APPENDIX 2.5
Landscaping Proposal previously submitted to Meath County Council

KEY TO TREE PLANTING

TREE NO.	BOTANICAL NAME	SIZE	QUANTITY
T 1	Poplus nigra	12-14cm girth b/r	11
T 2	Alnus cordata	10-12cm girth b/r	39
T 3	Fraxinus excelsior	10-12cm girth b/r	22
T 4	Quercus robur	12-14cm girth b/r	5
T 5	Fagus sylvatica	12-14cm girth b/r	3
T 6	Sorbus aucuparia	10-12cm girth b/r	19

KEY TO HEDGEROW PLANTING

HEDGE NO.	BOTANICAL NAME	SIZE	PLANTING DENSITY metre centres	QUANTITY
H 1	Crataegus monogyna	60-90cm b/r	0.25	880
	Prunus spinosa	60-90cm b/r	0.25	880
	(planted in a staggered row, ratio 1:1)			
H 2	Crataegus monogyna	60-90cm b/r	0.25	510
	Prunus spinosa	60-90cm b/r	0.25	510
	(planted in a staggered row, ratio 1:1)			

KEY TO WODLAND EDGE PLANTING

WOODLAND NO.	BOTANICAL NAME	SIZE	PLANTING DENSITY metre centres	QUANTITY
W 1	Corylus avellana	60-90cm b/r	1	371
	Rosa canina	60-90cm b/r	1	371
	Ilex aquifolium	2L c/g	1	371
	Symphoricarpos albus	40-60cm b/r	1	247
	Crataegus monogyna	60-90cm b/r	1	618
	Prunus spinosa	60-90cm b/r	1	495
W 2	Corylus avellana	60-90cm b/r	1	353
	Rosa canina	60-90cm b/r	1	353
	Ilex aquifolium	2L c/g	1	353
	Symphoricarpos albus	40-60cm b/r	1	235
	Crataegus monogyna	60-90cm b/r	1	180
	Prunus spinosa	60-90cm b/r	1	470
W 3	Corylus avellana	60-90cm b/r	1	108
	Rosa canina	60-90cm b/r	1	108
	Ilex aquifolium	2L c/g	1	108
	Symphoricarpos albus	40-60cm b/r	1	72
	Crataegus monogyna	60-90cm b/r	1	180
	Prunus spinosa	60-90cm b/r	1	144
W 4	Corylus avellana	60-90cm b/r	1	58
	Rosa canina	60-90cm b/r	1	58
	Ilex aquifolium	2L c/g	1	58
	Symphoricarpos albus	40-60cm b/r	1	38
	Crataegus monogyna	60-90cm b/r	1	97
	Prunus spinosa	60-90cm b/r	1	77

KEY TO LANDSCAPE TREATMENT

- T 1 — PROPOSED TREE PLANTING (see schedule above)
- H 1 — PROPOSED HEDGEROW PLANTING (see schedule above)
- W 1 — PROPOSED WOODLAND EDGE PLANTING (see schedule above)

NO.	REVISION	DATE	BY	CHKD	APPD
STAGE					
PRELIMINARY					
PLANNING					
TENDER					
CONSTRUCTION					

Landmark Designs Ltd.
LANDSCAPE DESIGN & CONSULTANCY
BALLINAFAGH, PROSPEROUS, NAAS, COKILDARE
T: 045 883810, M: 086 8519286, E: landmarkdesigns@eircom.net

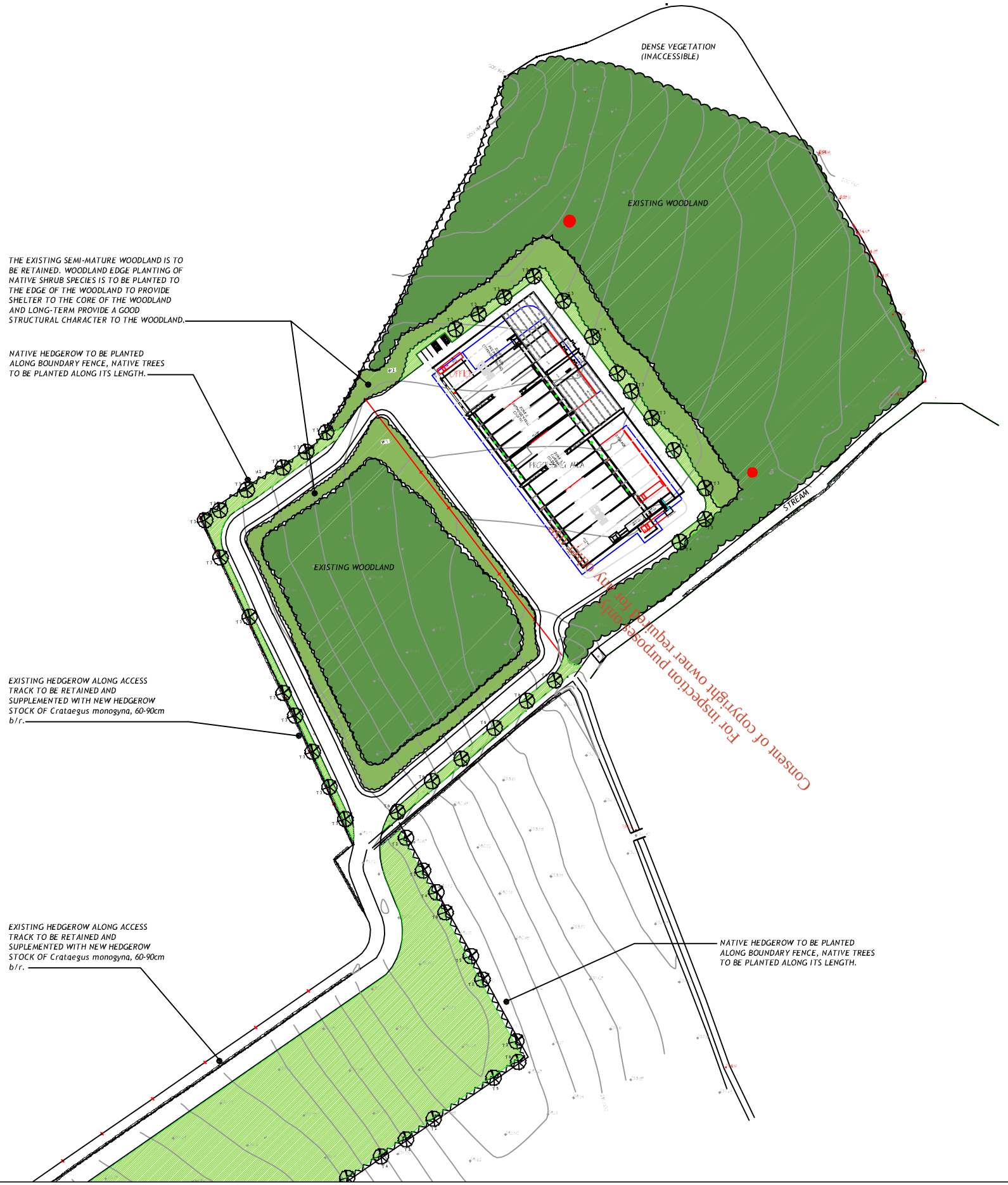
PROJECT TITLE:
PROPOSED DEVELOPMENT - KILMAINHAM WOOD, CO.MEATH FOR THORNTONS LTD.

DRAWING TITLE:
LANDSCAPE PROPOSALS - SHEET 1 OF 2

DATE	JOB NUMBER	DRAWING NUMBER	REV:
15-05-2007	06-125	01	

SCALE: 1:1000@A1

DRAWN: G.TIERNEY B.Agr.Sc.(Land. hort.)



KEY TO TREE PLANTING

TREE NO.	BOTANICAL NAME	SIZE	QUANTITY
T 1	Poplus nigra	12-14cm girth b/r	11
T 2	Alnus cordata	10-12cm girth b/r	39
T 3	Fraxinus excelsior	10-12cm girth b/r	22
T 4	Quercus robur	12-14cm girth b/r	5
T 5	Fagus sylvatica	12-14cm girth b/r	3
T 6	Sorbus aucuparia	10-12cm girth b/r	19

KEY TO HEDGEROW PLANTING

HEDGE NO.	BOTANICAL NAME	SIZE	PLANTING DENSITY metre centres	QUANTITY
H 1	Crataegus monogyna	60-90cm b/r	0.25	880
	Prunus spinosa	60-90cm b/r	0.25	880
	(planted in a staggered row, ratio 1:1)			
H 2	Crataegus monogyna	60-90cm b/r	0.25	510
	Prunus spinosa	60-90cm b/r	0.25	510
	(planted in a staggered row, ratio 1:1)			

KEY TO WODLAND EDGE PLANTING

WOODLAND NO.	BOTANICAL NAME	SIZE	PLANTING DENSITY metre centres	QUANTITY
W 1	Corylus avellana	60-90cm b/r	1	371
	Rosa canina	60-90cm b/r	1	371
	Ilex aquifolium	2L c/g	1	371
	Symphoricarpos albus	40-60cm b/r	1	247
	Crataegus monogyna	60-90cm b/r	1	618
	Prunus spinosa	60-90cm b/r	1	495
W 2	Corylus avellana	60-90cm b/r	1	353
	Rosa canina	60-90cm b/r	1	353
	Ilex aquifolium	2L c/g	1	353
	Symphoricarpos albus	40-60cm b/r	1	235
	Crataegus monogyna	60-90cm b/r	1	180
	Prunus spinosa	60-90cm b/r	1	470
W 3	Corylus avellana	60-90cm b/r	1	108
	Rosa canina	60-90cm b/r	1	108
	Ilex aquifolium	2L c/g	1	108
	Symphoricarpos albus	40-60cm b/r	1	72
	Crataegus monogyna	60-90cm b/r	1	180
	Prunus spinosa	60-90cm b/r	1	144
W 4	Corylus avellana	60-90cm b/r	1	58
	Rosa canina	60-90cm b/r	1	58
	Ilex aquifolium	2L c/g	1	58
	Symphoricarpos albus	40-60cm b/r	1	38
	Crataegus monogyna	60-90cm b/r	1	97
	Prunus spinosa	60-90cm b/r	1	77

KEY TO LANDSCPAE TREATMENT

T1 PROPOSED TREE PLANTING (see schedule above)

H1 PROPOSED HEDGEROW PLANTING (see schedule above)

W1 PROPOSED WOODLAND EDGE PLANTING (see schedule above)

NO.	REVISION	DATE	BY	CHKD	APPD
	STAGE				
	PRELIMINARY				
	PLANNING				
	TENDER				
	CONSTRUCTION				

Landmark Designs Ltd.
LANDSCAPE DESIGN & CONSULTANCY
BALLINAFAGH, PROSPEROUS, NAAS, CO.KILDARE
T: 045 893810. M: 086 8518296. E: landmarkdesigns@eircom.net

PROJECT TITLE:
PROPOSED DEVELOPMENT - KILMAINHAM WOOD, CO.MEATH FOR THORNTONS LTD.

DRAWING TITLE:
LANDSCAPE PROPOSALS - SHEET 2 OF 2

DATE	JOB NUMBER:	DRAWING NUMBER:	REV:
15-05-2007	05-125	01	
SCALE: 1:1000@A1	DRAWN: G.TIERNEY B.Agr.Sc.(land.hort.)		

APPENDIX 6.1
Bibliography of the Ecological Assessment

Appendix 6.1 Bibliography

- Colebourne, K.I. 2006. Guidelines for Ecological Impact Assessment in the United Kingdom. Institute of Ecology and Environmental Management.
- Environmental Protection Agency. 2002. Guidelines on the information to be contained in Environmental Impact Statements.
- Fossitt, J.A. 2000. A Guide to Habitats in Ireland. The Heritage Council, Kilkenny, Ireland.
- Natura Environmental Consultants. 2002. A Standard Methodology for Habitat Survey and Mapping in Ireland. The Heritage Council. Draft.
- Hayden, T. and Harrington, R. 2000. Exploring Irish Mammals. Dúchas The Heritage Service. Town House and Country House Ltd, Dublin.
- National Roads Authority. 2006. Guidelines for Assessment of Ecological Impacts of National Road Schemes. Revision 1, 1st March 2006.
- Preston, C.D, Pearman, D.A. & Dines, T.D. 2002. New Atlas of the British and Irish Flora. Oxford University Press, Oxford.
- Rose, F. 2006, The Wild Flower Key. Penguin Books Ltd, London.
- Webb, D.A., Parnell, J., & Doogue, D. 1996. An Irish Flora. Dundalgan Press (W.Tempest) Ltd., Dundalk.

Legislation

EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992) (E.U. Habitats Directive.).

EC Directive on The Conservation of Wild Birds (79/409/EEC) (E.U. Birds Directive).

Floral Protection Order (1999)

Wildlife Act, 1976

Wildlife [Amendment] Act, 2000

APPENDIX 6.2
Criteria for assessing Site Evaluation

Appendix 6.2 Criteria for assessing Site Evaluation

Rating	Qualifying Criteria
A	**Internationally important** Sites designated (or qualifying for designation) as SAC* or SPA* under the EU Habitats or Birds Directives. Undesignated sites containing good examples of Annex I priority habitats under the EU Habitats Directive. Major salmon river fisheries. Major salmonid (salmon, trout or char) lake fisheries.
B	**Nationally important** Sites or waters designated or proposed as an NHA* or statutory Nature Reserves. Undesignated sites containing good examples of Annex I habitats (under EU Habitats Directive). Undesignated sites containing significant numbers of resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive or species protected under the Wildlife (Amendment) Act 2000. Major trout river fisheries. Water bodies with major amenity fishery value. Commercially important coarse fisheries.
C	**High value, locally important** Sites containing semi-natural habitat types with high biodiversity in a local context and a high degree of naturalness, or significant populations of locally rare species. Small water bodies with known salmonid populations or with good potential salmonid habitat. Sites containing any resident or regularly occurring populations of Annex II species under the EU Habitats Directive or Annex I species under the EU Birds Directive. Large water bodies with some coarse fisheries value.
D	**Moderate value, locally important** Sites containing some semi-natural habitat or locally important for wildlife.

