GEOTECHNICAL BORING RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan town	**BOREHOLE NO.**	**BH001**
		SHEET	Sheet 1 of 1
CO-ORDINATES	667,183.00 E 833,675.00 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	56.65	**BOREHOLE DEPTH (m)**	3.60
		DATE COMMENCED	07/07/2021
		DATE COMPLETED	08/07/2021
CLIENT	Monaghan Co. Council	**SPT HAMMER REF. NO.**	SA4
ENGINEER	RPS	**ENERGY RATIO (%)**	77.09
		BORED BY	Wayne Bulter
		PROCESSED BY	M.Kluj

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND Loose grey sandy fine to medium angular GRAVEL. and is fie to coarse		56.40	0.25	AA163475	ENV	0.00-0.20			
					AA163476	ENV	0.30-0.50			
	MADE GROUND. Firm brown slightly gavelly sandy CLAY with low cobble content.Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of various lithoogies. Cobbles are subangular of various lothologies. Contains brick, slate roof, martar, pottery, scrap metal, coal and ash.		55.75	0.90	AA153476	ENV	0.70-0.90			
1			55.55	1.10	AA163477	B	1.00-1.10			
			55.25	1.40	AA153477	B	1.10-1.40		N = 6 (4, 4, 3, 0, 2, 1)	
	Firm o#light orangish brown slightlly silty sandy CLAY with ocasional gravel. Sand is fine to coarse. Gravel is subangular fine to medium predominantly of limestone.		54.65	2.00						
2					AA154151	B	2.00-2.50		N = 3 (1, 0, 1, 1, 0, 1)	
	Medium dence loght yellowish brown to light greish brown slity fine to coarse SAND with occasinal gravel. Gravel is ine to medium predominantly of limestone.									
3	Very soft dark bown sandu CLAY				AA154152	B	3.00-3.60		N = 19 (2, 3, 5, 5, 4, 5)	
	Firm/stiff dark brown slightly gravelly sandy silty CLAY		53.05	3.60					N = 50/10 mm (25, 50)	
	Obstruction End of Borehole at 3.60 m									
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
3.60	3.60	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
3.60	3.60	No	3.55	20	Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments
08-07-21	3.60	0.00	3.50	End of Borehole

REMARKS Set up Pedestrain Barriers and Covid safety Barriers

Sample Legend

D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 23412.GPJ IGSL.GDT 29/10/21

GEOTECHNICAL BORING RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan town	**BOREHOLE NO.**	**BH003**
		SHEET	Sheet 1 of 1
CO-ORDINATES	667,285.00 E 833,623.00 N	**RIG TYPE**	Dando 2000
		BOREHOLE DIAMETER (mm)	200
GROUND LEVEL (mOD)	55.05	**BOREHOLE DEPTH (m)**	3.40
		DATE COMMENCED	09/07/2021
		DATE COMPLETED	09/07/2021
CLIENT	Monaghan Co. Council	**SPT HAMMER REF. NO.**	SA4
ENGINEER	RPS	**ENERGY RATIO (%)**	77.09
		BORED BY	Wayne Bulter
		PROCESSED BY	C.Killaly

Depth (m)	Description	Legend	Elevation	Depth (m)	Samples: Ref. Number	Sample Type	Depth (m)	Recovery	Field Test Results	Standpipe Details
0	MADE GROUND comprised of Tarmcadam				AA154153	ENV	0.00-0.20			
			54.55	0.50	AA154153	ENV	0.30-0.50			
	MADE GROUND comrpised of grey clayey sandy Gravel with medium cobble content(Cl 804)				AA154153	ENV	0.70-0.90			
1					AA154153	B	1.00-1.50		N = 50 (5, 10, 18, 12, 18, 2)	
2			52.85	2.20	AA154154	B	2.00-2.00		N = 60/225 mm (9, 15, 18, 32, 10)	
	MADE GROUND comprised of brown clayey sandy GRAVEl with medium cobble content		52.75	2.30	AA154155	B	2.20-2.30			
	MADE GROUND comrpised of grey clayey sandy Gravel with medium cobble content(Cl 804)									
3					AA154156	B	3.00-3.40		N = 50/75 mm (25, 50)	
			51.65	3.40					N = 50/75 mm (25, 50)	
	Obstruction End of Borehole at 3.40 m									
4										
5										
6										
7										
8										
9										

HARD STRATA BORING/CHISELLING

From (m)	To (m)	Time (h)	Comments
1.20	3.00	2	Hard Stratum Boring
3.20	3.40	1.5	

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike

GROUNDWATER PROGRESS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

REMARKS Set up Pedestrain Barriers and Covid safety Barriers

Sample Legend
D - Small Disturbed (tub)
B - Bulk Disturbed
LB - Large Bulk Disturbed
Env - Environmental Sample (Jar + Vial + Tub)
UT - Undisturbed 100mm Diameter Sample
P - Undisturbed Piston Sample
W - Water Sample

IGSL BH LOG 23412.GPJ IGSL.GDT 29/10/21

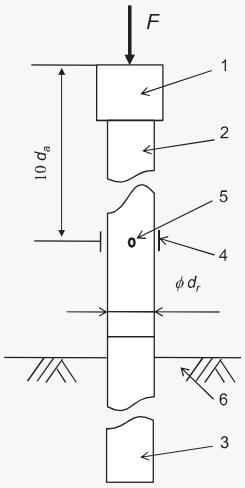
SPT Calibration Report

Hammer Energy Measurement Report

Type of Hammer		SPT HAMMER
Test No		EQU2657
Client		IGSL
Test Depth (m)		10.00
Mass of hammer	m =	63.5kg
Falling height	h =	0.76m
E_{theor} =	$m \times g \times h$ =	473J

Characteristics of the instrumented rod

Diameter	d_r =	0.052 m
Length of instrumented rod		0.558 m
Area	A =	11.61 cm²
Modulus	E_a =	206843 MPa



Key

1 Anvil
2 Part of instrumented rod
3 Drive Rod
4 Strain Gauge
5 Accelerometer
6 Ground

F Force
d_r Diameter of rod

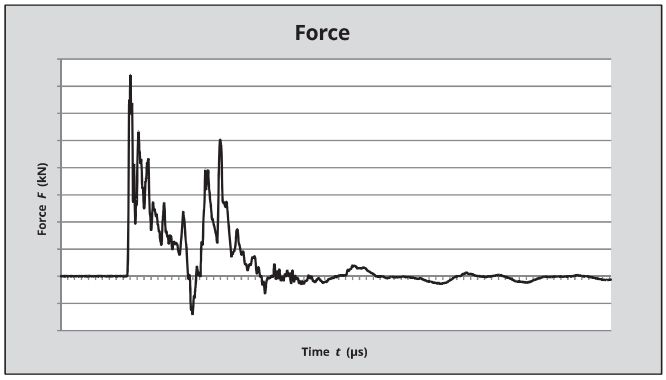
Fig. B.1 and B.2
BS EN ISO 22476-3 : 2005 + A1 : 2011

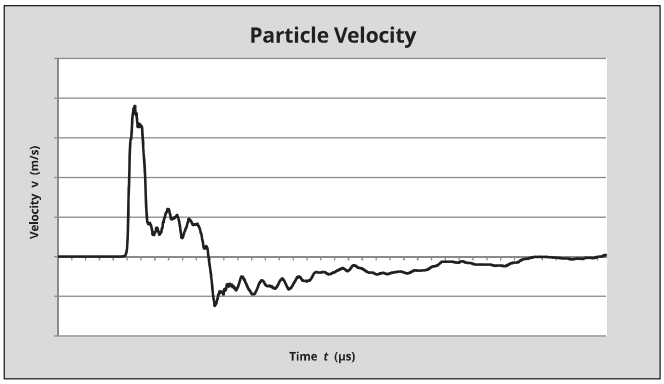
DATE OF TEST	VALID UNTIL	HAMMER ID
18/12/2020	18/12/2021	SA4

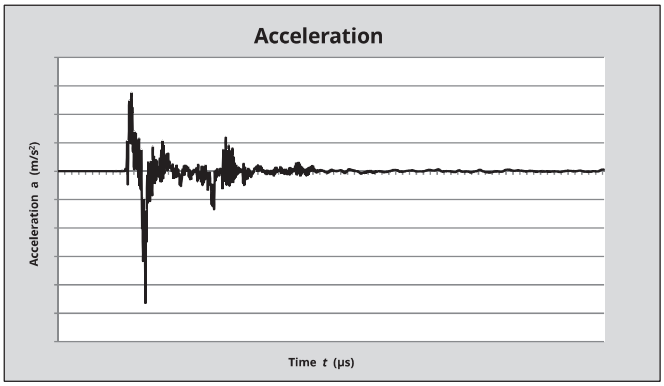
E_{meas} = **0.365** kN-m

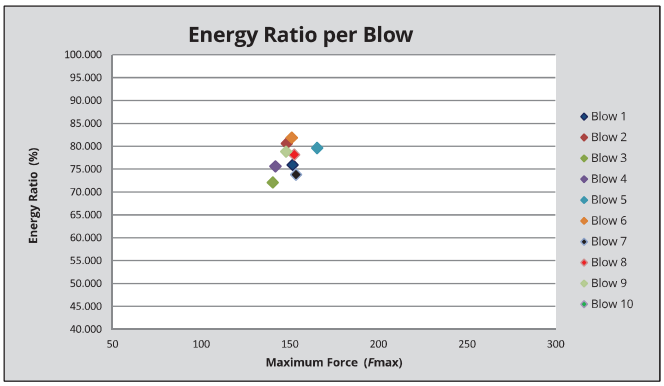
E_{theor} = **0.473** kN-m

Comments









Energy Ratio (Er) = $\frac{E_{meas}}{E_{theor}}$

Equipe SPT Analyzer Operator	Certificate prepared by	Certificate checked by	Certificate date
JML			07/01/2021

 Equipe Group, The Paddocks, Home Farm Offices, The Upton Estate, Banbury, Oxfordshire, OX15 6HU
Tel: +44 (0)1295 670990 Fax: +44 (0)1295 678232 Email: info@equipegroup.com

Appendix 2 - Rotary Corehole Records

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 1 of 2
CO-ORDINATES	667,183.00 E 833,675.00 N	**RIG TYPE**	GEO-205
GROUND LEVEL (mOD)	56.65	**FLUSH**	Air/Mist
		DATE COMMENCED	15/09/2021
		DATE COMPLETED	15/09/2021
CLIENT	Monaghan Co. Council	**INCLINATION (deg)**	-90
ENGINEER	RPS	**CORE DIAMETER (mm)**	78
		DRILLED BY	IGSL
		LOGGED BY	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
0								SYMMETRIX DRILLING: No recovery, observed by driller as returns of MADE GROUND grey sandy fine to medium angular gravel	0.90	55.75		
1								SYMMETRIX DRILLING: No recovery, observed by driller as returns of light orangish brown slightly silty sandy CLAY with occasional gravel. Sand is fine to coarse. Gravel is subangular fine to medium predominantly of limestone.	1.10 1.40	55.55 55.25		
2								SYMMETRIX DRILLING: No recovery, observed by driller as returns of light yellowish brown to light greyish brown silty fine to coarse SAND with occasional gravel. Gravel is ine to medium predominantly of limestone.	2.00	54.65		
3								SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark bown sandy CLAY SYMMETRIX DRILLING: No recovery, observed by driller as returns of dark brown slightly gravelly sandy silty CLAY	3.60	53.05		
4								SYMMETRIX DRILLING: No recovery, observed by driller as returns of clayey sandy gravel with occasional cobbles				
5									5.60	51.05		
6	6.10							SYMMETRIX DRILLING: No recovery, observed by driller as returns of probable ROCK	6.10	50.55		
7	7.10	100	59	56				Very strong to locally medium strong, thickly to thinly bedded, pale blueish grey to dark grey, fine-grained, LIMESTONE (local muddy layers, local stylolites, locally fossiliferous, common chert layers), fresh to locally slightly weathered. Very local shale layer at 9.71-9.79m Discontinuities are widely to closely spaced, smooth to locally rough, planar. Apertures are tight to locally open, locally clay/gravel filled (at 6.79-7.21m, 7.86-7.89m, 9.17-9.21m, 9.49-9.55m, 9.71-9.79m & 10.12-10.15m), locally slightly iron-oxide stained, locally quartz-veined (1-2mm thick). Dips are subhorizontal & locally 80°				
8	8.10	100	42	16								
9	9.50	100	94	81	670.000000000001 529.999999999999							

REMARKS

Hole cased 0.00-6.10m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.60	5.60	N/S			Slow

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
15-09-21	11.00	1.00	11.00	50mm SP

IGSL RC FI 10M 23412.GPJ IGSL.GDT 28/10/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**DRILLHOLE NO**	**RC01**
		SHEET	Sheet 2 of 2
CO-ORDINATES	667,183.00 E 833,675.00 N	**RIG TYPE**	GEO-205
GROUND LEVEL (mOD)	56.65	**FLUSH**	Air/Mist
		DATE COMMENCED	15/09/2021
CLIENT	Monaghan Co. Council	**DATE COMPLETED**	15/09/2021
ENGINEER	RPS	**INCLINATION (deg)**	-90
		CORE DIAMETER (mm)	78
		DRILLED BY	IGSL
		LOGGED BY	D.O'Shea

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10		100	81	78								
	11.00							End of Borehole at 11.00 m	11.00	45.65		
11												
12												
13												
14												
15												
16												
17												
18												
19												

REMARKS

Hole cased 0.00-6.10m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
5.60	5.60	N/S			Slow

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type
15-09-21	11.00	1.00	11.00	50mm SP

GROUNDWATER DETAILS

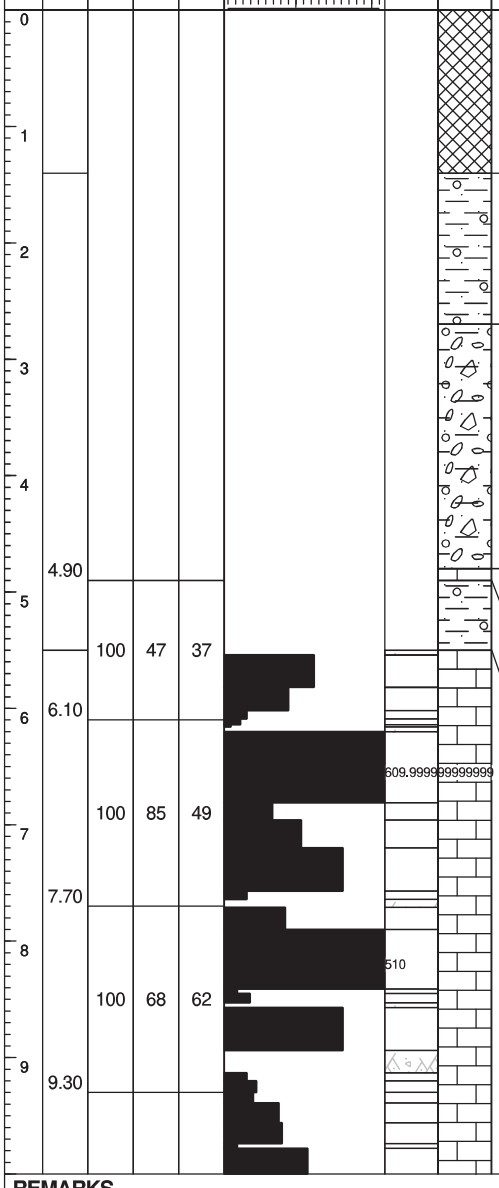
Date	Hole Depth	Casing Depth	Depth to Water	Comments
15-09-21	11.00	6.10	3.70	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23412.GPJ IGSL.GDT 28/10/21

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 1 of 2
CO-ORDINATES	667,215.00 E 833,691.00 N	**DATE COMMENCED**	14/09/2021
GROUND LEVEL (mOD)	57.38	**DATE COMPLETED**	14/09/2021
CLIENT	Monaghan Co. Council	**DRILLED BY**	IGSL
ENGINEER	RPS	**LOGGED BY**	D.O'Shea
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		



Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
SYMMETRIX DRILLING: No recovery, observed by driller as returns of MADE GROUND comprised of clayey gravel	1.40	55.98		N = 8 (1, 0, 1, 2, 2, 3)
SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/brown sandy gravelly CLAY	2.70	54.68		
SYMMETRIX DRILLING: No recovery, observed by driller as returns of grey/light brown clayey sandy GRAVEL	4.80	52.58		N = 18 (2, 2, 3, 4, 6, 5)
SYMMETRIX DRILLING: No recovery, observed by driller as returns of probable ROCK	4.90	52.48		N = 71/210 mm (3, 3, 3, 18, 50)
Returns of stiff dark brown slightly sandy slightly gravelly CLAY. Sand iis fine to coarse. Gravel is angular to subrounded fine to coarse of limestone.	5.50	51.88		
Very strong to locally medium strong, thickly to thinly bedded, pale blueish grey to dark grey, fine-grained, LIMESTONE (local muddy layers, local stylolites, locally fossiliferous, common chert layers), fresh to locally slightly weathered. Discontinuities are widely to closely spaced, smooth to locally rough, planar. Apertures are tight to locally open, locally clay/gravel filled (at 6.16-6.20m), locally slightly iron-oxide stained, locally quartz-veined (1-4mm thick). Dips are subhorizontal & locally 80°				

REMARKS

Hole cased 0.00-4.90m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

GROUNDWATER DETAILS

Date	Hole Depth	Casing Depth	Depth to Water	Comments

INSTALLATION DETAILS

Date	Tip Depth	RZ Top	RZ Base	Type

GEOTECHNICAL CORE LOG RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**DRILLHOLE NO**	**RC02**
		SHEET	Sheet 2 of 2
CO-ORDINATES	667,215.00 E 833,691.00 N	**DATE COMMENCED**	14/09/2021
GROUND LEVEL (mOD)	57.38	**DATE COMPLETED**	14/09/2021
CLIENT	Monaghan Co. Council	**DRILLED BY**	IGSL
ENGINEER	RPS	**LOGGED BY**	D.O'Shea
RIG TYPE	GEO-205		
FLUSH	Air/Mist		
INCLINATION (deg)	-90		
CORE DIAMETER (mm)	78		

Downhole Depth (m)	Core Run Depth (m)	T.C.R.%	S.C.R.%	R.Q.D.%	Fracture Spacing Log (mm) 0 250 500	Non-intact Zone	Legend	Description	Depth (m)	Elevation	Standpipe Details	SPT (N Value)
10		100	87	65								
	10.80							End of Borehole at 10.80 m	10.80	46.58		
11												
12												
13												
14												
15												
16												
17												
18												
19												

REMARKS

Hole cased 0.00-4.90m. Erect Covid-19 Safe Zone - 1hr.

WATER STRIKE DETAILS

Water Strike	Casing Depth	Sealed At	Rise To	Time (min)	Comments
					No water strike recorded

INSTALLATION DETAILS

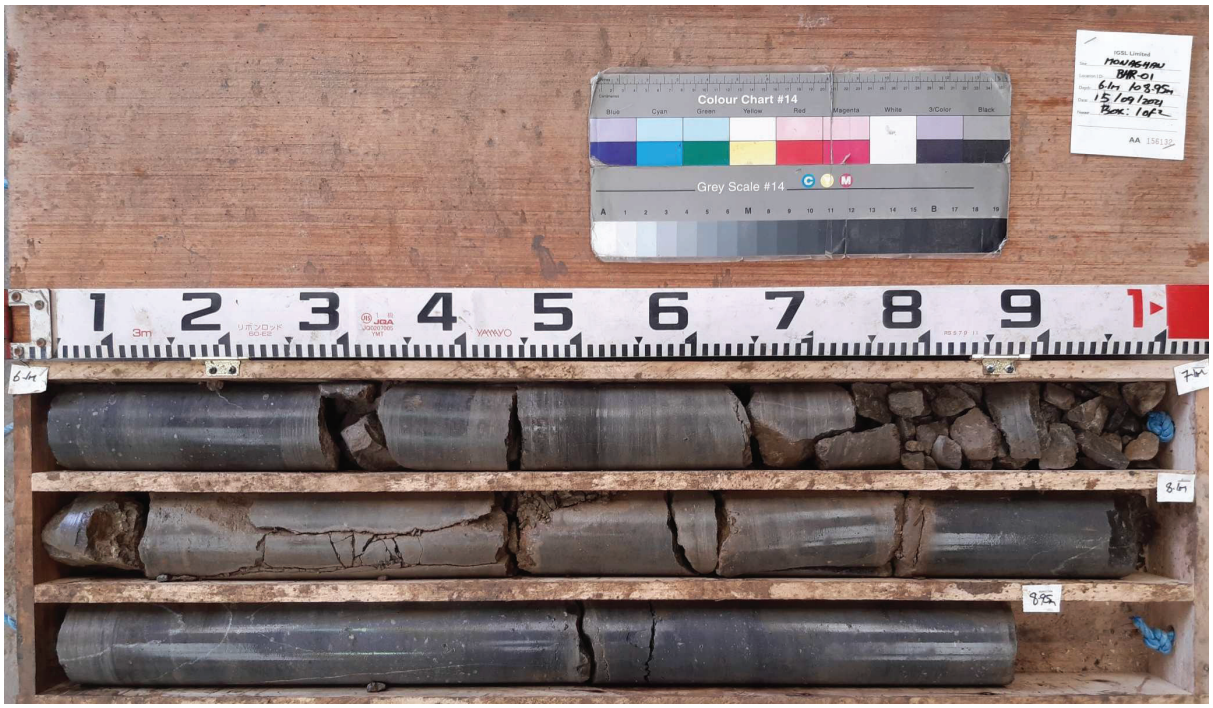
Date	Tip Depth	RZ Top	RZ Base	Type

GROUNDWATER DETAILS

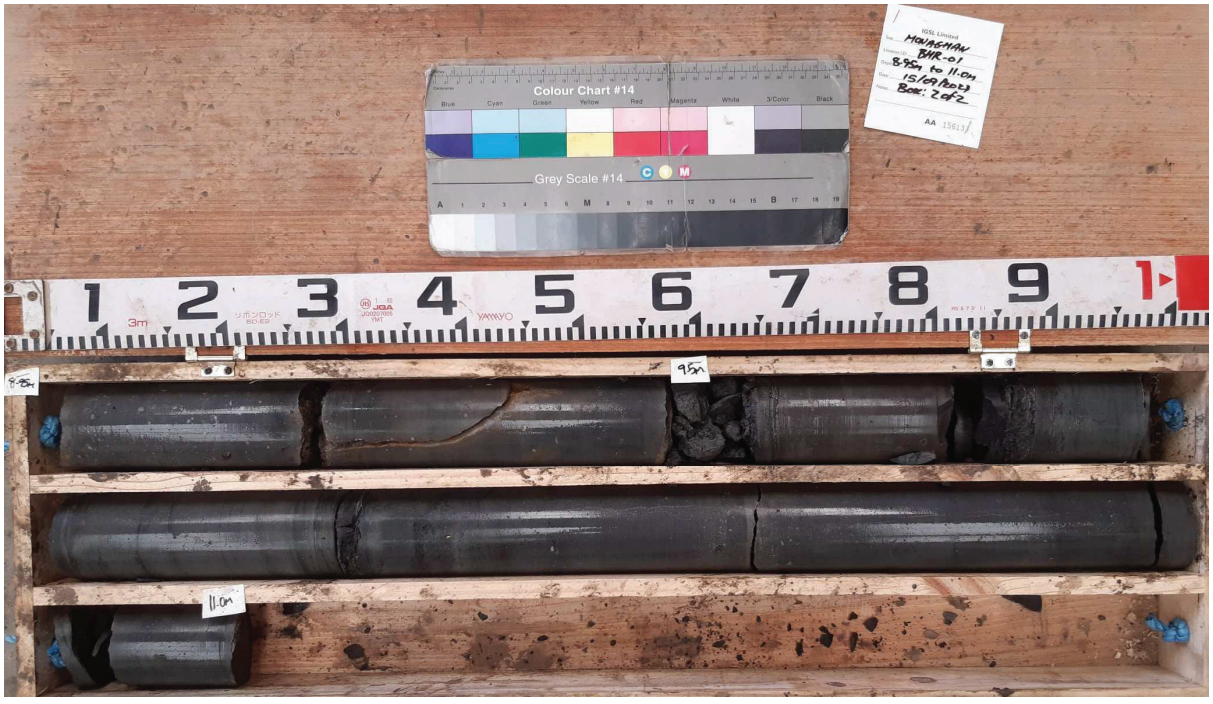
Date	Hole Depth	Casing Depth	Depth to Water	Comments
14-09-21	10.80	4.90	9.70	Water level recorded 5 mins after end of drilling.

