	ARM C	0.992 130.0 (6.2)	0.008 1.0 (0.0)	0.000 0.0 (0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET Baseline 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.30-14.45									
B-C	0.03	7.54	0.003		0.00	0.00	0.0		0.13
B-A	0.10	4.90	0.020		0.00	0.02	0.3		0.21
C-AB	0.01	12.26	0.001		0.00	0.00	0.0		0.08
C-A	1.63								
A-B	0.10								
A-C	1.57								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.45-15.00									
B-C	0.03	7.47	0.004		0.00	0.00	0.1		0.13
B-A	0.12	4.83	0.025		0.02	0.03	0.4		0.21
C-AB	0.02	12.36	0.001		0.00	0.00	0.0		0.08
C-A	1.95								
A-B	0.12								
A-C	1.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.00-15.15									
B-C	0.04	7.38	0.005		0.00	0.00	0.1		0.14
B-A	0.15	4.72	0.031		0.03	0.03	0.5		0.22
C-AB	0.02	12.51	0.002		0.00	0.00	0.0		0.08
C-A	2.38								
A-B	0.15								
A-C	2.29								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.15-15.30									
B-C	0.04	7.38	0.005		0.00	0.00	0.1		0.14
B-A	0.15	4.72	0.031		0.03	0.03	0.5		0.22
C-AB	0.02	12.51	0.002		0.00	0.00	0.0		0.08
C-A	2.38								
A-B	0.15								
A-C	2.29								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.30-15.45									
B-C	0.03	7.47	0.004		0.00	0.00	0.1		0.13
B-A	0.12	4.83	0.025		0.03	0.03	0.4		0.21
C-AB	0.02	12.36	0.001		0.00	0.00	0.0		0.08
C-A	1.95								
A-B	0.12								
A-C	1.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.03	7.54	0.003		0.00	0.00	0.1		0.13
B-A	0.10	4.90	0.020		0.03	0.02	0.3		0.21
C-AB	0.01	12.26	0.001		0.00	0.00	0.0		0.08
C-A	1.63								
A-B	0.10								
A-C	1.57								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	2.8	1.8	0.4	0.13	0.4	0.13
B-A	11.0	7.3	2.3	0.21	2.3	0.21
C-AB	1.6	1.1	0.1	0.08	0.1	0.08
C-A	178.7	119.1				
A-B	11.0	7.3				
A-C	172.1	114.7				
ALL	377.1	251.4	2.8	0.01	2.8	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 14.30 AND ENDS 16.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.67	2.51	1.67
ARM B	15.00	45.00	75.00	0.14	0.21	0.14
ARM C	15.00	45.00	75.00	1.64	2.46	1.64

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
14.30 - 16.00	ARM A	0.000	0.067	0.933
		0.0	9.0	125.0
		(0.0)	(77.8)	(0.4)
	ARM B	0.818	0.000	0.182
		9.0	0.0	2.0
		(88.9)	(0.0)	(50.0)
	ARM C	0.992	0.008	0.000
		130.0	1.0	0.0
		(6.2)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.30-14.45									
B-C	0.03	7.52	0.003		0.00	0.00	0.0		0.13
B-A	0.11	4.87	0.023		0.00	0.02	0.3		0.21
C-AB	0.01	12.25	0.001		0.00	0.00	0.0		0.08
C-A	1.63								
A-B	0.11								
A-C	1.57								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.45-15.00									
B-C	0.03	7.45	0.004		0.00	0.00	0.1		0.13
B-A	0.13	4.80	0.028		0.02	0.03	0.4		0.21
C-AB	0.02	12.36	0.001		0.00	0.00	0.0		0.08
C-A	1.95								
A-B	0.13								
A-C	1.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.00-15.15									
B-C	0.04	7.36	0.005		0.00	0.00	0.1		0.14
B-A	0.17	4.69	0.035		0.03	0.04	0.5		0.22
C-AB	0.02	12.50	0.002		0.00	0.00	0.0		0.08
C-A	2.38								
A-B	0.17								
A-C	2.29								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.15-15.30									
B-C	0.04	7.36	0.005		0.00	0.01	0.1		0.14
B-A	0.17	4.69	0.035		0.04	0.04	0.5		0.22
C-AB	0.02	12.50	0.002		0.00	0.00	0.0		0.08
C-A	2.38								
A-B	0.17								
A-C	2.29								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.30-15.45									
B-C	0.03	7.45	0.004		0.01	0.00	0.1		0.13
B-A	0.13	4.80	0.028		0.04	0.03	0.5		0.21
C-AB	0.02	12.36	0.001		0.00	0.00	0.0		0.08
C-A	1.95								
A-B	0.13								
A-C	1.87								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.03	7.51	0.003		0.00	0.00	0.1		0.13
B-A	0.11	4.87	0.023		0.03	0.02	0.4		0.21
C-AB	0.01	12.25	0.001		0.00	0.00	0.0		0.08
C-A	1.63								
A-B	0.11								
A-C	1.57								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-C	2.8	1.8	0.4	0.13	0.4	0.13
B-A	12.4	8.3	2.6	0.21	2.6	0.21
C-AB	1.6	1.1	0.1	0.08	0.1	0.08
C-A	178.7	119.1				
A-B	12.4	8.3				
A-C	172.1	114.7				
ALL	379.9	253.3	3.1	0.01	3.1	0.01

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

END OF JOB

.SLOPES AND INTERCEPT

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

will be adjusted)

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
588.44	0.21	0.08

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B
459.58	0.20	0.08	0.13	0.28

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
704.26	0.26	0.26

NB These values do not allow for any site specific corrections

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 14.30 AND ENDS 16.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	1.76	2.64	1.76
ARM B	15.00	45.00	75.00	0.14	0.21	0.14
ARM C	15.00	45.00	75.00	1.73	2.59	1.73

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
14.30 - 16.00	ARM A	0.000	0.064	0.936
		0.0	9.0	132.0
		(0.0)	(77.8)	(3.0)
	ARM B	0.818	0.000	0.182
		9.0	0.0	2.0
		(88.9)	(0.0)	(50.0)
	ARM C	0.993	0.007	0.000
		137.0	1.0	0.0
		(5.8)	(0.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.30-14.45									
B-C	0.03	7.50	0.003		0.00	0.00	0.0		0.13
B-A	0.11	4.85	0.023		0.00	0.02	0.3		0.21
C-AB	0.01	12.28	0.001		0.00	0.00	0.0		0.08
C-A	1.72								
A-B	0.11								
A-C	1.66								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
14.45-15.00									
B-C	0.03	7.43	0.004		0.00	0.00	0.1		0.14
B-A	0.13	4.77	0.028		0.02	0.03	0.4		0.22
C-AB	0.02	12.40	0.001		0.00	0.00	0.0		0.08
C-A	2.05								
A-B	0.13								
A-C	1.98								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.00-15.15									
B-C	0.04	7.34	0.005		0.00	0.00	0.1		0.14
B-A	0.17	4.67	0.035		0.03	0.04	0.5		0.22
C-AB	0.02	12.55	0.002		0.00	0.00	0.0		0.08
C-A	2.51								
A-B	0.17								
A-C	2.42								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.15-15.30									
B-C	0.04	7.34	0.005		0.00	0.01	0.1		0.14
B-A	0.17	4.67	0.035		0.04	0.04	0.5		0.22
C-AB	0.02	12.55	0.002		0.00	0.00	0.0		0.08
C-A	2.51								
A-B	0.17								
A-C	2.42								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.30-15.45									
B-C	0.03	7.43	0.004		0.01	0.00	0.1		0.14
B-A	0.13	4.77	0.028		0.04	0.03	0.5		0.22
C-AB	0.02	12.40	0.001		0.00	0.00	0.0		0.08
C-A	2.05								
A-B	0.13								
A-C	1.98								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
15.45-16.00									
B-C	0.03	7.50	0.003		0.00	0.00	0.1		0.13
B-A	0.11	4.85	0.023		0.03	0.02	0.4		0.21
C-AB	0.01	12.28	0.001		0.00	0.00	0.0		0.08
C-A	1.72								
A-B	0.11								
A-C	1.66								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-C

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
14.45	0.0
15.00	0.0
15.15	0.0
15.30	0.0
15.45	0.0
16.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	2.8	1.8	0.4	0.13	0.4	0.13
B-A	12.4	8.3	2.7	0.21	2.7	0.21
C-AB	1.7	1.1	0.1	0.08	0.1	0.08
C-A	188.3	125.5				
A-B	12.4	8.3				
A-C	181.7	121.1				
ALL	399.2	266.1	3.2	0.01	3.2	0.01

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

END OF JOB

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

[Printed at 15:11:31 on 10/09/2010]

TRL LIMITED

CAPACITIES, QUEUES, AND DELAYS AT 3 OR 4-ARM MAJOR/MINOR PRIORITY JUNCTIONS

PICADY 5.0 ANALYSIS PROGRAM
RELEASE 3.0 (JUNE 2006)

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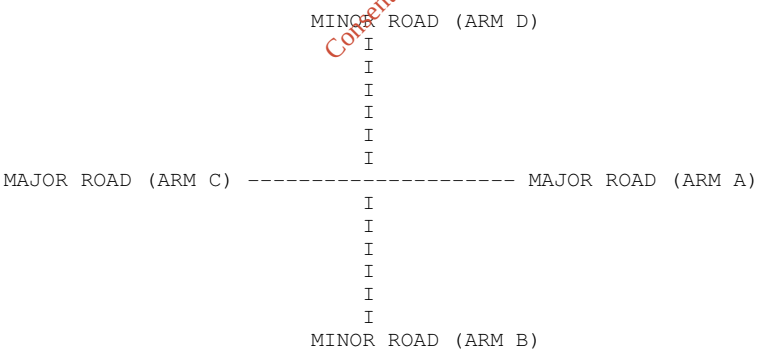
Run with file:-
"W:\Projects\6222pp - Roadstone Wood Waste Permits\05-Design\01-Calculations\Traffic\Picady\Mullaghcrone\R152 Crossroads PM.vpi"
(drive-on-the-left) at 16:00:30 on Friday, 10 September 2010

RUN INFORMATION
****

RUN TITLE: R152 Crossroads
LOCATION: Mullaghcrone Quarry
DATE: 10/09/10
CLIENT: Roadstone
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 6222
STATUS:
DESCRIPTION:

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

INPUT DATA



ARM A IS R152 North
ARM B IS Gaffney Road
ARM C IS R152 South
ARM D IS Platin Road

STREAM LABELLING CONVENTION

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

STREAM B-AC CONTAINS TRAFFIC GOING FROM ARM B TO ARM A AND TO ARM C

ETC.