Small water bodies with some coarse fisheries value or some potential salmonid habitat.

Any water body with unpolluted water (Q-value rating 4-5).

E **Low value, locally important**

Artificial or highly modified habitats with low species diversity and low wildlife value.

Water bodies with no current fisheries value and no significant potential fisheries value.

***SAC** = Special Area of Conservation

SPA = Special Protection Area

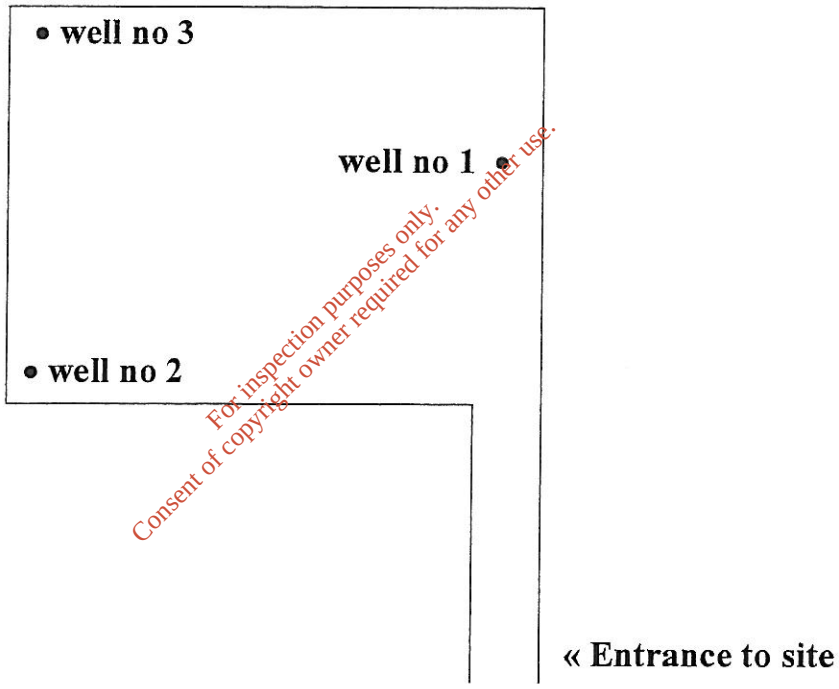
NHA = Natural Heritage Area

APPENDIX 7.1
Southern Pumps Ltd. Borehole Logs

Southern Pumps Ltd.,
Unit 18,
City North Business Park,
Dublin Hill,
Cork.
Tel: 021-4303946 Fax: 021-4393324

McGill Environmental Systems,
Ballinvoher,
Castletownroche,
Co. Cork.

Please see location of wells at Nobber, Co. Meath.



Well No :1

WELL RECORD

DRILLING CONTRACTOR: SOUTHERN PUMPS LTD,
ADDRESS: UNIT 18,
CITY NORTH BUSINESS PARK,
DUBLIN HILL, CORK.

DATE OF DRILLING: 27/03/2003
WELL OWNER: McGill Environmental
ADDRESS: Castletownroche,
WELL LOCATION: Nobber, Co. Meath

COUNTY: **TOWNLAND:**

WELL DETAILS

DEPTH OF WELL:	165	**FEET**
DIAMETER:	6	**INCHES**
DEPTH OF LINING:	40	**FEET**
DIAMETER OF LINING:	6½	**INCHES**
DEPTH TO BEDROCK:	35	**FEET**
TYPE OF SUBSOIL:	Clay with Gravel layees	
TYPE OF BEDROCK:	Chalk.	

WATER ENTRY LEVELS:	105	**FEET**
DEPTH TO ANY CAVITIES MET IN DRILLING:	-	**FEET**
STATIC WATER LEVEL BELOW GROUND:	-	**FEET**
MEASURED PUMPING RATE:	-	**G.P.H.**
DURATION OF PUMPING:	-	**HOURS**
DRAWNDOWN DURING PUMPING:	-	**FEET**
ESTIMATED MAXIMUM SAFE YIELD:	20	**G.P.H.**

REMARKS:

Well No: 2

WELL RECORD

DRILLING CONTRACTOR: SOUTHERN PUMPS LTD,
ADDRESS: UNIT 18,
CITY NORTH BUSINESS PARK,
DUBLIN HILL, CORK.

DATE OF DRILLING: 26/03/2003
WELL OWNER: McGill Environmental
ADDRESS: Castlecomrocke,
WELL LOCATION: Nobber, Co. Meath.

COUNTY: TOWNLAND:

WELL DETAILS

DEPTH OF WELL:	125	FEET
DIAMETER:	6	INCHES
DEPTH OF LINING:	60	FEET
DIAMETER OF LINING:	6½	INCHES
DEPTH TO BEDROCK:	54	FEET
TYPE OF SUBSOIL:	Clay with gravel layers	
TYPE OF BEDROCK:	Chalk.	

WATER ENTRY LEVELS:	90	FEET
DEPTH TO ANY CAVITIES MET IN DRILLING:	\	FEET
STATIC WATER LEVEL BELOW GROUND:	\	FEET
MEASURED PUMPING RATE:	\	G.P.H.
DURATION OF PUMPING:	\	HOURS
DRAWNDOWN DURING PUMPING:	\	FEET
ESTIMATED MAXIMUM SAFE YIELD:	200	G.P.H.

REMARKS:

WELL RECORD

Well No: 3

DRILLING CONTRACTOR: SOUTHERN PUMPS LTD,
ADDRESS: UNIT 18,
CITY NORTH BUSINESS PARK,
DUBLIN HILL, CORK.

DATE OF DRILLING: 25/03/03
WELL OWNER: McGill Environmental
ADDRESS: Castletownroche,
WELL LOCATION: Nobber, Co. Meath

COUNTY: **TOWNLAND:**

WELL DETAILS

DEPTH OF WELL:	125	**FEET**
DIAMETER:	6	**INCHES**
DEPTH OF LINING:	40	**FEET**
DIAMETER OF LINING:	6½	**INCHES**
DEPTH TO BEDROCK:	36	**FEET**
TYPE OF SUBSOIL:	Clay with gravel layers	
TYPE OF BEDROCK:	Chalk.	

WATER ENTRY LEVELS:	85	**FEET**
DEPTH TO ANY CAVITIES MET IN DRILLING:	\	**FEET**
ATIC WATER LEVEL BELOW GROUND:	\	**FEET**
MEASURED PUMPING RATE:	\	**G.P.H.**
DURATION OF PUMPING:	\	**HOURS**
DRAWNDOWN DURING PUMPING:	\	**FEET**
ESTIMATED MAXIMUM SAFE YIELD:	500.	**G.P.H.**

REMARKS:

APPENDIX 7.2
Trial Pit Logs

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of loose brown clay with many roots	
						0.60	Firm mottled grey/ brown gravelly SILT	
						(2.40)	Stiff mottled grey/brown gravelly SILT with cobbles and occasional boulders Becoming laminated at 2m bgl Increasing m/c at 2.2m bgl	
						3.00		
						(0.70)	Stiff to very stiff grey/ wine gravelly SILT	
						3.70	Trial pit ends at 3.7m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS
1, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18 10 05 GPJ AGS3_ALL GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				2
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of loose brown soil with many roots	
0.40 0.50	B SV	196kPa				(0.50) 0.80	Stiff mottled light grey/ brown SILT	
						1.10	Stiff brown slightly gravelly SILT	
1.00	SV	184kPa				1.40	Stiff dark brown/ grey/ wine gravelly SILT with occasional cobbles	
							Trial pit ends at 3.3m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

1, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18.10.05 GPJ AGS3_ALL GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				3
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of loose brown clay with many roots	
						0.60	Stiff light grey/ brown SILT	
0.70	B						Firm to stiff brown very gravelly SILT with occasional cobbles and boulders	
1.00	SV	126kPa						
							Many cobbles at 1.7m bgl	
						(3.00)		
							Becoming dark grey at 2.2m bgl	
						3.60		
							Trial pit ends at 3.6m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

1, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18 10.05.GPJ AGS3_ALL.GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				4
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.10	TOPSOIL consisting of loose brown soil with many roots	
							Firm to stiff yellow/ light brown SILT	
0.70	B					(3.20)	Occasional cobbles at 1.7m bgl Becoming dark brown at 2m bgl Becoming gravelly at 2.2m bgl	
						3.30	Trial pit ends at 3.3m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

1, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18.10.05 GPJ AGS3_ALL GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				S1
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of brown clay with roots	
						(1.30) 1.60	Stiff brown/grey clayey gravelly SILT	
							Soakaway ends at 1.6m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

1, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18.10.05 GPJ AGS3_ALL.GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				S2
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of brown clay with roots	
						(2.30)	Stiff brown gravelly clayey SILT	
						2.60	Soakaway ends at 2.6m bgl.	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

I, Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18 10 05.GPJ AGS3_ALL.GDT 10/19/05

BYRNE LOOBY PARTNERS
22 Canal Walk
Park West
Dublin 12
Telephone: 01-6301593
Fax: 01-6301594
E-mail: info@blp.ie

TRIAL PIT LOG

Project				TRIAL PIT No
B454				S3
Job No	Date	Ground Level (m)	Co-Ordinates ()	
KILMAINHAM WOOD	18-10-05			
Contractor				Sheet 1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument/ Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
						0.30	TOPSOIL consisting of brown clay with roots	
						(2.50)	Stiff mottled grey/brown clayey SILT with some gravels	
						2.80	Soakaway ends at 2.8m bgl	

Water Observations		
Date	Comments	Depth (m)

GENERAL REMARKS

1. Trial pit dry and stable

All dimensions in metres Scale 1:50	Client THORTON RECYCLING	Method/ Plant Used CAT 330B	Logged By PG

TP B454-TP 18 10 05.GPJ AGS3_ALL.GDT 10/19/05

APPENDIX 8.1
Waterbody Report for River Dee

Waterbody Report for NB_Dee96_DrumconrathTRIB_Coole River Waterbody

Report Creation Date: 13 March 2009

Waterbody Category:	River Waterbody
Waterbody Name:	NB_Dee96_DrumconrathTRIB_Coole
Waterbody Code:	IE_NB_06_723
Length (km)	0.23
RBD Name:	Neagh Bann International River Basin District
Overall Risk Result:	1a At significant risk
Test Date:	01 January 2005

Risk Test Description		*Risk Test Result*
Abstraction	River water balance	2b Not at significant risk
Diffuse	EPA diffuse sources model	1a At significant risk
	Agricultural sources - arable	2a Probably not at significant risk
	Agricultural sources - sheep dip	2b Not at significant risk
	Dangerous substances	2b Not at significant risk
	Forestry sources - acidification	2b Not at significant risk
	Forestry sources - eutrophication	2b Not at significant risk
	Forestry sources - suspended solids	2b Not at significant risk
	Roadside drainage - soluble copper	2b Not at significant risk
	Roadside drainage - total hydrocarbons	2b Not at significant risk
	Roadside drainage - total zinc	2b Not at significant risk
	Runoff from railways	2b Not at significant risk
	Un-sewered areas	2b Not at significant risk
Morphology	Channelisation	1b Probably at significant risk
	Embankments	2b Not at significant risk
	Impoundments	2b Not at significant risk
	Intensive landuse	2b Not at significant risk
	Water regulation (weirs)	2b Not at significant risk
Point Source	Combined sewer and treatment plant overflows	2b Not at significant risk
	IPPC	2b Not at significant risk
	Section 4 (Local Authority licensed discharges)	2b Not at significant risk
	Waste water treatment plants	2b Not at significant risk
	Water treatment plants and other pressures	2b Not at significant risk
Q or point/diffuse	EPA Q value if it exists or worst case of point & diffuse risk tests:	1a At significant risk
Risk Diffuse	Risk result for all diffuse sources of pollution (worst case):	1a At significant risk
Risk Morphology	Risk result for all morphological pressures (worst case):	1b Probably at significant risk
Risk Point Source	Risk result for all point sources of pollution (worst case):	2b Not at significant risk
Risk Result Overall	Risk results for all risk tests carried out on this waterbody (worst case):	1a At significant risk

APPENDIX 8.2
Groundwater/Surfacewater Quality Data

MONITORING WELL B1: Chemical Analysis of Groundwater.				
PARAMETERS	**UNIT**	**21/06/06**	**25/07/2006**	**13/09/2007**
FIELD ANALYSIS				
General Water Quality Parameters	**mAoD(malin)**		80.81m	80.81m
Colour	**-**	Clear	Reddish Brown	Clear
Conductivity @ 25°C	**uS/cm**	1,552	1,157	1,229
Odour	**-**	No Odour	No Odour	No Odour
pH	**pH Units**	7.75	7.54	7.33
Temperature	**deg C**	12.2	12.8	10.9
Ground Water Level	**M**			16.7
LABORATORY ANALYSIS				
General Water Quality Parameters				
pH	**pH Units**	7.6	7.4	7.6
Inorganics				
Ammonia	**NH_4 mg/l**	<0.05	<0.05	<0.2
Calcium	**Ca mg/l**	206	-	168
Chloride	**Cl mg/l**	29	47	27
Nitrate	**NH_3 mg/l**	2.5	-	<0.3
Phosphorous	**P mg/l**	0.05	-	<0.05
Potassium	**K mg/l**	5.9	-	2.8
Ortho Phosphate	**PO_4 mg/l**	<0.05	-	<0.04
Sodium	**Na mg/l**	25	-	26.5
Sulphate	**SO_4 mg/l**	860	800	619
Metals				
Boron	**B mg/l**	0.32	-	0.42
Cadmium	**Cd mg/l**	<0.005	-	<0.004
Chromium (Total)	**Cr mg/l**	<0.01	-	<0.001
Copper	**Cu mg/l**	<0.01	-	<0.004
Iron	**Fe mg/l**	0.05	-	<0.002
Lead	**Pb mg/l**	<0.02	-	<0.001
Magnesium	**Mg mg/l**	75	-	58.39
Manganese	**Mn mg/l**	0.07	-	0.036
Nickel	**Ni mg/l**	<0.01	-	<0.008
Zinc	**Zn mg/l**	<0.01	-	0.114
Bacteria				
Feacal Coliforms	**cfu/100ml**		<1	<1
Total Coliforms	**cfu/100ml**		<1	800
List I/II				
Volatile Organic Compounds	**mg/l**		<0.001	<0.001
Semivolatiles	**mg/l**		<0.001	<0.001
Pesticides	**mg/l**		<0.00001	<0.00001