IGSL RC FI 10M 23412.GPJ IGSL.GDT 28/10/21

RC01 Box 1 of 2 – 6.10-8.95m

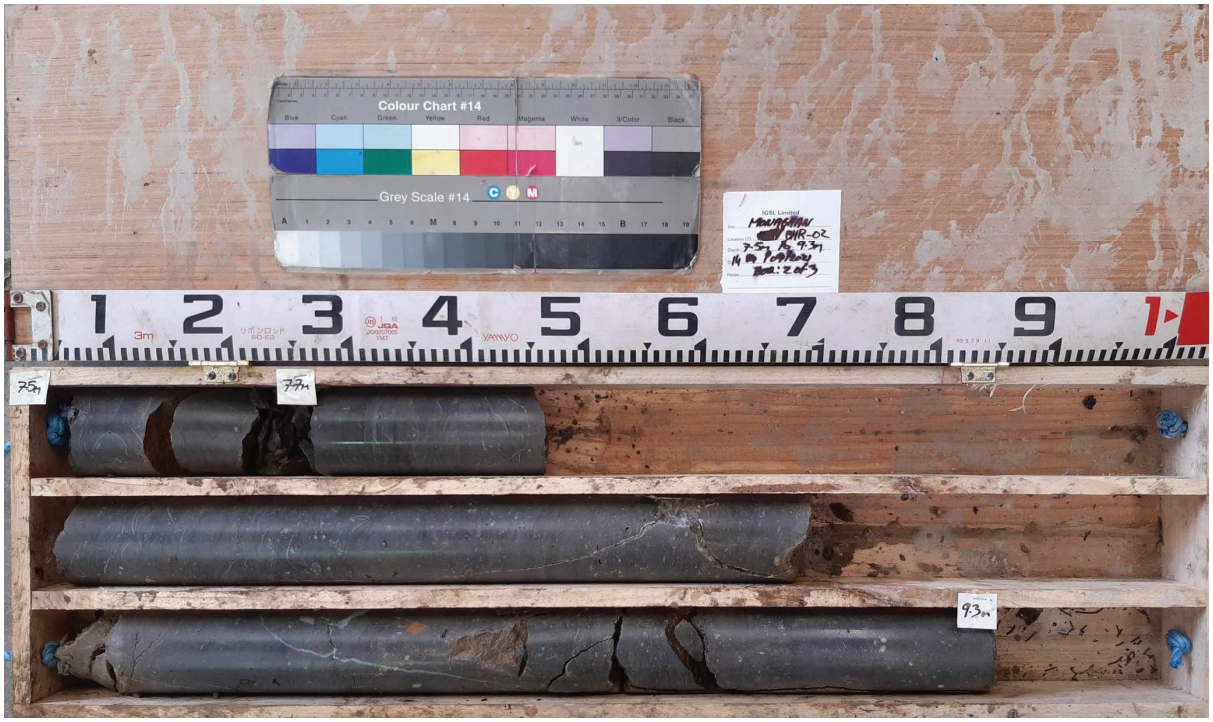


RC01 Box 2 of 2 – 8.95-11.00m



RC02 Box 1 of 3 – 4.90-7.50m

RC02 Box 2 of 3 – 7.50-9.30m



RC02 Box 3 of 3 – 9.30-10.80m

Appendix 3 - Trial Pit Records

TRIAL PIT RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**TRIAL PIT NO.**	**TP01**
		SHEET	Sheet 1 of 1
LOGGED BY	M.Kluj	**CO-ORDINATES**	667,277.23 E 833,676.58 N
		DATE STARTED	01/07/2021
		DATE COMPLETED	01/07/2021
CLIENT	Monaghan Co. Council	**GROUND LEVEL (m)**	58.60
ENGINEER	RPS	**EXCAVATION METHOD**	3 T exavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL Unstable sites									
MADE GROUND. Firm brown locally light brownish grey slightly gravelly very sandy CLAY with low cobble and boulder content. Contains fragments of glass pottery, scrap metal, brick, slate roof tiles, lime mortar and ash. Sand is fine to coarse. Gravel is fine to coarse angular to subrounded of varius lithologies.		0.25	58.35		AA167597	B	0.30-0.50		
Firm light orangish brown slightly silty slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subangular predominantly of limestone.		0.90	57.70		AA157598	B	1.00-1.20	70 20[R]	
Medium dence light brown slightly sandy very clayey fine to coarse angular to subrounded GRAVEL with medium cobble and boulder content. Sand is fine to coarse. Gravel is of limestone. Cobbles and bolders are angular and subangular of limestone.		1.40	57.20		AA167598	B	1.50-1.70		
End of Trial Pit at 1.90m		1.90	56.70						

Groundwater Conditions
None

Stability
Moderate

General Remarks

TRIAL PIT RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**TRIAL PIT NO.**	**TP02**
		SHEET	Sheet 1 of 1
LOGGED BY	M.Kluj	**CO-ORDINATES**	667,293.35 E 833,714.64 N
		DATE STARTED	06/07/2021
		DATE COMPLETED	06/07/2021
CLIENT	Monaghan Co. Council	**GROUND LEVEL (m)**	59.89
ENGINEER	RPS	**EXCAVATION METHOD**	1.9 T exavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
CONCRETE Unstable sites		0.10	59.79						
MADE GROUND. Loose grey sandy fine to coarse angular to subrunded GRAVEL with medium cobble and boulder content. Contains brick, fragments of cast iron and lead. Sand is fine to coarse. Cobbles and boulders are angular to subrounded of various lithologies.		0.30	59.59		AA167599	B	0.40-0.60		
MADE GROUND. Loose brown slightly clayey snady fine to coarse angular GRAVEL with low cobble and boulder content. Contains brick, slate tiles, glass, scrap metal, lime mortar, ash, timber and coal. Sand is fine to coarse. Cobbles and boulders are subangular to subrounded predominantly of sandstone and limestone.		0.70	59.19		AA157600	B	0.70-0.90	66 20[R]	
Firm light orangish brown slightly silty slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subangular predominantly of limestone.		0.90	58.99		AA167600	B	1.20-1.40		
Medium dence light brown slightly sandy very clayey fine to coarse angular to subrounded GRAVEL with medium cobble and boulder content. Sand is fine to coarse. Gravel is of limestone. Cobbles and bolders are angular and subangular of limestone.		1.70	58.19						
End of Trial Pit at 1.70m									

0.0
1.0
2.0
3.0
4.0

Groundwater Conditions
None

Stability
Moderate

General Remarks

IGSL TP LOG 23412.GPJ IGSL.GDT 28/10/21

TRIAL PIT RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**TRIAL PIT NO.**	**TP03**
		SHEET	Sheet 1 of 1
LOGGED BY	M.Kluj	**CO-ORDINATES**	667,302.94 E 833,732.40 N
		DATE STARTED	06/07/2021
		DATE COMPLETED	06/07/2021
CLIENT	Monaghan Co. Council	**GROUND LEVEL (m)**	59.88
ENGINEER	RPS	**EXCAVATION METHOD**	1.9 T exavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 CONCRETE Restricted access		0.12	59.76						
MADE GROUND. Firm brown locally light brownish grey slightly gravelly very sandy CLAY with low cobble and boulder content. Contains fragments of lead pipes glass pottery brick, slate roof tiles, lime mortar. Sand is fine to coarse. Gravel is fine to coarse subangular of various lithologis.					AA163474	B	0.30-0.50		
1.0		1.05	58.83		AA153474	B	1.00-1.20	64 20[R]	
Firm light orangish brown slightly silty slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel is fine to medium subangular predominantly of limestone.		1.20	58.68						
End of Trial Pit at 1.00m									
2.0									
3.0									
4.0									

Groundwater Conditions
None

Stability
Good

General Remarks

FOUNDATION INSPECTION PIT RECORD

REPORT NUMBER

23412

CONTRACT: Monaghan town

LOCATION: TP03

LOGGED BY: M.Kluj

Date of survey:06/07/2021

TRIAL PIT NO. TP03

SHEET Sheet 1 of 1

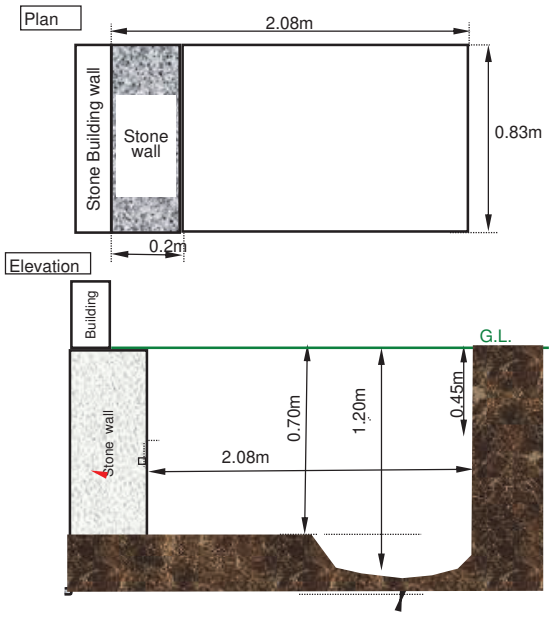
Summary of ground conditions

from	to	Description	Ground water
0.00	0.10	CONCRETE	DRY
0.10	1.05	MADE GROUND. Firm brown locally light brownish grey slightly gravelly very sandy CLAY with	
1.05	1.20	Firm light orangish brown slightly silty slightly gravelly sandy CLAY. Sand is fine to coarse.	
		RHS concrete (possibly duckt) 0.45m below the surface from 1.35m	

NOTICE: Sample bag taken noted in TP log

LOCATION TP03

DETAIL



Appendix 4 - Slit Trench Records

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: N (N / W / E / S)	IGSL

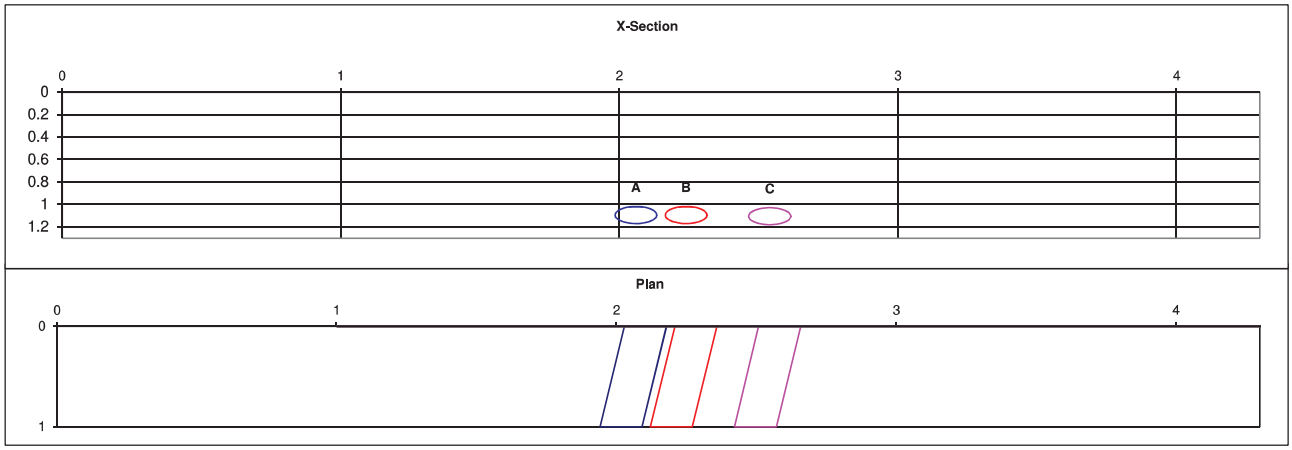
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST001
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667230.379	833668.814	62.125	Date Commenced	01.07.2021
	End of Trench	667234.178	833669.642	56.593	Date Completed	01.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.15	TOPSOIL
0.15	1.30	occasional small boulder and roots and rootlets Sand is fine to coarse. Gravel is fine to coarse. Contains fragments of brick, glass, pottery, slte roof tiles, wood, cables,

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	4.30		Footpath		
Trench Depth (m)	1.30		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)	4.30	MADE GROUND
			Grass Verge (RHS)		
Facing Direction	0	SAMPLES	Other		
Facing Features	looking towars t wall on the LHS		Total Length	4.30	
Groundwater	None		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	150	Red PVC	LIVE ESB with warning tape	2.06	1.02	85
Service B	150	Red PVC	LIVE ESB with warning tape	2.24	1.02	85
Service C	150	Red PVC	LIVE ESB with warning tape	2.54	1.03	85
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: S	IGSL

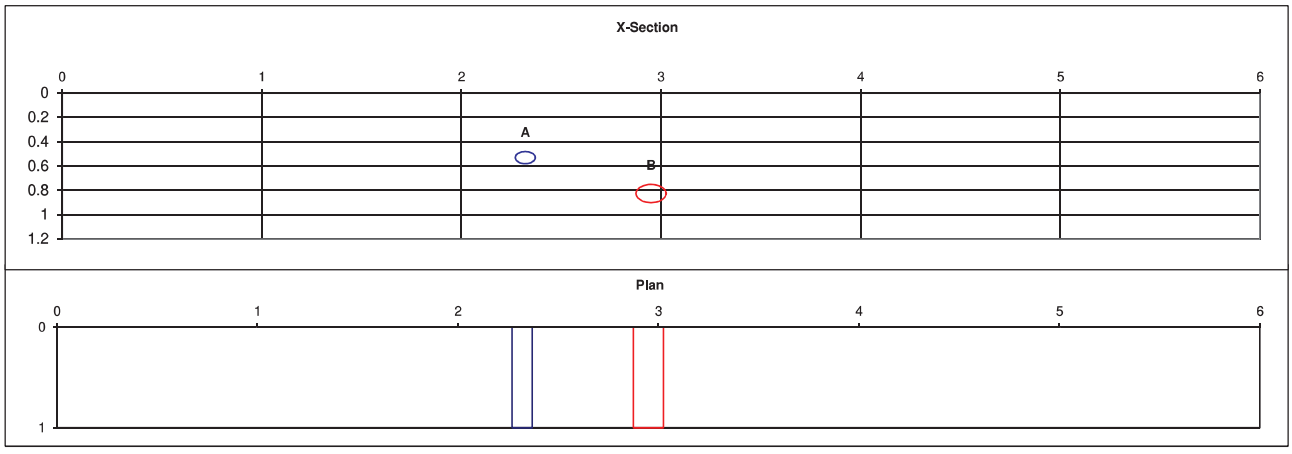
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST002
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667250.84	833656.96	56.1	Date Commenced	07.07.2021
	End of Trench	667244.843	833657	56.0	Date Completed	08.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	MACADAM
0.07	0.48	Loose grey sandy fine to coarse angular limestone GRAVEL with low cobble content. Sand is fine to coarse. coarse. Cobbles and boulder are angular off limestone
0.48	1.10	Medium dence light yellowish brown and light greish brown slightly gravelly silty fine to coarse SAND. Gravel is fine to medium subangular predominantly of limestone.
1.10	1.20	Dence dence orangish brown slightly sandy fine to coarse subangular of limestone GRAVEL with low cobble content and occasional boulder. Sand is fine to coarse.

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	6.00		Road	4.20	Macadam
Trench Depth (m)	1.20		Path(LHS)+13cm curb	1.80	Concrete
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	186	SAMPLES	Other		
Facing Features	Looking towords overflow carpark	B 0.60-0.90 AA153475	Total Length	6.00	
Groundwater	None		Zero Metres Taken As: LHS		

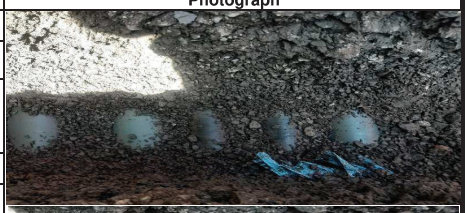


	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	100	Blue PVC	Water with pea gravel and tape	2.32	0.48	90
Service B	150	Red PVC	Live ESB with pea gravel and tape	2.95	0.75	90
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

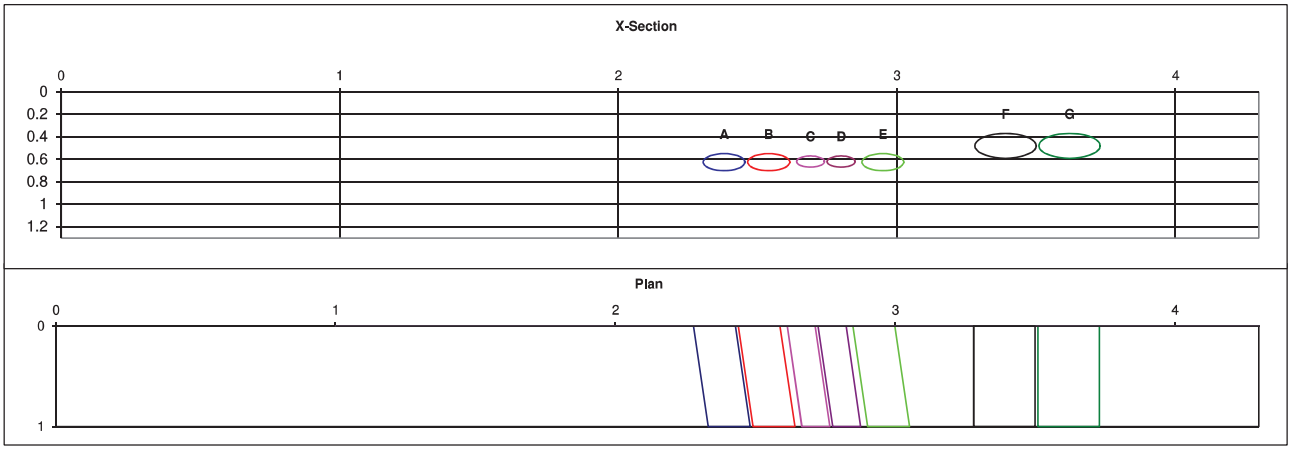
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NE	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST003
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667284.201	833672.693	58.342	Date Commenced	30.06.2021
	End of Trench	667287.841	833671.159	58.457	Date Completed	30.06.2021

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.08	Brick concrete pavers	
0.08	0.48	MADED GROUND. Loose grey very sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.	
0.48	1.30	MADE GROUND brown to dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to sbrounded of various lithologes. Contains brick, glass, plastic, pottery, lime mortar, bones, ash.	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	4.30		Footpath	4.30	Concrete pavers
Trench Depth (m)	1.30		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	30	SAMPLES	Other		
Facing Features	looking towards the diamont		Total Length	4.30	
Groundwater	None		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	150	Grey PVC	pea gravel and tape	2.38	0.55	93
Service B	150	Light grey PVC	pea gravel and tape	2.54	0.55	93
Service C	100	Black PVC	water pea gravel and tape	2.69	0.57	93
Service D	100	Black PVC	water pea gravel and tape	2.8	0.57	93
Service E	150	Light grey PVC	pea gravel and tape	2.95	0.55	93
Service F	220	Orange PVC	Drain in pea gravel	3.39	0.37	90
Service G	220	Orange PVC	Drain in pea gravel	3.62	0.37	90
Service H			Electric signal detected underneath the left curb			
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NE (N / W / E / S)	IGSL

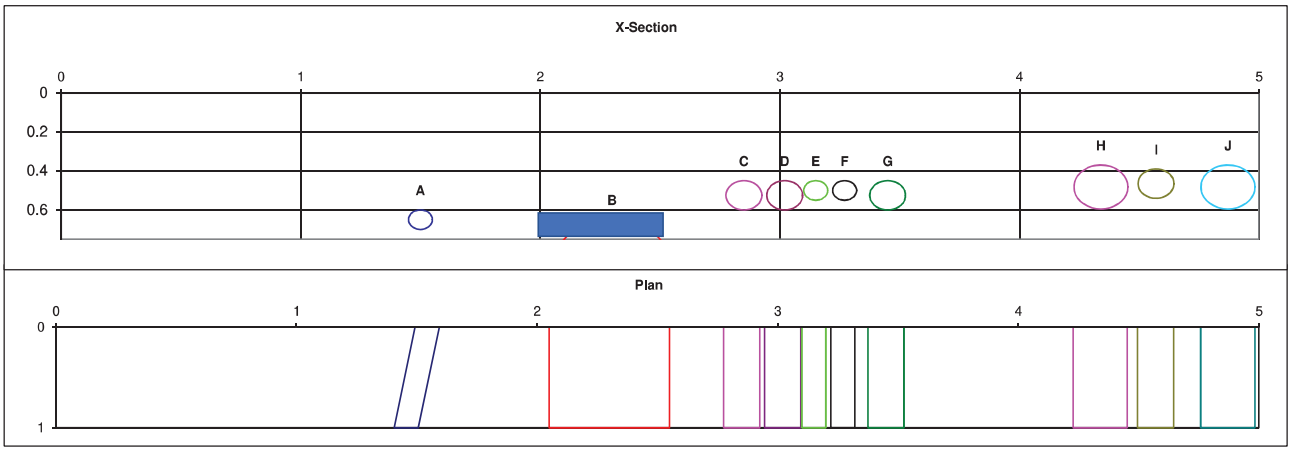
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST004
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667290.338	833686.462	58.987	Date Commenced	30.06.2021
	End of Trench	667294.052	833683.918	59.003	Date Completed	30.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.08	Brick concrete pavers
0.08	0.38	MADE GROUND. Loose grey very sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.38	0.75	MADE GROUND brown to dark brown slightly sandy slightly gravelly CLAY. Sand is fine to coarse. Gravel is fine to coarse angular to sbrounded of various lithologes. Contains brick, glass, plastic, pottery, lime mortar, bones, ash.