GEOMETRIC DATA

DATA ITEM	MINOR ROAD B	MINOR ROAD D
TOTAL MAJOR ROAD CARRIAGEWAY WIDTH	(W) 7.00 M.	(W) 7.00 M.
CENTRAL RESERVE WIDTH	(WCR) 0.00 M.	(WCR) 0.00 M.
MAJOR ROAD RIGHT TURN - WIDTH	(WC-B) 2.20 M.	(WA-D) 2.20 M.
- VISIBILITY	(VC-B) 225.0 M.	(VA-D) 225.0 M.
- BLOCKS TRAFFIC	YES	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 0.0 M.	(VD-A) 20.0 M.
- VISIBILITY TO RIGHT	(VB-A) 10.0 M.	(VD-C) 20.0 M.
- LANE 1 WIDTH	(WB-C) 3.00 M.	(WD-A) 5.00 M.
- LANE 2 WIDTH	(WB-A) 0.00 M.	(WD-C) 5.00 M.

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D
704.26	0.26	0.37

A-D Stream

Intercept For Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B

704.26	0.26	0.37	

B-D Stream From Left Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
482.67	0.21	0.21	0.08	0.30

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.13	0.13		

B-D Stream From Right Hand Lane

Intercept For Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B
482.67	0.21	0.21	0.08	0.30

	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing
	0.13	0.13		

D-B Stream From Left Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D
592.82	0.26	0.26	0.10	0.37

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.16	0.16		

D-B Stream From Right Hand Lane

Intercept For Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D
592.82	0.26	0.26	0.10	0.37

	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing
	0.16	0.16		

TRAFFIC DEMAND DATA

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

Demand set: Baseflow 2010

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.78	8.66	5.78
ARM B	15.00	45.00	75.00	0.68	1.01	0.68
ARM C	15.00	45.00	75.00	5.90	8.85	5.90
ARM D	15.00	45.00	75.00	0.70	1.05	0.70

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.30 - 18.00	ARM A	0.000	0.165	0.812	0.024
		0.0	76.0	375.0	11.0
		(0.0)	(6.6)	(4.8)	(0.0)
	ARM B	0.574	0.000	0.000	0.426
		31.0	0.0	0.0	23.0
		(3.2)	(0.0)	(0.0)	(8.7)
	ARM C	0.943	0.002	0.000	0.055
		445.0	1.0	0.0	26.0
		(3.4)	(0.0)	(0.0)	(23.1)
	ARM D	0.393	0.357	0.250	0.000
		22.0	20.0	14.0	0.0
		(4.5)	(14.3)	(13.3)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET Baseflow 2010
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-ACD	0.68	5.69	0.119		0.00	0.13	1.9		0.20
A-BCD	0.22	13.67	0.016		0.00	0.02	0.3		0.07
A-B	0.94								
A-C	4.63								
D-AB	0.40	8.65	0.047		0.00	0.05	0.7		0.12
D-BC	0.30	6.44	0.046		0.00	0.05	0.7		0.16
C-ABD	0.02	13.84	0.001		0.00	0.00	0.0		0.07
C-D	0.33								
C-A	5.58								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-ACD	0.81	5.31	0.152		0.13	0.18	2.6		0.22
A-BCD	0.29	14.07	0.021		0.02	0.03	0.4		0.07
A-B	1.12								
A-C	5.51								
D-AB	0.48	8.20	0.059		0.05	0.06	0.9		0.13
D-BC	0.35	6.00	0.059		0.05	0.06	0.9		0.18
C-ABD	0.03	14.27	0.002		0.00	0.00	0.0		0.07
C-D	0.39								
C-A	6.66								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-ACD	0.99	4.79	0.207		0.18	0.26	3.7		0.26
A-BCD	0.41	14.61	0.028		0.03	0.04	0.5		0.07
A-B	1.36								
A-C	6.71								
D-AB	0.60	7.58	0.079		0.06	0.08	1.2		0.14
D-BC	0.43	5.39	0.080		0.06	0.09	1.2		0.20
C-ABD	0.04	14.85	0.003		0.00	0.00	0.0		0.07
C-D	0.48								
C-A	8.15								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-ACD	0.99	4.79	0.207		0.26	0.26	3.9		0.26
A-BCD	0.41	14.61	0.028		0.04	0.04	0.5		0.07
A-B	1.36								
A-C	6.71								
D-AB	0.60	7.58	0.079		0.08	0.08	1.3		0.14
D-BC	0.43	5.39	0.080		0.09	0.09	1.3		0.20
C-ABD	0.04	14.85	0.003		0.00	0.00	0.0		0.07
C-D	0.48								
C-A	8.15								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-ACD	0.81	5.31	0.152		0.26	0.18	2.9		0.22
A-BCD	0.29	14.07	0.021		0.04	0.03	0.4		0.07
A-B	1.12								
A-C	5.51								
D-AB	0.48	8.20	0.059		0.08	0.06	1.0		0.13
D-BC	0.35	6.00	0.059		0.09	0.06	1.0		0.18
C-ABD	0.03	14.27	0.002		0.00	0.00	0.0		0.07
C-D	0.39								
C-A	6.66								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-ACD	0.68	5.68	0.119		0.18	0.14	2.1		0.20
A-BCD	0.22	13.67	0.016		0.03	0.02	0.3		0.07
A-B	0.94								
A-C	4.63								
D-AB	0.40	8.64	0.047		0.06	0.05	0.8		0.12
D-BC	0.30	6.43	0.046		0.06	0.05	0.8		0.16
C-ABD	0.02	13.84	0.001		0.00	0.00	0.0		0.07
C-D	0.33								
C-A	5.58								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.0

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.0

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	74.3	49.6	17.0	0.23	17.0	0.23
A-BCD	27.7	18.5	2.4	0.09	2.4	0.09
A-B	102.5	68.3				
A-C	505.7	337.1				
D-AB	44.6	29.7	5.9	0.13	5.9	0.13
D-BC	32.5	21.7	5.9	0.18	5.9	0.18
C-ABD	2.6	1.7	0.2	0.07	0.2	0.07
C-D	35.7	23.8				
C-A	611.4	407.6				
ALL	1437.0	958.0	31.3	0.02	31.3	0.02

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

END OF JOB

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

I Intercept For Slope For Opposing Slope For Opposing I

I Stream C-B	Stream A-C	Stream A-D	I
I 704.26	0.26	0.37	I

A-D Stream

I Intercept For I Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	I
I 704.26	0.26	0.37	I

B-D Stream From Left Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

B-D Stream From Right Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

D-B Stream From Left Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

D-B Stream From Right Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

TRAFFIC DEMAND DATA

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

Demand set: 2010 + gen

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	5.78	8.66	5.78
ARM B	15.00	45.00	75.00	0.69	1.03	0.69
ARM C	15.00	45.00	75.00	5.91	8.87	5.91
ARM D	15.00	45.00	75.00	0.73	1.09	0.73

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.30 - 18.00	ARM A	0.000	0.165	0.812	0.024
		0.0	76.0	375.0	11.0
		(0.0)	(6.6)	(4.8)	(0.0)
	ARM B	0.564	0.000	0.000	0.436
		31.0	0.0	0.0	24.0
		(3.2)	(0.0)	(0.0)	(12.5)
	ARM C	0.941	0.002	0.000	0.057
		445.0	1.0	0.0	27.0
		(3.4)	(0.0)	(0.0)	(25.9)
	ARM D	0.379	0.362	0.259	0.000
		22.0	21.0	15.0	0.0
		(4.5)	(19.0)	(20.0)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2010 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-ACD	0.69	5.59	0.123		0.00	0.14	2.0		0.20
A-BCD	0.22	13.67	0.016		0.00	0.02	0.3		0.07
A-B	0.94								
A-C	4.63								
D-AB	0.41	8.43	0.049		0.00	0.05	0.7		0.12
D-BC	0.32	6.11	0.052		0.00	0.05	0.8		0.17
C-ABD	0.02	13.84	0.001		0.00	0.00	0.0		0.07
C-D	0.34								
C-A	5.58								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-ACD	0.82	5.22	0.158		0.14	0.18	2.7		0.23
A-BCD	0.29	14.06	0.021		0.02	0.03	0.4		0.07
A-B	1.12								
A-C	5.51								
D-AB	0.49	7.98	0.062		0.05	0.07	1.0		0.13
D-BC	0.38	5.70	0.066		0.05	0.07	1.0		0.19
C-ABD	0.03	14.27	0.002		0.00	0.00	0.0		0.07
C-D	0.40								
C-A	6.66								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-ACD	1.01	4.71	0.214		0.18	0.27	3.8		0.27
A-BCD	0.41	14.61	0.028		0.03	0.04	0.5		0.07
A-B	1.36								
A-C	6.71								
D-AB	0.61	7.35	0.083		0.07	0.09	1.3		0.15
D-BC	0.46	5.12	0.089		0.07	0.10	1.4		0.21
C-ABD	0.04	14.85	0.003		0.00	0.00	0.0		0.07
C-D	0.49								
C-A	8.15								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-ACD	1.01	4.70	0.215		0.27	0.27	4.0		0.27
A-BCD	0.41	14.61	0.028		0.04	0.04	0.5		0.07
A-B	1.36								
A-C	6.71								
D-AB	0.61	7.35	0.083		0.09	0.09	1.3		0.15
D-BC	0.46	5.12	0.089		0.10	0.10	1.5		0.21
C-ABD	0.04	14.85	0.003		0.00	0.00	0.0		0.07
C-D	0.49								
C-A	8.15								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-ACD	0.82	5.22	0.158		0.27	0.19	3.0		0.23
A-BCD	0.29	14.06	0.021		0.04	0.03	0.4		0.07
A-B	1.12								
A-C	5.51								
D-AB	0.49	7.97	0.062		0.09	0.07	1.0		0.13
D-BC	0.38	5.69	0.066		0.10	0.07	1.1		0.19
C-ABD	0.03	14.27	0.002		0.00	0.00	0.0		0.07
C-D	0.40								
C-A	6.66								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-ACD	0.69	5.59	0.124		0.19	0.14	2.2		0.20
A-BCD	0.22	13.67	0.016		0.03	0.02	0.3		0.07
A-B	0.94								
A-C	4.63								
D-AB	0.41	8.42	0.049		0.07	0.05	0.8		0.12
D-BC	0.32	6.11	0.052		0.07	0.06	0.8		0.17
C-ABD	0.02	13.84	0.001		0.00	0.00	0.0		0.07
C-D	0.34								
C-A	5.58								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.1