MONITORING WELL B2: Chemical Analysis of Groundwater.				
PARAMETERS	**UNIT**	**21/06/06**	**25/07/2006**	**13/09/2007**
	mAoD(malin)	86.93	86.93	86.93
FIELD ANALYSIS				
General Water Quality Parameters				
Colour	**-**	Slighty Rusty	Rusty Red	-
Conductivity @ 25°C	**uS/cm**	1,283	1,101	1,116
Odour	**-**	No Odour	No Odour	No Odour
pH	**pH Units**	7.62	7.27	7.1
Temperature	**deg C**	11.3	12.3	11.9
Ground Water Level	**M**			22.2
LABORATORY ANALYSIS				
General Water Quality Parameters				
pH	**pH Units**	7.6	7.4	7.49
Inorganics				
Ammonia	**NH_4 mg/l**	<0.05	<0.05	<0.2
Calcium	**Ca mg/l**	187	-	175.1
Chloride	**Cl mg/l**	17	19	15
Nitrate	**NH_3 mg/l**	2.6	-	<0.3
Phosphorous	**P mg/l**	<0.05	-	0.06
Potassium	**K mg/l**	3.6	-	2.8
Ortho Phosphate	**PO_4 mg/l**	<0.05	-	0.03
Sodium	**Na mg/l**	42	-	39
Sulphate	**SO_4 mg/l**	440	500	459
Metals				
Boron	**B mg/l**	<0.1	-	0.056
Cadmium	**Cd mg/l**	<0.005	-	<0.004
Chromium (Total)	**Cr mg/l**	<0.01	-	<0.001
Copper	**Cu mg/l**	<0.01	-	<0.001
Iron	**Fe mg/l**	0.02	-	<0.002
Lead	**Pb mg/l**	<0.02	-	<0.001
Magnesium	**Mg mg/l**	45	-	44.47
Manganese	**Mn mg/l**	0.85	-	0.154
Nickel	**Ni mg/l**	<0.01	-	0.003
Zinc	**Zn mg/l**	<0.01	-	0.012
Bacteria				
Feacal Coliforms	**cfu/100ml**		<1	<1
Total Coliforms	**cfu/100ml**		<1	3
List I/II				
Volatile Organic Compounds	**mg/l**		<0.001	<0.001

Semivolatiles	**mg/l**		<0.001	<0.001
Pesticides	**mg/l**		<0.00001	<0.00001

MONITORING WELL B3: Chemical Analysis of Groundwater.				
PARAMETERS	**UNIT**	**21/06/06**	**25/07/2006**	**13/09/2007**
FIELD ANALYSIS				
General Water Quality Parameters	**mAoD(malin)**			
Colour	**-**	Clear	Clear	Clear
Conductivity @ 25°C	**uS/cm**	541	23/05/1901	601
Odour	**-**	No Smell	No Odour	No Odour
pH	**pH Units**	7.78	07/01/1900	7.36
Temperature	**deg C**	11.9	11/01/1900	11.5
Ground Water Level	**M**			10
LABORATORY ANALYSIS				
General Water Quality Parameters				
pH	**pH Units**	7.7	7.6	7.82
Inorganics				
Ammonia	**NH_4 mg/l**	<0.05	<0.05	<0.2
Calcium	**Ca mg/l**	83	-	90.27
Chloride	**Cl mg/l**	16	12	13
Nitrate	**NH_3 mg/l**	5.2	-	1.6
Phosphorous	**P mg/l**	<0.05	-	0.12
Potassium	**K mg/l**	2.6	-	2.2
Ortho Phosphate	**PO_4 mg/l**	<0.05	-	0.08
Sodium	**Na mg/l**	12	-	12.5
Sulphate	**SO_4 mg/l**	64	68	90
Metals				
Boron	**B mg/l**	<0.1	-	0.035
Cadmium	**Cd mg/l**	<0.005	-	<0.004
Chromium (Total)	**Cr mg/l**	<0.01	-	<0.001
Copper	**Cu mg/l**	<0.01	-	<0.001
Iron	**Fe mg/l**	0.01	-	<0.002
Lead	**Pb mg/l**	<0.02	-	<0.001
Magnesium	**Mg mg/l**	17	-	17.36
Manganese	**Mn mg/l**	0.37	-	0.003
Nickel	**Ni mg/l**	<0.01	-	0.003
Zinc	**Zn mg/l**	<0.01	-	0.009
Bacteria				
Feacal Coliforms	**cfu/100ml**		<1	<1
Total Coliforms	**cfu/100ml**		<1	52

List I/II				
Volatile Organic Compounds	**mg/l**		<0.001	<0.001
Semivolatiles	**mg/l**		<0.001	<0.001
Pesticides	**mg/l**		<0.00001	<0.00001

SW1 Results						
		Feb-07	**Jul-07**	**Aug-07**	**Sep-07**	**Nov-07**
FIELD ANALYSIS						
General Water Quality Parameters						
Colour	**-**	Clear	Clear	Clear	Clear	Brown tint
Conductivity @ 25°C	**uS/cm**	276	436	-		645
Odour	**-**	No Odour	No Odour	No Odour	No Odour	No Odour
pH	**pH Units**	-	6.19	-	-	7.66
Temperature	**deg C**	7.3	15.4	-	-	11
LABORATORY ANALYSIS						
General Water Quality Parameters						
Total Suspended Solids	**mg/l**	<10	<10	<10	<10	<10
Mineral Oils	**mg/l**	<0.01	<0.01	<10	<0.01	<0.01
pH	**pH Units**	7.57	7.2	7.64	7.55	7.66
Inorganics						
Total Ammonia	**NH_4 mg/l**	2.4	0.3	0.2	2.4	1
Chloride	**Cl mg/l**	13	15	15	19	19

SW2 Results						
		Feb-07	**Jul-07**	**Aug-07**	**Sep-07**	**Nov-07**
FIELD ANALYSIS						
General Water Quality Parameters						
Colour	**-**	Clear	Clear	Clear	Clear	Brown
Conductivity @ 25°C	**uS/cm**	282	484	-		645
Odour	**-**	No Odour	No Odour	No Odour	No Odour	No Odour
pH	**pH Units**	-	6.18	-	-	7.46
Temperature	**deg C**	7.2	15.6	-	-	11
LABORATORY ANALYSIS						

General Water Quality Parameters						
Total Suspended Solids	**mg/l**	<10	<10	<10	<10	<10
Mineral Oils	**mg/l**	<0.01	<0.01	<10	<0.01	<0.01
pH	**pH Units**	7.29	7.2	7.64	7.67	7.46
Inorganics						
Total Ammonia	**NH_4 mg/l**	<0.2	0.3	0.2	<0.2	<0.2
Chloride	**Cl mg/l**	13	13	14	18	19

APPENDIX 8.3
Design of Storm Water Attenuation and Table 6.3 of GDSDS

Summary of stormwater attenuation design.

Area of Roof (new and existing) = 7961 Sq mr

Area of yard (new and existing) =6073 Sq mr

Total impermeable area is 14034 Sq mr

Note: All yard water is routed through Class 1 petrol interceptor CP10BP by Carlow precast.

Attenuation design storage volume is based on 100 year storms and 1year Q_{bar} (13.54 l/sec)

Q_{bar} is calculated using SAAR= 980mm and Soil type 4 index =0.45, taken from map and met office data appended .Rainfall figures for Newtownforbes are used,being he closest available to us.

Volume of water storage required see calculation sheet SA1 is 535.4 Cumrs

There is a low lying forested area adjacent to the proposed development that can be utilised to provide this storage volume. This area has been surveyed and the existing levels have been shown on the drawing. Based on an idealised cross section see calculation sheet SA2 this area can generate an average depth of storage of 300mm over the area. This yields in excess of the 535 Cumrs reqd. The maximum depth of water at the southern end will be 900mm based on a top of water level of 80.60. The existing earth berm around this area shall be extended to contain the area and raised to 80.80 to ensure that the volume of storage is provided. The trees will remain as their footprint is insignificant.

Floor level is 81.1 which is 500mm above top of water

There are two flow streams, a clean roof water sewer and a yard water sewer . These combine at the flow control manhole which is downstream of the petrol interceptor on the yard water sewer and the overflow from here is directed into the storage area. When this area floods any water that can flow to ground can do so and the remainder will discharge back to the field drain over time , subject to the hydrobrake flow control.

Composting development At Kilmainhamwood

Nov 09

Sizing of Retention	1201
Impermeable Area	14034
Total Area m²	14034
Allowable l/sec	13.54
Return Period	1:100 Year

Duration minutes	Rainfall mm	Runoff m³	Allowable m³	Retention Req. m³
5	0.00	0.00	N/A	N/A
10	0.00	0.00	N/A	N/A
15	22.00	308.75	12.18606355	296.56
30	28.00	392.95	24.3721271	368.58
60	35.00	491.19	48.7442542	442.45
120	42.00	589.43	97.4885084	491.94
240	51.00	715.73	194.9770168	520.76
360	59.00	828.01	292.4655252	535.54
720	72.00	1010.45	584.9310504	425.52
1440	85.00	1192.89	1169.862101	23.03
2880	100.00	1403.40	2339.724202	-936.32

Max. Retention Required (m³)	535.54

AREA REQUIRED x 300 dp = 1783 M²

AREA	KM2	0.014034	SOIL	0.45
SAAR	MM	980	S1	0
SOIL	INDEX	0.45	S2	1
			S3	0
			S4	100
			S5	0

O/A AREA 14,034 M²

AREA 0.014034 Km²

$Q_{bar}=(0.00108x(AREA)^{0.89}x(SAAR)^{1.17}x(SOIL)^{2.17})x1000$ [l/sec]

Allowable l/sec QBAR= *13.54*

Extreme Rainfall Return Periods

Location: Newtownforbes, Co. Longford (USED FOR KILMAINHAMWOOD)
Average Annual Rainfall: 980

Maximum rainfall (mm) of indicated duration expected in the indicated return period.

RAINFALL EVENTS OUTSIDE CAPACITY OF PETROL INTERCEPTOR.

Duration	Return Period (years) 1/2	1	2	5	10	20	50	100
1 min				1.7	2.1	2.5	3.1	3.6
2 min				2.9	3.7	4.3	5.4	6.2
5 min				5.2	6.6	7.9	9.8	11.3
10 min				7.5	9.5	11.4	14.4	16.7
15 min	5.1	6.4	7.2	9.8	12.1	14.6	18.6	22
30 min	6.8	8.5	9.5	12.9	15.7	18.8	24	28
60 mn	8.9	11.0	12.0	16.5	19.9	24	30	35
2 hour	11.7	14.2	15.9	20.9	25	30	36	42
4 hour	15.8	19.1	21.0	27	32	36	44	51
6 hour	19.1	22.9	25	32	37	43	51	59
12 hour	24.4	29	32	40	47	53	64	72
24 hour	30	36	39	48	56	64	75	85
48 hour	37	43	47	58	67	76	89	100
96 hour								

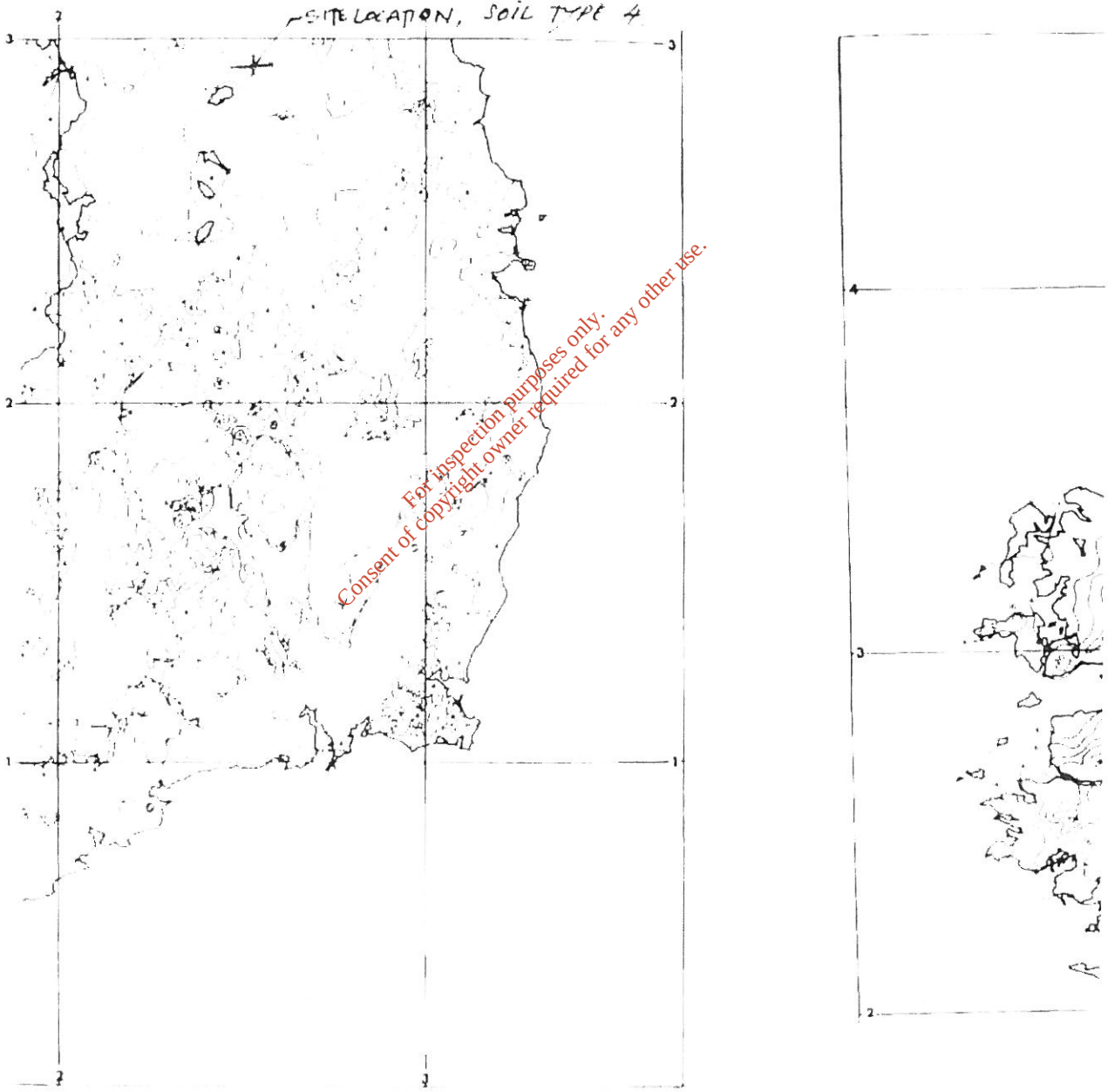
RAINFALL USED FOR ATTENUATION DESIGN. 100 YEAR.