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	5.00		Footpath	5.00	Concrete pavers
Trench Depth (m)	0.75		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	44	SAMPLES	Other		
Facing Features	looking towars the diamont	B/ENV 0.35 -0.55 AA167596	Total Length		
Groundwater	None		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	100	Light grey PVC	ESB oetected by wooden poste and tape	1.50	0.6	85
Service B	500	Concrete covering ESB	ESB under concrete (2.05-2.55)	2.3	0.65	90
Service C	150	Grey PVC	Unknown	2.85	0.45	90
Service D	150	Light grey PVC	pea gravel and tape	3.02	0.45	90
Service E	100	Black PVC	water pea gravel and tape	3.15	0.45	90
Service F	100	Black PVC	water pea gravel and tape	3.27	0.45	90
Service G	150	Light grey PVC	pea gravel and tape	3.45	0.45	90
Service H	225	Orange PVC	Drain in pea gravel	4.34	0.37	90
Service I	150	Light grey PVC	in pea gravel	4.57	0.39	90
Service J	225	Orange PVC	Drain in pea gravel	4.87	0.37	90
Service K						
Service L						
Service M						

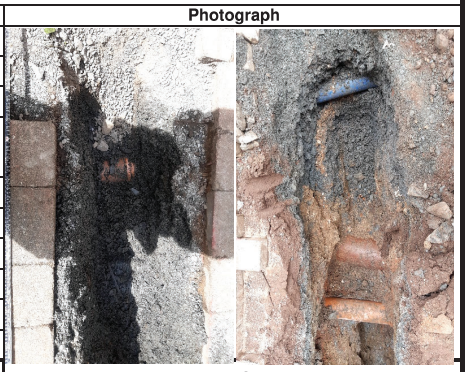
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NNE (N / W / E / S)	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST005
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667254.750	833743.670	59.940	Date Commenced	01.07.2021
	End of Trench	667258.290	833742.270	59.920	Date Completed	01.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.08	Brick pavers
0.08	0.10	MADE GROUND. Redish brown fine to coarce SAND.
0.10	0.14	Leanmix
0.14	1.20	MADE GROUND. Angular coarse gravel up to 1.00 from LHS. Made ground. Brown slightly gravelly clayey to very clayey finw to coarse SAND with medium cobble content. Contains fragments of brick. Gravel is angular fine to corse.

Photograph



Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	3.80
Trench Depth (m)	1.20
Trench Width (m)	1.00
Facing Direction	25
Facing Features	looking towars the diamont
Groundwater	None

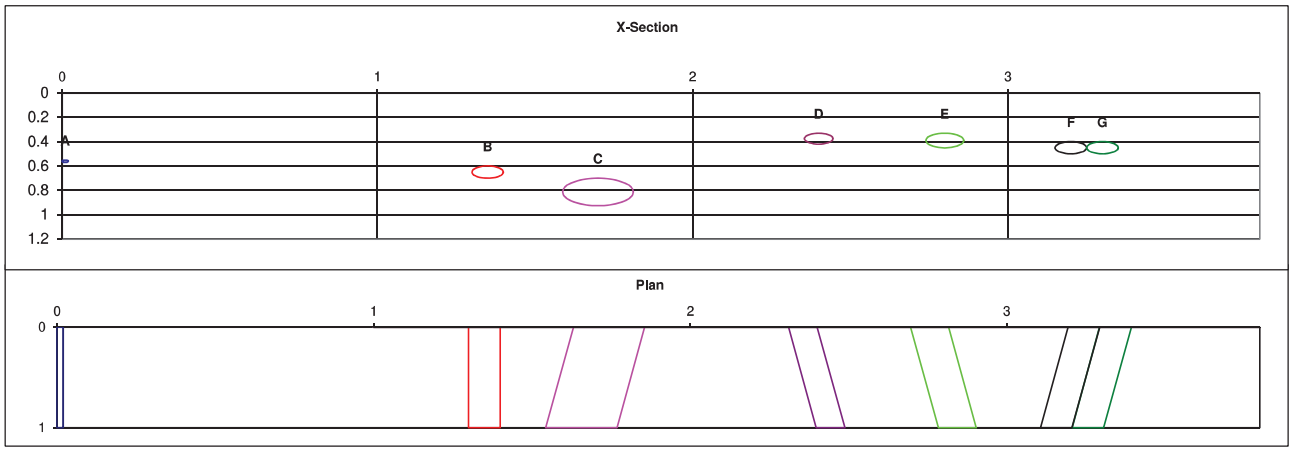
Location

SAMPLES

Excavation Quantities

Surface	Length (m)	Material
Footpath	3.80	Brick pavers
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other		
Total Length	3.80	

Zero Metres Taken As: LHS



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	20	Blue PVC	water with warning tape	0.01	0.55	90
Service B	100	Orange PVC	drain	1.35	0.6	90
Service C	225	clay pipe	Unknown	1.70	0.7	85
Service D	90	Blue PVC	water	2.4	0.33	95
Service E	120	Orange PVC	drain	2.8	0.33	95
Service F	100	corrigated black	media	3.2	0.4	85
Service G	100	corrigated black	media	3.3	0.4	85
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: SW (N / W / E / S)	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST006
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667324.957	833664.093	57.686	Date Commenced	02.07.2021
	End of Trench	667328.518	833662.877	58.104	Date Completed	02.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.03	Macadam
0.03	0.20	MADE GROUND. Grey slightly sandy fine to medium angular GRAVEL
0.20	0.95	with medium cobble and low boulder content. Contains brick, slate roof tiles, pottery and scrap metal. At 0.95 1.90 fro LHS cobble stone pavement.
95.00	1.50	LHS from 0 to 1.80m and to the 1.50 depth. MADED GROUND. Light brown sandy fine to coarse angular to subrounded GRAVEL with medium cobble and low boulder content. Contains brick, slate roof tiles, pottery and scrap metal.

Photograph

Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	3.60
Trench Depth (m)	1.50
Trench Width (m)	1.00

Location

Facing Direction	225
Facing Features	looking towars the overflow carpark
Groundwater	None

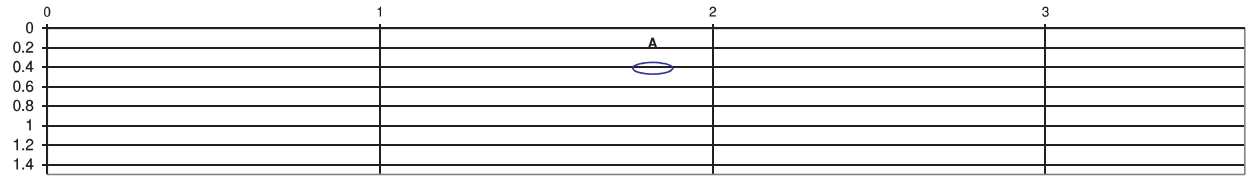
SAMPLES

Excavation Quantities

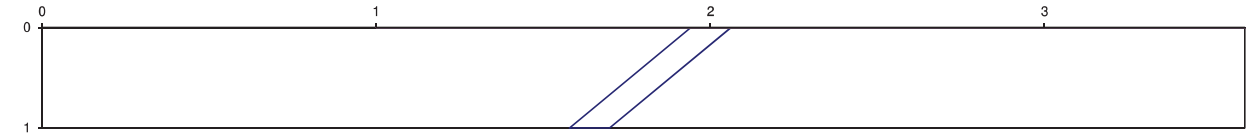
Surface	Length (m)	Material
Access Road	3.58	Mackadam
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other		
Total Length	3.60	

Zero Metres Taken As: LHS

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	120	Grey PVC	sewer	1.82	0.35	70
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NE (N / W / E / S)	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST007A
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667354.240	833676.775	59.100	Date Commenced	02.07.2021
	End of Trench	667354.762	833675.921	59.151	Date Completed	02.07.2021

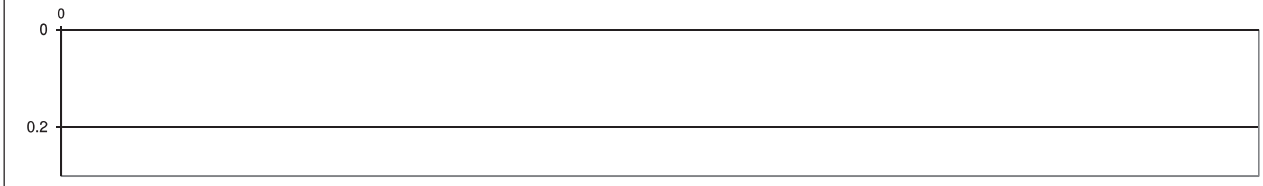
Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.10	Concrete
0.10	0.30	BIG Boulder ranging from 0.1- to 0.30 covered by brownslightly clayey sandy fine to medium angular to subrounded GRAVEL (MADED GROUND)
0.30	0.30	Obstruction

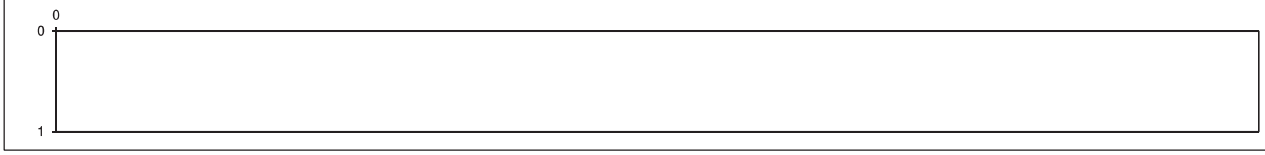
Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	0.75		Access Road	0.75	Concrete
Trench Depth (m)	0.30		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	60	SAMPLES	Other		
Facing Features	looking away from overflow carpark		Total Length	0.75	
Groundwater	None		Zero Metres Taken As: LHS		

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A						
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NE (N / W / E / S)	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST007B
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667356.091	833677.194	59.250	Date Commenced	02.07.2021
	End of Trench	667357.042	833676.029	59.310	Date Completed	02.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.10	Concrete
0.10	0.15	MADE GROUND. Grey sandy fine to medium GRAVEL. Contains brick and fragments of clay pipe.
0.15	0.55	MADE GROUND. Brown slightly clayey very sandy fine to medium GRAVEL. Contains brick and fragments of clay pipe
0.00	0.55	Obstruction

Photograph

Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	1.50
Trench Depth (m)	0.55
Trench Width (m)	0.60

Location

Facing Direction	60
Facing Features	looking away from overflow carpark
Groundwater	None

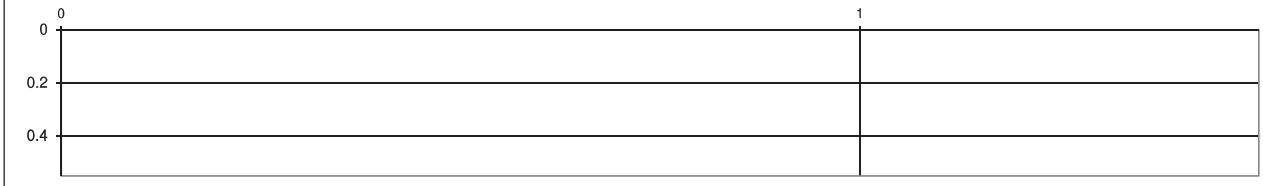
SAMPLES

Excavation Quantities

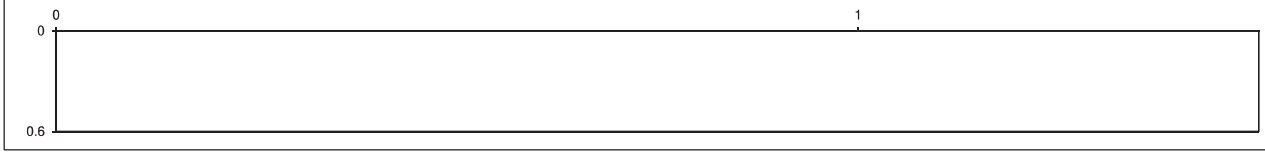
Surface	Length (m)	Material
Access Road	1.50	Concrete
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other		
Total Length	1.50	

Zero Metres Taken As: LHS

X-Section



Plan



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A						
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: SW	N / W / E / S

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST008
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667290.260	833643.205	56.479	Date Commenced	25.06.2021
	End of Trench	667284.395	833643.732	56.357	Date Completed	25.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.09	MACADAM
0.09	0.14	MADE GROUND. Loose brownish greys very sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.14	0.45	MADE GROUND. Medium Dence grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL. Sand is fine to coarse.
0.45	1.50	MADE GROUND. Medium Dence grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL with low cobble content and occasional small boulder. Sand is fine to coarse. Cobbles and boulders are angular of limestone.

Photograph

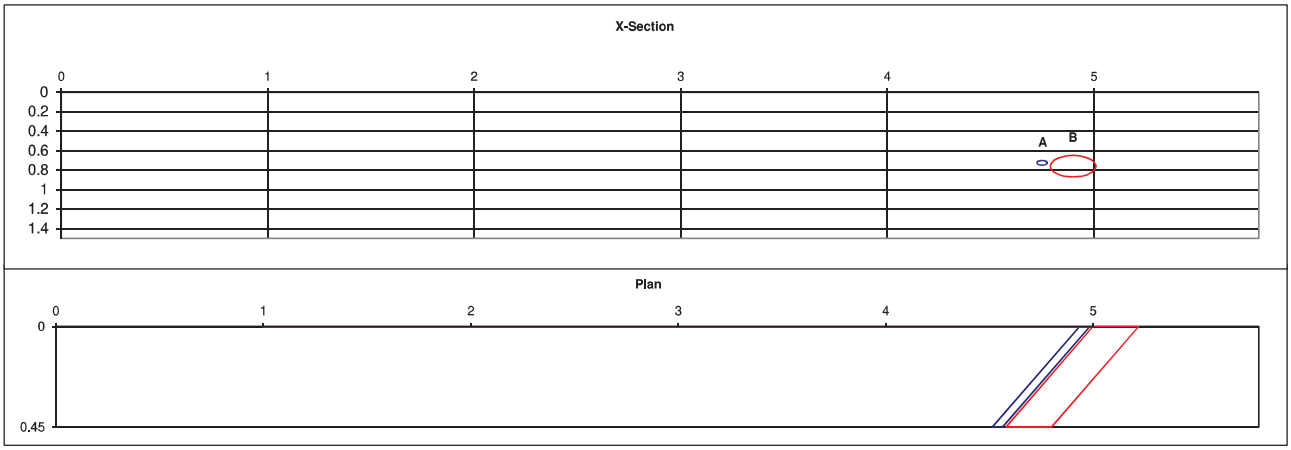
Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	5.80
Trench Depth (m)	1.50
Trench Width (m)	0.45

Location	
Facing Direction	200
Facing Features	
Groundwater	None

SAMPLES

Excavation Quantities		
Surface	Length (m)	Material
Road	5.80	Macadam
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other		
Total Length	5.80	

Zero Metres Taken As: LHS



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	50	Red PVC	Live ESB with pea gravel and tape.	4.75	0.7	47
Service B	220	Orang PVC	Drain	4.9	0.65	47
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

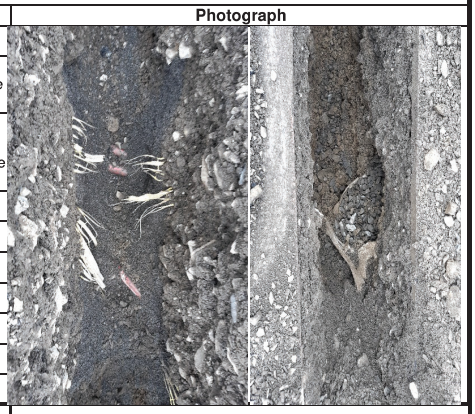
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: SE (N / W E / S)	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST009
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667258.890	833613.036	54.524	Date Commenced	24.06.2021
	End of Trench	667253.597	833608.334	54.291	Date Completed	24.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	MACADAM
0.07	0.15	MADE GROUND. Medium dence grey sligtly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.15	1.50	MADE GROUND. Medium dence grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL. Sand is fine to coarse. Geofabric starts on RHS of the thrench at depth 0.70 and 5.65 from the LHS of the trench. coarese angular limestone fabric insude the fabric(possible atteniuation tank)

Photograph



Trench Dimensions

LHS of Trench (m)	0.00
RHS of Trench (m)	7.00
Trench Depth (m)	1.50
Trench Width (m)	1.00

Location

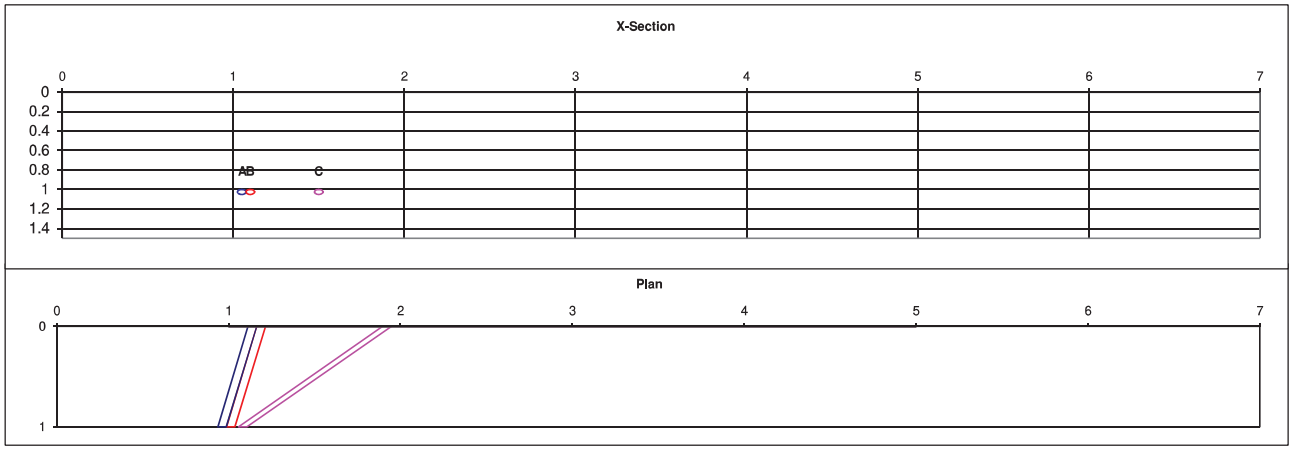
Facing Direction	115
Facing Features	looking towars bottle bank
Groundwater	water at 1.2

SAMPLES

Excavation Quantities

Surface	Length (m)	Material
Road	7.00	Macadam
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)		
Grass Verge (RHS)		
Other		
Total Length	7.00	

Zero Metres Taken As: LHS



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	50	Red PVC	pea gravel and tape services prependiculatr to carpark	1.05	1	80
Service B	50	Red PVC	Live ESB with pea gravel and tape	1.1	1	80
Service C	50	Red PVC	Live ESB with pea gravel and tape	1.5	1	50
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: S	N / W / E / S

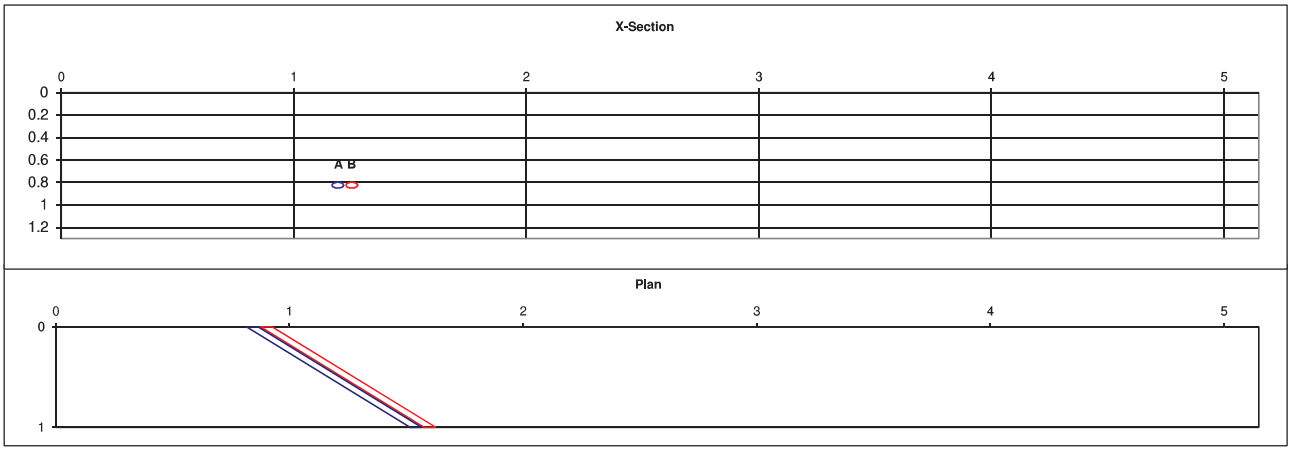
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST010
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667276.817	833582.321	53.617	Date Commenced	24.06.2021
	End of Trench	667270.519	833580.968	53.506	Date Completed	24.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	MACADAM
0.07	0.20	MADE GROUND. Grey sligtly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.20	0.70	MADE GROUND. Medium Dence grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL. Sand is fine to coarse.
0.70	1.20	Geofabric at 0.70. MADE GROUND. Loose Grey slightly silty coarse angular limestone GRAVEL. Possible attenuation tank.