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	75.7	50.5	17.7	0.23	17.7	0.23
A-BCD	27.7	18.5	2.4	0.09	2.4	0.09
A-B	102.5	68.3				
A-C	505.7	337.1				
D-AB	45.4	30.2	6.2	0.14	6.2	0.14
D-BC	34.5	23.0	6.6	0.19	6.6	0.19
C-ABD	2.6	1.7	0.2	0.07	0.2	0.07
C-D	37.1	24.7				
C-A	611.4	407.6				
ALL	1442.5	961.7	33.1	0.02	33.1	0.02

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

END OF JOB

.SLOPES AND INTERCPET

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

will be adjusted)

B-C Stream

Intercept For Stream B-C	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
630.23	0.23	0.09

D-A Stream

Intercept For Stream D-A	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D
763.98	0.28	0.11

B-A Stream

Intercept For Stream B-A	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream D-A	Slope For Opposing Stream D-B
482.67	0.21	0.21	0.21	0.21

Slope For Opposing Stream A-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C
0.08	0.13	0.30	0.11

D-C Stream

Intercept For Stream D-C	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream B-C	Slope For Opposing Stream B-D
592.82	0.26	0.26	0.26	0.26

Slope For Opposing Stream C-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream B-A
0.10	0.16	0.37	0.13

C-B Stream

I Intercept For Slope For Opposing Slope For Opposing I

I Stream C-B	Stream A-C	Stream A-D	I
I 704.26	0.26	0.37	I

A-D Stream

I Intercept For I Stream A-D	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	I
I 704.26	0.26	0.37	I

B-D Stream From Left Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

B-D Stream From Right Hand Lane

I Intercept For I Stream B-D	Slope For Opposing Stream A-C	Slope For Opposing Stream A-D	Slope For Opposing Stream A-B	Slope For Opposing Stream C-B	I
I 482.67	0.21	0.21	0.08	0.30	I

I	Slope For Opposing Stream C-A	Slope For Opposing Stream C-D	Slope For Opposing	Slope For Opposing	I
I	0.13	0.13			I

D-B Stream From Left Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream D-C	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

D-B Stream From Right Hand Lane

I Intercept For I Stream D-B	Slope For Opposing Stream C-A	Slope For Opposing Stream C-B	Slope For Opposing Stream C-D	Slope For Opposing Stream A-D	I
I 592.82	0.26	0.26	0.10	0.37	I

I	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B	Slope For Opposing	Slope For Opposing	I
I	0.16	0.16			I

TRAFFIC DEMAND DATA

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

Demand set: 2015 + gen

TIME PERIOD BEGINS 16.30 AND ENDS 18.00

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

DEMAND FLOW PROFILES ARE SYNTHESISED FROM TURNING COUNT DATA

ARM	NUMBER OF MINUTES FROM START WHEN FLOW STARTS TO RISE	NUMBER OF MINUTES FROM START WHEN TOP OF PEAK IS REACHED	NUMBER OF MINUTES FROM START WHEN FLOW STOPS FALLING	RATE OF FLOW (VEH/MIN) BEFORE PEAK	RATE OF FLOW (VEH/MIN) AT TOP OF PEAK	RATE OF FLOW (VEH/MIN) AFTER PEAK
ARM A	15.00	45.00	75.00	6.11	9.17	6.11
ARM B	15.00	45.00	75.00	0.73	1.09	0.73
ARM C	15.00	45.00	75.00	6.26	9.39	6.26
ARM D	15.00	45.00	75.00	0.76	1.14	0.76

TURNING PROPORTIONS
TURNING COUNTS (VEH/HR)
(PERCENTAGE OF H.V.S)

TIME	FROM/TO	ARM A	ARM B	ARM C	ARM D
16.30 - 18.00					
	ARM A	0.000	0.164	0.812	0.025
		0.0	80.0	397.0	12.0
		(0.0)	(6.3)	(4.8)	(0.0)
	ARM B	0.569	0.000	0.000	0.431
		33.0	0.0	0.0	25.0
		(3.0)	(0.0)	(0.0)	(12.0)
	ARM C	0.942	0.002	0.000	0.056
		472.0	1.0	0.0	28.0
		(3.4)	(0.0)	(0.0)	(25.0)
	ARM D	0.377	0.361	0.262	0.000
		23.0	22.0	16.0	0.0
		(4.5)	(18.2)	(18.8)	(0.0)

TURNING PROPORTIONS ARE CALCULATED FROM TURNING COUNT DATA

THE PERCENTAGE OF HEAVY VEHICLES VARIES OVER TURNING MOVEMENTS

QUEUE AND DELAY INFORMATION FOR EACH 15 MIN TIME SEGMENT

FOR DEMAND SET 2015 + gen
AND FOR TIME PERIOD 1

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.30-16.45									
B-ACD	0.73	5.50	0.132		0.00	0.15	2.1		0.21
A-BCD	0.25	13.78	0.018		0.00	0.02	0.3		0.07
A-B	0.99								
A-C	4.90								
D-AB	0.43	8.32	0.052		0.00	0.05	0.8		0.13
D-BC	0.33	6.04	0.055		0.00	0.06	0.8		0.17
C-ABD	0.02	13.98	0.002		0.00	0.00	0.0		0.07
C-D	0.35								
C-A	5.91								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
16.45-17.00									
B-ACD	0.87	5.10	0.170		0.15	0.20	2.9		0.24
A-BCD	0.33	14.20	0.023		0.02	0.03	0.4		0.07
A-B	1.17								
A-C	5.82								
D-AB	0.52	7.84	0.066		0.05	0.07	1.0		0.14
D-BC	0.40	5.59	0.071		0.06	0.08	1.1		0.19
C-ABD	0.03	14.43	0.002		0.00	0.00	0.0		0.07
C-D	0.42								
C-A	7.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.00-17.15									
B-ACD	1.06	4.56	0.234		0.20	0.30	4.3		0.29
A-BCD	0.46	14.78	0.031		0.03	0.04	0.6		0.07
A-B	1.43								
A-C	7.08								
D-AB	0.64	7.16	0.089		0.07	0.10	1.4		0.15
D-BC	0.48	4.98	0.097		0.08	0.11	1.5		0.22
C-ABD	0.04	15.04	0.003		0.00	0.00	0.0		0.07
C-D	0.51								
C-A	8.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.15-17.30									
B-ACD	1.06	4.56	0.234		0.30	0.30	4.5		0.29
A-BCD	0.46	14.78	0.031		0.04	0.04	0.6		0.07
A-B	1.43								
A-C	7.08								
D-AB	0.64	7.16	0.089		0.10	0.10	1.5		0.15
D-BC	0.48	4.97	0.097		0.11	0.11	1.6		0.22
C-ABD	0.04	15.04	0.003		0.00	0.00	0.0		0.07
C-D	0.51								
C-A	8.64								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.30-17.45									
B-ACD	0.87	5.10	0.170		0.30	0.21	3.3		0.24
A-BCD	0.33	14.20	0.023		0.04	0.03	0.4		0.07
A-B	1.17								
A-C	5.82								
D-AB	0.52	7.83	0.066		0.10	0.07	1.1		0.14
D-BC	0.40	5.59	0.071		0.11	0.08	1.2		0.19
C-ABD	0.03	14.43	0.002		0.00	0.00	0.0		0.07
C-D	0.42								
C-A	7.06								

TIME	DEMAND (VEH/MIN)	CAPACITY (VEH/MIN)	DEMAND/ CAPACITY (RFC)	PEDESTRIAN FLOW (PEDS/MIN)	START QUEUE (VEHS)	END QUEUE (VEHS)	DELAY (VEH.MIN/ TIME SEGMENT)	GEOMETRIC DELAY (VEH.MIN/ TIME SEGMENT)	AVERAGE DELAY PER ARRIVING VEHICLE (MIN)
17.45-18.00									
B-ACD	0.73	5.49	0.132		0.21	0.16	2.4		0.21
A-BCD	0.25	13.78	0.018		0.03	0.02	0.3		0.07
A-B	0.99								
A-C	4.90								
D-AB	0.43	8.31	0.052		0.07	0.06	0.8		0.13
D-BC	0.33	6.04	0.055		0.08	0.06	0.9		0.18
C-ABD	0.02	13.98	0.002		0.00	0.00	0.0		0.07
C-D	0.35								
C-A	5.91								

WARNING NO MARGINAL ANALYSIS OF CAPACITIES AS MAJOR ROAD BLOCKING MAY OCCUR

QUEUE FOR STREAM B-ACD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.2
17.00	0.2
17.15	0.3
17.30	0.3
17.45	0.2
18.00	0.2

QUEUE FOR STREAM A-BCD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUE FOR STREAM D-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM D-BC

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.1
17.00	0.1
17.15	0.1
17.30	0.1
17.45	0.1
18.00	0.1

QUEUE FOR STREAM C-ABD

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
16.45	0.0
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND (VEH)	TOTAL DEMAND (VEH/H)	* QUEUEING * DELAY * (MIN)	* QUEUEING * DELAY * (MIN/VEH)	* INCLUSIVE QUEUEING * DELAY * (MIN)	* INCLUSIVE QUEUEING * DELAY * (MIN/VEH)
B-ACD	79.8	53.2	19.5	0.24	19.5	0.24
A-BCD	31.3	20.9	2.7	0.09	2.7	0.09
A-B	107.6	71.8				
A-C	534.1	356.1				
D-AB	47.5	31.7	6.6	0.14	6.6	0.14
D-BC	36.4	24.3	7.2	0.20	7.2	0.20
C-ABD	2.7	1.8	0.2	0.07	0.2	0.07
C-D	38.5	25.6				
C-A	648.5	432.3				
ALL	1526.5	1017.6	36.2	0.02	36.2	0.02