Notes: Larger margins of error for 1, 2 ,5 and 10 minute values and for 100 year return periods

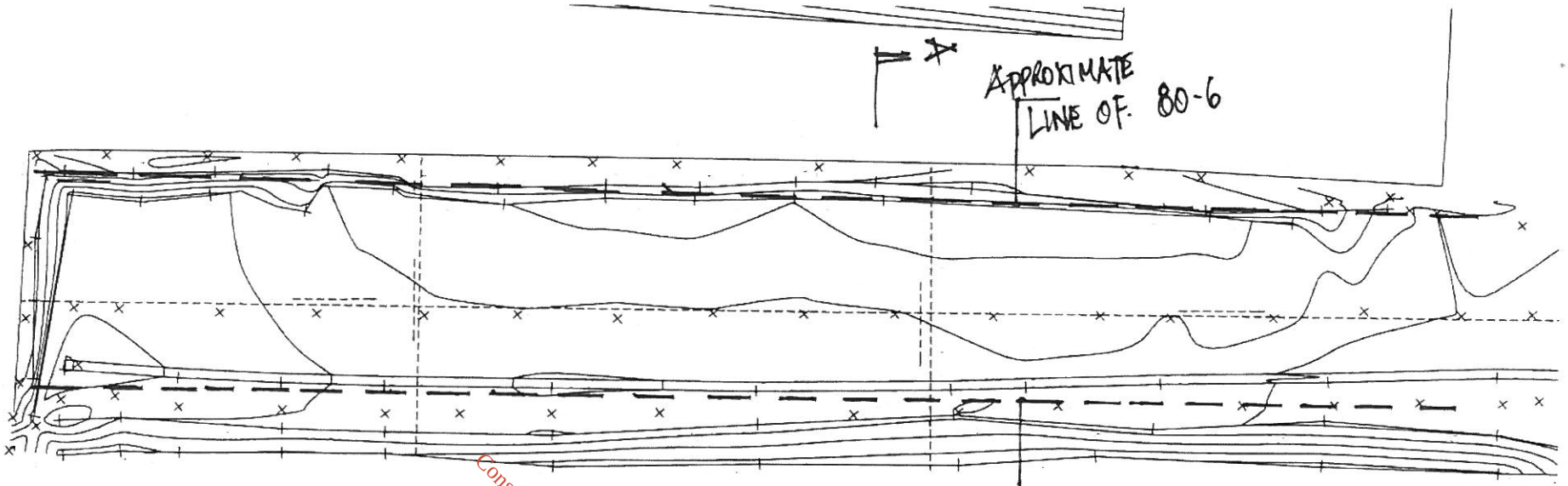
M560: 16.6 M52d: .55 M560/m52d: 0.30

SA 4.

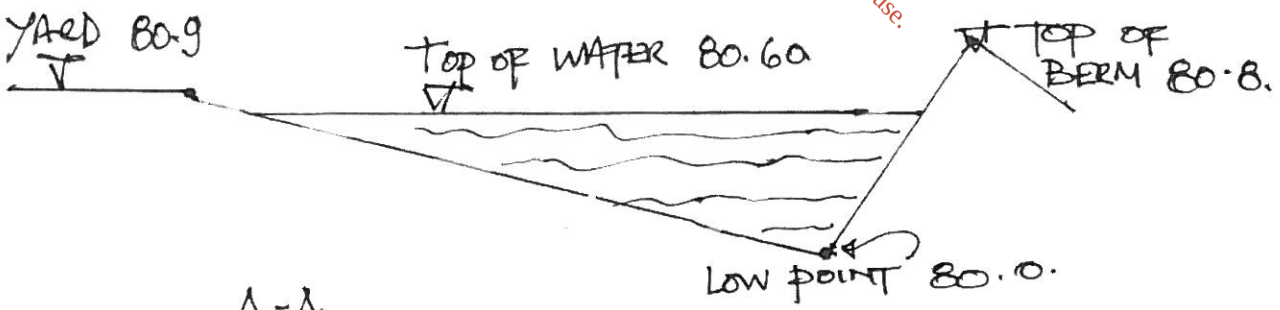
SITE LOCATION, SOIL TYPE 4



1 RP.2



SURVEY PLAN OF DETENTION BASIN



A-A.

IDEALISED CROSS SECTION FOR STORAGE VOLUME - AVERAGE DEPTH 300MM

Criteria	Sub-criterion	Return Period (Years)	Design Objective
Criterion 1 River water quality protection	1.1	<1	Interception storage of at least 5mm, and preferably 10mm, of rainfall where runoff to the receiving water can be prevented.
	1.2	<1	Where initial runoff from at least 5mm of rainfall cannot be intercepted, treatment of runoff (treatment volume) is required. Retention pond (if used) to have minimum pool volume equivalent to 15mm rainfall.
Criterion 2 River regime protection	2.1	1	Discharge rate equal to 1 year greenfield site peak runoff rate or 2l/s/ha, whichever is the greater. Site critical duration storm to be used to assess attenuation storage volume
	2.2	100	Discharge rate equal to 1 in 100 year greenfield site peak runoff rate. Site critical duration storm to be used to assess attenuation storage volume
Criterion 3 Level of service (flooding) for the site	3.1	30	No flooding on site except where specifically planned flooding is approved. Summer design storm of 15 or 30 minutes are normally critical.
	3.2	100	No internal property flooding. Planned flood routing and temporary flood storage accommodated on site for short high intensity storms. Site critical duration events.
	3.3	100	No internal property flooding Floor levels at least 500mm above maximum river level and adjacent on-site storage retention.
	3.4	100	No flooding of adjacent urban areas. Overland flooding managed within the development

Criteria	Sub-criterion	Return Period (Years)	Design Objective
Criterion 4 River flood protection (criterion 4.1, or 4.2 or 4.3 to be applied)	4.1	100	"Long-term" floodwater accommodated on site for development runoff volume which is in excess of the greenfield runoff volume. Temporary flood storage drained by infiltration on a designated flooding area brought into operation by extreme events only. 100 year, 6 hour duration storm to be used for assessment of the additional volume of runoff
	4.2	100	Infiltration storage provided equal in volume to "long term" storage. Usually designed to operate for all events. 100year, 6 hour duration storm to be used for assessment of the additional volume of runoff.
	4.3	100	Maximum discharge rate of QBAR or 2 l/s/ha, whichever is the greater, for all attenuation storage where separate "long term" storage cannot be provided.

Table 6.3 Criteria for New Development Drainage

This process should be an integral part of design.

6.4 Hydraulic Design of Drainage Components - General

The design of a storm sewer network and determining its performance requires the use of network modelling tools, rainfall information based on the Flood Studies Report (FSR) and detailed network and ground level information. As climate change is now accepted as taking place, a precautionary position has been taken to cater for its effects. Details of these allowances are contained in the Regional Policy on Climate Change.

The design of a stormwater drainage system is expected to involve the use of SuDS. However in nearly all situations, pipes will also be involved to provide much of the conveyance of the runoff. The attenuation aspects of SuDS, together with the perception of possible premature failure of SuDS, need to be taken into consideration in the design of the supporting pipe system. Risk of sewer system failure can be due to:

- Structural failure;
- Pipe sedimentation / blockage;
- Inadequate capacity

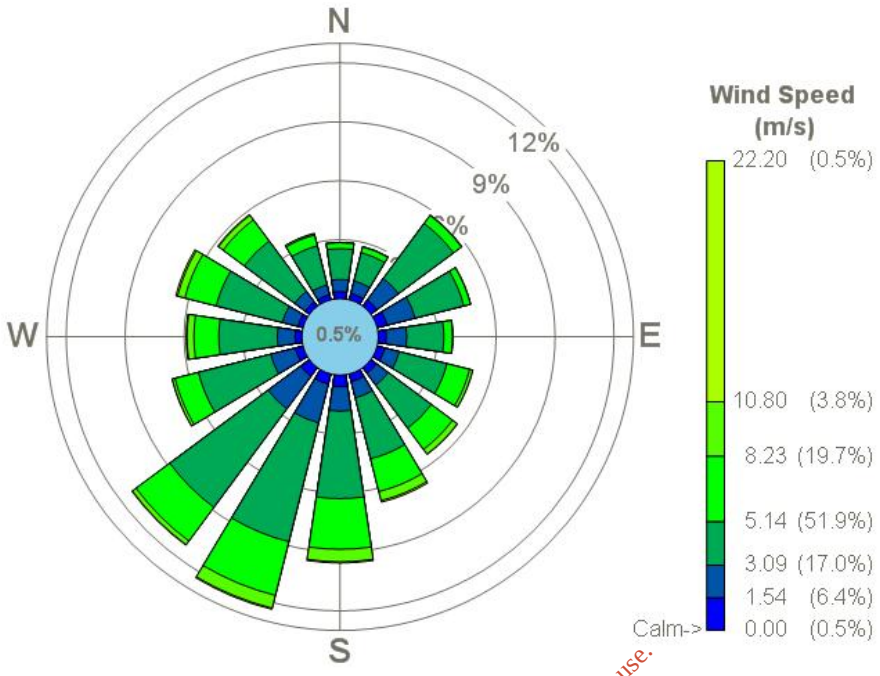
Design of sewers must therefore consider design for:

APPENDIX 9.1
Meteorological File for Dispersion Modelling

Meteorological data examined and used in the dispersion modelling exercise

Tabular illustration of Clones meteorological files for Years 2002 to 2006 inclusive (5 years)

5 year Meteorological file for Clones 2002 to 2006 inclusive							
Dir \ Speed	**<= 1.54 m/s**	**<= 3.09 m/s**	**<= 5.14 m/s**	**<= 8.23 m/s**	**<= 10.80 m/s**	**> 10.80 m/s**	**Total**
0.0	0.36	0.62	1.57	0.30	0.02	0.00	2.87
22.5	0.34	0.65	1.49	0.31	0.02	0.00	2.79
45.0	0.39	1.36	3.49	0.50	0.03	0.00	5.77
67.5	0.52	1.47	2.56	0.35	0.01	0.00	4.90
90.0	0.41	1.04	1.89	0.44	0.02	0.00	3.79
112.5	0.40	0.76	2.51	1.20	0.16	0.00	5.02
135.0	0.35	0.75	2.74	1.34	0.30	0.02	5.50
157.5	0.40	0.84	3.20	1.72	0.47	0.09	6.73
180.0	0.59	1.24	4.45	2.58	0.63	0.06	9.56
202.5	0.53	2.03	6.24	2.82	0.67	0.06	12.35
225.0	0.55	2.06	6.24	2.14	0.24	0.03	11.26
247.5	0.41	1.29	3.80	1.23	0.14	0.01	6.88
270.0	0.35	0.90	2.98	1.27	0.35	0.05	5.89
292.5	0.26	0.81	3.48	1.65	0.39	0.08	6.67
315.0	0.27	0.67	3.20	1.34	0.29	0.05	5.81
337.5	0.26	0.51	2.05	0.56	0.08	0.01	3.48
Total	6.39	17.00	51.87	19.74	3.80	0.47	99.28
Calms	-	-	-	-	-	-	**0.48**
Missing	-	-	-	-	-	-	**0.24**
Total	-	-	-	-	-	-	**100.00**