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	5.15		Road	5.15	Macadam
Trench Depth (m)	1.30		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	115	SAMPLES	Other		
Facing Features	looking towars bottle bank		Total Length	5.15	
Groundwater	water at 1.1		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	50	Red PVC	Live ESB with pea gravel and tape.	1.19	0.8	125
Service B	50	Red PVC	Live ESB with pea gravel and tape	1.25	0.8	125
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

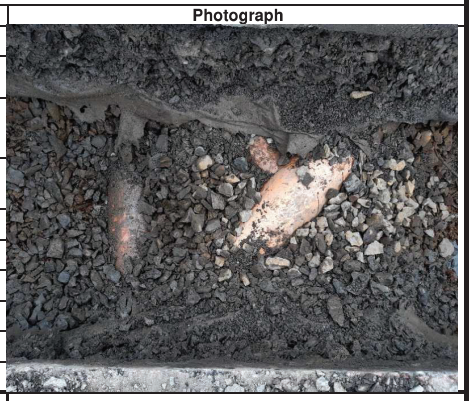
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION:SE	N / W / E / S	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST011
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667294.076	833578.062	53.662	Date Commenced	23.06.2021
	End of Trench	667288.875	833574.720	53.597	Date Completed	23.06.2021

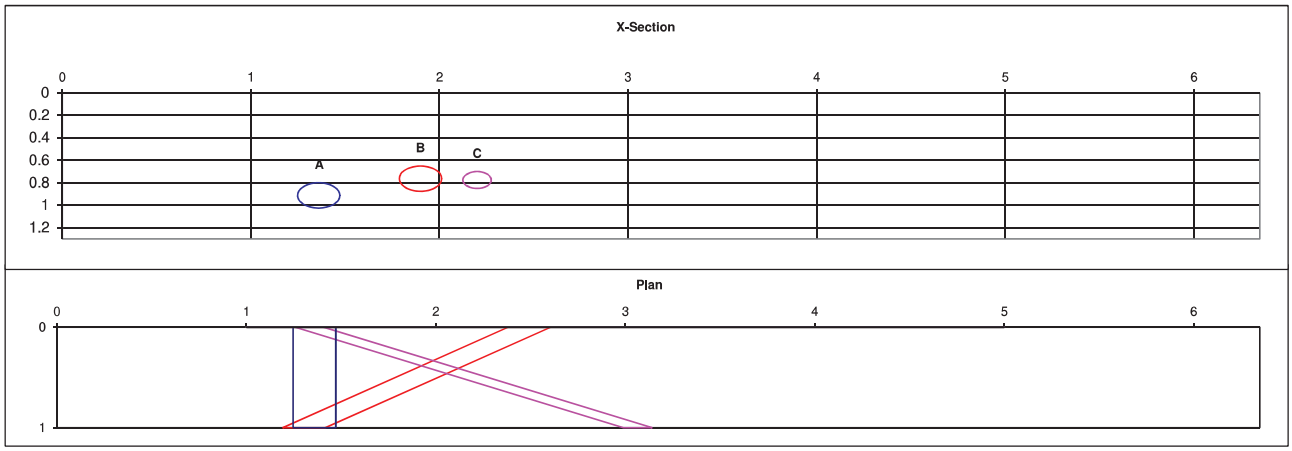
Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.10	MACADAM
0.10	0.20	MADE GROUND. Medium dence grey sligtly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.20	0.55	MADE GROUND. Medium Dence Grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL. Sand is fine to coarse. Contains reinforcement bars 10mm to 50 mm.
0.55	1.30	Geofabric at 0.55. MADE GROUND. Loose Grey slightly silty coarse angular limestone GRAVEL. Possible attenuation tank.

Photograph



Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	6.35		Road	6.35	Macadam
Trench Depth (m)	1.30		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	127	SAMPLES	Other		
Facing Features			Total Length	6.35	
Groundwater	water at 1.1		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	225	Orange PVC	Drain	1.36	0.8	90
Service B	225	Orange PVC	Drain	1.9	0.65	40
Service C	150	Orange PVC	Drain conected at 90 to service B	2.2	0.7	150
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: SE	IGSL

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST012
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667224.355	833613.787	54.293	Date Commenced	29.06.2021
	End of Trench	667220.279	833610.027	54.444	Date Completed	29.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	MACADAM
0.07	0.30	MADE GROUND. Loose grey sligtly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.30	1.30	Grey slightly silty sandy fine to coarse GRAVEL with occasional cobble. Very strong pinkish grey CONCRETE. Depth from 0.30(0.70 from 0) to 0.95 (0.25 from 0) .Vertical fabric membrane from 0.70.
		RHS
0.00	0.25	TOPSOIL
0.25		Very strong pinkish grey CONCRETE.

Photograph

Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	3.80
Trench Depth (m)	1.30
Trench Width (m)	1.00
Facing Direction	180
Facing Features	looking towars N54
Groundwater	water at 1.30

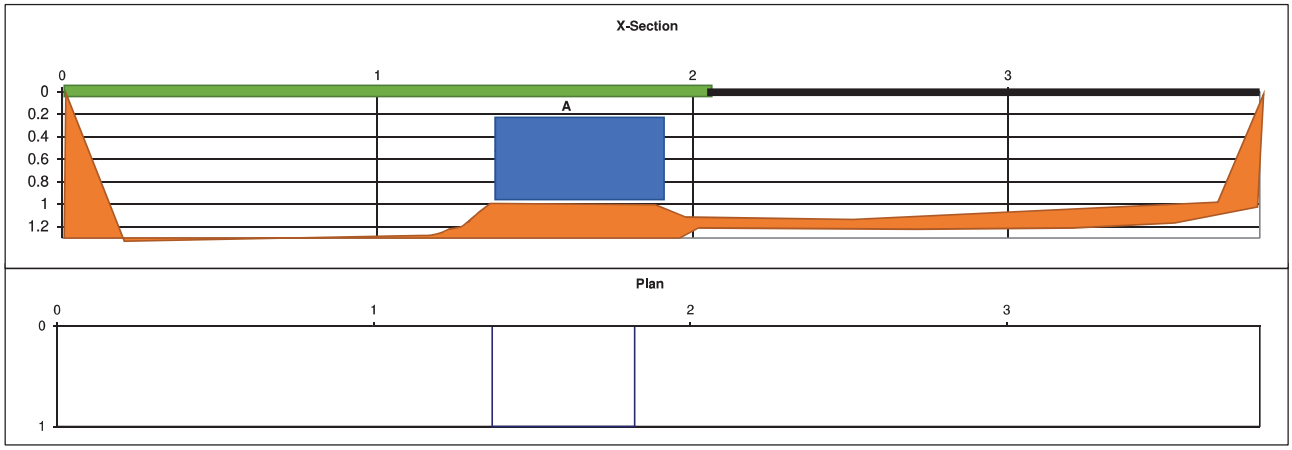
Location

SAMPLES

Excavation Quantities

Surface	Length (m)	Material
Footpath	1.70	Macadam
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)	2.10	ly gravelly sandy (
Grass Verge (RHS)		
Other		
Total Length	3.80	

Zero Metres Taken As: LHS



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	450	Concrete	Unknown	1.60	0.3	90
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

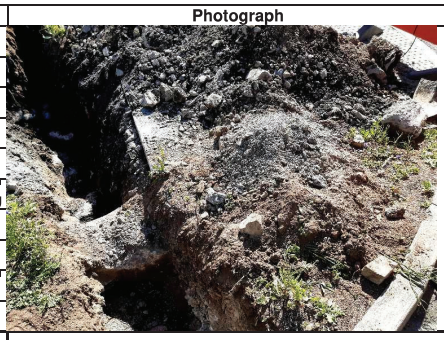
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: S	N / W / E / S

Project: Monaghan Town		Survey			Slit Trench No.	ST013
Engineer: RPS		Easting (m)	Northing (m)	Elevation (mOD)	Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667248.129	833558.903	53.436	Date Commenced	24.06.2021
	End of Trench	667242.832	833557.825	53.382	Date Completed	24.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	Concrete
0.07	0.27	MADE GROUND. Loose grey slightly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.27	0.70	Very strong pinkish grey CONCRETE.
		LHS VERDGE
0.00	0.15	MADE GROUND. Loose slightly gravelly clayey fine to coarse SAND
0.15	0.95	MADE GROUND. Firm slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel was fine to coarse subangular to subrounded of various lithologies. Concrete varing
		RHS
0.00	0.15	MADE GROUND. Loose slightly gravelly clayey fine to coarse SAND
0.15	0.65	MADE GROUND. Firm slightly gravelly sandy CLAY. Sand is fine to coarse. Gravel was fine to coarse subangular to subrounded of various lithologies.

Photograph



Trench Dimensions	
LHS of Trench (m)	0.00
RHS of Trench (m)	5.27
Trench Depth (m)	1.00
Trench Width (m)	1.00
Facing Direction	180
Facing Features	looking towars N54
Groundwater	water at 0.90

Location

SAMPLES

Excavation Quantities

Surface	Length (m)	Material
Road/Footpath	1.90	Concrete
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)	2.10	wild flower area
Grass Verge (RHS)	1.27	wils flower area
Other		
Total Length	5.27	

Zero Metres Taken As: LHS

	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	50	Red PVC	Live ESB with pea gravel and tape.	4.54	0.6	95
Service B	120	Concrete	Curb footing	4	0.4	95
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: S	N / W / E / S

Project: Monaghan Town		Survey			Slit Trench No. ST014
Engineer: RPS		Easting (m)	Northing (m)	Elevation (mOD)	Sheet 1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667251.561	833528.714	53.273	Date Commenced 28.06.2021
	End of Trench	667247.803	833528.161	53.243	Date Completed 28.06.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.07	Concrete
0.07	0.35	MADED GROUND. Loose grey sligtly sandy fine to medium angular limestone GRAVEL. Sand is fine to coarse.
0.35	0.70	Very strong pinkish grey CONCRETE. Depth from 0.10 to 0.60.
		LHS VERDGE
0.00	0.15	TOPSOIL
0.15	0.35	MADED GROUND. Medium dence slightly sandy clayey fine to medium GRAVEL. Sand is fine to coarse.
0.35	0.45	Concrete paving bricks
0.45	1.50	MADED GROUND. Medium dence sligtly sandy clayey fine to coarse angular to subangular GRAVEL. Contains cobble size fragments of concrete pavement

Photograph

Trench Dimensions

LHS of Trench (m)	0.00
RHS of Trench (m)	3.80
Trench Depth (m)	1.00
Trench Width (m)	1.00

Location

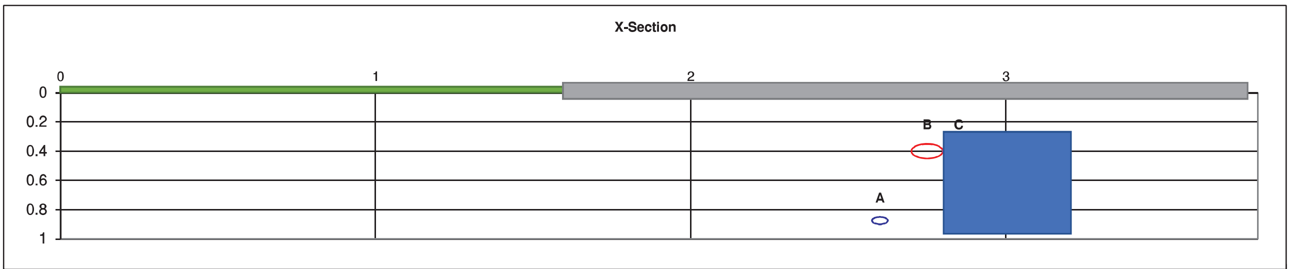
Excavation Quantities

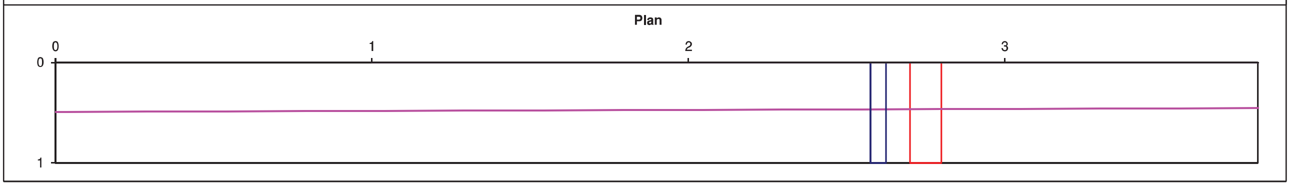
Surface	Length (m)	Material
Footpath	1.70	Concrete
Drain(LHS)		
Drain (RHS)		
Grass Verge (LHS)	2.10	ly gravelly sandy (
Grass Verge (RHS)		
Other		
Total Length	3.80	

Facing Direction	180
Facing Features	looking towars N54
Groundwater	water at 1.30

SAMPLES

Zero Metres Taken As: LHS





	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	50	blacl PVC	ESB not live	2.60	0.85	90
Service B	100	Green PVC	Vibre	2.75	0.35	90
Service C	100	Concrete	concret with live cable within it	2.85	0.35	
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION:SW	N W E S	IGSL

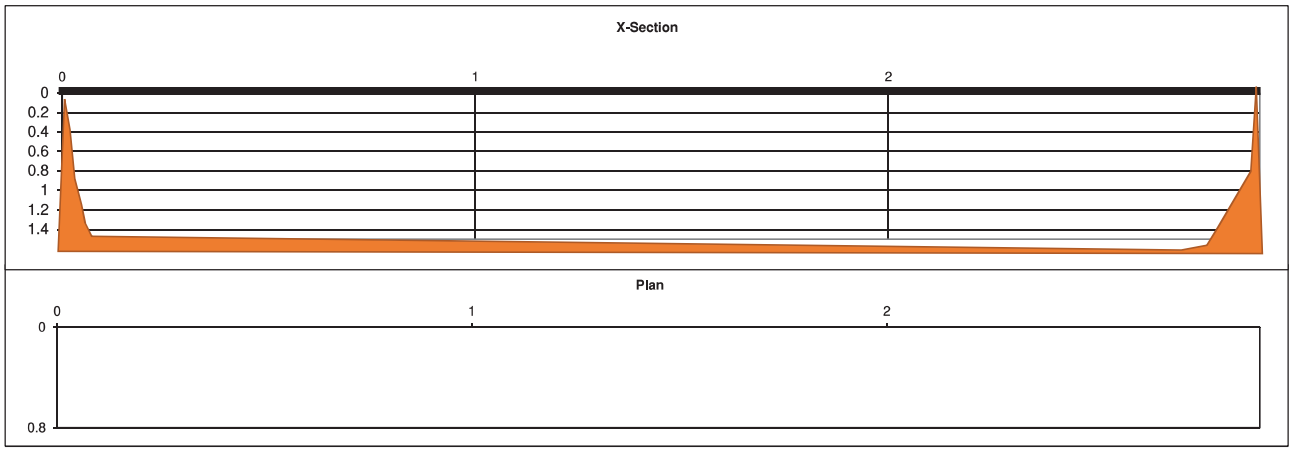
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST015
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667244.570	833481.655	54.314	Date Commenced	01.07.2021
	End of Trench	667242.073	833483.105	54.090	Date Completed	01.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.08	Brick pavers
0.08	0.25	MADE GROUND. Medium dece grey becoming redish brown fine to coarce SAND.
0.25	0.29	Leanmix Concrete
0.29	1.50	MADE GROUND. Loose grey slightly silty slightly sandy fine to coarse angular limestone GRAVEL with occasional cobble. San is fine to coarse. Cobbles are

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	2.90		Footpath	2.90	Brick pavers
Trench Depth (m)	1.50		Drain(LHS)		
Trench Width (m)	0.80		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	227	SAMPLES	Other		
Facing Features	Looking towords overflow car park		Total Length	2.90	
Groundwater	None		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A						
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

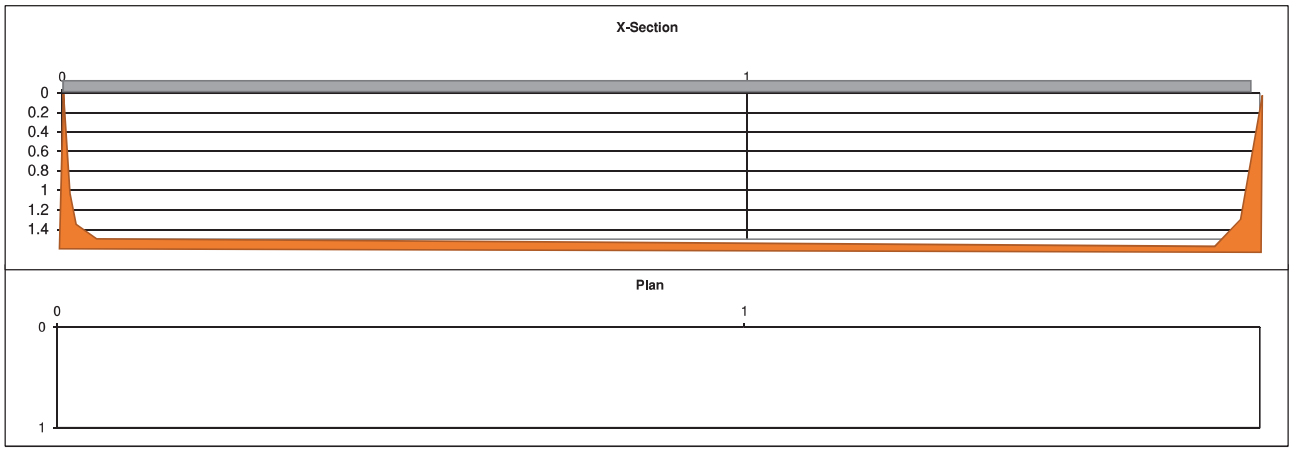
Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION: NW	N / W / E / S

		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST016A
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667265.169	833487.389	55.012	Date Commenced	08.07.2021
	End of Trench	667264.742	833485.592	55.0	Date Completed	08.07.2021

Ground Conditions

From (m)	To (m)	Soil Description	Photograph
0.00	0.15	CONCRETE	
0.15	0.35	MADE GROUND loose brown very sandy fine to medium angular limestone GRAVEL.	
0.35	0.45	CONCRETE	
0.45	0.85	MADE GROUND loose Greyslightly silty sandy fine to coarse angular limestone GRAVEL. Sand is fine to coarse.	
0.85	1.50	occasional small boulder. Sand is fine to coarse. Gravel is fine to coarse angu	

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.00		Surface	Length (m)	Material
RHS of Trench (m)	1.75		Footpath	1.75	Concrete
Trench Depth (m)	1.50		Drain(LHS)		
Trench Width (m)	1.00		Drain (RHS)		
			Grass Verge (LHS)		
			Grass Verge (RHS)		
Facing Direction	307	SAMPLES	Other		
Facing Features	looking towords shopping center.	B/ ENV AA153478	Total Length	1.75	
Groundwater	None		Zero Metres Taken As: LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A						
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Report No. 23412	SLIT TRENCH RECORD	FACING DIRECTION:NW W N E S	IGSL

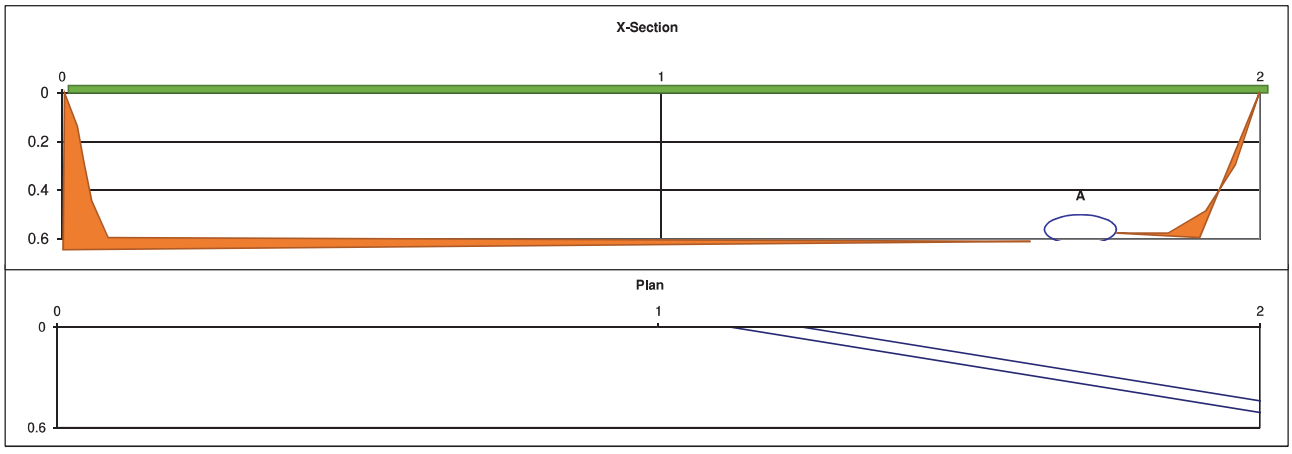
		Survey				
Project: Monaghan Town		Easting (m)	Northing (m)	Elevation (mOD)	Slit Trench No.	ST016B
Engineer: RPS					Sheet	1 of 1
Crew: M.Kluj, Flanagan	Start of Trench	667267.143	833483.712	54.940	Date Commenced	09.07.2021
	End of Trench	667267.910	833485.430	54.930	Date Completed	09.07.2021

Ground Conditions

From (m)	To (m)	Soil Description
0.00	0.25	TOPSOIL
0.25	0.60	MADE GROUND: Loose brownish grey slightly silty sandy fine to medium angular GRAVEL. Sand is fine to coarse.