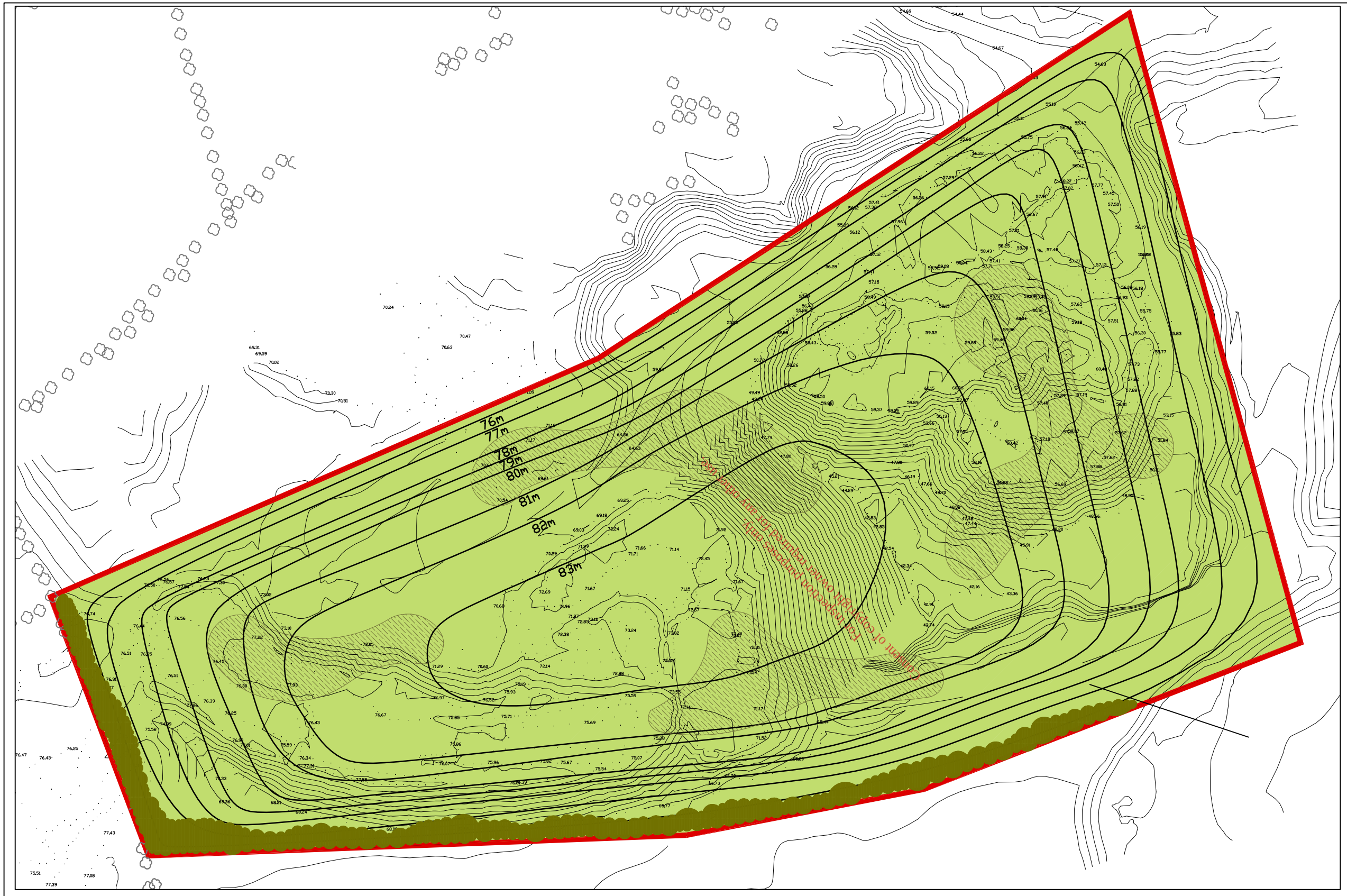
* DELAY IS THAT OCCURRING ONLY WITHIN THE TIME PERIOD .
* INCLUSIVE DELAY INCLUDES DELAY SUFFERED BY VEHICLES WHICH ARE STILL QUEUEING AFTER THE END OF THE TIME PERIOD.
* THESE WILL ONLY BE SIGNIFICANTLY DIFFERENT IF THERE IS A LARGE QUEUE REMAINING AT THE END OF THE TIME PERIOD.

END OF JOB

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

[Printed at 16:00:45 on 10/09/2010]

APPENDIX 14.1
Landscaping restoration master plan and earthworks specification



LEGEND

- Site boundary
- Grass seeding
- Meadow seeding
- Native hedgerow

PLANTING SCHEDULE

CG=Container grown, BR=bare root, RB= Root balled

GRASS SEEDING

Seed mix:	App rate:	Supplier:
Coburns Low Maintenance	35-50gr/sq.	James Coburn & son Ltd 32 Scarva Street, Banbridge, Co.Down, Northern Ireland. Ph: 00 44 (0) 28 40662207 Email: sales@coburns.net

MEADOW MIX (150mm topsoil)

Seed Mix	App rate:	Supplier:
WF03 - Wild Flower for diodiversity	1.5 gr/sq.m (with 1.5 gr/sq.m grass seed)	Design by Nature Cretty Yard, Co.Laois (Via Carlow Post Office) Ph: 056 4442526 Email: sales@wildflowers.ie

NATIVE HEDGEROW (Planted in 450mm topsoil)

Species to be planted 10% standard trees and 90% whip trees with species evenly sperad thoughout mix

Species:	Size:	Condition:
1+1 trans feathered		
Corylus avellana	1000-1200mm br	feathered
Fraxinus excelsior	1000-1200mm br	feathered
Crataegus mongyna	1000-1200mm br	feathered
Prunus spinosa	1000-1200mm br	feathered
Ligustrum vulgare	3lt cg	bushy min 6 breaks
Rosa canina	3lt cg	branched min 4 breaks

NORTH

1:1500@A3

NOTES

Do Not Scale. Use Figured Dimensions Only.
Not for Construction Purposes unless Specifically Marked.

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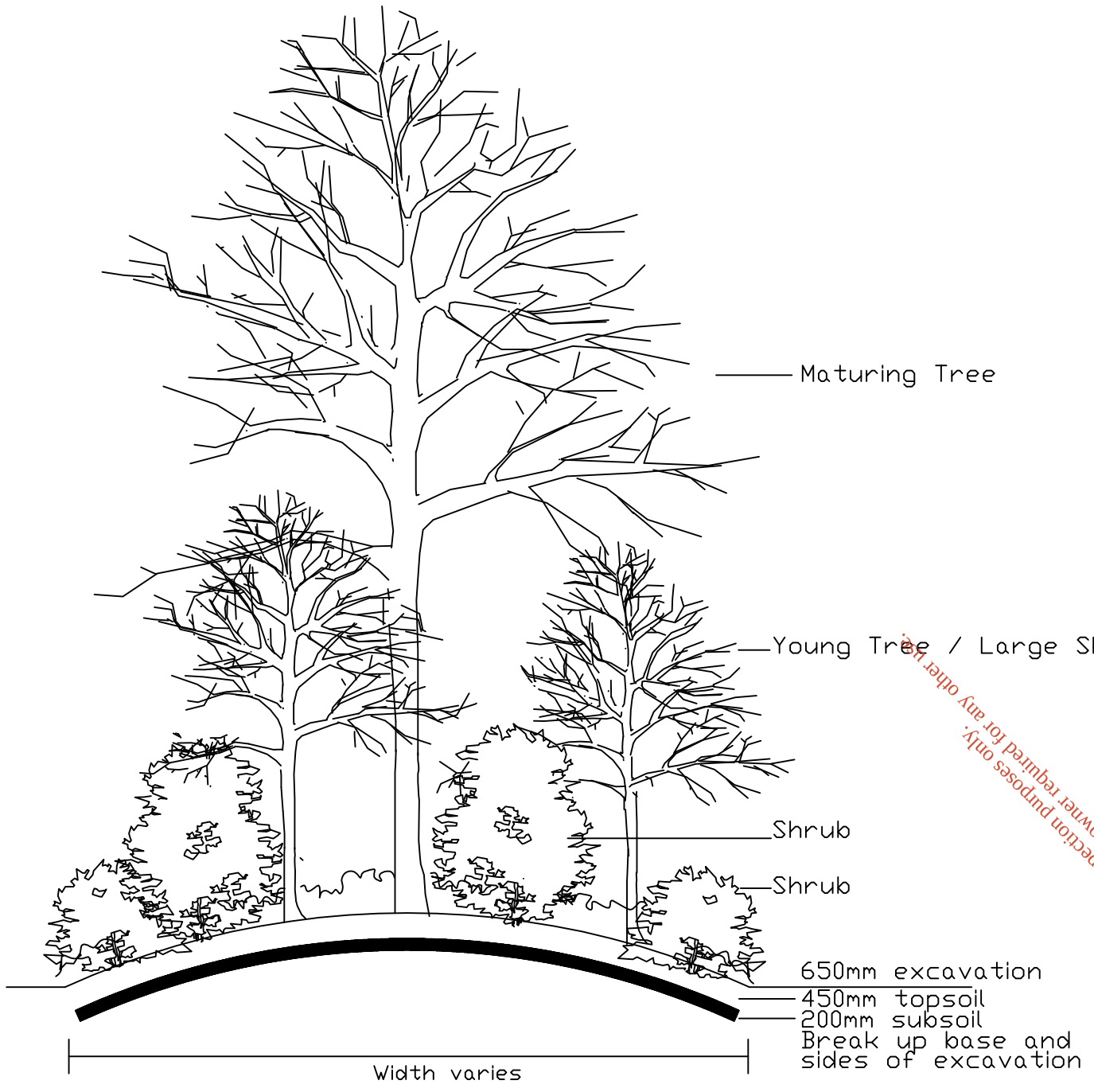
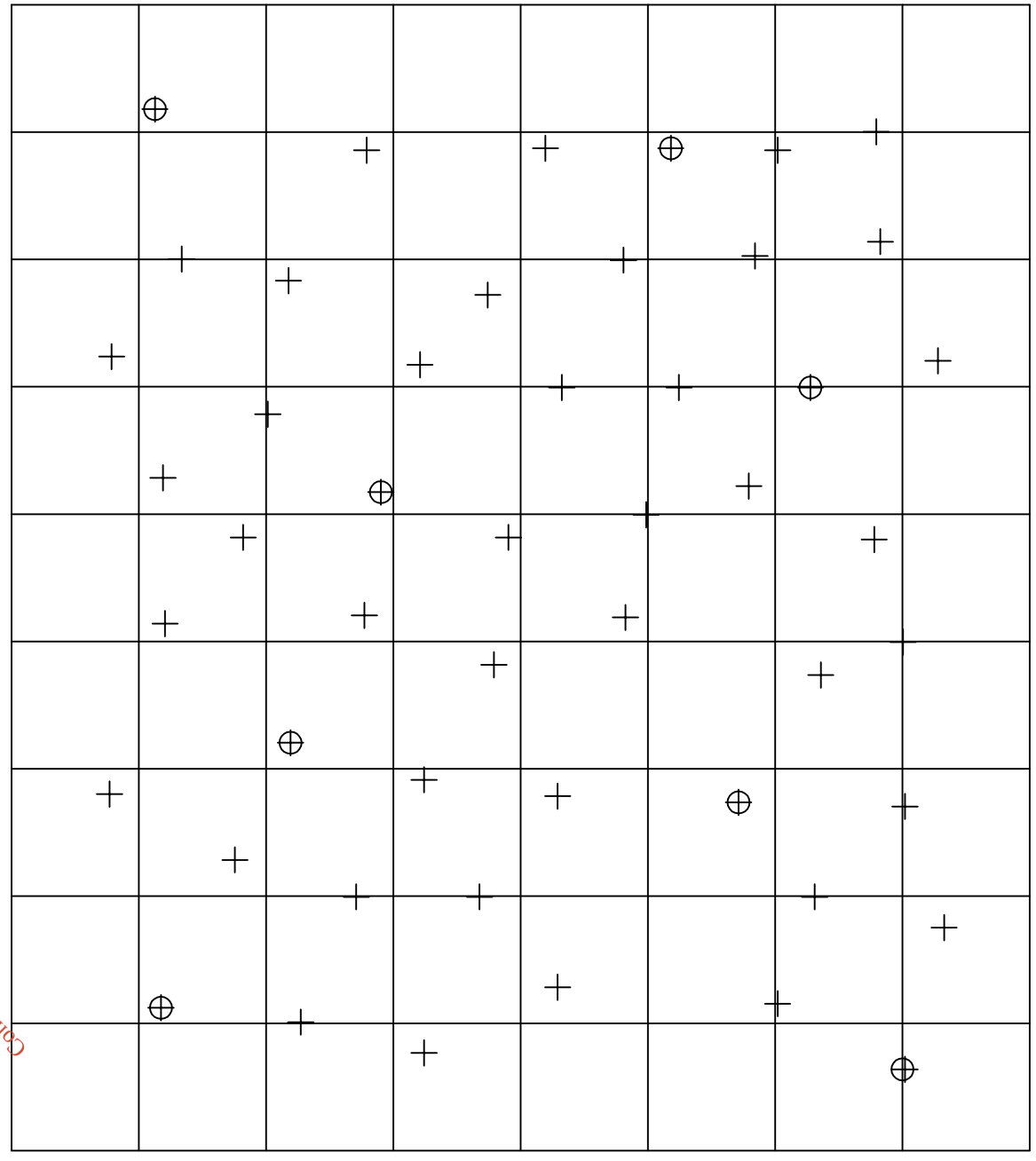
CLIENT: ROADSTONE	**PROJECT:** MALLAGHCRONE QUARRY		**JOB NO.** EMUL001
	DRAWING: LANDSCAPE REMEDIATION PLAN	**DATE:** 24.09.2010	**SCALE:** 1:1500@A3	**DRAWING NO.** 100
	DRAWN BY: ROWAN D'ARCY		**CHK'D:** CC	**REVISION.** -
	STATUS: PLANNING			