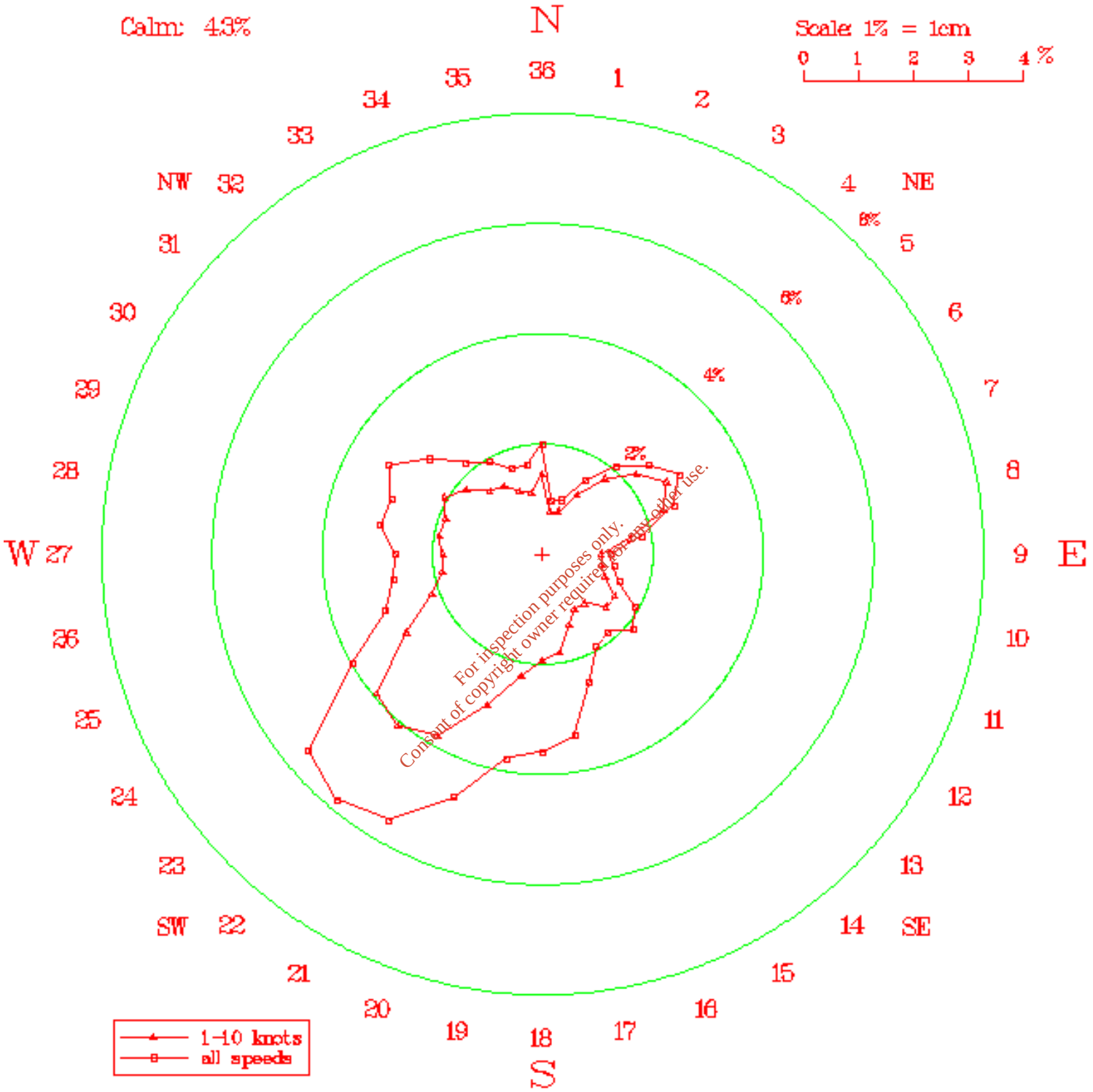


Windrose illustration of meteorological files Clones 2002 to 2006 inclusive

APPENDIX 9.2
Windrose Clones

7419702000

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
4.3	18.5	21.8	26.8	21.9	5.1	1.4	0.1	+	+	0.0	%

mean wind speed: 7.9 knots standard deviation: 5.3 knots

anemometer height: 12m

Met Eireann, Glasnevin Hill, Dublin 9.

APPENDIX 12.1
Reference Sources for the Cultural and Archaeological Heritage Assessment

APPENDIX 12.1 REFERENCES

- Bradley, J. (1988/9) “The Medieval Towns of County Meath” in Ríocht na Mídhe, Vol. VIII, No. 4, pp 40–59.
- Graham, B. (1974) “Medieval Settlements in County Meath” in Ríocht na Mídhe, Vol. V, No. 2, pp 30–49.
- O’Sullivan, A. (1998) The Archaeology of Lake Settlement in Ireland, Discovery Programme Monograph No. 4. Royal Irish Academy. Dublin.
- Waddell, J. (1998) The Archaeology of Prehistoric Ireland, Galway University Press. Galway.
- County Meath RMP files
- Database for Irish Excavations
  Available from: http://www.excavations.ie
  Date 02/03/2008

12 *Other Sources Referenced*

- Dept. of Arts, Heritage, Gaeltacht & the Islands, 1999. Frameworks and Principles for the Protection of the Archaeological Heritage, Government publications, Dublin.
- Dept. of Arts, Heritage, Gaeltacht & the Islands, 1999. Policy and Guidelines on Archaeological Excavation. Govn. Publications, Dublin.
- The Heritage Council, 2000. Archaeology & Development: Guidelines for Good Practice for Developers. The Heritage Council of Ireland Series, Kilkenny.
- The Planning and Heritage Section of the Department of the Environment, Heritage and Local Government. Sites and Monuments Record, County Meath and Cavan.
- EPA, 1995. Advise notes on current practice in the preparation of Environmental Impact Statements. Dublin.
- Landscape and Landscape Assessment: Consultation Draft of Guidelines for Planning Authorities. DoEHLG. June 2000
- National Monuments Acts 1930-1994.

APPENDIX 12.2
Details of RMP sites

Appendix 12.2 - RMP Sites

Sheet Number	Townland	Grid Reference		Classification	Description	Distance from the site (km)
ME002: 030	Raloaghan	279370	292960	Ringfort (Rath / Cashel)	A circular flat area surrounded by the remains of a large earthen bank on an embankment with the remains of a large v shaped fosse outside and the remains of a small outer earthen bank. The interior slopes from E-W and has deep, old cultivation drills running E-W. There is a large entrance in both inner and outer banks with a partly defaced causeway at SSW. Internal diameter E-W 38.40m	1
ME002: 031	Raloaghan	279740	293060	Ringfort (Rath / Cashel)	Ringfort is situated on a hilltop with surrounding land falling in all directions. Field fence running NE-SW destroyes 1/3 of site to SE. Platform ringfort dipping towards the centre. Fosse visible from NW-NE. Length 7.50m, breadth 4.80m. The remains rise to a height of 1.20m at NW corner. Only the NW portion of this rath remains. The interior was possibly curcular and slopes slightly to the SE. It is uneven due to the presense of house foundations built up against it. Internal diameter NE-SW 29.10M.	0.9
ME002: 047	Keenaghan	278260	291550	Ringfort (Rath / Cashel)	Raised subcircular area surrounded by earthen bank (dims 32 NE-SE, 28 NW-SE) and slight traces of fosse. Narrow gap at ESE may be original entrance	1.6
ME002: 048	Keenaghan	278280	291100	Ringfort (Rath / Cashel)	Raised circular area (diam 37m) defined by earthen bank with slight tracesof external fosse. Original entrance may be at E	1.7
ME002: 051	Keenaghan	278680	291080	Ringfort (Rath / Cashel)	Raised subcircular area defined by earthen bank (dims 34 N-S, 31m E-W) and with slight traces of fosse at NW. Entrance was possibly at SSW	1.4
ME002: 053	Raloaghan	279330	292130	Ringfort (Rath / Cashel)	This rath consists of a circular area sloping from N-S. It is surrounded by a large earthen bank with an external wide flat bottemed partly water-logged fosse. The entrance may be marked to the N by a gap through the bank and a caseway across the fosse. Internal diameter N-S 54m. Internal diameter E-W 48m. Width of fosse is 2.80m at bottom and 4.80 at top.	0.4
ME002: 054	Raloaghan	279670	292260	Ringfort (Rath / Cashel)	This rath consists of a circular area sloping from N-S. It is surrounded by a single earthen bank which has had its outer face steepened in modern times. There are gaps due to diturbance in the banks to the NW and E. The site has been altered in modern times. Diameter from crest to crest of the bank is N-S 38.50m and E-W 37m.	0.2
ME002: 055	Raloaghan	280060	292410	Ringfort (Rath / Cashel)	The rath consists of a circular area sloping from NNW- SSE and is surrounded by a massive earthen bank, a wide fosse and the remains of a counterscarp bank from NNE- N-W-SW. The fosse is almost completely filled in and a wide gap on the ESE presumably marks the entrance. The site is densely overgrown. Internal diameter E-W is 34m and N-S is 31.40m. Width of the inner bank is 5.60m and the width of the outer bank is 3.60m.	0.4
ME002: 05901	Mullaghboy	280450	29130	Burial Possible	The stone slab is thought to mark the grave of a Croppy and is believed to have been removed to a big house before being returned to its current position.	0.9
ME002: 05902	Mullaghboy	280450	291300	Cross	The stone slab is in two fragments with the middle portion missing. It is made of sandstone and at its present length is c. 75cm. It has a tenon c.15cm long at its narrower end. It is c. 10cm thick and c. 30cm in breadth. The decoration is lightly incised and difficult to see. The cross has 2 rings and 4 dimples at the angles. The stern has 3 vertical encised lines connected by 4 horizontal lines.	0.9
ME005:014	Kilmainhamwood	278260	290550	Rath	Subcircular, raised area (dims 47m N-S, 43m E-W) defined by earthen bank with external fosse. Original entrance with causeway at ESE	2.1
ME005:015	Coole	278840	290670	Rath	Subcircular area defined by massice earthen bank with has been re-faced with stone (dims 37m NW-SE, 34m NE-SW) and traces of external fosse. Original entrance cannot be determined.	1.6
ME005:016	Coole	279600	290770	Crannog	Marked as an island on the OS 25" map and situated at the south outlet of Newcastle Lough. It is now attached to the mainland and can only by distinguished by a slight dip where reeds are now growing. Dims: c.14m N-S and c.18m E-W	1.2
ME005:017	Rathe	280430	290300	Ringfort (Rath / Cashel)	Situated on the top of a ridge which rises steeply on the NE and NW sides. The interior is circular in shape and very uneven. At the SE there is a sudden sharp drop towards a gap in the enclosing bank. The interior is enclosed by a large grass covered bank of earth and small boulders. It has a well defined fosse and outer bank. Internal diamter is E-W 32.20m and N-S 30.05M. Width of inner bank is c. 6.20m and width of outer bank is c. 6.30m.	1.8
ME005:030	Coole	279080	290320	Ringfort (Rath / Cashel)	Situated on the NE slope of a ridge which reaches the summit near Coole House.It is a subcircular enclosure sloping slightly from W-E and bounded by a scarp with the remains of an earthen bank on its upper edge with a fosse at its foot. The entrance was most likely to the east. The site has been modified in modern times. Internal diameter N-S 36m and E-W 42m.	1.8
ME005:031	Coole	279270	29020	Enclosure	Sited on the summit of a hill in grassland. The interior slopes from NW-SE and has been cultivated. No trace of an entrance.There possibly was an earthen bank on the embankment originally.	1.8
ME005:032	Rathe	279580	290020	Ringfort (Rath / Cashel)	This ringfort consists of a roughly circular area demarcated by a high steep scarp. There is no trace of a fosse. The entrance is not recognisable. The interior gently rises towards the centre. Elsewhere the rath is overgrown with hay. Diameters from the top edge of the scarp in 37m N-Sand 40m E-W.	2

APPENDIX 12.3
Topographical Files

Appendix 12.3 – Topographical Files

The topographical files in the National Museum of Ireland were consulted to determine if any archaeological artefacts had been recorded from the area. This is the National archive of all known finds recorded by the National Museum. It relates primarily to artefacts but also includes references to monuments and has a unique archive of records of previous excavations. A list of recorded finds from the area is given below.

The following townlands were assessed:

Aghamore, Aghafarnan, Aghaloaghan, Ballylurgan, Ballynaclose, Boynagh, Carrickleck, Coole, Coordooey, Enniskeen, Garmanagh, Keenaghan, Kilmainhamwood, Kilnalun, Lisnabo, Lisnagrow, Lisnahederna, Mullaghboy, Newcastle, Raloaghan, Rathe and Whitewood.

Townland	Newcastle
Parish	Enniskeen
Barony	Morgallion
Reg No.	Record
Monument	None
Finds	A stone head feature found within a stable wall.

Townland	Whitewood
Parish	Nobber
Barony	Kells
Reg No.	1955: 54-76
Monument	Crannog
Finds	The following items were discovered on the lake shore edge after drainage works were carried out by the OPW: a perforated stone bead (greyish in colour, flat on both faces. It has an off-centre circular perforation 4mm in diameter), medieval jar fragment (the ware is red in colour and the outer surface appears glazed), fragment of pottery, hollowed stone (oval piece of sandstone 11.6cm long and 8.6cm wide), timbers and paddles, fragments of quern stone and 2 dug out canoes (flat bottomed and c. 770cm in length, stern is c.25cm in thickness and stern width is c.63cm).