Photograph

Trench Dimensions		Location	Excavation Quantities		
LHS of Trench (m)	0.0		Surface	Length (m)	Material
RHS of Trench (m)	2.0		Road		
Trench Depth (m)	0.6		Path (LHS)		
Trench Width (m)	0.6		Path (RHS)		
			Grass Verge (LHS)	2.00	Grass
			Grass Verge (RHS)		
Facing Direction	307	**SAMPLES**	Other		
Facing Features	looking towords shopping center.	**B/ ENV AA153478**	Total Length	2.00	
Groundwater	None		Zero Metres Taken As:LHS		



	Diameter (mm)	Material	Description	Distance (m)	Depth to crown (m)	Angle (deg.)
Service A	120	Green PVC	Virgin media parrarel to the road	1.7	0.5	150
Service B						
Service C						
Service D						
Service E						
Service F						
Service G						
Service H						
Service I						
Service J						
Service K						
Service L						
Service M						

Appendix 5 - Infiltration Testing Records

TRIAL PIT RECORD

REPORT NUMBER 23412

CONTRACT	Monaghan Town	**TRIAL PIT NO.**	**BRE TEST 1**
		SHEET	Sheet 1 of 1
LOGGED BY	M.Kluj	**CO-ORDINATES**	667,305.13 E 833,580.00 N
		DATE STARTED	06/07/2021
		DATE COMPLETED	06/07/2021
CLIENT	Monaghan Co. Council	**GROUND LEVEL (m)**	53.73
ENGINEER	RPS	**EXCAVATION METHOD**	1.9 T exavator

Geotechnical Description	Legend	Depth (m)	Elevation	Water Strike	Samples: Sample Ref	Samples: Type	Samples: Depth	Vane Test (KPa)	Hand Penetrometer (KPa)
0.0 TOPSOIL Unstable sites and water tabe at 1.15m		0.20	53.53						
MADE GROUND. Loose brown slightly clayey snady fine to coarse angular GRAVEL with low cobble and boulder content. Contains brick, scrap metal, timber ,concrete, macadam, plastic, PVC pipe and glass. Sand is fine to coarse. Cobbles and boulders are subangular of various lithologies. Geo fabric and plastic net at 1.00m					AA157599	B	0.40-0.60		
1.0				1 (Moderate)					
End of Trial Pit at 1.30m		1.30	52.43						
2.0									
3.0									
4.0									

Groundwater Conditions
Water at 1.15

Stability
Moderate

General Remarks

Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dublin Street Monaghan Contract No. 23412
Test No. 1
Client Monaghan CoCo
Date: #######

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	GW Encountered at 1.15mbgl
0.20	1.30	MADE GROUND. Loose brown slightly clayey sandy fine to coarse angular GRAVEL with low cobble and boulder content. Contains brick, scrap metal, timber ,concrete, macadam, plastic, PVC pipe and glass. Sand is fine to coarse. Cobbles and boulders are subangular of various lithologies. Geo fabric and plastic net at 1.00m	

Notes: GW Encountered at 1.15mbgl

Field Data

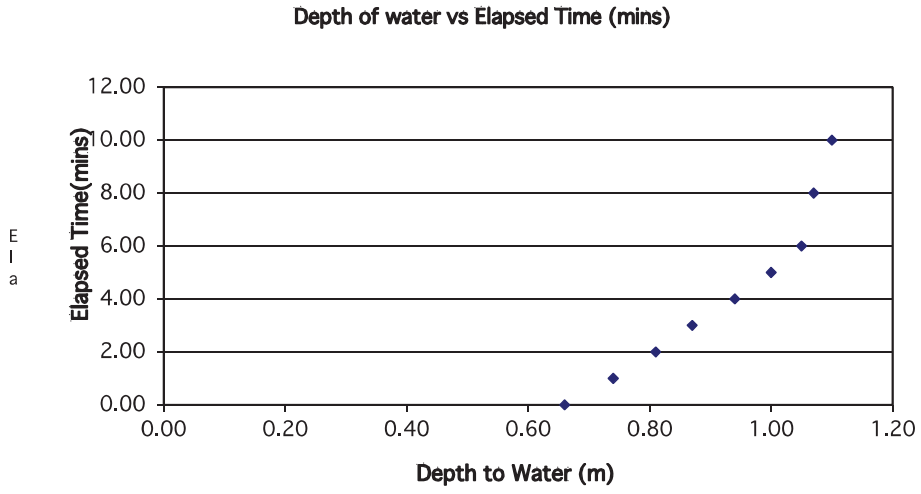
Depth to Water (m)	Elapsed Time (min)
0.66	0.00
0.74	1.00
0.81	2.00
0.87	3.00
0.94	4.00
1.00	5.00
1.05	6.00
1.07	8.00
1.10	10.00

Field Test

Depth of Pit (D)	1.30	m
Width of Pit (B)	0.65	m
Length of Pit (L)	0.80	m
Initial depth to Water =	0.66	m
Final depth to water =	1.10	m
Elapsed time (mins)=	10.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.52	m2
*Av. side area of permeable stratum over test perio	1.218	m2
Total Exposed area =	1.738	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.01316 m/min or 0.0002194 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dublin Street Monaghan Contract No. 23412
Test No. 2
Client Monaghan CoCo
Date: #######

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	GW Encountered at 1.15mbgl
0.20	1.30	MADE GROUND. Loose brown slightly clayey sandy fine to coarse angular GRAVEL with low cobble and boulder content. Contains brick, scrap metal, timber ,concrete, macadam, plastic, PVC pipe and glass. Sand is fine to coarse. Cobbles and boulders are subangular of various lithologies. Geo fabric and plastic net at 1.00m	

Notes: GW Encountered at 1.15mbgl

Field Data

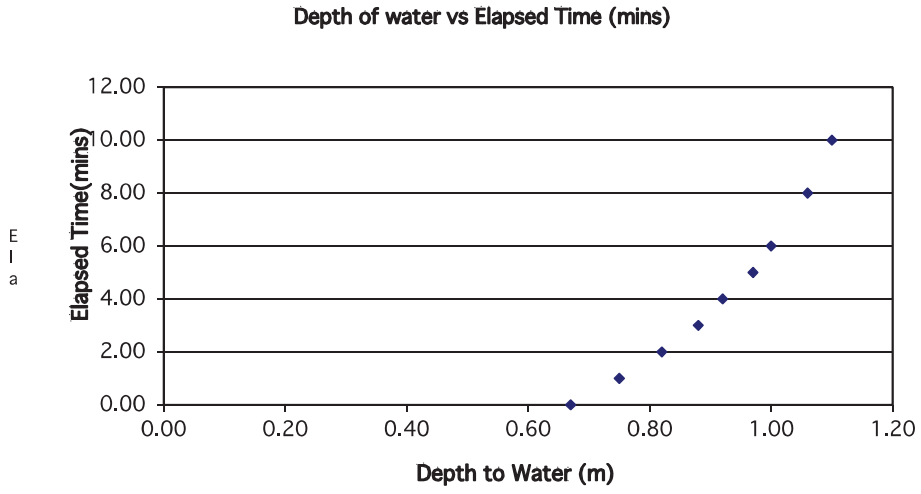
Depth to Water (m)	Elapsed Time (min)
0.67	0.00
0.75	1.00
0.82	2.00
0.88	3.00
0.92	4.00
0.97	5.00
1.00	6.00
1.06	8.00
1.10	10.00

Field Test

Depth of Pit (D)	1.30	m
Width of Pit (B)	0.65	m
Length of Pit (L)	0.80	m
Initial depth to Water =	0.67	m
Final depth to water =	1.10	m
Elapsed time (mins)=	10.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.52	m2
*Av. side area of permeable stratum over test perio	1.2035	m2
Total Exposed area =	1.7235	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.01297 m/min or 0.0002162 m/sec



Soakaway Design f -value from field tests (F2C) IGSL

Contract: Dublin Street Monaghan Contract No.
Test No. 3
Client Monaghan CoCo
Date: #######

Summary of ground conditions

from	to	Description	Ground water
0.00	0.20	TOPSOIL	GW Encountered at 1.15mbgl
0.20	1.30	MADE GROUND. Loose brown slightly clayey sandy fine to coarse angular GRAVEL with low cobble and boulder content. Contains brick, scrap metal, timber ,concrete, macadam, plastic, PVC pipe and glass. Sand is fine to coarse. Cobbles and boulders are subangular of various lithologies. Geo fabric and plastic net at 1.00m	

Notes: GW Encountered at 1.15mbgl

Field Data

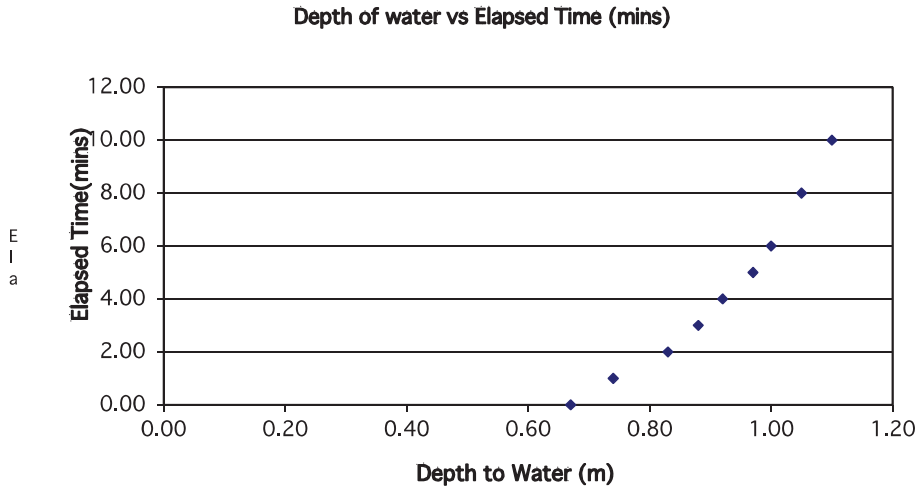
Depth to Water (m)	Elapsed Time (min)
0.67	0.00
0.74	1.00
0.83	2.00
0.88	3.00
0.92	4.00
0.97	5.00
1.00	6.00
1.05	8.00
1.10	10.00

Field Test

Depth of Pit (D)	1.30	m
Width of Pit (B)	0.65	m
Length of Pit (L)	0.80	m
Initial depth to Water =	0.67	m
Final depth to water =	1.10	m
Elapsed time (mins)=	10.00	
Top of permeable soil		m
Base of permeable soil		m
Base area=	0.52	m2
*Av. side area of permeable stratum over test perio	1.2035	m2
Total Exposed area =	1.7235	m2

Infiltration rate (f) = Volume of water used/unit exposed area / unit time

f= 0.01297 m/min or 0.0002162 m/sec



Appendix 6 - Geotechnical Soil Laboratory Records

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No. **R126192** Contract No. 23412 Contract Name: Monaghan Town

Customer Monaghan Co.Co./ RPS

Samples Received: 07/09/21 Date Tested: 07/09/21

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
BH001	AA163475	0.0	A21/4465	B	19								Brown sandy gravelly SILT/CLAY
BH001	AA163476	0.3	A21/4466	B	34								Brown sandy gravelly SILT/CLAY
BH001	AA153476	0.7	A21/4467	B	38								Brown sandy gravelly SILT/CLAY
BH001	AA163477	1.0	A21/4468	B	32	73	34	39	75	WS	4.4	C V	Brown sandy, slightly gravelly, CLAY
BH001	AA153477	1.1	A21/4469	B	21	37	18	19	76	WS	4.4	C I	Brown sandy, slightly gravelly, CLAY
BH001	AA154151	2.0	A21/4470	B	18	23	NP	NP	83	WS	4.4		Brown sandy, slightly gravelly, SILT
BH001	AA154152	3.0	A21/4471	ENV	27	30	NP	NP	96	WS	4.4		Brown sandy, slightly gravelly, SILT
BH003	AA154153	0.0	A21/4472	ENV	9.4	33	NP	NP	21	WS	4.4		Brown silty, very sandy, GRAVEL
BH003	AA154153	0.3	A21/4473	ENV	5.8								Brown silty/clayey sandy GRAVEL
BH003	AA154153	0.7	A21/4474	B	4.7								Brown silty/clayey sandy GRAVEL
BH003	AA154153	1.0	A21/4475	B	4.1								Brown clayey/silty, sandy, GRAVEL with some cobbles
BH003	AA154154	2.0	A21/4476	B	8.8								Brown silty/clayey sandy GRAVEL
BH003	AA154155	2.2	A21/4477	B	9.4								Brown silty/clayey sandy GRAVEL
BH003	AA154156	3.0	A21/4478	B	8.5								Brown silty/clayey sandy GRAVEL

WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.
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IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by	Date	Page
	29/09/21	1 of 1

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Moisture Content, Liquid & Plastic Limits

Tested in accordance with BS1377:Part 2:1990, clauses 3.2, 4.3, 4.4 & 5.3**

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Report No. **R126193** Contract No. 23412 Contract Name: Monaghan Town

Customer Monaghan Co.Co./ RPS

Samples Received: 07/09/21 Date Tested: 07/09/21

BH/TP*	Sample No.	Depth* (m)	Lab. Ref	Sample Type*	Moisture Content %	Liquid Limit %	Plastic Limit %	Plasticity Index	% <425µm	Preparation	Liquid Limit Clause	Classification (BS5930)	Description
TP01	AA167597	0.3	A21/4479	B	14								Brown clayey/silty, very sandy, GRAVEL
TP01	AA167598	1.0	A21/4480	B	17	39	21	18	62	WS	4.4	C I	Brown sandy, slightly gravelly, CLAY
TP01	AA167598	1.5	A21/4481	B	10	40	22	18	44	WS	4.4	C I	Brown clayey, very sandy, GRAVEL
TP02	AA167599	0.4	A21/4482	B	39								Brown sandy, slightly gravelly, SILT/CLAY
TP02	AA157600	0.7	A21/4483	B	33								Brown sandy gravelly SILT/CLAY
TP02	AA167600	1.2	A21/4484	B	22	36	21	15	57	WS	4.4	C I	Brown slightly sandy, gravelly, CLAY
TP03	AA163474	0.3	A21/4485	B	18								Brown slightly sandy, gravelly, SILT/CLAY
TP03	AA153474	1.0	A21/4486	B	25	44	25	19	56	WS	4.4	C I	Brown sandy, slightly gravelly, CLAY
BRE TEST 1	AA157599	0.4	A21/4487	B	17								Brown sandy gravelly SILT/CLAY

WS - Wet sieved
AR - As received
NP - Non plastic

Liquid Limit Clause: 4.3 Cone Penetrometer definitive method
4.4 Cone Penetrometer one point method

Sample Type: B - Bulk Disturbed
U - Undisturbed

Remarks:
Results relate only to the specimen tested,in as received condition unless otherwise noted.
NOTE: **These clauses have been superceded by EN 17892-1 and EN17892-12.
Opinions and interpretations are outside the scope of accreditation. * denotes Customer supplied information.
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IGSL Ltd Materials Laboratory

Persons authorized to approve reports
H Byrne (Laboratory Manager)

Approved by	Date	Page
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TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	98	
6.3	97	
5	97	
3.35	96	
2	95	
1.18	93	SAND
0.6	89	
0.425	85	
0.3	79	
0.15	61	
0.063	37	SILT/CLAY

Contract No. 23412 Report No. R127126
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH01
Sample No.* AA163477 Lab. Sample No. A21/4468
Sample Type: B
Depth* (m) 1.00 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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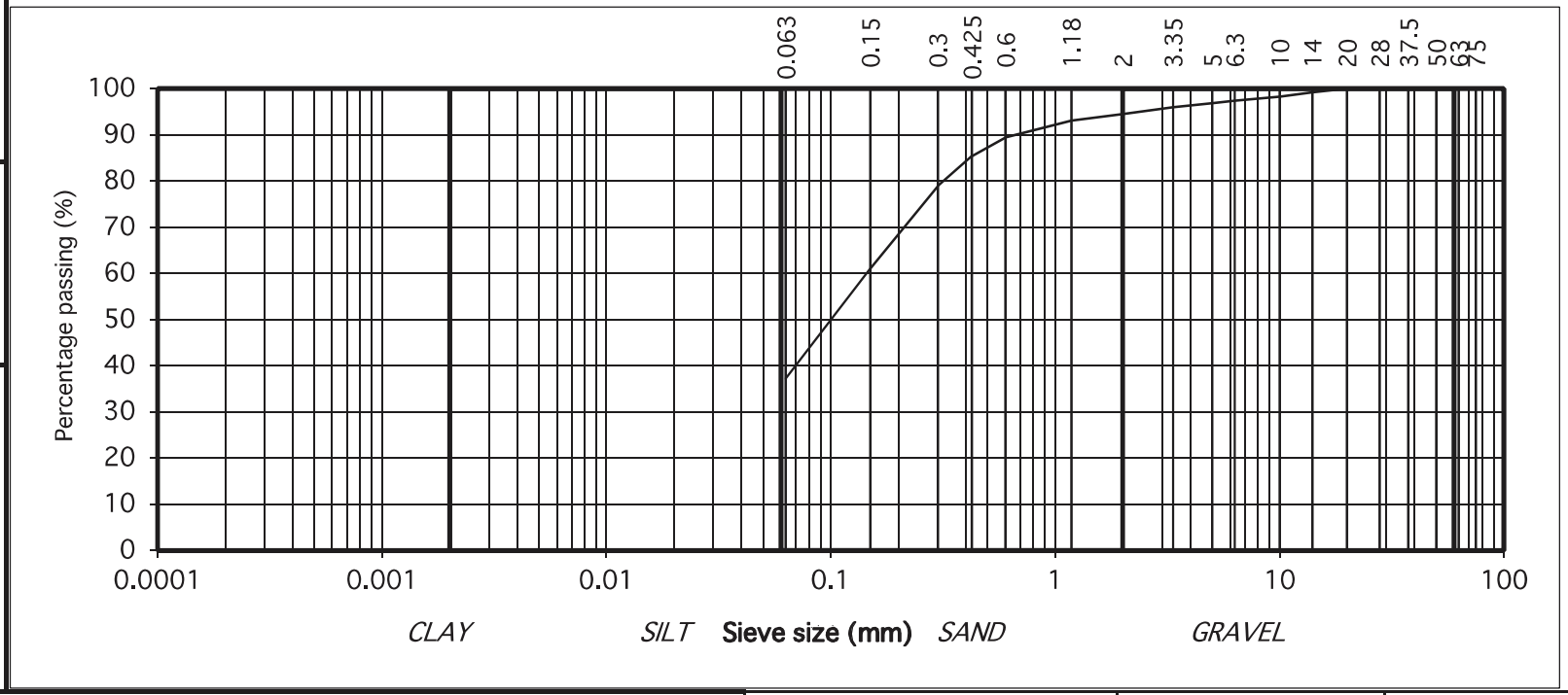

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	99	
10	98	
6.3	97	
5	96	
3.35	95	
2	93	
1.18	91	SAND
0.6	87	
0.425	84	
0.3	77	
0.15	56	
0.063	37	SILT/CLAY

Contract No. 23412 Report No. R127124
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH01
Sample No.* AA153477 Lab. Sample No. A21/4469
Sample Type: B
Depth* (m) 1.1-1.4 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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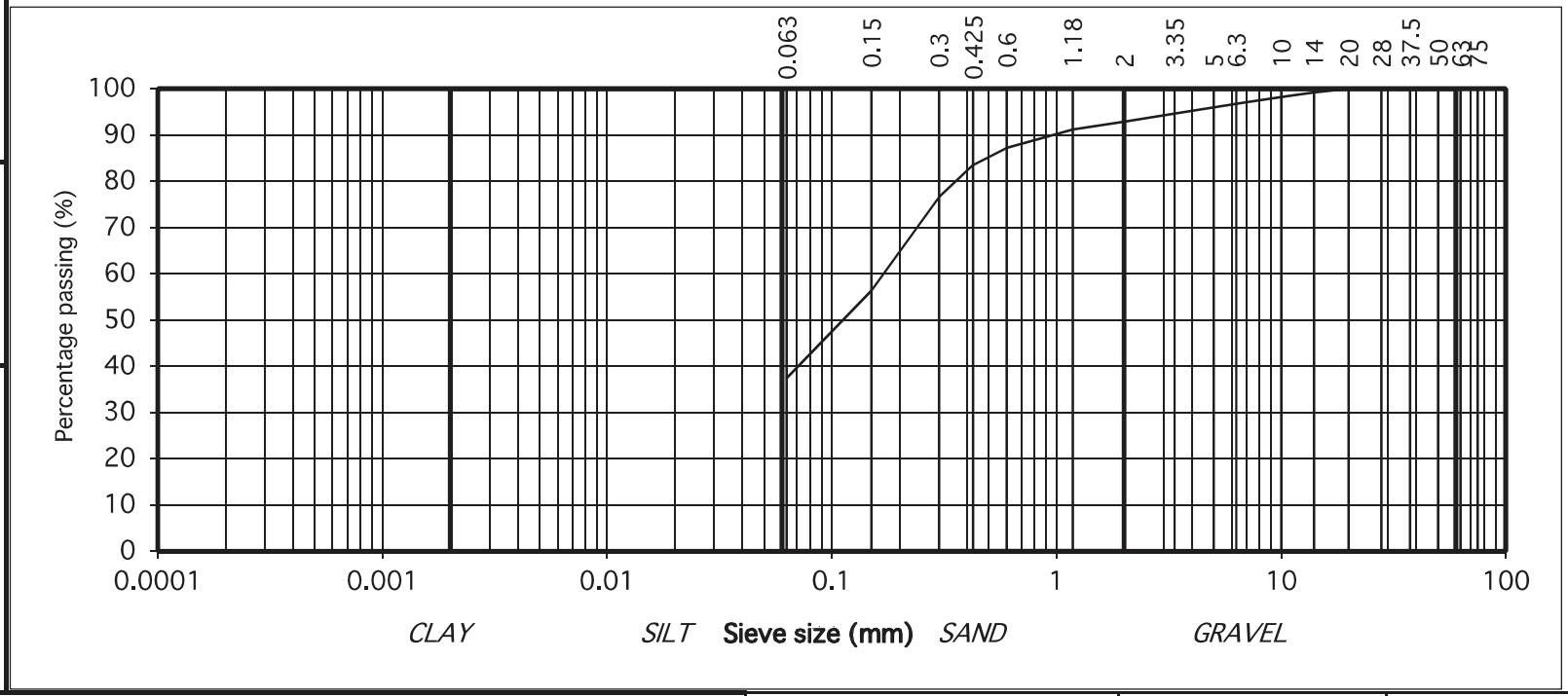

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	97	
14	97	
10	96	
6.3	96	
5	96	
3.35	95	
2	94	
1.18	93	SAND
0.6	90	
0.425	86	
0.3	79	
0.15	57	
0.063	33	SILT/CLAY

Contract No. 23412 Report No. R127125
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH01
Sample No.* AA154151 Lab. Sample No. A21/4470
Sample Type: B
Depth* (m) 2.0-2.5 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, SILT