HEDGEROW PLANTING

SECTION



Note: Grid describes example of method of planting woodland mixes with 10% standard trees and 90% whips. Whip trees shall be planted ramdomly with no more than 5 plants of the same species planted in groups. Blocks of similar species are not to be planted. Pits shall be excavated 150mm wider in all directions that the natural root spread of the plant.

⊕ 10% Feathered

+ 90% Whips

HEDGEROW PLANTING

Whips planted at 1 metre centres and staggared as shown

NORTH

NTS

NOTES
Do Not Scale. Use Figured Dimensions Only.
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CLIENT	PROJECT:			JOB NO.
ROADSTONE	MALLAGHCRONE QUARRY			EMUL001
	DRAWING: PLANTING DETAILS	DATE: 24.09.2010	SCALE: NTS	DRAWING NO. 101
	DRAWN BY: ROWAN D'ARCY		CHK'D: CC	REVISION. -
	STATUS: PLANNING			

View from north-western edge of application site looking south-east towards Platin Cement Plant

Plate 1

View from eastern edge of application site looking towards agricultural land to the west

Plate 2

EMUL001 MULLAGHCRONE QUARRY
Outline Landscape Specification
Earth Works

SPECIFICATION

Method of work

No works in relation to grading and topsoiling to be carried out in conditions where materials are wet.

Provide catchment drains or ditches to collect excess run-off and prevent water entering from adjacent land. Remove scrub as well as top growth by cutting and burning. Flail or swipe mowers can be used. Where turf is excessively thick, plough, disc harrow, and reduce vegetative content by weathering and cultivations.

In late April - early May, apply 'Roundup' at 5 litres per hectare, diluted in water at 200 litres per hectare, at a pressure not exceeding 30 p.s.i. Apply evenly over full area of soil to be stripped. Apply when weather is mild and grass is growing. Do not apply when rain or showers are forecast within six hours or when wind may cause drift (over 24kph/15mph). If rain falls within the min mum period, retreat.
After application, leave the soil surface undisturbed for a minimum period of 15 days, to allow foliage symptoms to develop. If possible, leave undisturbed for two months.

Strip topsoil from all areas liable to disturbance of any kind, including building works, roads, underground services, all temporary access routes, compounds and storage areas. Strip the full designated working area, and any other areas liable to encroachment and traffic.

Do not run machinery over ground before stripping.
Strip the full depth of sod and topsoil. Avoid stripping into the subsoil layers.

Where a hedgerow is to be maintained, do not strip within 4 metres of it. Soil must not be stripped from any part of the area under the canopy of an tree which is to be retained.

Stockpiles

When soil is in a condition for stacking, remove all topsoil to its full depth and place it in heaps either off site in a convenient position, or on the neutral line of cut and fill. Strict precautions are essential to prevent loss or admixture with subsoil.

Soil heaps should be formed in positions which facilitate eventual respreading, reduce travel to a minimum and will not result in interference with subsequent major levelling and/or grading operations. Stockpiles shall be located on dry, free draining ground, not subject to standing water. If water ponds against the stockpile, temporary drains shall be cut to relieve it.. Avoid running machinery over stockpiles.

Stockpile heaps should not exceed 1.5m in height to avoid compaction.

While topsoil is stacked, measures should be taken to ensure that weed control by spraying with total or appropriate selective weedkillers is carried out during the growing season to prevent weeds seeding.

Topsoil stockpiles shall not be covered by subsoil, rock, rubble, site debris, fuel or chemical pollution. Where there is a danger of contamination or topsoil and subsoil stockpiles intermingling the topsoil stockpile shall be fenced off.
Temporary yards, storage areas or hardstanding areas shall not drain towards topsoil stockpiles.

Topsoil is the property of the Employer, and shall not be removed from site without consent given from Employer or Landscape Architect.

Subsoil cultivations
Subsoil should be placed in layers not exceeding 150mm thick; consolidation of fill may be accomplished by the use of special compacting machinery or by running over it with the next load; filling by tipping over an exposed face is not recommended because of the difficulty of consolidation.

After completion of subsoil moving, the formation level should be graded with the box scraper to even, running contours and then, depending on the soil texture and degree of compaction, loosened with a subsoiler or ripper.

Subsoil levels
Subsoil levels shall be 200mm below the finished ground levels in all areas for grass seeding to allow for 250mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.

Subsoil levels shall be 400mm below the finished ground levels in all areas for shrub planting to allow for 450mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.

Subsoil levels shall be 550mm below the finished ground levels in all areas for shrub planting to allow for 600mm of topsoil to be placed so that 50mm of topsoil stands proud of all kerbs, paths, etc.

Subsoil levels in all areas for tree planting shall be 900mm below the finished ground levels to allow for 900mm of topsoil to be placed.

Topsoil
Topsoil shall be native topsoil as removed and stored.
All imported topsoil to be of medium texture, pH matching that of the native topsoil, stone content 10mm in size not greater than 5% by weight, and no stones greater than 40mm in any dimension, and shall conform to BS 3882:1965. Topsoil shall be a free draining sandy loam. Depth of topsoil to be as specified.
Topsoil shall be free of perennial weed roots, i.e. couch grass, sticks, sub soil or any waste, toxic, putrescent or foreign matter.

After spreading, the soil should be cultivated to crumb size to a condition suitable for blade grading. Large stones and unwanted material 75mm and over should be picked off and carted away. Areas should then be blade graded to true flowing contours.
As topsoiling proceeds all consolidated wheel tracks shall be forked over.
Final grading of the top 150mm is to be carried out to ensure a true specified level and slope to avoid dishing or other depressions where water may collect. The use of a heavy roller to roll out humps will not be permitted and any area that becomes unduly compacted during the grading operation shall be loosened by forking or harrowing.

Topsoil levels
All topsoil shall be placed and graded by the Main Contractor to the following levels:

grass seeding	250mm
shrub / groundcover planting	450mm
hedge planting	600mm
tree planting	1000mm x 1000mm x 900mm pit

Maintenance of topsoil stockpiles

Stockpiles of 1 year duration or less: treat the growing weeds with 'Roundup' applied at 5 litres per hectare, diluted and applied in accordance with the manufacturers instructions, when they are growing strongly (May - June). Noxious weeds (dock, thistle, ragwort) shall be treated before they flower.

Stockpiles of up to 2 year's duration: roughly grade top and slopes of topsoil. Sow Italian Ryegrass at 50kg per hectare as a temporary grass cover. Control noxious weeds with a proprietary weedkiller such as 'Bandock' , diluted and applied in accordance with the manufacturers instructions, when they are growing strongly (May - June).

EMUL001 MULLAGHCRONE QUARRY
Outline Landscape Specification
Soft Works

PRELIMINARIES

Description of Work
The work consists of general works, site preparation, soil preparation, grass seeding, wildflower seeding, bulb/corm planting, shrub/groundcover planting, and tree planting
Exact dates for completion of works will be finalised after the award of the contract.

Standards of Workmanship and Materials
The Landscape Contractor shall satisfy the Landscape Architect that all works have been carried out to comply with BS 4428(General Landscape Operations), BS 3936 (Nursery Stock), and BS 3882 (Topsoil).
It is essential that the site is tidy at all times, and that the planting appears healthy. The Landscape Contractor should be prepared, at all times, to ensure that such conditions are met and should include for this in his rates.
Any materials not meeting the specifications or qualifying for the approval of the Landscape Architect, for whatever cause, shall be rejected.
The Landscape Contractor shall familiarise himself/herself with the layout of services and the positions of all structures on the site and shall be liable for any damage to the above.
No existing plants shall be removed or damaged, other than those specified by the Landscape Architect

Notice of Intentions and Recording Actions
The Landscape Contractor shall give 48 hours notice of his intention to commence setting out, planting and maintenance visits.
The Landscape Contractor shall return a weekly record of all site actions.