APPENDIX 13.1
Details of Traffic Survey

ABACUS TRANSPORTATION SURVEYS

NEWCASTLE CO.MEATH TRAFFIC COUNT **MARCH 2009**
MANUAL CLASSIFIED JUNCTION COUNT **ATH/09/022**

SITE: 01 DATE: 3rd March 2009

LOCATION: R162/Link to Kilmainhamwood Facility DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	2	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15	2	0	1	0	0	3	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30	8	1	1	2	0	12	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45	8	6	1	0	0	15	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	19	7	5	2	0	33	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00	14	3	0	1	1	19	21	2	1	0	0	0	3	3	0	0	0	0	0	0	0
08:15	7	2	0	4	0	13	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30	7	0	0	1	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45	10	2	0	1	0	13	14	0	0	1	0	0	1	2	0	0	0	0	0	0	0
H/TOT	38	7	0	7	1	53	63	2	1	1	0	0	4	5	0	0	0	0	0	0	0
09:00	19	3	1	2	0	25	28	0	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15	19	4	0	3	0	26	30	0	0	0	1	0	1	2	0	0	0	0	0	0	0
09:30	10	5	1	3	0	19	23	0	0	0	0	0	0	0	0	0	1	0	0	1	2
09:45	8	2	0	6	0	16	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	56	14	2	14	0	86	105	0	0	0	1	0	1	2	0	0	1	0	0	1	2
10:00	9	1	0	4	0	14	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	12	2	0	1	0	15	16	0	1	0	1	0	2	3	0	0	0	0	0	0	0
10:30	6	3	0	6	0	15	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10:45	11	3	1	1	0	16	18	0	0	0	0	0	0	0	0	0	0	2	0	2	5
H/TOT	38	9	1	12	0	60	76	0	1	0	1	0	2	3	0	0	0	2	0	2	5
11:00	8	3	0	0	0	11	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:15	3	4	0	1	0	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:30	10	1	0	1	0	12	13	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11:45	6	3	2	2	0	13	17	0	0	0	0	0	0	0	1	0	0	0	0	1	1
H/TOT	27	11	2	4	0	44	50	0	0	0	0	0	0	0	1	0	0	0	0	1	1
12:00	6	3	2	1	0	12	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15	10	1	0	3	0	14	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30	9	2	2	1	0	14	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45	11	0	0	3	0	14	18	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	36	6	4	8	0	54	66	0	0	0	0	0	0	0	0	0	0	0	0	0	0

ABACUS TRANSPORTATION SURVEYS

NEWCASTLE CO.MEATH TRAFFIC COUNT **MARCH 2009**
MANUAL CLASSIFIED JUNCTION COUNT **ATH/09/022**

SITE: 01 DATE: 3rd March 2009

LOCATION: R162/Link to Kilmainhamwood Facility DAY: Tuesday

	MOVEMENT 1							MOVEMENT 2							MOVEMENT 3						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	9	4	1	2	0	16	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:15	5	4	1	2	0	12	15	0	0	1	0	0	1	2	0	0	0	0	0	0	0
13:30	8	7	1	2	0	18	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13:45	11	1	3	3	0	18	23	0	0	1	1	0	2	4	0	0	0	0	0	0	0
H/TOT	33	16	6	9	0	64	79	0	0	2	1	0	3	5	0	0	0	0	0	0	0
14:00	18	1	3	2	0	24	28	0	0	0	0	0	0	0	0	0	1	0	0	1	2
14:15	13	1	1	4	0	19	25	0	1	0	1	0	2	3	0	1	0	0	0	1	1
14:30	9	3	0	1	1	14	16	1	0	0	0	0	1	1	0	0	0	0	0	0	0
14:45	13	2	0	2	0	17	20	0	0	0	0	0	0	0	0	1	1	0	0	2	3
H/TOT	53	7	4	9	1	74	89	1	1	0	1	0	3	4	0	2	2	0	0	4	5
15:00	17	5	0	2	0	24	27	1	0	0	0	0	1	1	0	0	0	2	0	2	5
15:15	13	2	1	2	3	21	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:30	16	0	1	2	0	19	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15:45	17	1	1	4	0	23	29	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	63	8	3	10	3	87	105	1	0	0	0	0	1	1	0	0	0	2	0	2	5
16:00	16	5	1	2	0	24	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:15	16	2	0	2	0	20	23	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:30	18	5	1	2	1	27	31	1	0	0	0	0	1	1	1	0	0	0	0	1	1
16:45	19	7	0	4	0	30	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	69	19	2	10	1	101	116	1	0	0	0	0	1	1	1	0	0	0	0	1	1
17:00	19	3	0	3	0	25	29	0	0	0	0	0	0	0	1	0	0	0	0	1	1
17:15	14	3	2	2	1	22	27	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17:30	33	5	1	2	0	41	44	0	0	0	0	0	0	0	1	1	0	0	0	2	2
17:45	20	10	0	2	0	32	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	86	21	3	9	1	120	134	0	0	0	0	0	0	0	2	1	0	0	0	3	3
18:00	24	3	2	2	0	31	35	0	0	0	0	0	0	0	1	0	0	0	0	1	1
18:15	28	4	0	0	0	32	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	27	7	1	0	1	36	38	0	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	22	0	1	0	0	23	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0
H/TOT	101	14	4	2	1	122	128	0	0	0	0	0	0	0	1	0	0	0	0	1	1
P/TOT	619	139	36	96	8	898	1049	5	3	3	4	0	15	22	5	3	3	4	0	15	22

ABACUS TRANSPORTATION SURVEYS

NEWCASTLE CO.MEATH TRAFFIC COUNT **MARCH 2009**
MANUAL CLASSIFIED JUNCTION COUNT **ATH/09/022**

SITE: 01 DATE: 3rd March 2009

LOCATION: R162/Link to Kilmainhamwood Facility DAY: Tuesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
07:00	1	0	0	0	0	1	1	1	0	0	0	0	1	1	11	4	2	0	0	17	18
07:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	8	3	1	1	26	30
07:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	6	1	0	0	19	20
07:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	7	1	1	0	22	24
H/TOT	1	0	0	0	0	1	1	1	0	0	0	0	1	1	49	25	7	2	1	84	91
08:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	8	0	2	3	24	30
08:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	2	1	1	0	28	30
08:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	24	4	1	2	1	32	36
08:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	22	7	1	1	0	31	33
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	81	21	3	6	4	115	128
09:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	1	0	3	0	24	28
09:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	4	1	0	0	23	24
09:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	5	0	2	0	21	24
09:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	2	1	2	2	22	27
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	67	12	2	7	2	90	102
10:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	2	0	13	16
10:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	3	0	14	18
10:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	4	3	3	0	21	26
10:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	3	1	2	1	20	24
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	42	11	4	10	1	68	84
11:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	3	3	1	0	21	24
11:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	2	1	4	0	13	19
11:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	2	1	3	0	14	18
11:45	1	0	0	0	0	1	1	0	0	0	0	0	0	0	11	1	0	3	0	15	19
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	39	8	5	11	0	63	80
12:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	3	1	1	0	17	19
12:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	9	2	0	0	0	11	11
12:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	2	3	4	0	20	27
12:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	4	1	1	1	14	17
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	39	11	5	6	1	62	73

ABACUS TRANSPORTATION SURVEYS

NEWCASTLE CO.MEATH TRAFFIC COUNT **MARCH 2009**
MANUAL CLASSIFIED JUNCTION COUNT **ATH/09/022**

SITE: 01 DATE: 3rd March 2009

LOCATION: R162/Link to Kilmainhamwood Facility DAY: Tuesday

	MOVEMENT 4							MOVEMENT 5							MOVEMENT 6						
TIME	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU	CAR	LGV	OGV1	OGV2	BUS	TOT	PCU
13:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	5	0	2	0	13	16
13:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	0	15	15
13:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	3	1	0	19	22
13:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	1	2	2	0	15	19
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	43	9	5	5	0	62	71
14:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	3	0	15	19
14:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7	6	0	1	0	14	15
14:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	11	4	1	2	0	18	21
14:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	2	1	0	16	18
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	13	3	7	0	63	74
15:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	4	1	0	0	17	18
15:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	3	0	0	0	13	13
15:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	2	1	0	18	20
15:45	0	0	0	0	0	0	0	1	0	0	0	0	1	1	9	4	3	2	0	18	22
H/TOT	0	0	0	0	0	0	0	1	0	0	0	0	1	1	44	13	6	3	0	66	73
16:00	1	0	0	0	0	1	1	0	0	0	0	0	0	0	11	4	2	1	0	18	20
16:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	1	1	0	1	17	19
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	21	3	1	1	0	26	28
16:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	5	0	2	1	20	24
H/TOT	1	0	0	0	0	1	1	0	0	0	0	0	0	0	58	13	4	4	2	81	90
17:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	17	4	2	0	0	23	24
17:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	3	0	1	0	22	23
17:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	15	3	1	2	0	21	24
17:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	19	5	0	1	0	25	26
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	69	15	3	4	0	91	98
18:00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	2	0	0	0	15	15
18:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	2	0	1	0	21	22
18:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	4	0	1	0	19	20
18:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	14	4	0	0	0	18	18
H/TOT	0	0	0	0	0	0	0	0	0	0	0	0	0	0	59	12	0	2	0	73	76
P/TOT	3	0	0	0	0	3	3	2	0	0	0	0	2	2	630	163	47	67	11	918	1040

APPENDIX 13.2
Origin/Destination Traffic Demand Tables

Development Junction

AM Peak Hour (8:15-9:15)

Surveyed Car Traffic 2009
Seasonal Adjustment Factor = 1

Route	A	B	C
A		0	81
B	0		0
C	70	0	

Baseflow Car Traffic 2010
Growth Factor = 1.017391 (Non National Roads F

Route	A	B	C
A		0	82
B	0		0
C	71	0	

Baseflow Car Traffic 2025
Growth Factor = 1.173913 (Non National Roads Factor)

Route	A	B	C
A		0	96
B	0		0
C	83	0	

Surveyed HGV Traffic 2009
Seasonal Adjustment Factor = 1

Route	A	B	C
A		0	9
B	0		1
C	16	1	

Baseflow HGV Traffic 2010
Growth Factor = 1.017857 (Non National Roads F

Route	A	B	C
A		0	9
B	0		1
C	16	1	

Baseflow HGV Traffic 2025
Growth Factor = 1.196429 (Non National Roads Factor)

Route	A	B	C
A		0	11
B	0		1
C	19	1	

Surveyed Traffic 2009
Seasonal Adjustment Factor = 1

Route	A	B	C
A		0	90
B	0		1
C	86	1	

Baseflow Traffic 2010

Route	A	B	C
A		0	91
B	0		1
C	87	1	

Baseflow Traffic 2025

Route	A	B	C
A		0	107
B	0		1
C	102	1	

Surveyed Traffic 2009
% HGVs

Route	A	B	C
A		#DIV/0!	10
B	#DIV/0!		100
C	18.6	100	

Baseflow Traffic 2010
% HGVs

Route	A	B	C
A		#DIV/0!	9.9
B	#DIV/0!		100
C	18.4	100	

Baseflow Traffic 2025
% HGVs

Route	A	B	C
A		#DIV/0!	10.3
B	#DIV/0!		100
C	18.6	100	

Arm A - Local Road West
Arm B - Access
Arm C - Local Road East

Baseflow + Generated Car Traffic 2010

Route	A	B	C
A		0	82
B	0		0
C	71	2	

Baseflow + Generated Car Traffic 2025

Route	A	B	C
A		0	96
B	0		0
C	83	2	

Baseflow + Generated HGV Traffic 2010

Route	A	B	C
A		0	9
B	0		2
C	16	2	

Baseflow + Generated HGV Traffic 2025

Route	A	B	C
A		0	11
B	0		2
C	19	2	

Baseflow + Generatd Traffic 2010

Route	A	B	C
A		0	91
B	0		2
C	87	4	

Baseflow + Generated Traffic 2025

Route	A	B	C
A		0	107
B	0		2
C	102	4	

Baseflow + Generated Traffic 2010
% HGVs

Route	A	B	C
A		#DIV/0!	9.9
B	#DIV/0!		100.0
C	18.4	50.0	

Baseflow + Genrated Traffic 2025
% HGVs

Route	A	B	C
A		#DIV/0!	10.3
B	#DIV/0!		100.0
C	18.6	50.0	

Development Junction

PM Peak Hour (15:30-16:30)

Surveyed Car Traffic 2009
Seasonal Adjustment Factor = 1.12

Route	A	B	C
A		0	84
B	0		3
C	108	0	

Baseflow Car Traffic 2010
Growth Factor = 1.017699 (Non National Roads F

Route	A	B	C
A		0	85
B	0		3
C	110	0	

Baseflow Car Traffic 2025
Growth Factor = 1.185841 (Non National Roads Factor)

Route	A	B	C
A		0	101
B	0		3
C	130	0	

Surveyed HGV Traffic 2009
Seasonal Adjustment Factor = 1.12

Route	A	B	C
A		0	7
B	0		0
C	12	0	

Baseflow HGV Traffic 2010
Growth Factor = 1.018182 (Non National Roads F

Route	A	B	C
A		0	7
B	0		0
C	12	0	

Baseflow HGV Traffic 2025
Growth Factor = 1.209091 (Non National Roads Factor)

Route	A	B	C
A		0	8
B	0		0
C	15	0	

Surveyed Traffic 2009
Seasonal Adjustment Factor = 1.12

Route	A	B	C
A		0	91
B	0		3
C	120	0	

Baseflow Traffic 2010

Route	A	B	C
A		0	92
B	0		3
C	122	0	

Baseflow Traffic 2025

Route	A	B	C
A		0	109
B	0		3
C	145	0	

Surveyed Traffic 2009
% HGVs

Route	A	B	C
A		#DIV/0!	7.7
B	#DIV/0!		0
C	10	#DIV/0!	

Baseflow Traffic 2010
% HGVs

Route	A	B	C
A		#DIV/0!	7.6
B	#DIV/0!		0
C	9.8	#DIV/0!	

Baseflow Traffic 2025
% HGVs

Route	A	B	C
A		#DIV/0!	7.3
B	#DIV/0!		0
C	10.3	#DIV/0!	