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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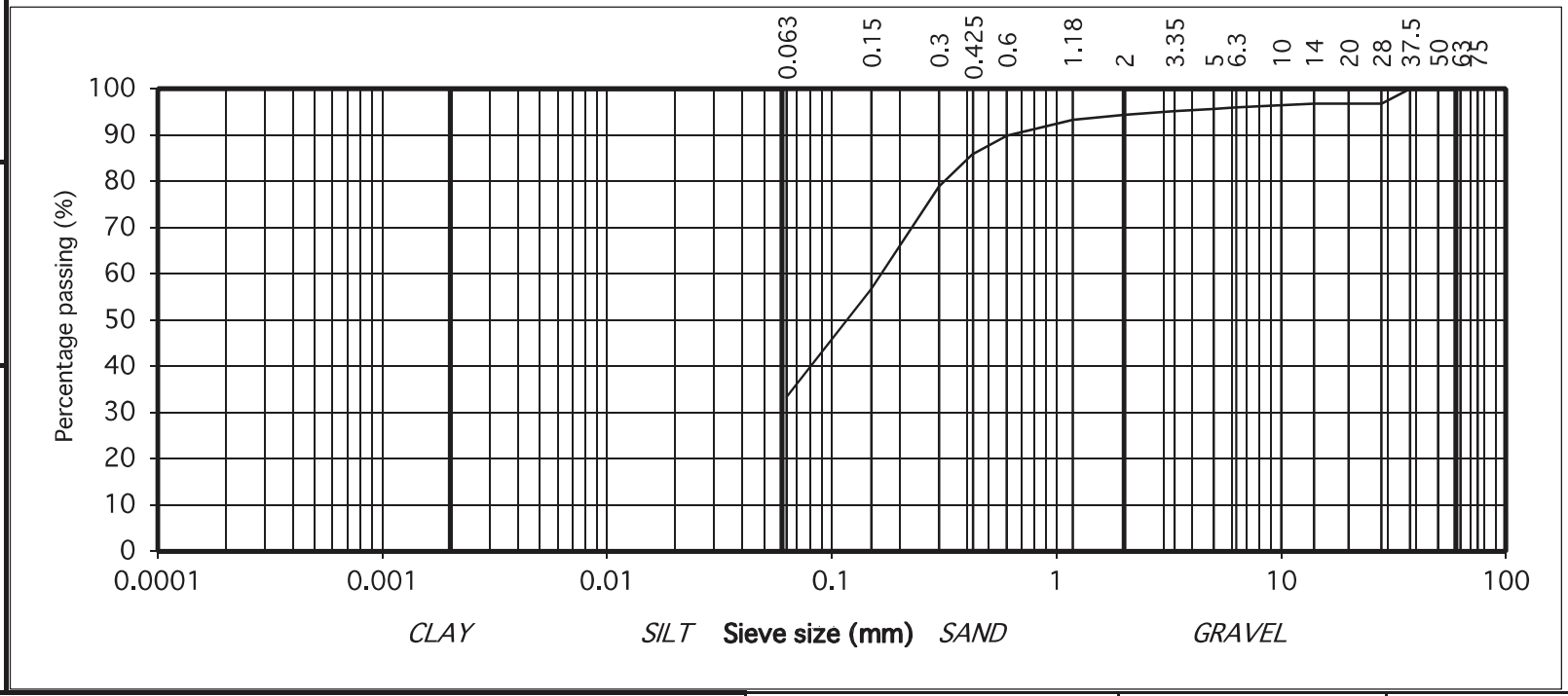

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	100	
6.3	100	
5	99	
3.35	99	
2	99	
1.18	98	SAND
0.6	98	
0.425	97	
0.3	96	
0.15	83	
0.063	45	SILT/CLAY

Contract No. 23412 Report No. R127127
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH01
Sample No.* AA154152 Lab. Sample No. A21/4478
Sample Type: B
Depth* (m) 3.00 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, SILT

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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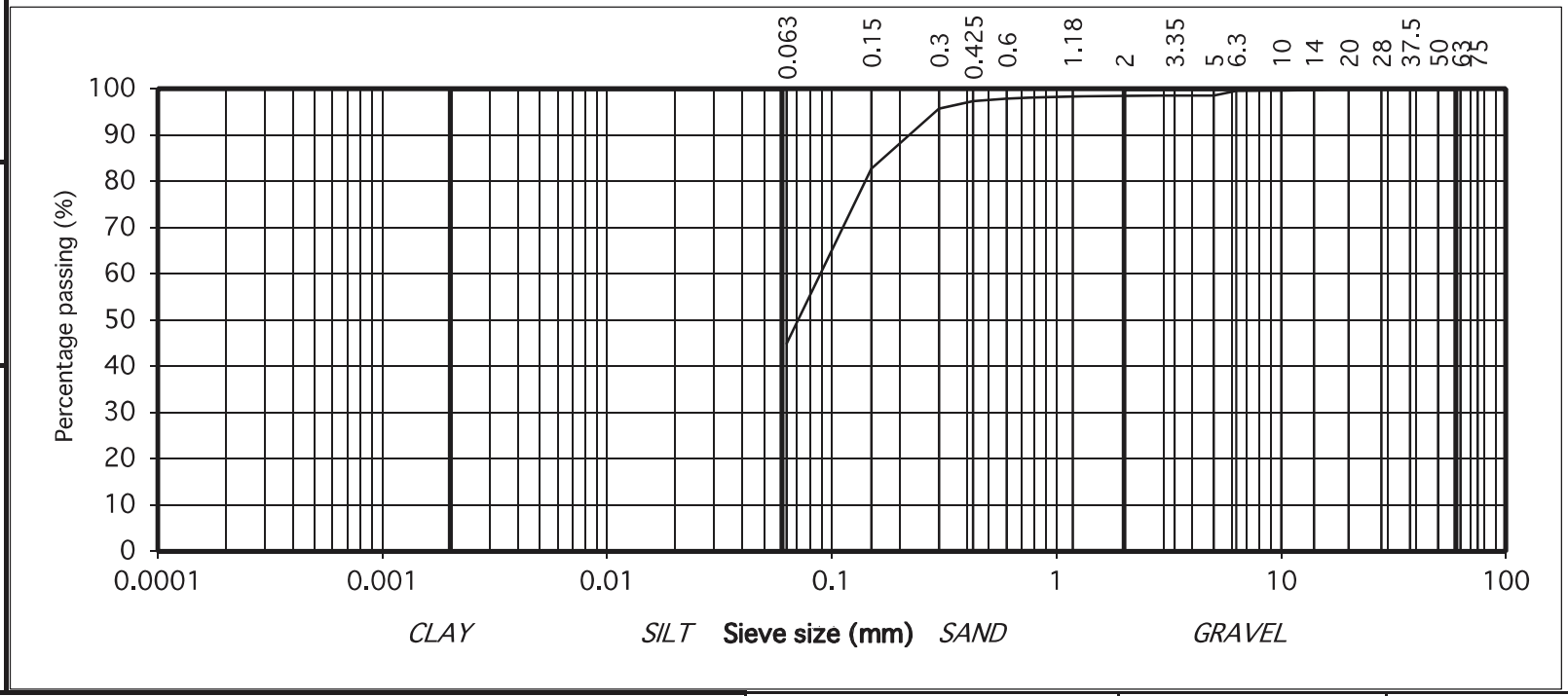

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	97	
20	84	
14	76	
10	68	
6.3	58	
5	53	
3.35	47	
2	40	
1.18	33	SAND
0.6	26	
0.425	23	
0.3	20	
0.15	15	
0.063	11	SILT/CLAY

Contract No. 23412 Report No. R126603
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH03
Sample No.* AA154153 Lab. Sample No. A21/4472
Sample Type: B
Depth* (m) 0.00-0.20 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown silty, very sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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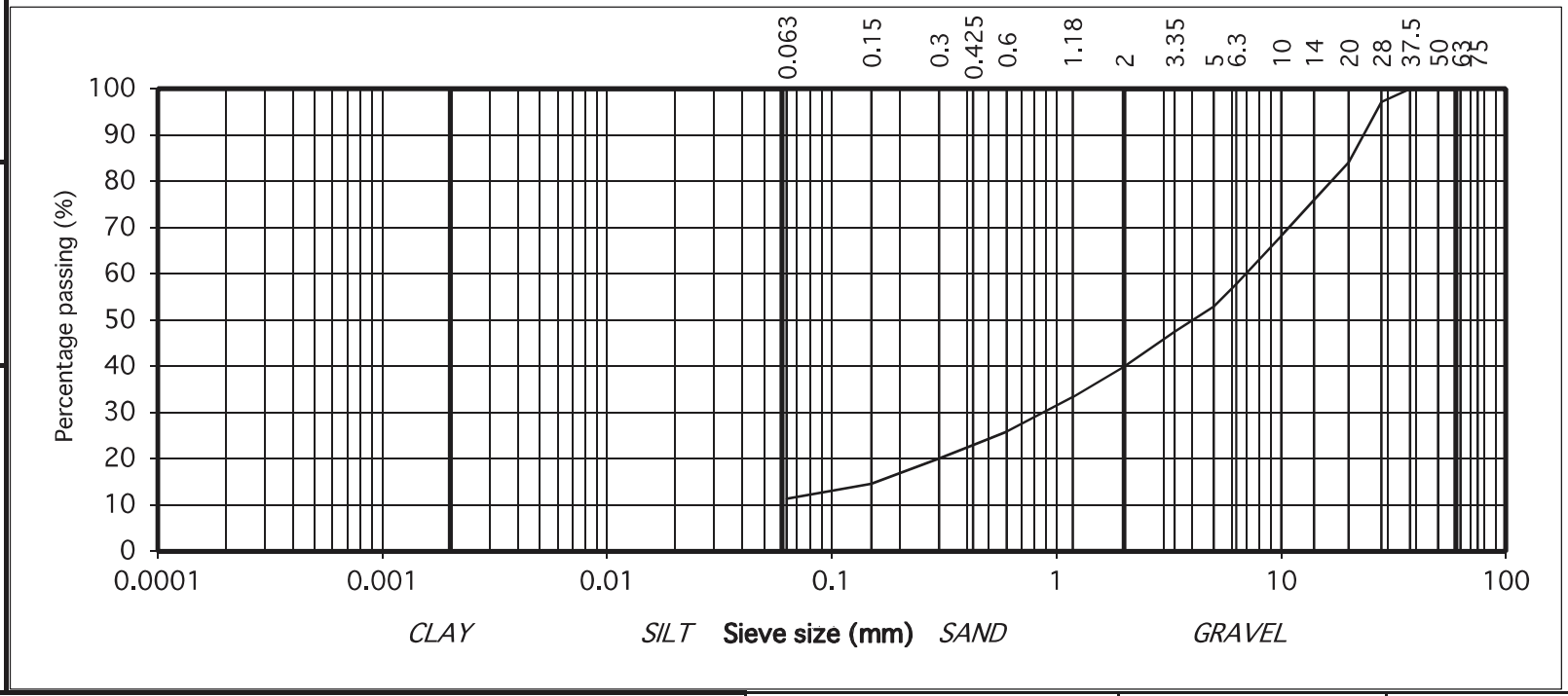

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Approved by:	Date:	Page no:
	29/09/21	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	85	COBBLES
63	85	
50	85	GRAVEL
37.5	81	
28	76	
20	68	
14	56	
10	46	
6.3	37	
5	33	
3.35	28	
2	23	
1.18	19	SAND
0.6	15	
0.425	14	
0.3	12	
0.15	10	
0.063	8	SILT/CLAY

Contract No. 23412 Report No. R126585
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : BH03
Sample No.* AA153474 Lab. Sample No. A21/4475
Sample Type: B
Depth* (m) 1.00 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown clayey/silty, sandy, GRAVEL with some cobbles

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2 Sample size did not meet the requirements of BS1377

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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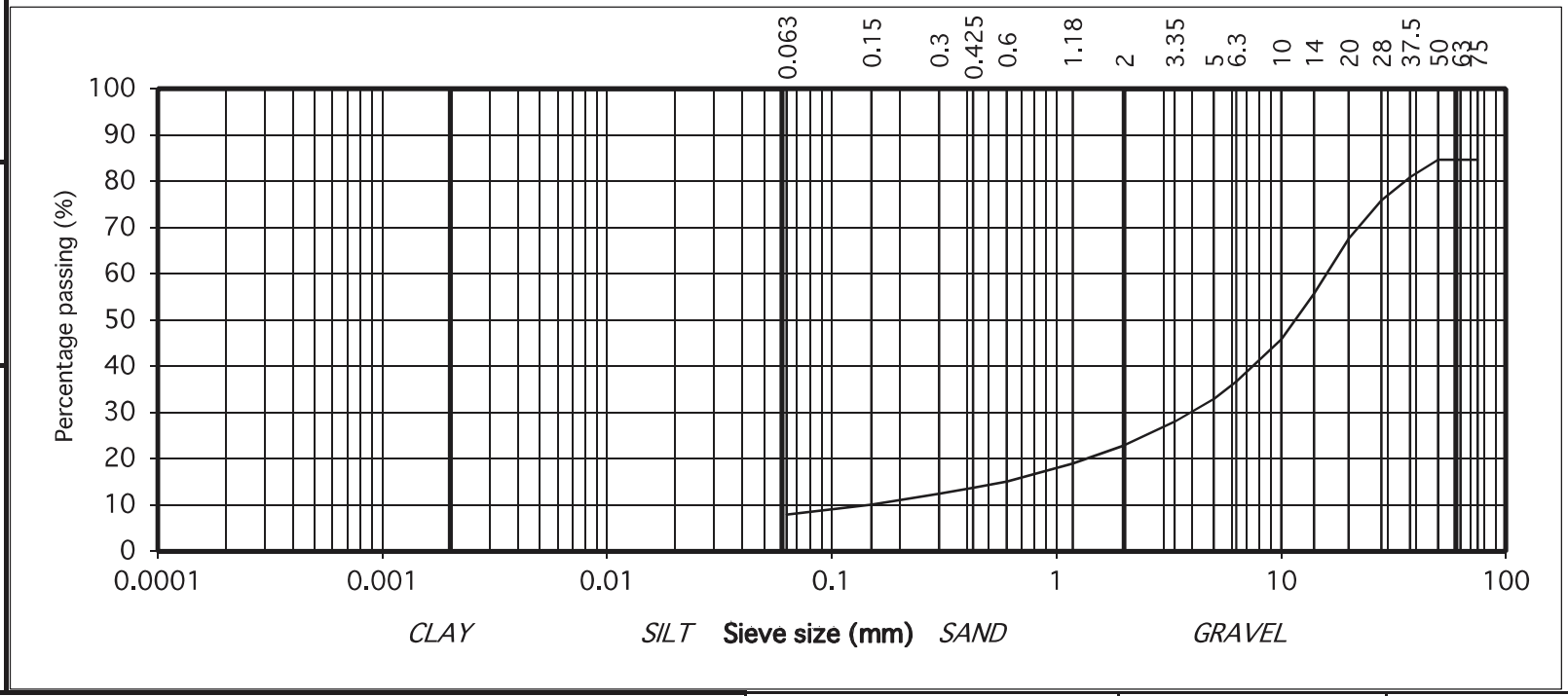

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	95	
20	87	
14	82	
10	78	
6.3	71	
5	67	
3.35	61	
2	55	
1.18	50	SAND
0.6	42	
0.425	39	
0.3	34	
0.15	25	
0.063	16	SILT/CLAY

Contract No. 23412 Report No. R126601
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP01
Sample No.* AA167597 Lab. Sample No. A21/4479
Sample Type: B
Depth* (m) 0.30-0.50 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown clayey/silty, very sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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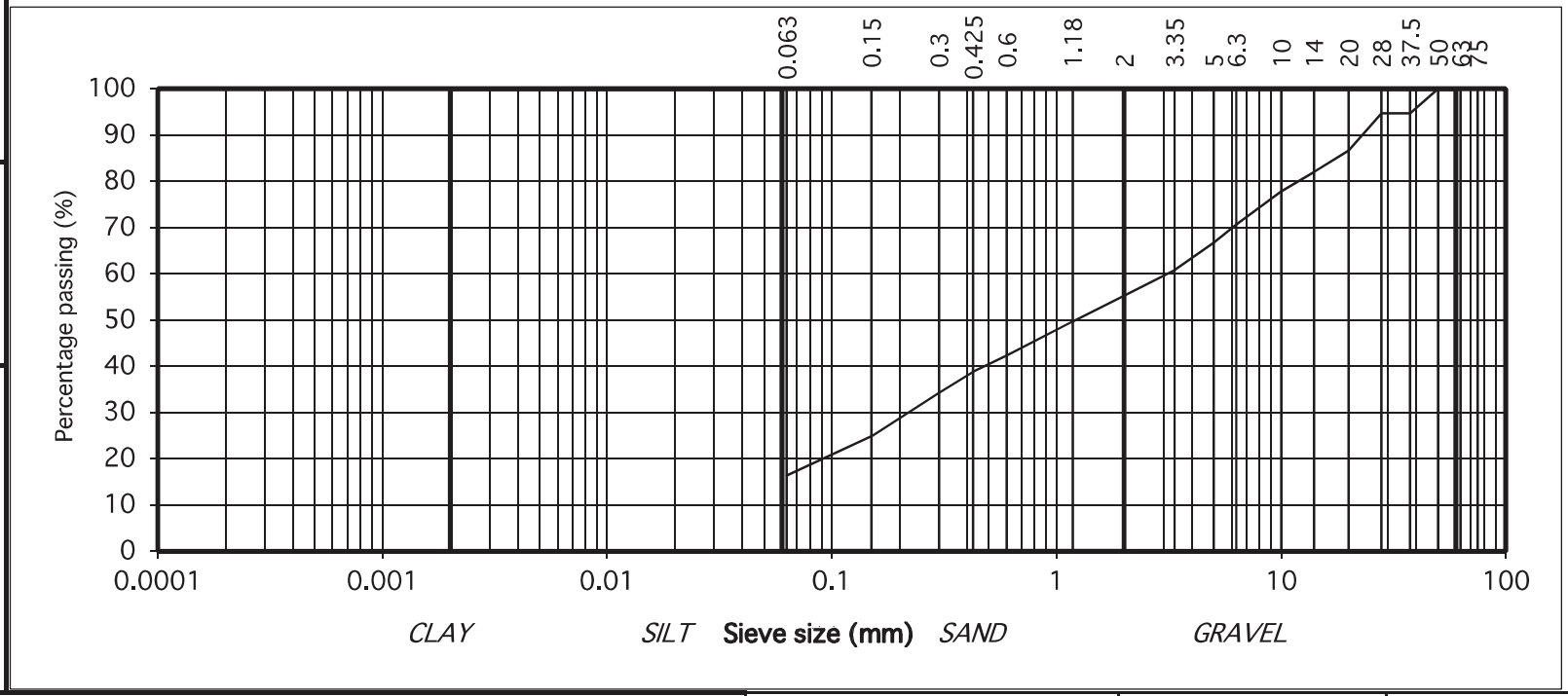

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	95	
20	94	
14	93	
10	91	
6.3	90	
5	89	
3.35	86	
2	83	
1.18	81	SAND
0.6	79	
0.425	76	
0.3	67	
0.15	55	
0.063	35	SILT/CLAY

Contract No. 23412 Report No. R127128
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP01
Sample No.* AA157598 Lab. Sample No. A21/4478
Sample Type: B
Depth* (m) 1-1.2 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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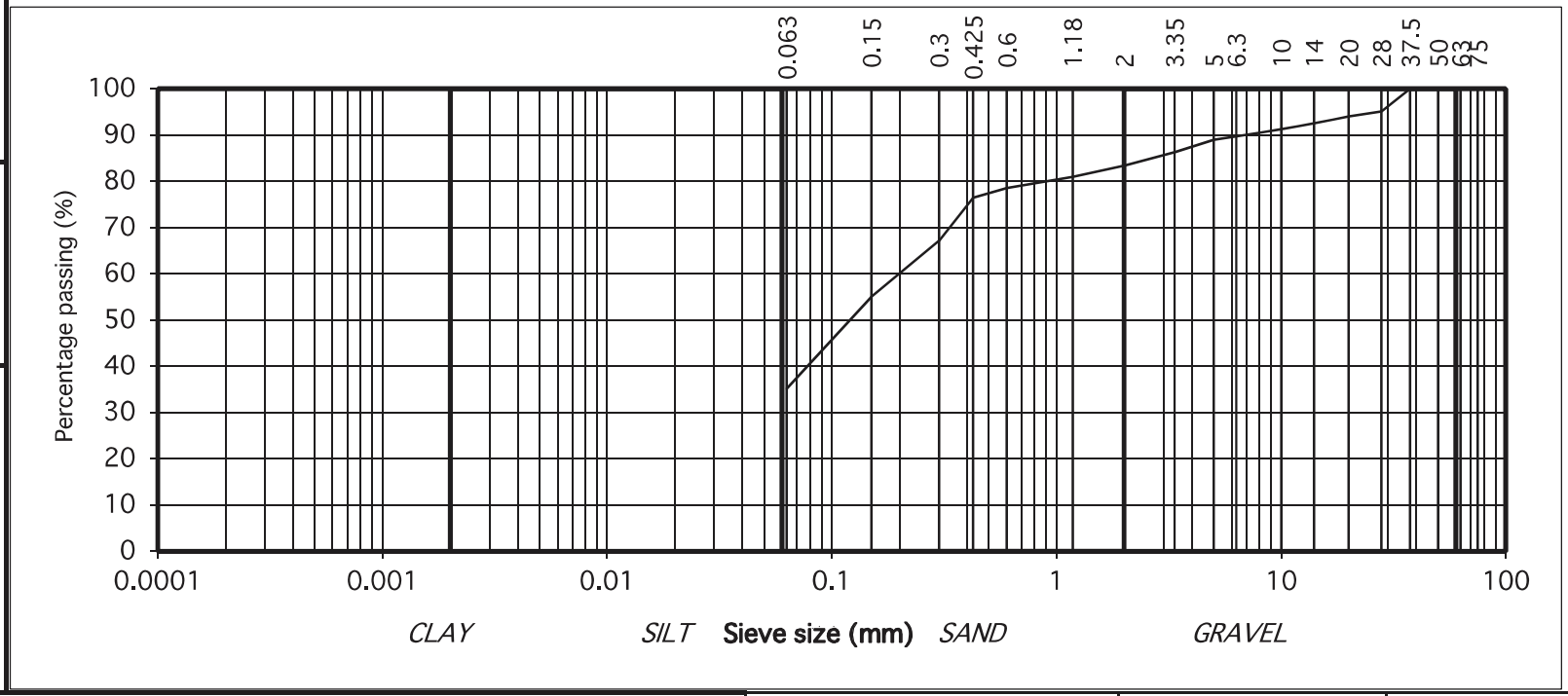

IGSL Ltd Materials Laboratory

Approved by:	Date:	Page no:
	29/09/21	1 of 1

Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	98	
28	81	
20	69	
14	63	
10	57	
6.3	51	
5	48	
3.35	45	
2	41	
1.18	38	SAND
0.6	35	
0.425	34	
0.3	32	
0.15	26	
0.063	18	SILT/CLAY

Contract No. 23412 Report No. R126582
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP01
Sample No.* AA167598 Lab. Sample No. A21/4481
Sample Type: B
Depth* (m) 1.50 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown clayey, very sandy, GRAVEL