Leaving the Site Tidy
The site shall be left in a neat and orderly condition at the end of each day's work.

Season
Landscape work shall take place in the appropriate season and only when the conditions are suitable, i.e. it is dull, moist and mild, without undue risk of frost or drying winds.
There shall be no cultivation or planting when the soil is frozen or waterlogged.

If exceptional weather conditions occur after planting, e.g. heavy frosts, measures shall be taken as approved by the Landscape Architect.

Replacement
The sub-contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time up to practical completion and in the twelve months after planting.

The sub-contractor shall make good at his own expense any losses of trees and plants which die or appear unhealthy at any time prior to hand over.

Plant failures will not be charged to the Landscape Contractor if the failure is due to; damage by hares, rabbits, deer, livestock where not protected by guards or fencing, damage/ losses due to theft, vandalism or disturbance by other contractors.

Persistence of weed in planted areas will be regarded as a contributory cause of failure due to drought. Prolonged dry weather will not exonerate the landscape Contractor if the scheduled maintenance operations have not been carried out as programmed.

Damage
All trees and plants are to be adequately and carefully packed and protected to survive transport, whatever means, to the site, during loading, transit or unloading.
If in spite of these precautions roots, branches, or shoots suffer slight damage, they are to be carefully pruned.
If major damage has occurred, the plant or tree shall be rejected and replaced at the Landscape Contractor's own expense.

Defects Liability Period
The Landscape Contractor shall be responsible for any plants that fail to take during the first full growing season (12 months) from date of completion.

Protection
The Landscape Contractor shall provide adequate temporary protection to the whole of his work and shall include temporary coverings, planked barrow runs and all other measures for protecting the work from damage.
The Landscape Contractor shall also protect from damage all existing roadways, kerbs, services and other completed works on site.
Any work damaged or soiled by weather, traffic or other causes due to inadequate temporary protection shall be removed and made good at the cost of the Landscape Contractor. The form of protection is left to the discretion of the Landscape Contractor.

Programme of Operation
The Landscape Contractor shall execute his works in conformity with a programme to be agreed with the Landscape Architect and shall include in his estimate for working within an agreed time limit.
No individual areas will be handed over unless there is an agreed sectional completion. The Landscape Contractor shall allow for keeping individual areas adequately maintained until the whole has been completed.

Site Inspection
Prior to the submission of tenders to the Landscape Architects, the Landscape Contractor is expected to visit the site and familiarise himself with the nature of the existing roads and pathways, the soil conditions, slope gradients, any hazards and other matters affecting the works. No extra charges will be made for any misunderstandings, or incorrect information or any of these points, or on grounds of insufficient description or lack of information will be allowed.

Setting Out
The Landscape Contractor will be responsible for checking all schedules and drawings by the Landscape Architect. In the event of any discrepancies being found between such schedules and drawings, or if the Landscape Contractor considers that additional detail drawings are required, the Landscape Contractor shall report such discrepancy in writing at least ten days before the works are to be executed.
The right is reserved to adjust the exact position of trees and specimen shrubs after they have been set out on site.
Any trees which are planted without approval of the setting out may be required to be re planted at the Landscape Contractor's expense.

Supervision and Contractor's Staff
The Landscape Contractor shall ensure full and adequate supervision of the site during the duration of the works.

The Landscape Contractor shall at all times during the Contract period employ sufficient persons of appropriate abilities, skills, care, and experience as are required for the proper performance of the Services in accordance with the Contract and shall ensure that a sufficient reserve of persons is

available to provide the Services during holiday periods, absences due to sickness and special events/emergencies.

The Landscape Contractor will appoint a Contract Manager to supervise those persons employed to perform the Services in accordance with the Contract. The Contract Manager must be available and present in the Contract Area at all times that the Services are being carried out.
The Landscape Contractor shall notify the Supervising Officer of the name, address and telephone number of the appointed Contract Manager who will be responsible for receiving notification from the Employer of complaints and instructions under the Contract.
The Employer shall be entitled to notify the Landscape Contractor by notice in writing to remove from the Contract or discipline any employee of the Landscape Contractor (which for avoidance of doubt shall include the Contract Manager or his deputy) who, in the reasonable opinion of the Supervising Officer, has shown himself to be unsuitable to perform his duties under the Contract.
The Employer shall in no circumstances be liable either to the Landscape Contractor or to the employee in respect of any liability, loss or damage occasioned by such removal or disciplinary action and the Landscape Contractor shall fully and promptly indemnify the Employer against any claim made by such employee.
The Landscape Contractor shall ensure that every person employed by the Landscape Contractor in and about the provision of the Services is at all times properly and sufficiently trained and instructed with regard to: the task the person has to perform;
any relevant provisions of the Contract; relevant rules, procedures and standards of the Employer; all relevant rules, procedures and statutory requirements concerning Health and Safety at work; fire risks and fire precautions; and the necessity to observe the highest standards of courtesy and consideration to the public to promote and enhance the Employer's image and reputation.

Sequence of Operations
The sequence of operations shall be as described unless written authority to vary is obtained from the Landscape Architect.

Insurance, Indemnities, etc.
The Landscape Contractor shall indemnify, and keep indemnified the Employer against all actions, suits, claims, demands, costs and expenses whatsoever, by reason of, or arising out of the execution of the Contract Works, or any of the matters connected therewith, whether such claim or proceedings be brought or costs or expenses incurred under or virtue of Workmen's Compensation Act, Employer's Liability Act, or any other statute or at Common Law, or otherwise howsoever.

The Landscape Contractor shall indemnify the Employer in respect of accidental injury, loss or damage caused by, through or in connection with his work. The Landscape Contractor shall arrange insurance to cover the risk of such accidental injury, loss or damage and shall have the Employer indemnified by such insurance policies with approved insurance companies as detailed hereunder and shall take all necessary steps to keep such policies validly in force during the period of Contract work. The Landscape Contractor shall produce such insurances when requested by the Employer.

Employer's Liability Policy
This policy should provide for indemnification of the Employer in respect of claims which could be made against it as principal by employees of the Landscape Contractor.
Public Liability Policy
This policy should provide for the following :
Indemnification of the Employer as principal.
Unlimited cover generally and a limit not less than €1,000,000.00 in respect of any one accident.
Full Motor Insurance Policy
This should provide for the following in respect of vehicles and plant governed by the Roads Traffic Act:
Indemnification of the Employer as principal.
Names and addresses of drivers where limited cover only is provided.

Passenger cover in relation to seating capacity of cab.
Cover for towing including trailers where applicable.
Loading and unloading risks both on and beyond public thoroughfares.

Health and Safety
The Landscape Contractors shall at their own cost arrange for the safe keeping during and after delivery to works of all manures, plants and equipment necessary to complete the job in hand. All oil and petrol containers must be kept in suitable sheds and the Landscape Contractor shall observe all regulation regarding the storage of poisonous and/or inflammable liquids.

The Landscape Contractor shall in performing the Services adopt safe methods of work in order to protect the health and safety of his own employees, the employees of the Employer and of all other persons, including members of the
public and shall comply with the requirements of the Health and Safety at Work Act 1974, The Management of Health and Safety Regulations 1992, Control Of Substances Hazardous to Health (COSHH) Regulations 1988 and 1994, and of the Road Traffic Act 1988 and of any other Acts, Regulations, Orders or any European Directive pertaining to the health and safety of employed persons.

The Landscape Contractor shall at the time of submitting his Tender provide to the Employer a written copy of his health and safety working procedures relating to the performance of the Contract.

The Landscape Contractor shall review his Health and Safety policy and safe working procedures as often as may be necessary and in the light of changing legislation or working practices or the introduction of new Work Equipment and shall notify the Supervising Officer in writing of any such revisions. The Supervising Officer may require the Landscape Contractor to amend its health and safety policy and safe working procedures to comply with any change in legislation or working practices or required as a result of the introduction of new Work Equipment.

Equal Opportunities Policy
The Landscape Contractor shall keep his equal opportunities policy in force for the duration of the Contract to comply with statutory obligations. Any findings of unlawful discrimination against the Landscape Contractor during the three years prior to the commencement of the Contract shall be reported to the Employer, together with details of the steps taken to avoid repetition.

Waiver
Failure by the Employer at any time to enforce the provisions of the Contract or to require performance by the Landscape Contractor of any of the provisions of the Contract shall not be construed as a waiver of any such provision and shall not affect the validity of the Contract or any part thereof or the right of the Employer to enforce any provision in accordance with its terms.

Acceptance
Payment will be made to the Landscape Contractor following certification of completed works by the Landscape Architect. There shall be no sectional handover unless previously agreed. In appropriate circumstances and where the contract involves the application of a defects liability period following practical completion of landscape works, there shall be a retention amounting to 5% of the total contract price, which shall be released when defects have been made good at the end of the defects liability period.

Default in provision of the service
Without prejudice to any other powers of the Employer, if the Landscape Contractor, for whatever reason fails to provide or perform the Services in whole or in part completely in accordance with the terms of the Contract then without prejudice to any remedy contained herein the Employer may by his own or other workmen provide and perform such Services or part thereof in which the Landscape Contractor has made default. The costs and charges incurred by the

Employer in so doing shall be paid by the Landscape Contractor to the Employer on demand or may be deducted by the Employer from any moneys due or which may become due to the Landscape Contractor.
In the event of non-completion of specified works, non-compliance with specification, faulty workmanship or use of defective materials, the Landscape Contractor will be deemed to be in breach of contract and payment may be withheld in full or in part pending completion or execution of remedial works.

SPECIFICATION

Topsoil

Topsoil shall be native topsoil as removed and stored.
All imported topsoil to be of medium texture, pH matching that of the native topsoil, stone content 10mm in size not greater than 5% by weight, and no stones greater than 40mm in any dimension, and shall conform to BS 3882:1965. Topsoil shall be a free draining sandy loam. Depth of topsoil to be as specified.
Topsoil shall be free of perennial weed roots, i.e. couch grass, sticks, sub soil or any waste, toxic, putrescent or foreign matter.