Arm A - Local Road West
Arm B - Access
Arm C - Local Road East

Baseflow + Generated Car Traffic 2010

Route	A	B	C
A		0	85
B	0		5
C	110	0	

Baseflow + Generated Car Traffic 2025

Route	A	B	C
A		0	101
B	0		5
C	130	0	

Baseflow + Generated HGV Traffic 2010

Route	A	B	C
A		0	7
B	0		1
C	12	1	

Baseflow + Generated HGV Traffic 2025

Route	A	B	C
A		0	8
B	0		1
C	15	1	

Baseflow + Generatd Traffic 2010

Route	A	B	C
A		0	92
B	0		6
C	122	1	

Baseflow + Generated Traffic 2025

Route	A	B	C
A		0	109
B	0		6
C	145	1	

Baseflow + Generated Traffic 2010
% HGVs

Route	A	B	C
A		#DIV/0!	7.6
B	#DIV/0!		16.7
C	9.8	100.0	

Baseflow + Genrated Traffic 2025
% HGVs

Route	A	B	C
A		#DIV/0!	7.3
B	#DIV/0!		16.7
C	10.3	100	

APPENDIX 13.3
PICADY 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
BY PERMISSION OF THE CONTROLLER OF HMSO

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

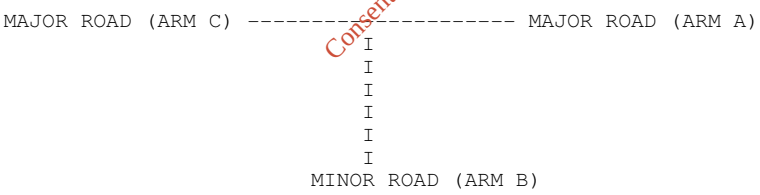
Run with file:-
"W:\Projects\5361 - Kilmainhamwood Facility Expansion\05-Design\01-Calculations\Traffic\PICADY\5361-Entrance AM.vpi"
(drive-on-the-left) at 10:33:49 on Friday, 13 March 2009

RUN INFORMATION

RUN TITLE: 5361-Entrance AM
LOCATION: Kilmainhamwood
DATE: 13/03/09
CLIENT: Thorntons Recycling
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 5361
STATUS:
DESCRIPTION:

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS R162 North
ARM B IS Facility
ARM C IS R162 South

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) 250.0 M.
- BLOCKS TRAFFIC	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 130.0 M.
- VISIBILITY TO RIGHT	(VB-A) 95.0 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.	10.00 M.
- WIDTH AT 20 M FROM JUNC.	9.00 M.
- LENGTH OF FLARED SECTION	4 VEHS

.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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance AM 2009

TIME PERIOD BEGINS 08.45 AND ENDS 10.15

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	1.13	1.69	1.13
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	1.09	1.63	1.09

TIME	FROM/TO	ARM A	ARM B	ARM C
08.45 - 10.15	TURNING PROPORTIONS			
	TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S)			
	ARM A	0.000	0.000	1.000
		0.0	0.0	90.0
		(0.0)	(0.0)	(10.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	0.0
		(0.0)	(0.0)	(100.0)
	ARM C	0.989	0.011	0.000
		86.0	1.0	0.0
		(18.6)	(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 5361-Entrance AM 2009
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)
08.45-09.00									
B-C	0.01	6.64	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.58	0.000		0.00	0.00	0.0		0.00
C-AB	0.01	6.64	0.002		0.00	0.00	0.0		0.15
C-A	1.08								
A-B	0.00								
A-C	1.13								

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	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.47	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.77	0.003		0.00	0.00	0.0		0.15
C-A	1.29								
A-B	0.00								
A-C	1.35								

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)
09.15-09.30									
B-C	0.02	6.55	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.31	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.94	0.003		0.00	0.00	0.1		0.14
C-A	1.57								
A-B	0.00								
A-C	1.65								

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)
09.30-09.45									
B-C	0.02	6.55	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.31	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.94	0.003		0.00	0.00	0.1		0.14
C-A	1.57								
A-B	0.00								
A-C	1.65								

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)
09.45-10.00									
B-C	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.47	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.77	0.003		0.00	0.00	0.0		0.15
C-A	1.29								
A-B	0.00								
A-C	1.35								

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)
10.00-10.15									
B-C	0.01	6.64	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.58	0.000		0.00	0.00	0.0		0.00
C-AB	0.01	6.64	0.002		0.00	0.00	0.0		0.15
C-A	1.08								
A-B	0.00								
A-C	1.13								

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
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	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-C	1.4	0.9	0.2	0.15	0.2	0.15
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	1.7	1.1	0.3	0.15	0.3	0.15
C-A	118.0	78.7				
A-B	0.0	0.0				
A-C	123.9	82.6				
ALL	245.0	163.3	0.5	0.00	0.5	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance AM 2010

TIME PERIOD BEGINS 08.45 AND ENDS 10.15

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	1.14	1.71	1.14
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	1.10	1.65	1.10

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
		ARM A	ARM B	ARM C
08.45 - 10.15	ARM A	0.000	0.000	1.000
		0.0	0.0	91.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	0.0
		(0.0)	(0.0)	(100.0)
	ARM C	0.989	0.011	0.000
		87.0	1.0	0.0
		(18.4)	(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 5361-Entrance AM 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)
08.45-09.00									
B-C	0.01	6.64	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.58	0.000		0.00	0.00	0.0		0.00
C-AB	0.01	6.65	0.002		0.00	0.00	0.0		0.15
C-A	1.09								
A-B	0.00								
A-C	1.14								

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	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.46	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.77	0.003		0.00	0.00	0.0		0.15
C-A	1.30								
A-B	0.00								
A-C	1.36								

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	0.02	6.55	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.30	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.95	0.003		0.00	0.00	0.1		0.14
C-A	1.59								
A-B	0.00								
A-C	1.67								

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	0.02	6.55	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.30	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.95	0.003		0.00	0.00	0.1		0.14
C-A	1.59								
A-B	0.00								
A-C	1.67								

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)
09.45-10.00									
B-C	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.46	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.77	0.003		0.00	0.00	0.0		0.15
C-A	1.30								
A-B	0.00								
A-C	1.36								

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)
10.00-10.15									
B-C	0.01	6.64	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.58	0.000		0.00	0.00	0.0		0.00
C-AB	0.01	6.65	0.002		0.00	0.00	0.0		0.15
C-A	1.09								
A-B	0.00								
A-C	1.14								

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
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	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-C	1.4	0.9	0.2	0.15	0.2	0.15
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	1.7	1.1	0.3	0.15	0.3	0.15
C-A	119.4	79.6				
A-B	0.0	0.0				
A-C	125.3	83.5				
ALL	247.8	165.2	0.5	0.00	0.5	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance AM 2010 + Dev

TIME PERIOD BEGINS 08.45 AND ENDS 10.15

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	1.14	1.71	1.14
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	1.14	1.71	1.14

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
		ARM A	ARM B	ARM C
08.45 - 10.15	ARM A	0.000 0.0 (0.0)	0.000 0.0 (0.0)	1.000 91.0 (10.0)
	ARM B	0.000 0.0 (0.0)	0.000 2.0 (100.0)	1.000 1.0 (0.0)
	ARM C	0.956 87.0 (18.0)	0.044 4.0 (50.0)	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 5361-Entrance AM 2010 + Dev
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)
08.45-09.00									
B-C	0.03	6.64	0.004		0.00	0.00	0.1		0.15
B-A	0.00	9.56	0.000		0.00	0.00	0.0		0.00
C-AB	0.06	8.51	0.007		0.00	0.01	0.1		0.12
C-A	1.08								
A-B	0.00								
A-C	1.14								

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	0.03	6.60	0.005		0.00	0.00	0.1		0.15
B-A	0.00	9.44	0.000		0.00	0.00	0.0		0.00
C-AB	0.07	8.61	0.008		0.01	0.01	0.1		0.12
C-A	1.29								
A-B	0.00								
A-C	1.36								

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	0.04	6.55	0.006		0.00	0.01	0.1		0.15
B-A	0.00	9.27	0.000		0.00	0.00	0.0		0.00
C-AB	0.09	8.75	0.010		0.01	0.01	0.2		0.12
C-A	1.58								
A-B	0.00								
A-C	1.67								

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	0.04	6.55	0.006		0.01	0.01	0.1		0.15
B-A	0.00	9.27	0.000		0.00	0.00	0.0		0.00
C-AB	0.09	8.75	0.010		0.01	0.01	0.2		0.12
C-A	1.58								
A-B	0.00								
A-C	1.67								

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)
09.45-10.00									
B-C	0.03	6.60	0.005		0.01	0.00	0.1		0.15
B-A	0.00	9.44	0.000		0.00	0.00	0.0		0.00
C-AB	0.07	8.61	0.008		0.01	0.01	0.1		0.12
C-A	1.29								
A-B	0.00								
A-C	1.36								

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)
10.00-10.15									
B-C	0.03	6.64	0.004		0.00	0.00	0.1		0.15
B-A	0.00	9.56	0.000		0.00	0.00	0.0		0.00
C-AB	0.06	8.51	0.007		0.01	0.01	0.1		0.12
C-A	1.08								
A-B	0.00								
A-C	1.14								

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
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	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-C	2.8	1.8	0.4	0.15	0.4	0.15
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	6.5	4.3	0.8	0.13	0.8	0.13
C-A	118.7	79.2				
A-B	0.0	0.0				
A-C	125.3	83.5				
ALL	253.3	168.8	1.2	0.00	1.2	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance AM 2025

TIME PERIOD BEGINS 08.45 AND ENDS 10.15

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	1.34	2.01	1.34
ARM B	15.00	45.00	75.00	0.01	0.02	0.01
ARM C	15.00	45.00	75.00	1.29	1.93	1.29

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.45 - 10.15	ARM A	0.000	0.000	1.000
		0.0	0.0	107.0
		(0.0)	(0.0)	(10.3)
	ARM B	0.000	0.000	1.000
		0.0	0.0	2.0
		(0.0)	(0.0)	(100.0)
	ARM C	0.990	0.010	0.000
		102.0	1.0	0.0
		(18.6)	(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 5361-Entrance AM 2025
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)
08.45-09.00									
B-C	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.47	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.76	0.002		0.00	0.00	0.0		0.15
C-A	1.28								
A-B	0.00								
A-C	1.34								

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	0.01	6.56	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.34	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.91	0.003		0.00	0.00	0.0		0.15
C-A	1.52								
A-B	0.00								
A-C	1.60								

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)
09.15-09.30									
B-C	0.02	6.49	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.15	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.11	0.003		0.00	0.00	0.1		0.14
C-A	1.87								
A-B	0.00								
A-C	1.96								

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	0.02	6.49	0.003		0.00	0.00	0.0		0.15
B-A	0.00	9.15	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.11	0.003		0.00	0.00	0.1		0.14
C-A	1.87								
A-B	0.00								
A-C	1.96								

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)
09.45-10.00									
B-C	0.01	6.56	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.34	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.91	0.003		0.00	0.00	0.0		0.15
C-A	1.52								
A-B	0.00								
A-C	1.60								

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)
10.00-10.15									
B-C	0.01	6.60	0.002		0.00	0.00	0.0		0.15
B-A	0.00	9.47	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	6.76	0.002		0.00	0.00	0.0		0.15
C-A	1.28								
A-B	0.00								
A-C	1.34								

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
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	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-C	1.4	0.9	0.2	0.15	0.2	0.15
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	1.8	1.2	0.3	0.15	0.3	0.15
C-A	140.0	93.3				
A-B	0.0	0.0				
A-C	147.3	98.2				
ALL	290.4	193.6	0.5	0.00	0.5	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance AM 2025 + Dev

TIME PERIOD BEGINS 08.45 AND ENDS 10.15

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	1.34	2.01	1.34
ARM B	15.00	45.00	75.00	0.03	0.04	0.03
ARM C	15.00	45.00	75.00	1.33	1.99	1.33

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
08.45 - 10.15	ARM A	0.000	0.000	1.000
		0.0	0.0	107.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	2.0
		(0.0)	(0.0)	(0.0)
	ARM C	0.962	0.038	0.000
		102.0	4.0	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 5361-Entrance AM 2025 + Dev
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)
08.45-09.00									
B-C	0.03	13.25	0.002		0.00	0.00	0.0		0.08
B-A	0.00	9.54	0.000		0.00	0.00	0.0		0.00
C-AB	0.06	12.39	0.005		0.00	0.00	0.1		0.08
C-A	1.27								
A-B	0.00								
A-C	1.34								

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	0.03	13.17	0.002		0.00	0.00	0.0		0.08
B-A	0.00	9.42	0.000		0.00	0.00	0.0		0.00
C-AB	0.07	12.47	0.005		0.00	0.01	0.1		0.08
C-A	1.52								
A-B	0.00								
A-C	1.60								

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)
09.15-09.30									
B-C	0.04	13.05	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-AB	0.09	12.59	0.007		0.01	0.01	0.1		0.08
C-A	1.86								
A-B	0.00								
A-C	1.96								

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	0.04	13.05	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-AB	0.09	12.59	0.007		0.01	0.01	0.1		0.08
C-A	1.86								
A-B	0.00								
A-C	1.96								

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)
09.45-10.00									
B-C	0.03	13.17	0.002		0.00	0.00	0.0		0.08
B-A	0.00	9.42	0.000		0.00	0.00	0.0		0.00
C-AB	0.07	12.47	0.005		0.01	0.01	0.1		0.08
C-A	1.52								
A-B	0.00								
A-C	1.60								

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)
10.00-10.15									
B-C	0.03	13.25	0.002		0.00	0.00	0.0		0.08
B-A	0.00	9.54	0.000		0.00	0.00	0.0		0.00
C-AB	0.06	12.39	0.005		0.01	0.00	0.1		0.08
C-A	1.27								
A-B	0.00								
A-C	1.34								

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
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM B-A

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	0.0

QUEUE FOR STREAM C-AB

TIME SEGMENT ENDING	NO. OF VEHICLES IN QUEUE
09.00	0.0
09.15	0.0
09.30	0.0
09.45	0.0
10.00	0.0
10.15	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-C	2.8	1.8	0.2	0.08	0.2	0.08
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	6.3	4.2	0.5	0.08	0.5	0.08
C-A	139.6	93.1				
A-B	0.0	0.0				
A-C	147.3	98.2				
ALL	295.9	197.3	0.7	0.00	0.7	0.00