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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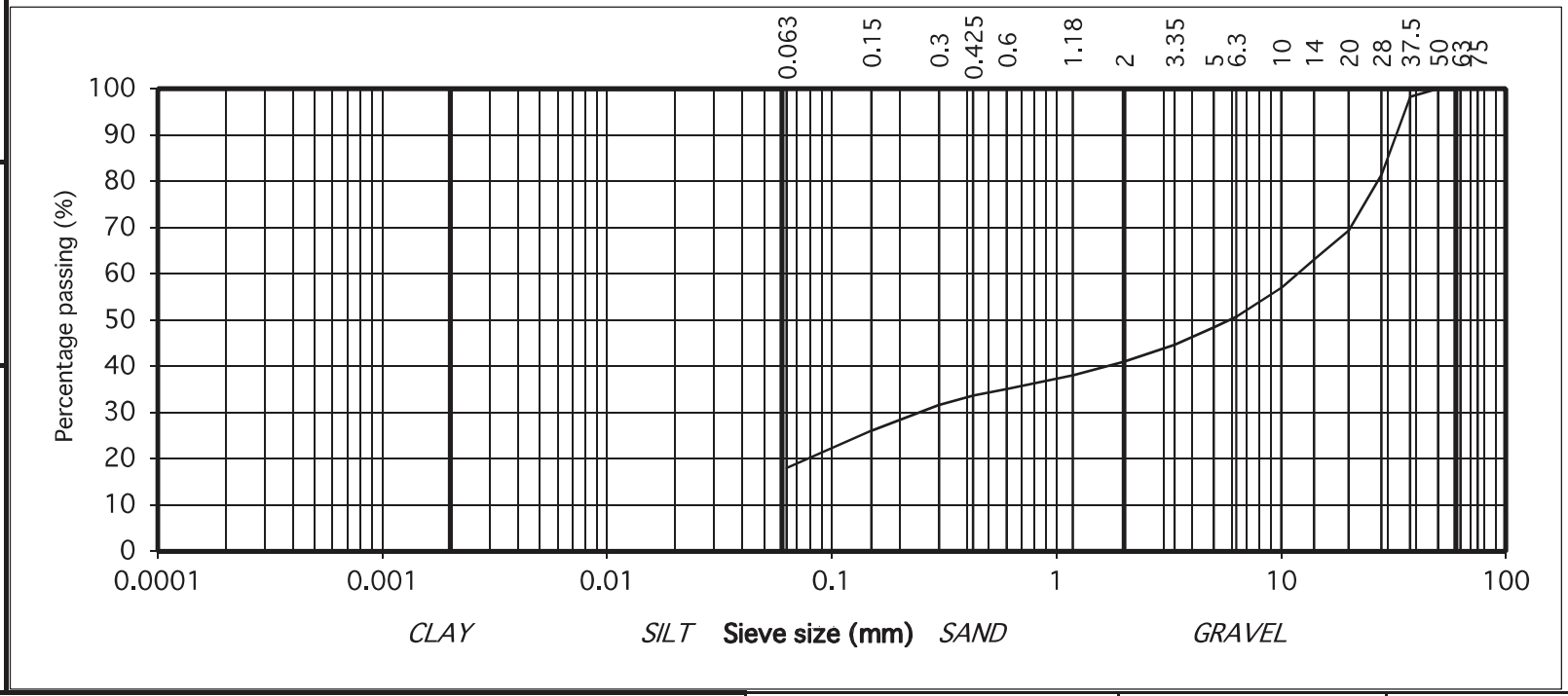

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	95	
28	91	
20	89	
14	85	
10	82	
6.3	79	
5	77	
3.35	75	
2	73	
1.18	71	SAND
0.6	67	
0.425	65	
0.3	60	
0.15	46	
0.063	33	SILT/CLAY

Contract No. 23412 Report No. R126583
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP02
Sample No.* AA167599 Lab. Sample No. A21/4482
Sample Type: B
Depth* (m) 0.40 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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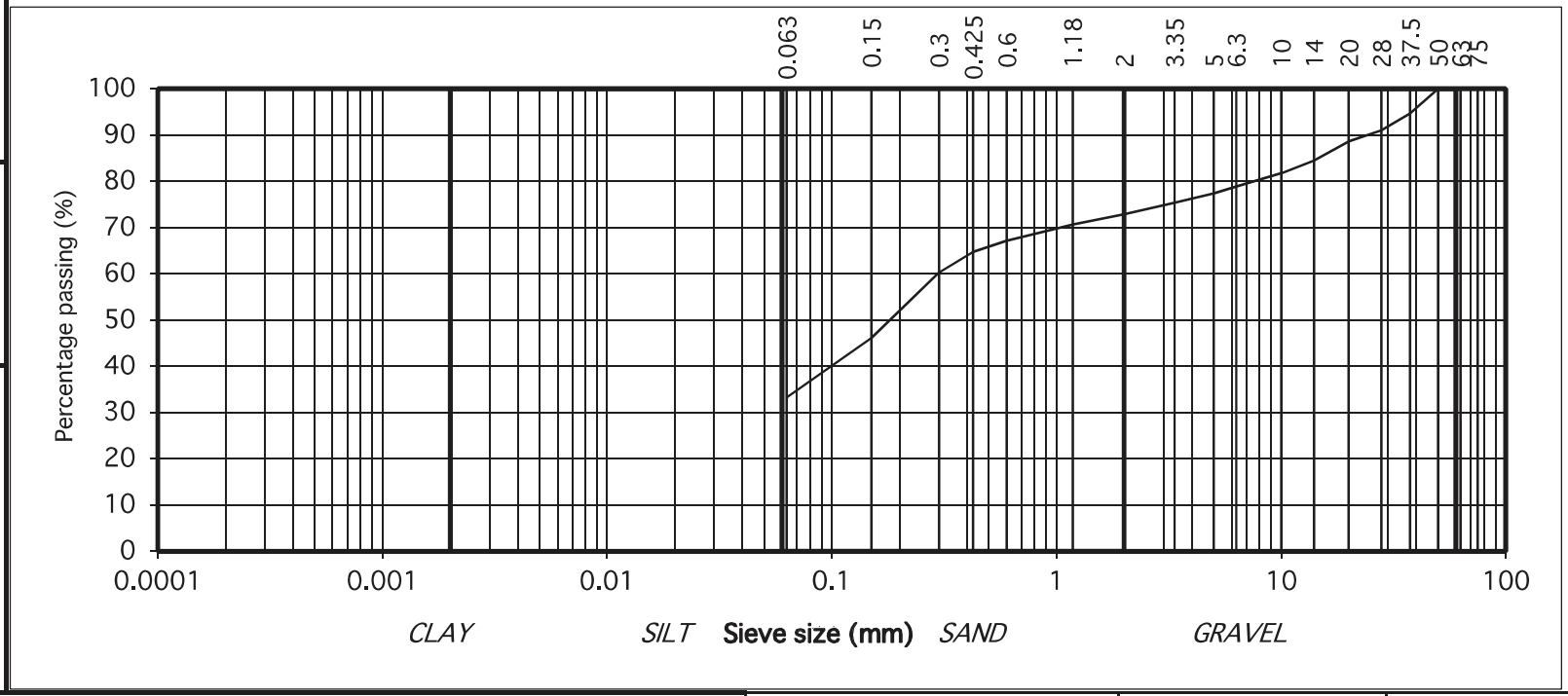

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	90	
28	84	
20	78	
14	71	
10	68	
6.3	63	
5	62	
3.35	59	
2	57	SAND
1.18	55	
0.6	53	
0.425	52	
0.3	50	
0.15	40	
0.063	29	SILT/CLAY

Contract No. 23412 Report No. R126602
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP02
Sample No.* AA167600 Lab. Sample No. A21/4484
Sample Type: B
Depth* (m) 1.20-1.40 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown slightly sandy, gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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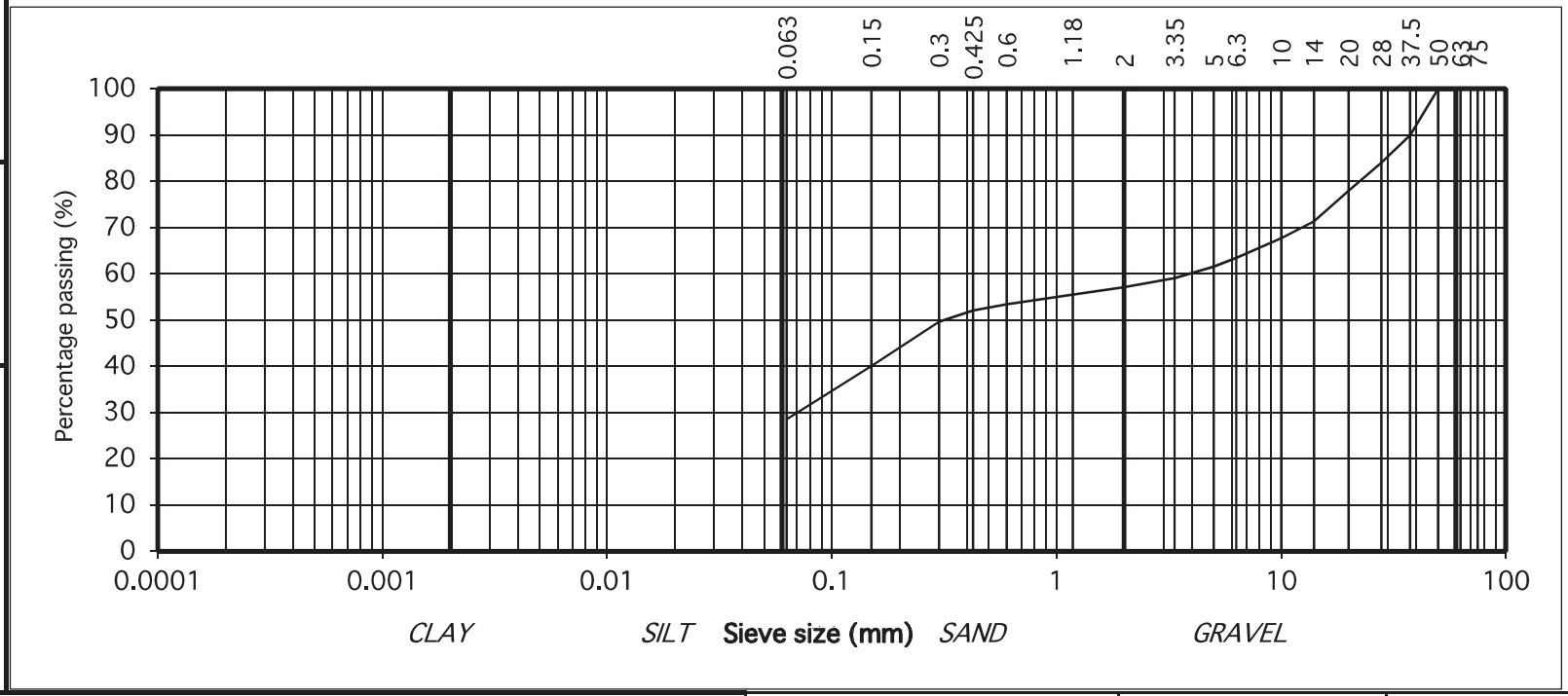

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	93	
28	87	
20	82	
14	79	
10	75	
6.3	70	
5	67	
3.35	66	
2	63	
1.18	60	SAND
0.6	56	
0.425	54	
0.3	50	
0.15	38	
0.063	28	SILT/CLAY

Contract No. 23412 Report No. R163484
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP03
Sample No.* AA163474 Lab. Sample No. A21/4485
Sample Type: B
Depth* (m) 0.30 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown slightly sandy, gravelly, SILT/CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

Results relate only to the specimen tested in as received condition unless otherwise noted. * denotes Customer supplied information. Opinions and interpretations are outside the scope of accreditation.
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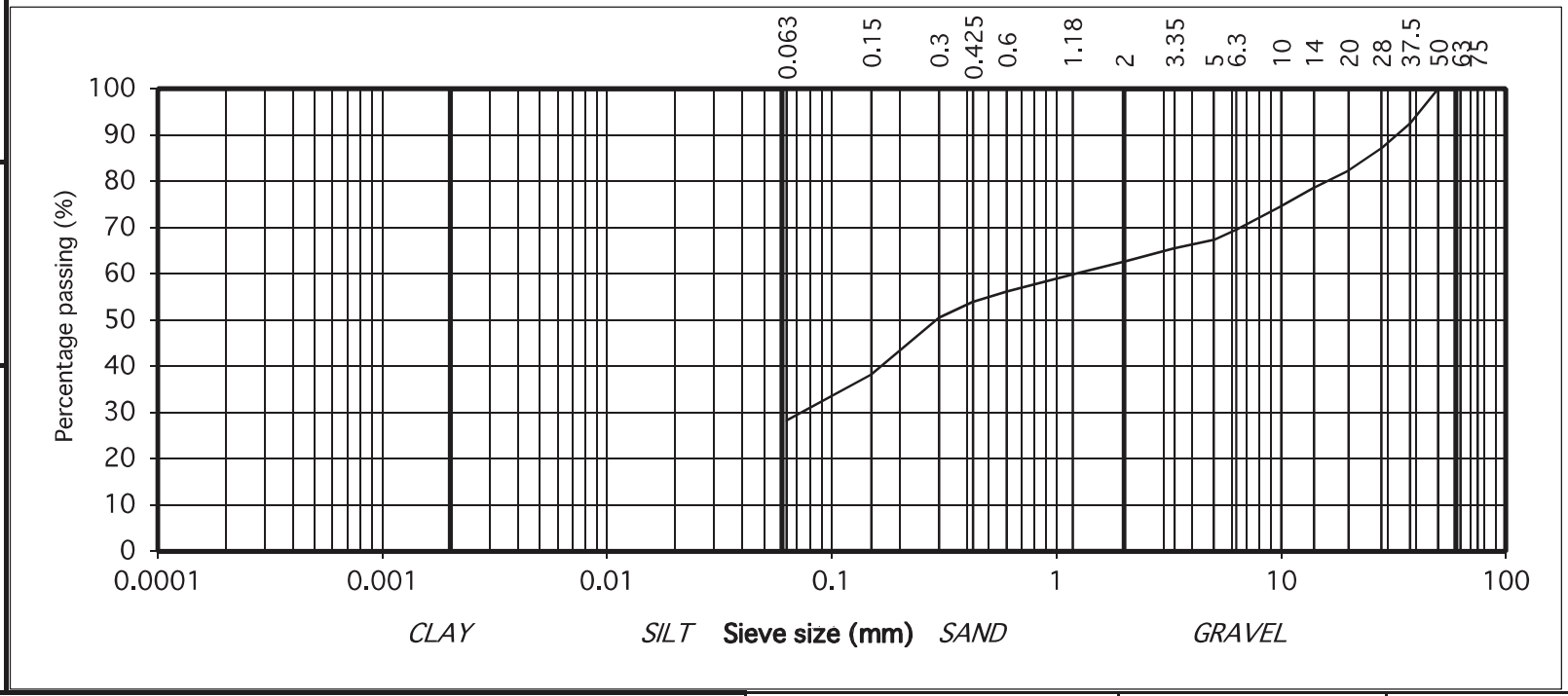

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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

TEST REPORT
Determination of Particle Size Distribution
Tested in accordance with: BS1377:Part2:1990 , clause 9.2 & 9.5**
(note: Sedimentation stage not accredited)

ISO 17025 INAB ACCREDITED TESTING DETAILED IN SCOPE REG NO. 133T

particle size	% passing	
75	100	COBBLES
63	100	
50	100	GRAVEL
37.5	100	
28	100	
20	100	
14	100	
10	99	
6.3	97	
5	97	
3.35	96	
2	95	
1.18	93	SAND
0.6	91	
0.425	89	
0.3	85	
0.15	72	
0.063	48	SILT/CLAY

Contract No. 23412 Report No. R127129
Contract Name: South Dublin St. & Backlands Rehabilitation Scheme - Monaghan Town
BH/TP* : TP03
Sample No.* AA157598 Lab. Sample No. A21/4486
Sample Type: B
Depth* (m) 1-1.2 Customer: Monaghan Co.Cc
Date Received 07/09/2021 Date Testing started 07/09/2021
Description: Brown sandy, slightly gravelly, CLAY

Remarks Note: **Clause 9.2 and Clause 9.5 of BS1377:Part 2:1990 have been superseded by ISO17892-4:2016 .

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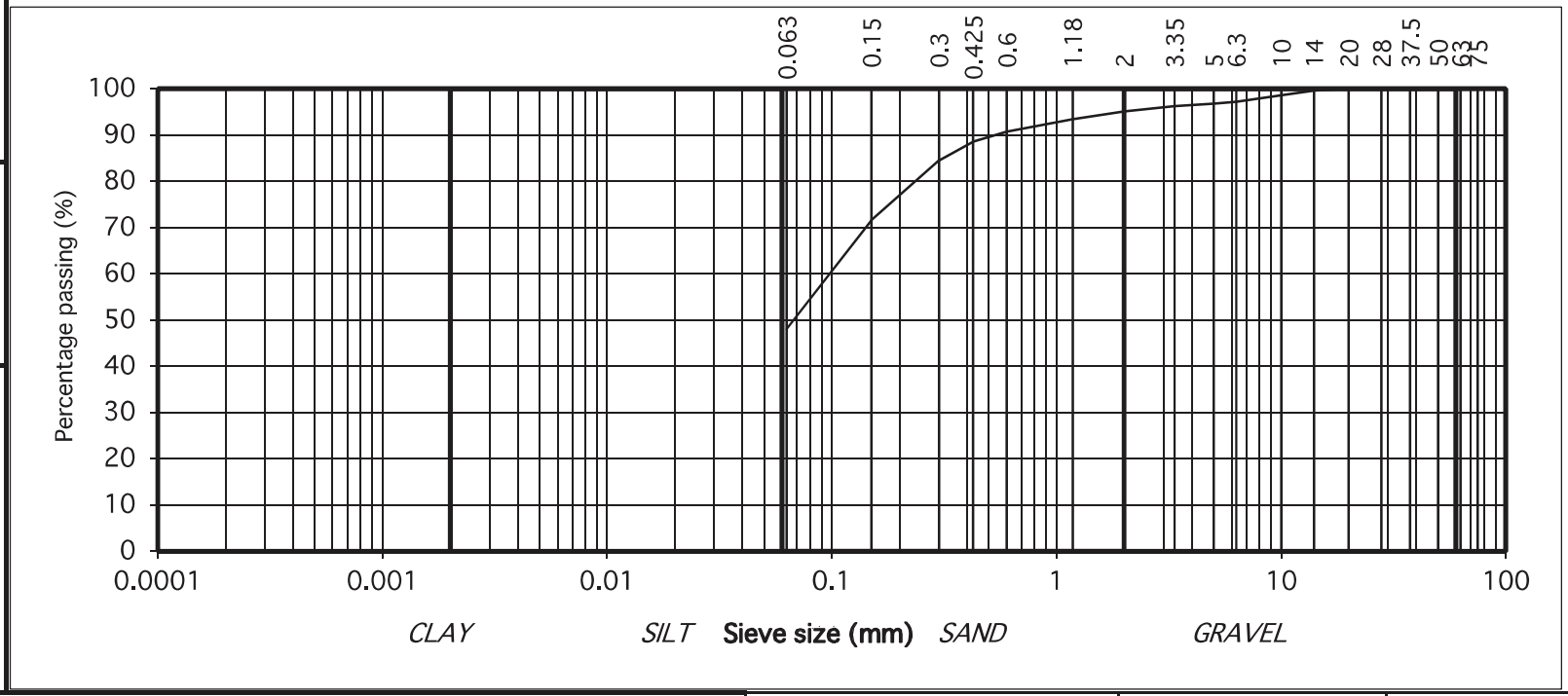

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Approved by:	Date:	Page no:
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Persons authorised to approve report: J Barrett (Quality Manager) H Byrne (Laboratory Manager)

IGSL Ltd
Materials Laboratory
Unit J5, M7 Business Park
Newhall, Naas
Co. Kildare
045 846176

Test Report

Determination of Shear Strength by the Laboratory Vane Method

Tested in accordance with BS1377:Part 7:1990, clause 3

Report No. **R123716** Contract No. 23412 Contract Name: Monaghan Town

Customer Monaghan County Council

Samples Received: Date Tested: 14/09/21

BH/TP	Sample No.	Depth (m)	Specimen Type	Average Shear Strength (kPa) (average of 3 tests)	Average Remoulded Shear Strength (kPa) after 2 revolutions of the vane	Moisture Content %	Vane Size (mm)	Description
BH01	163477	1.0	R	18.8	4.2	20.8	12.7 x 12.7	Grey brown slightly gravelly sandy SILT/CLAY
BH01	154151	2.0	R	9.4	2.7	18.1	12.7 x 12.7	Grey brown sandy SILT/CLAY
BH01	154152	3.0	R	5.5	1.0	27.3	12.7 x 12.7	Grey brown sandy SILT/CLAY
TP01	157598	1.0	R	70.0	7.9	18.1	12.7 x 12.7	Brown slightly gravelly sandy SILT/CLAY with roots
TP03	153474	1.0	R	31.3	1.6	26.7	12.7 x 12.7	Yellowish brown slightly gravelly sandy SILT/CLAY

Specimen Types: P - Piston U - U100 tube R - Remoulded specimen (compacted into container)

IGSL Ltd Laboratory	Persons authorized to approve reports	Approved by	Date	Page
	J Barrett (Quality Manager)		21/09/21	1 of 1

Determination of Shear Strength by Direct Shear

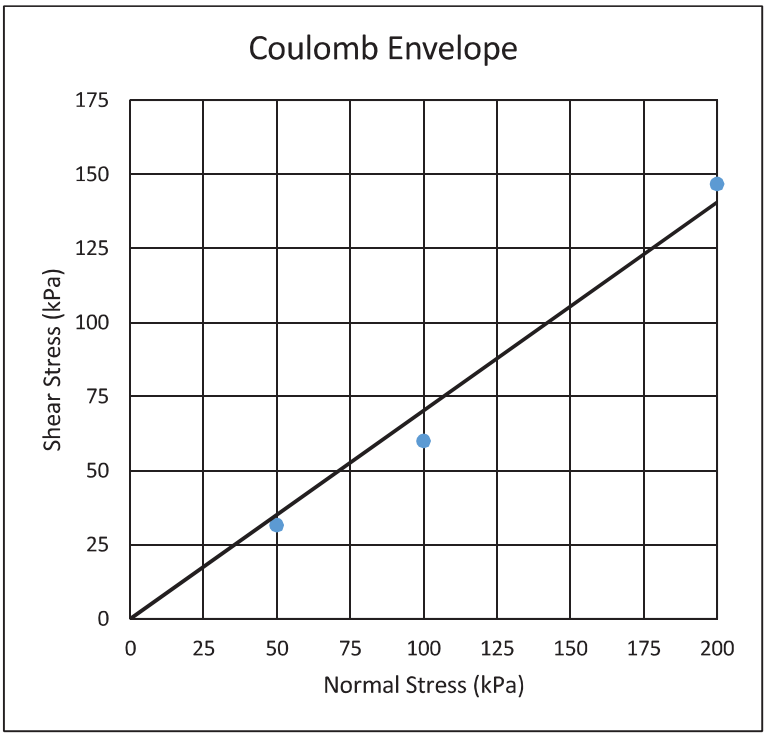
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location*:	BH01	Depth (m)*	1	Sample No.*	163477
Report No.	R126745			Customer:	Monaghan County Council
Sample Received:	-			Testing started:	01/10/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Grey brown sandy slightly gravelly SILT/CLAY