Plants Generally

All plants shall conform fully to the specification in respect of species, size and quality.
The Landscape Contractor shall investigate the sources of supply and satisfy himself that he can supply all of the plants specified on the planting schedule in the size, variety and quality before submitting a bid. Substitutions will not be permitted. If proof is submitted that any plant specified is not obtainable, a proposal will be considered for use of nearest equivalent size or variety, with an equitable adjustment of contract price.
All plants shall be well grown, sturdy and bushy, according to type, and free from all disease and defects.
The Landscape Architect reserves the right to reject any plant material before or after planting if it does not conform with the specification.
All plants shall be adequately hardened off prior to planting, where frost or cold winds may be a problem. All plants shall be supplied with temporary labels with the full botanical name , on each bundle or batch of plants.
The Landscape Contractor should indicate in their tender source of material to be used and where it can be inspected prior to award of contract.
All plants that do not conform to the specification will be automatically rejected and must be removed from site and replaced at the Landscape contractor's expense.
All trees, shrubs and other plant material shall comply with the minimum requirement of the relevant British Standards below:

BS 3936	Part 1: Specification for trees and shrubs
BS 3936	Part 4: Specification for forest trees
BS 3936	Part 5: Specification for Poplars and Willows
BS 3936	Part 6: Specification for herbaceous, perennials and alpines
BS 3936	Part 9: Specification for bulbs, corms and tubers
BS 3936	Part 10: Specification for groundcover plants

Time of Lifting

Bare root plants must only be lifted when the ground is moist and the plant is dormant between November and end March of the current year. Lifting must never take place when there is a severe ground frost. Particular attention must always be paid to the protection of the roots on lifting when there is a strong drying wind or sun.

Protection

Care must be taken to ensure that bare roots are protected from physical damage and desiccation at all times. All bare roots must be covered within two hours of lifting.

Bundling
Whip planting must be in bundles of the same species and size, all shoots must face in the same direction so that roots and shoots are not in contact, and must be of equal numbers. Bundles are to be securely tied with supple material which will not, by its nature or tension, cause damage to the plants.

Labelling
Each individual plant, bundle, bag, or lot of one species shall be labelled with a securely attached label, clearly indicating the plant name, grade and quantity.

Grass Seed
Grass seed shall conform to the requirements of British Standard 4428:1969 and subsequent amendments, and to the European communities (seed and fodder plants) regulations 1976.
The Landscape Contractor shall supply, with each seed mixture, a certificate stating the composition, purity, germination, year of collection and country of origin.
The germination capacity of each constituent of the mixture should be not less than 80%, and the purity of the mixture not less than 90%.
Total weed seed content should not be more than 0.5% and the total content of other crop seeds should not be more than 1%. These minimum figures shall be for the current 14 month period of annual tests.

The seed is to be thoroughly re-mixed before sowing to avoid patchiness on the ground and is to be 'Coburns Urban Parks mix' or similar approved, sown at a rate of 35 - 50g per square metre.
(James Coburn + Sons Ltd., 32 Scarva Street, Banbridge, Co. Down BT32 3DD
Telephone: 08 - 018206 - 62207 Fax: 08 - 018206 - 27250)

Wild Flower Seed
Wild Flora Mix is to be 'Coburn's Light Soil mix' or similar approved as supplied by Coburn's, seed merchants. Grass seed shall conform to the requirements of British Standard 4428:1969 and subsequent amendments, and to the European communities (seed and fodder plants) regulations 1976.

The seed is to be thoroughly re-mixed before sowing to avoid patchiness on the ground. The seed can be bulked up with sand to ease distribution, lightly raked or rolled in with a ringed roller, taking care not to bury the smaller seeds.
The seed is to be sown at a rate of 5gms per square metre.

Container grown Shrubs, Groundcovers, Climbers and Herbaceous Plants
Shrubs shall be bushy, well established nursery stock with a good fibrous root system. They shall be container grown, true to size, name and description as scheduled. Shrubs shall conform to the appropriate British Standards.
Plants shall not be pot bound, nor with roots deformed or restricted.

Bare root material will only be accepted where specified.

Herbaceous plants shall be supplied as well rooted clumps, showing several healthy buds, and grown in pots. pots shall be appropriate to the size of the plant supplied, minimum size 0.5litres (80mm square or 90mm diameter).

Whips and Transplants
All plant material must comply in all respects with the current edition of BS 3936 Parts 1, 4, and 5.

Transplants shall not be less than 3 years old and have been transplanted at least once. Trees shall be sturdy, with a balanced root and shoot development, sizes shall conform to schedule.

Willows shall have been stumped and transplanted at the end of the first year in the nursery.

Trees
Trees shall conform to the appropriate British Standards.
All trees should be full and well shaped, bark unmarked and have healthy root systems.
The Landscape Architect must inspect and approve all trees prior to lifting or planting. Trees must all be of identical size and shape and should originate from the same stock nursery and stand.

Rootballed trees shall be rootballed immediately when lifted at the nursery.
The rootball shall be suitable for the size of crown and the rootball shall be flat bottomed.
The rootball shall be formed through regular transplanting; every 2-3 years minimum. The rootball shall be wrapped in hessian and steel wire netting or other suitable and approved decomposable material.

Standard pleached trees shall have a clear stem 1.7m to 1.85m in height from ground level to the lowest branch, a minimum girth of 8cm at 1m from ground level and a total height of 2.75m to 3m. They shall have a well defined, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown shall be well shaped, balanced, of a form and habit natural for the species.

All advanced nursery trees shall comply with BS 5236: 1975. They shall have a well defined, straight and upright central leader, with branches growing out of the stem with reasonable symmetry. The crown shall be well shaped, balanced, of a form and habit natural for the species. Trees shall have a sturdy, reasonably straight stem not less than 1.8m from ground level to the lowest branch.
All advanced nursery stock trees shall be supplied with roots balled.

All coniferous trees shall be supplied rootballed or container grown, with a good fibrous root system. Trees shall conform to specified height with well developed, uniform branching systems.

Shrub/Groundcover Sizes
All shrubs and groundcovers shall be supplied as sizes indicated in the Bill of Quantities and Contract drawings.

Whip Sizes
Unless otherwise specified, all trees shall be as follows :-
Whips, 600 - 1200mm high, 150 x 150 x 150mm minimum root dimension. To have a sound central leader and well formed branches.

Tree Sizes
Unless otherwise specified, all trees shall be as follows :-

Type	Girth	Height
Whip planting	-	600-1200mm
Half Standard Tree	4-6cm	1.8-2.1m
Light Standard Tree	6-8 cm	2.25-2.5m
Standard Tree	8-10 cm	2.75-3m
Selected Standard Tree	10-12 cm	3-3.5m
Heavy Standard Tree	12-14 cm	3.5-4m
Extra Heavy Standard Tree	14-16 cm	4-4.5m
Advanced Extra Heavy Standard Tree	16-18 cm	5m
Semimature Tree	20-22 cm +	6.5-7m +

Tree Anchors, Stakes, Guys, etc.
All trees other than semimature trees and whips trees shall be supplied and fitted with one tree stake per tree.

Tree stakes shall be peeled poles of oak, sweet chestnut, pine or douglas fir, or tanalised larch. All stakes shall be preserved with water borne copper chrome arsenic to IS 131, to a net dry salt retention of 5.3kg per cubic metre of timber.
Stakes shall be supplied as sizes specified.

They shall be at least 1.8 metres long unless otherwise specified, with a minimum diameter of 75 mm at both butts.

Stakes shall be driven prior to planting with a drive all, wooden maul or cast iron mell, not with a sledge hammer.

Trees shall be tied to each stake with a purpose made tie and spacer, the tie to be overlapped and thrice nailed to the stake. Tree ties shall be rubber or PVC or proprietary fabric laminate composition, and shall be durable enough to hold the tree secure in all weather conditions for a period of three years.
They shall be flexible enough to allow for proper tightening of the tie.
Tree ties shall be 25mm -40mm wide depending on tree size. They shall be fitted with a simple collar spacer to prevent charring, and with a buckle for adjustment.
All Semimature trees shall be supplied and fitted with anchoring system: "Platipus root anchoring system kit" (as by Duckbill Anchors Ltd., Perrywood Business Park, Honeycrock Lane, Salfords, Nr. Redhill, Surrey, England, RH1 5DZ Tel: 01737 762300).

Mulch
Mulch shall be graded bark chippings from coniferous trees, particles 25 - 75mm , free of fine material, dust or wood.

Mulch will be rejected if in the Landscape Architect's opinion it is likely to be wind blown.
The Contractor should arrange to have an on site sample (or samples) inspected by the Landscape Architect prior to spreading. Spreading without the approval of sample is at the Contractor's own risk.

Approved chemicals
All chemicals used shall be non-toxic to human beings, birds and animals under normal use, and chemicals which are not agriculturally approved shall not be used.

The use of the following herbicides is acceptable:
Roundup
Basta
Tritox (only after 2nd cut)
Casoron G
Kerb Flo

The use of the following fertilizers is acceptable:
Fisons PS5 : grass areas
Osmocote Plus- fertiliser N:P:K 15:9:11 plus trace elements: Shrub areas
Enmag - 4:19:10 + 7.5% : Tree planting

The Landscape Contractor may only use alternative formulations and manufacturers with prior approval by the Landscape Architect.

All weed killer and fertiliser shall be applied with properly designed equipment, maintained in good order and calibrated to deliver the specified volume, evenly and without localised overdosing. All quantities shall be accurately measured.

WORKMANSHIP

Site Clearance

Remove and dispose of off-site any rubbish still occurring in topsoiled areas, including weeds, old masonry and rubble, metal, wood, and stones, excavating as necessary to permit the specified depth of final cultivations.

All scrub areas shall be grubbed and all existing plants of same shall be removed and disposed of including all root systems unless otherwise specified.

Before topsoiling, remove all stones over 75mm in diameter. Dig out any areas polluted by oil or chemicals and make up with clean soil. Break up the formation under any areas liable to ponding of rainwater, so that they drain.

Topsoil shall be moved and spread only in dry weather. No work to topsoil shall be carried out when it is waterlogged, or if it's moisture content is conducive to structural deterioration. minimise compaction of topsoil and subsoil when spreading, running machinery over the surface as little as possible.

Cultivation Generally

The aim of cultivation is to produce a well-drained and textured soil suitable for plant growth.
All areas to be planted, or seeded shall be cultivated to a minimum depth of 450mm or deeper if specified. Areas where obvious compaction has occurred shall be ripped.
Stones above 75mm longest dimension shall be removed from the top 100mm layer of shrub planting areas.

Final preparation - Seeding Areas

One week before seeding, Fisons PS5 or similar approved pre-seeding fertiliser shall be spread at a rate of 70g per square metre and incorporated in the surface layer. The soil shall be firmed and raked to a fine tilth suitable for seeding.

Final preparation - Wild flower seeding Areas

The soil shall be firmed and raked to a fine tilth suitable for seeding. No fertilisers shall be used on areas for wildflower seeding.