* 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 10:44:15 on 13/03/2009]

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
BY PERMISSION OF THE CONTROLLER OF HMSO

FOR SALES AND DISTRIBUTION INFORMATION,
PROGRAM ADVICE AND MAINTENANCE CONTACT:
TRL SOFTWARE BUREAU
TEL: CROWTHORNE (01344) 770758, FAX: 770864
EMAIL: SoftwareBureau@trl.co.uk

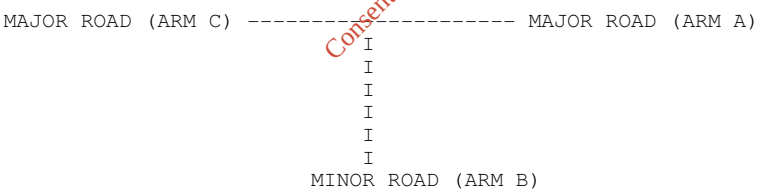
Run with file:-
"W:\Projects\5361 - Kilmainhamwood Facility Expansion\05-Design\01-Calculations\Traffic\PICADY\5361-Entrance PM.vpi"
(drive-on-the-left) at 10:40:32 on Friday, 13 March 2009

RUN INFORMATION

RUN TITLE: 5361-Entrance AM
LOCATION: Kilmainhamwood
DATE: 13/03/09
CLIENT: Thorntons Recycling
ENUMERATOR: Brendan Ward [DUB-35LJ52J-BW]
JOB NUMBER: 5361
STATUS:
DESCRIPTION:

.MAJOR/MINOR JUNCTION CAPACITY AND DELAY

INPUT DATA



ARM A IS R162 North
ARM B IS Facility
ARM C IS R162 South

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) 250.0 M.
- BLOCKS TRAFFIC	YES
MINOR ROAD - VISIBILITY TO LEFT	(VB-C) 130.0 M.
- VISIBILITY TO RIGHT	(VB-A) 95.0 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.	10.00 M.
- WIDTH AT 20 M FROM JUNC.	9.00 M.
- LENGTH OF FLARED SECTION	4 VEHS

.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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance PM 2009

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

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	1.14	1.71	1.14
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	1.50	2.25	1.50

TIME	FROM/TO	ARM A	ARM B	ARM C
16.45 - 18.15				
	ARM A	0.000	0.000	1.000
		0.0	0.0	91.0
		(0.0)	(0.0)	(7.7)
	ARM B	0.000	0.000	1.000
		0.0	0.0	3.0
		(0.0)	(0.0)	(0.3)
	ARM C	1.000	0.000	0.000
		120.0	0.0	0.0
		(10.0)	(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 5361-Entrance PM 2009
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)
16.45-17.00									
B-C	0.04	13.29	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.53	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.58	0.000		0.00	0.00	0.0		0.00
C-A	1.51								
A-B	0.00								
A-C	1.14								

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-C	0.04	13.21	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.52	0.000		0.00	0.00	0.0		0.00
C-A	1.80								
A-B	0.00								
A-C	1.36								

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-C	0.06	13.11	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.23	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.43	0.000		0.00	0.00	0.0		0.00
C-A	2.20								
A-B	0.00								
A-C	1.67								

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-C	0.06	13.11	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.23	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.43	0.000		0.00	0.00	0.0		0.00
C-A	2.20								
A-B	0.00								
A-C	1.67								

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-C	0.04	13.21	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.52	0.000		0.00	0.00	0.0		0.00
C-A	1.80								
A-B	0.00								
A-C	1.36								

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)
18.00-18.15									
B-C	0.04	13.29	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.53	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.58	0.000		0.00	0.00	0.0		0.00
C-A	1.51								
A-B	0.00								
A-C	1.14								

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
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	4.1	2.8	0.3	0.08	0.3	0.08
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	165.2	110.1				
A-B	0.0	0.0				
A-C	125.3	83.5				
ALL	294.6	196.4	0.3	0.00	0.3	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance PM 2010

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

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	1.15	1.72	1.15
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	1.52	2.29	1.52

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000	0.000	1.000
		0.0	0.0	92.0
		(0.0)	(0.0)	(0.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	3.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		122.0	0.0	0.0
		(9.8)	(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 5361-Entrance PM 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)
16.45-17.00									
B-C	0.04	13.28	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.52	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.58	0.000		0.00	0.00	0.0		0.00
C-A	1.53								
A-B	0.00								
A-C	1.15								

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)
17.00-17.15									
B-C	0.04	13.21	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.51	0.000		0.00	0.00	0.0		0.00
C-A	1.83								
A-B	0.00								
A-C	1.38								

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)
17.15-17.30									
B-C	0.06	13.10	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.22	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.43	0.000		0.00	0.00	0.0		0.00
C-A	2.24								
A-B	0.00								
A-C	1.69								

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)
17.30-17.45									
B-C	0.06	13.10	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.22	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.43	0.000		0.00	0.00	0.0		0.00
C-A	2.24								
A-B	0.00								
A-C	1.69								

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)
17.45-18.00									
B-C	0.04	13.21	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.51	0.000		0.00	0.00	0.0		0.00
C-A	1.83								
A-B	0.00								
A-C	1.38								

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)
18.00-18.15									
B-C	0.04	13.28	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.52	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.58	0.000		0.00	0.00	0.0		0.00
C-A	1.53								
A-B	0.00								
A-C	1.15								

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
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	4.1	2.8	0.3	0.08	0.3	0.08
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	167.9	111.9				
A-B	0.0	0.0				
A-C	126.6	84.4				
ALL	298.7	199.1	0.3	0.00	0.3	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance PM 2010 + Dev

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

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	1.15	1.72	1.15
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	1.54	2.31	1.54

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S)		
		ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000 0.0 (0.0)	0.000 0.0 (0.0)	1.000 92.0 (10.0)
	ARM B	0.000 0.0 (0.0)	0.000 0.0 (0.0)	1.000 6.0 (20.0)
	ARM C	0.992 122.0 (10.0)	0.008 1.0 (100.0)	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 5361-Entrance PM 2010 + Dev
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)
16.45-17.00									
B-C	0.08	11.06	0.007		0.00	0.01	0.1		0.09
B-A	0.00	9.50	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.00	0.002		0.00	0.00	0.0		0.14
C-A	1.53								
A-B	0.00								
A-C	1.15								

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)
17.00-17.15									
B-C	0.09	11.00	0.008		0.01	0.01	0.1		0.09
B-A	0.00	9.37	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.19	0.003		0.00	0.00	0.0		0.14
C-A	1.82								
A-B	0.00								
A-C	1.38								

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)
17.15-17.30									
B-C	0.11	10.91	0.010		0.01	0.01	0.1		0.09
B-A	0.00	9.20	0.000		0.00	0.00	0.0		0.00
C-AB	0.03	7.46	0.003		0.00	0.00	0.1		0.13
C-A	2.23								
A-B	0.00								
A-C	1.69								

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)
17.30-17.45									
B-C	0.11	10.91	0.010		0.01	0.01	0.2		0.09
B-A	0.00	9.20	0.000		0.00	0.00	0.0		0.00
C-AB	0.03	7.46	0.003		0.00	0.00	0.1		0.13
C-A	2.23								
A-B	0.00								
A-C	1.69								

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)
17.45-18.00									
B-C	0.09	11.00	0.008		0.01	0.01	0.1		0.09
B-A	0.00	9.37	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.19	0.003		0.00	0.00	0.0		0.14
C-A	1.82								
A-B	0.00								
A-C	1.38								

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)
18.00-18.15									
B-C	0.08	11.06	0.007		0.01	0.01	0.1		0.09
B-A	0.00	9.50	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.00	0.002		0.00	0.00	0.0		0.14
C-A	1.53								
A-B	0.00								
A-C	1.15								

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
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	8.3	5.5	0.8	0.09	0.8	0.09
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	1.9	1.2	0.3	0.14	0.3	0.14
C-A	167.4	111.6				
A-B	0.0	0.0				
A-C	126.6	84.4				
ALL	304.2	202.8	1.0	0.00	1.0	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance PM 2025

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

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	1.36	2.04	1.36
ARM B	15.00	45.00	75.00	0.04	0.06	0.04
ARM C	15.00	45.00	75.00	1.81	2.72	1.81

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000	0.000	1.000
		0.0	0.0	109.0
		(0.0)	(0.0)	(.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	3.0
		(0.0)	(0.0)	(0.0)
	ARM C	1.000	0.000	0.000
		145.0	0.0	0.0
		(10.3)	(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 5361-Entrance PM 2025
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)
16.45-17.00									
B-C	0.04	13.21	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.52	0.000		0.00	0.00	0.0		0.00
C-A	1.82								
A-B	0.00								
A-C	1.37								

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-C	0.04	13.12	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.45	0.000		0.00	0.00	0.0		0.00
C-A	2.17								
A-B	0.00								
A-C	1.63								

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-C	0.06	13.00	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.05	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.35	0.000		0.00	0.00	0.0		0.00
C-A	2.66								
A-B	0.00								
A-C	2.00								

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-C	0.06	13.00	0.004		0.00	0.00	0.1		0.08
B-A	0.00	9.05	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.35	0.000		0.00	0.00	0.0		0.00
C-A	2.66								
A-B	0.00								
A-C	2.00								

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-C	0.04	13.12	0.003		0.00	0.00	0.1		0.08
B-A	0.00	9.25	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.45	0.000		0.00	0.00	0.0		0.00
C-A	2.17								
A-B	0.00								
A-C	1.63								

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)
18.00-18.15									
B-C	0.04	13.21	0.003		0.00	0.00	0.0		0.08
B-A	0.00	9.40	0.000		0.00	0.00	0.0		0.00
C-AB	0.00	10.52	0.000		0.00	0.00	0.0		0.00
C-A	1.82								
A-B	0.00								
A-C	1.37								

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
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	4.1	2.8	0.3	0.08	0.3	0.08
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	0.0	0.0	0.0	0.00	0.0	0.00
C-A	199.6	133.1				
A-B	0.0	0.0				
A-C	150.0	100.0				
ALL	353.7	235.8	0.3	0.00	0.3	0.00

* 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
628.98	0.24	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
523.00	0.24	0.10	0.15	0.34

Intercept For Stream C-B	Slope For Opposing Stream A-C	Slope For Opposing Stream A-B
718.74	0.28	0.28

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: 5361-Entrance PM 2025 + Dev

TIME PERIOD BEGINS 16.45 AND ENDS 18.15

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	1.36	2.04	1.36
ARM B	15.00	45.00	75.00	0.08	0.11	0.08
ARM C	15.00	45.00	75.00	1.83	2.74	1.83

TIME	FROM/TO	TURNING PROPORTIONS / TURNING COUNTS (VEH/HR) / (PERCENTAGE OF H.V.S) ARM A	ARM B	ARM C
16.45 - 18.15	ARM A	0.000	0.000	1.000
		0.0	0.0	109.0
		(0.0)	(0.0)	(10.0)
	ARM B	0.000	0.000	1.000
		0.0	0.0	6.0
		(0.0)	(0.0)	(20.0)
	ARM C	0.993	0.007	0.000
		145.0	1.0	0.0
		(10.0)	(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 5361-Entrance PM 2025 + Dev
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)
16.45-17.00									
B-C	0.08	11.00	0.007		0.00	0.01	0.1		0.09
B-A	0.00	9.38	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.19	0.002		0.00	0.00	0.0		0.14
C-A	1.82								
A-B	0.00								
A-C	1.37								

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-C	0.09	10.92	0.008		0.01	0.01	0.1		0.09
B-A	0.00	9.23	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.42	0.003		0.00	0.00	0.0		0.14
C-A	2.17								
A-B	0.00								
A-C	1.63								

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-C	0.11	10.81	0.010		0.01	0.01	0.2		0.09
B-A	0.00	9.02	0.000		0.00	0.00	0.0		0.00
C-AB	0.03	7.73	0.004		0.00	0.00	0.1		0.13
C-A	2.65								
A-B	0.00								
A-C	2.00								

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-C	0.11	10.81	0.010		0.01	0.01	0.2		0.09
B-A	0.00	9.02	0.000		0.00	0.00	0.0		0.00
C-AB	0.03	7.74	0.004		0.00	0.00	0.1		0.13
C-A	2.65								
A-B	0.00								
A-C	2.00								

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-C	0.09	10.92	0.008		0.01	0.01	0.1		0.09
B-A	0.00	9.23	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.42	0.003		0.00	0.00	0.0		0.14
C-A	2.17								
A-B	0.00								
A-C	1.63								

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)
18.00-18.15									
B-C	0.08	11.00	0.007		0.01	0.01	0.1		0.09
B-A	0.00	9.38	0.000		0.00	0.00	0.0		0.00
C-AB	0.02	7.19	0.002		0.00	0.00	0.0		0.14
C-A	1.82								
A-B	0.00								
A-C	1.37								

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
17.00	0.0
17.15	0.0
17.30	0.0
17.45	0.0
18.00	0.0
18.15	0.0

QUEUE FOR STREAM B-A

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

QUEUE FOR STREAM C-AB

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

QUEUEING DELAY INFORMATION OVER WHOLE PERIOD

STREAM	TOTAL DEMAND		* QUEUEING * DELAY *		* INCLUSIVE QUEUEING * DELAY *	
	(VEH)	(VEH/H)	(MIN)	(MIN/VEH)	(MIN)	(MIN/VEH)
B-C	8.3	5.5	0.8	0.09	0.8	0.09
B-A	0.0	0.0	0.0	0.00	0.0	0.00
C-AB	2.0	1.3	0.3	0.14	0.3	0.14
C-A	199.0	132.7				
A-B	0.0	0.0				
A-C	150.0	100.0				
ALL	359.2	239.5	1.0	0.00	1.0	0.00

* 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 10:43:28 on 13/03/2009]