Final Preparation - Shrub planting areas

Coarse clean moist compost or approved peat substitute shall be forked in at a rate of 5kg per square metre and incorporated to a depth of 200mm.
Controlled release fertiliser N:P:K 15:9:11 plus trace elements - Osmocote plus or similar approved shall be applied at specified rates and raked into the top 50mm layer.
The surface shall be raked to a tilth suitable for planting.

Final Preparation Whip planting areas

Coarse clean moist compost or approved peat substitute shall be forked in at a rate of 5kg per square metre and incorporated to a depth of 200mm.
An approved fertiliser shall be spread at a rate of 70g per square metre and raked into the top 50mm layer.
The surface shall be raked to a tilth suitable for planting.

Planting Season

Forestry transplants and feathered trees other than evergreens will be planted between November and march inclusive. Evergreens will be planted in October or in April/May.
Planting shall normally be carried out during the period 1st October to 31 March in suitable weather.

Containerised plants may be planted throughout the year provided the weather is suitable, the soil is sufficiently moist and each planted is watered following planting.

Planting outwith the specified planting period will only be permitted in exceptional circumstances at the discretion of the landscape Architect; such exceptional circumstance shall include unsuitable weather and no penalty shall be incurred under provided that any delay is formally accepted by the Landscape Architect as attributed to this cause. in the event that works are delayed by inclement weather, the landscape Contractor shall complete them at the earliest opportunity afforded by suitable weather.

Planting Generally

All planting operations shall be carried out in accordance with BS 4428 and good horticultural practice.

The Landscape Contractor shall provide the Landscape Architect with the species and quantities reserved from each named nursery, and the Landscape Architect shall have the right to inspect such nursery stock as deemed necessary, prior to its purchase by the contractor.

All plant labels are to be kept on their respective plants by the Landscape Contractor until the final inspection has been carried out. Only on approval from the Landscape Architect may such labels be removed by the Landscape Contractor.

Bare root stock shall be delivered to the site on the day of planting.

If under exceptional circumstances planting cannot take place within 12 hours of delivery, stock shall be healed in or their roots shall be adequately covered with moist hessian or good quality topsoil fir a maximum period of ten days. The roots are to be kept moist throughout this time by adequate watering. Waterlogging shall be prevented.

Any plants which fail due to inadequate protection prior to planting shall be rejected and replaced at the Landscape contractor's own expense.

Any plants stored temporarily on site shall be protected from adverse weather conditions. Plants with damaged root systems shall not be accepted.

After planting, any minor damage shall be rectified by pruning.

Plants which, in the opinion of the Landscape Architect, have been seriously damaged during planting shall be rejected and replaced at the Landscape Contractor's expense.

All planting shall be firmed up if loosened by frost or wind.

Prior to planting all bare rooted plants shall be completely immersed in a container of Alignure Root Dip (1:99) solution and container grown plants shall be sprayed with the solution according to manufacturers instructions.

Seeding and Establishment

Grass seeding rate shall be : 25-35gm per square metre.

Wildflower seeding rate shall be : 5gm per square metre.

Seeding shall only be carried out at the correct season and in suitably calm but moist weather conditions.

Seed shall be cross sown in two directions at right angles to each other (half the seed to be used in each directions) to prevent striping.

After sowing, all areas shall be lightly raked with a chain harrow or by hand.

About 48 hours before first cut, large stones (more than 40 mm in any dimension), should be removed and all areas rolled with a light roller to firm grass and press in all remaining stones.

When the grass is established and from 40 mm to 75 mm high, according to the seed mixture, it should be topped with a roto-scythe so as to leave from 25 mm to 50 mm of growth, to cut weeds, to control the growth of coarser grass and to encourage tillering.

Grass areas shall only be accepted as reaching practical completion when germination has proved satisfactory and all weeds have been removed.
No payment for re-seeding shall be made to the landscaping Sub-Contractor if the seed fails due to any cause whatsoever. He shall be required to make good the soiling and repeat the seeding until a good sward is obtained.

Bulbs / Corms
Bulbs/Corms shall be planted in a random pattern and allowed to naturalise. Avoid planting in straight lines. To plant, take out core in grass/shrub area, placing bulb/corm at base of hole ensuring no space is left under bulb. Hole must be wide enough to allow for base of bulb/corm to be placed directly on soil. Replace core and firm flush.

Shrubs
All shrubs shall be pit planted in precise locations as shown in plans. Pits shall be excavated 150mm wider in all directions than the natural root spread of the plant, and the bottom of the pit must be well forked to improve drainage.
Back filling of all pits shall be with soil and compost or an approved peat substitute in the ratio of 4:1.

All plastic and non-degradeable wrappings and containers shall be removed before planting. Make four vertical cuts with a sharp knife on the quadrants through the edge of container grown rootballs to sever girdling roots.

Whip Planting
All whips shall be notch planted in staggered pattern. Whip trees shall be planted randomly with no more than 5 plants of the same species planted in groups. Blocks of similar species are not to be planted. Pits shall be excavated 150mm wider in all directions than the natural root spread of the plant.

Tree Planting
Planting pits for trees in undisturbed ground will be backfilled with excavated material. Tree pits in mounds or other made up ground shall be backfilled with topsoil.

All tree pits for all trees other than semimature trees shall be excavated 200mm wider in all directions than the natural root spread, or rootball, and the base forked to improve drainage. Stakes shall be positioned before backfilling.
Topsoil backfill shall be mixed with peat substitute in the ratio of 4:1.
60g Enmag or similar approved slow release fertiliser shall be incorporated.
The backfill shall be settled and well firmed around the roots avoiding air pockets.

All semimature tree pits shall be excavated 500mm wider than the natural root rootball, and 150mm deeper to allow for 250mm of backfill mix, tamped firm to 150mm. In all semimature tree pits an additional depth of 150mm should be dug to allow for a 150mm gravel layer at the bottom of the pit to aid in drainage.
Sides of tree pit shall be ripped and loosened to ensure a good bond with the backfill and to avoid root girdling.

All semimature tree pits shall be backfilled with mix consisting of: 10 parts native topsoil and 5 parts sharp sand. 60g Enmag or similar approved slow release fertiliser shall be incorporated.
Backfilling shall be firmly tamped every 150-200mm and when pit is half full the backfill shall be flooded for further settlement. After excess water has drained further soil shall be added, tamped, and a final watering shall be given just before the final 75mm of backfill added.
The backfill shall be settled and well firmed around the roots avoiding air pockets.
All trees shall be well watered after planting.

All semimature trees shall be transported to the site of planting one tree at a time, and only when the pit has been dug and the backfill mixed on site.
All semimature trees shall be supported on transit by the rootball only. Manhandling of the rootball will not be permitted. The stem shall not be supported. The crown may be supported by hand only if the Landscape Contractor deems it necessary.
No tyred machinery except approved balloon-tyred machinery shall be used in the excavations of the tree pits. While excavating, tracked or balloon wheeled machinery shall operate on protective mats or wooden sheets to prevent compaction.

All semimature trees shall be secured with a Platipus rootball fixing kit as per manufacturer's instructions. See schedule for rootball fixing in Bill of Quantities.
All timber frames to be used with the Platipus rootball fixing system shall be fixed with nail plates at each junction so that the individual members of the finished frame shall be flush with each other and of one level. Where possible the timber frames shall be constructed so that an optimum condition is achieved between preventing the timber frame from appearing above finished ground levels, and also ensuring that an uncompromised frame for anchorage exists (i.e. the frame shall be made as large as possible so that it can sit on the lowest part of the top rootball).

All ratchet tensioning systems shall be nailed to the timber frame so that the ratchet shall remain upright and in the position intended when installed.
All timber frames of the rootball fixing system shall be installed to ensure that when the tree pit is backfilled the frame shall be covered by a minimum of 50mm of mulch.
All rootballs of semimature trees are to be surrounded with a 4 inch perforated land drain pipe to aid in future waterings.

Mulch
On completion of planting, the total area of the disturbed soil is to be mulched to a depth of 50mm. The soil and the mulch shall be thoroughly wetted prior to application, and also prior to application a complete clearing through and weeding of the area shall be carried out, leaving the soil weed free, smooth and conforming to acceptable finished levels.

Watering
During dry periods at any other times deemed necessary prior to practical Completion, the Landscape Contractor shall water all plant areas.
The Landscape Contractor must give notice to the local water Authority that a supply of water will be required for the execution of the works.
The Landscape Contractor is to ensure that he is aware of any restrictions on the use of water and hose pipes which may be applied by the water Authority and is to comply with any such restrictions.
Any water carried out shall take care to avoid soilwash off the shrub area and disturbance of the peat mulch.
Any damage caused by soil-wash shall be immediately rectified by the Landscape Contractor at his own expense, to the approval of the Landscape Architect.
Watering shall be carried out to add moisture to the full planting depth. No minor surface watering shall be carried out.
The Landscape contractor shall allow for watering of all plants to field capacity as and when necessary, until practical completion is achieved.

Weeding
All planting areas are to be kept free of weeds and rubbish prior to Practical Completion.All planting areas are to be hoed, forked or hand weeded. The use of chemicals shall be only be upon approval from Landscape Architects.

Roundup - by Monsanto chemicals Ltd. 4 - 5litre/Ha. Do not apply when rain is forecast within six hours. Do not apply when wind is likely to cause spray drift (over 24kph / 15mph). Allow for leaf

symptoms to develop before carrying out any cultivations. Apply to manufacturers recommendations. Apply 'Roundup' to kill existing grass preseeding, and weeds germinating in topsoil.

If germinating weed grasses are less than 100mm high and broad leaved weeds have not produced full-sized keaves, do not apply 'Roundup'. Apply 'Basta' @ recommended rates, 4 to 7 days before cultivating.

Basta - by Hoechst Ltd. 3 - 7.5litre/Ha. Do not apply when rain is forecast within six hours. Apply to manufacturers recommendations.

'Actrilawn 10' - by May + Baker Ltd., 11litre/Ha. Shall be used in accordance with manufacturer's instructions. Apply 'Actrilawn' when grasses have reached the two leaf stage or beyond, and when seedlings have emerged and have reached cotyledon or two leaf stage (approx. 4 weeks after sowing). Do not mow grass within 7 days of treatment.

Casoron G - Granular weedkiller to be applied 5.6-22.5 kg /1000sq.m. Shall be used in accordance with manufacturer's instructions.

Kerb Flo - weedkiller to be applied 3.75 - 4.25litre/Ha. Shall be used in accordance with manufacturer's instructions.