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	36	36	36
Initial Bulk Density (Mg/m^3)	1.91	1.90	1.90
Initial Dry Density (Mg/m^3)	1.40	1.40	1.40
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	31.62	59.96	146.703
Horizontal displacement at failure (mm)	5.27	11.15	12
Rate Horizontal displacement (mm/min)	0.019	0.012	0.016
Condition (Dry (D) / Submerged (S))	S	S	S

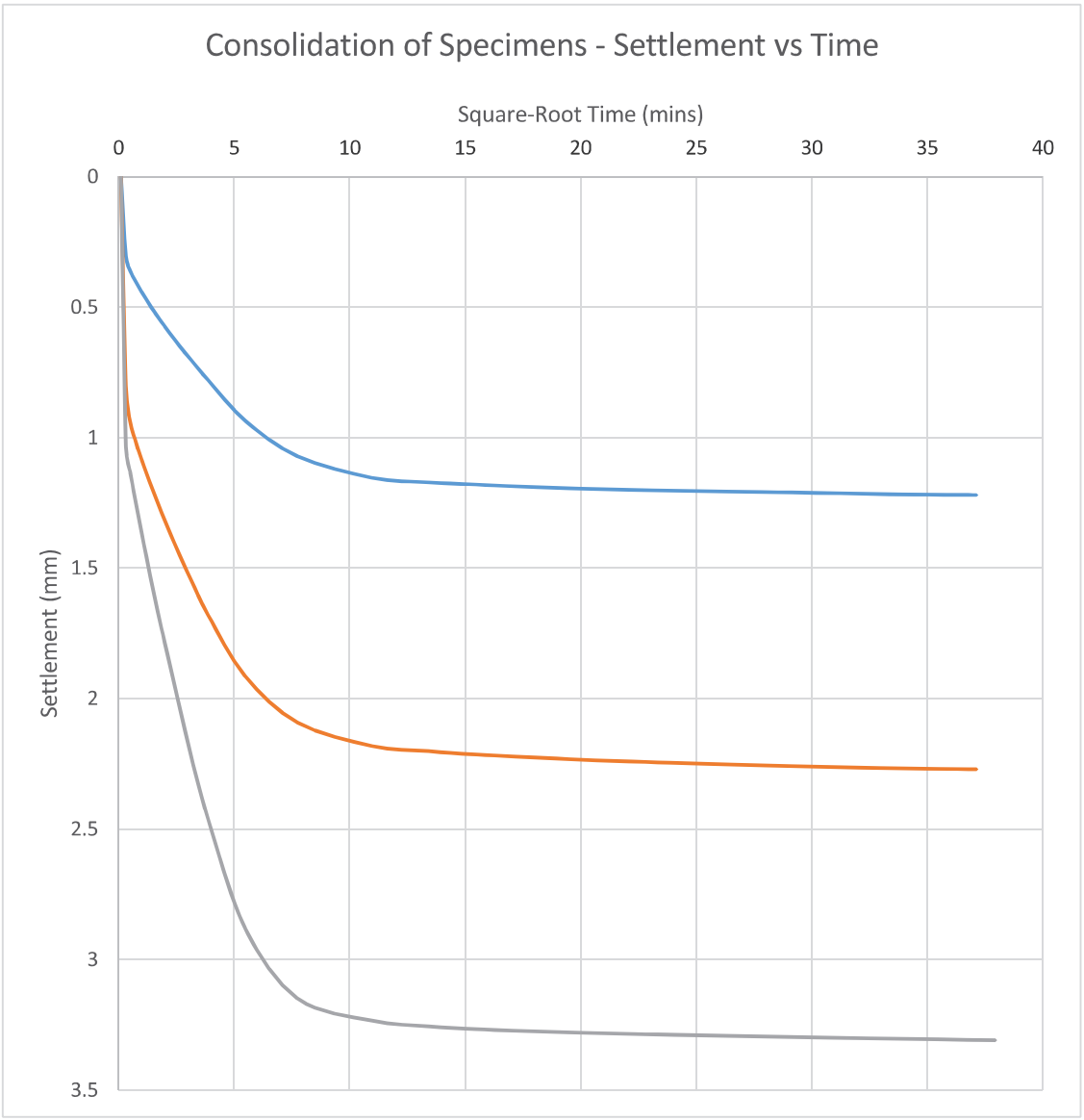


c' (kPa)	0
ϕ' (degrees)	35

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	BH01	Depth (m)	1	Sample No.	163477



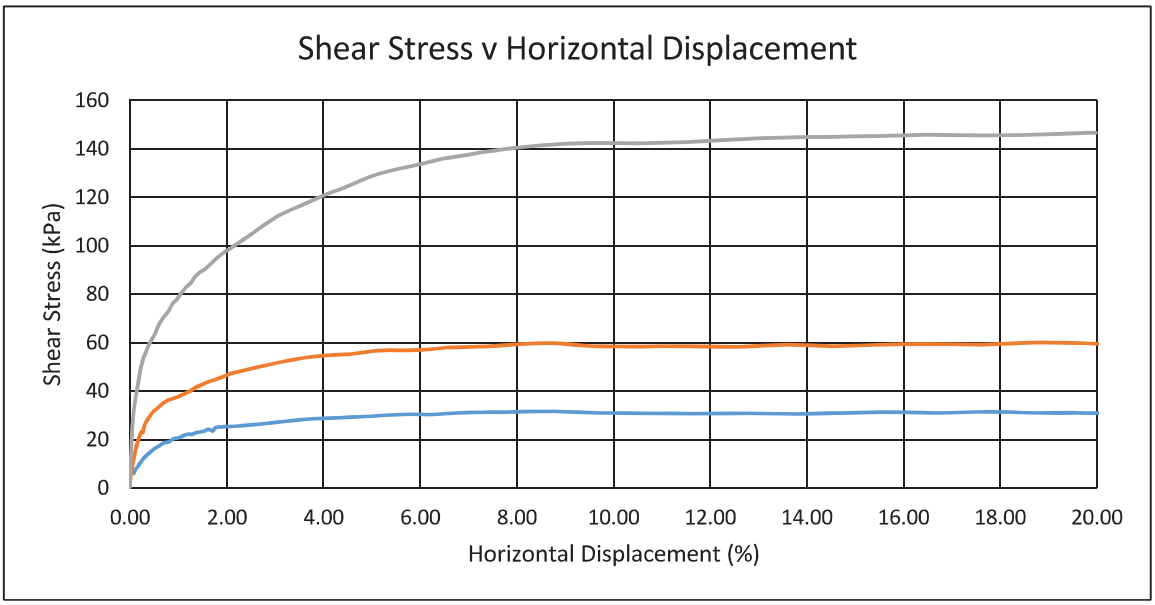
Determination of Shear Strength by Direct Shear

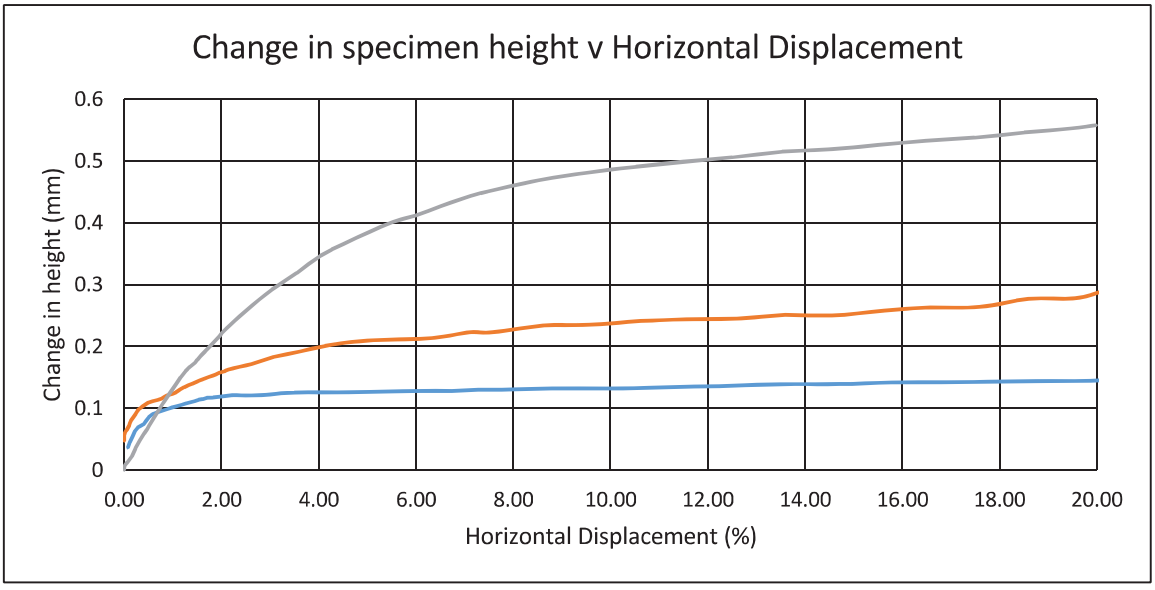
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: BH01 Depth (m) 1 Sample No. 163477

Report No. R126745





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date	Page 3 of 3
		06/10/21	

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

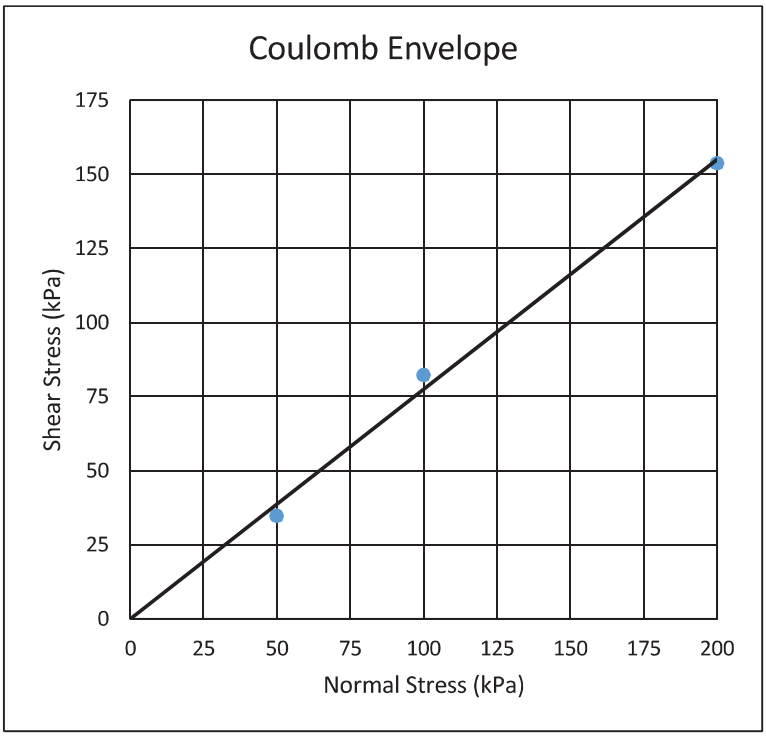
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.133T

Contract:	Monaghan Town			Contract No.	23412
Location*:	BH01	Depth (m)*	1.2	Sample No.*	153477
Report No.	R126746			Customer:	Monaghan County Council
Sample Received:	-			Testing started:	05/10/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Grey brown sandy slightly gravelly SILT/CLAY

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	22	22	22
Initial Bulk Density (Mg/m^3)	2.05	2.04	2.03
Initial Dry Density (Mg/m^3)	1.68	1.68	1.67
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	34.71	82.25	153.736
Horizontal displacement at failure (mm)	3.48	4.44	4.43
Rate Horizontal displacement (mm/min)	0.016	0.022	0.044
Condition (Dry (D) / Submerged (S))	S	S	S



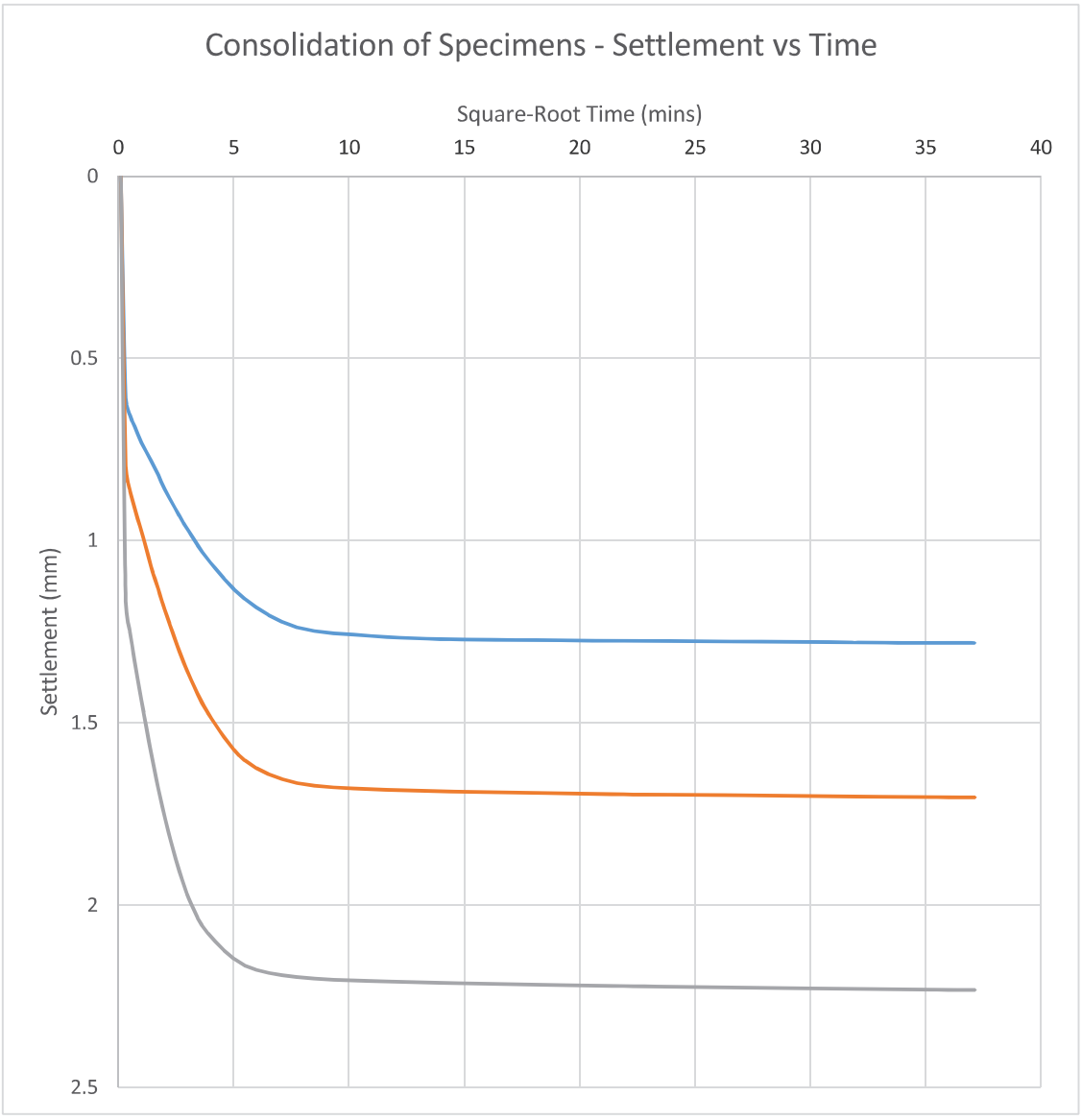
c' (kPa)	0
ϕ' (degrees)	38

* denotes customer supplied information
Opinions and Interpretations are outside the scope of accreditation
The results relate to the specimen in as received condition unless otherwise stated.

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	BH01	Depth (m)	1.2	Sample No.	153477



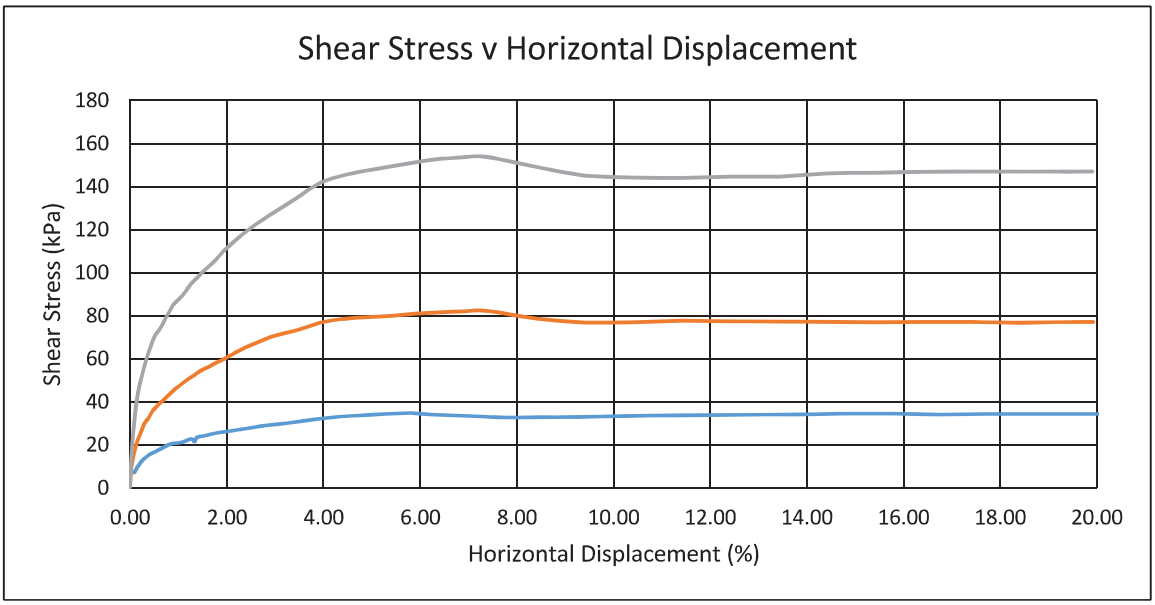
Determination of Shear Strength by Direct Shear

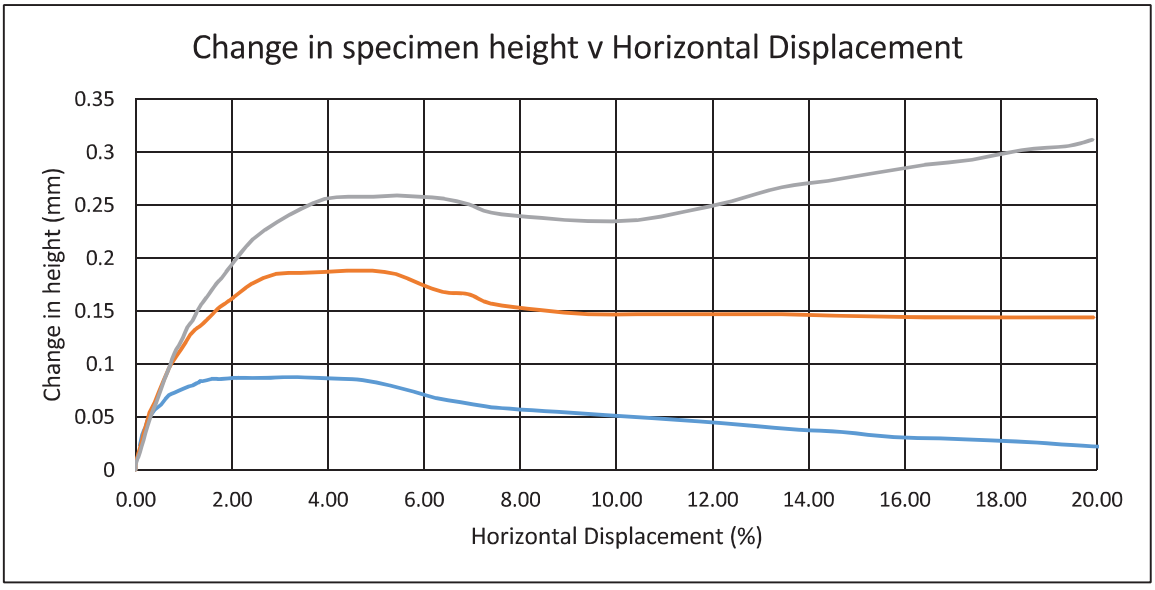
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: BH01 Depth (m) 1.2 Sample No. 153477

Report No. R126746





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date	Page 3 of 3
		08/10/21	

Determination of Shear Strength by Direct Shear

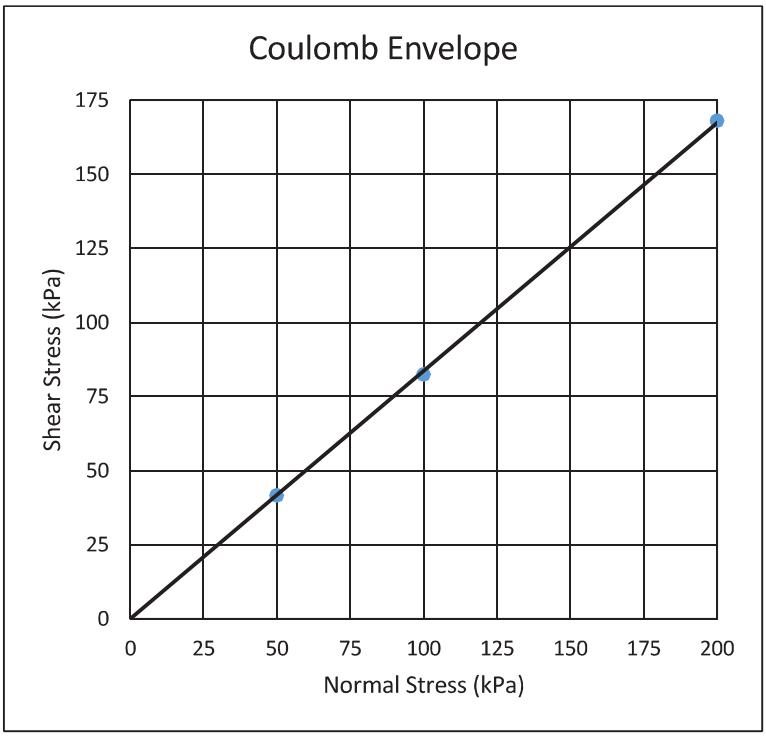
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location*:	BH01	Depth (m)*	2.0	Sample No.*	154151
Report No.	R126747			Customer:	Monaghan County Council
Sample Received:	-			Testing started:	08/10/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Grey brown very sandy SILT/CLAY

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	18	18	18
Initial Bulk Density (Mg/m^3)	2.12	2.13	2.13
Initial Dry Density (Mg/m^3)	1.79	1.80	1.80
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	41.62	82.40	168.043
Horizontal displacement at failure (mm)	3.07	2.84	3.19
Rate Horizontal displacement (mm/min)	0.058	0.097	0.109
Condition (Dry (D) / Submerged (S))	S	S	S



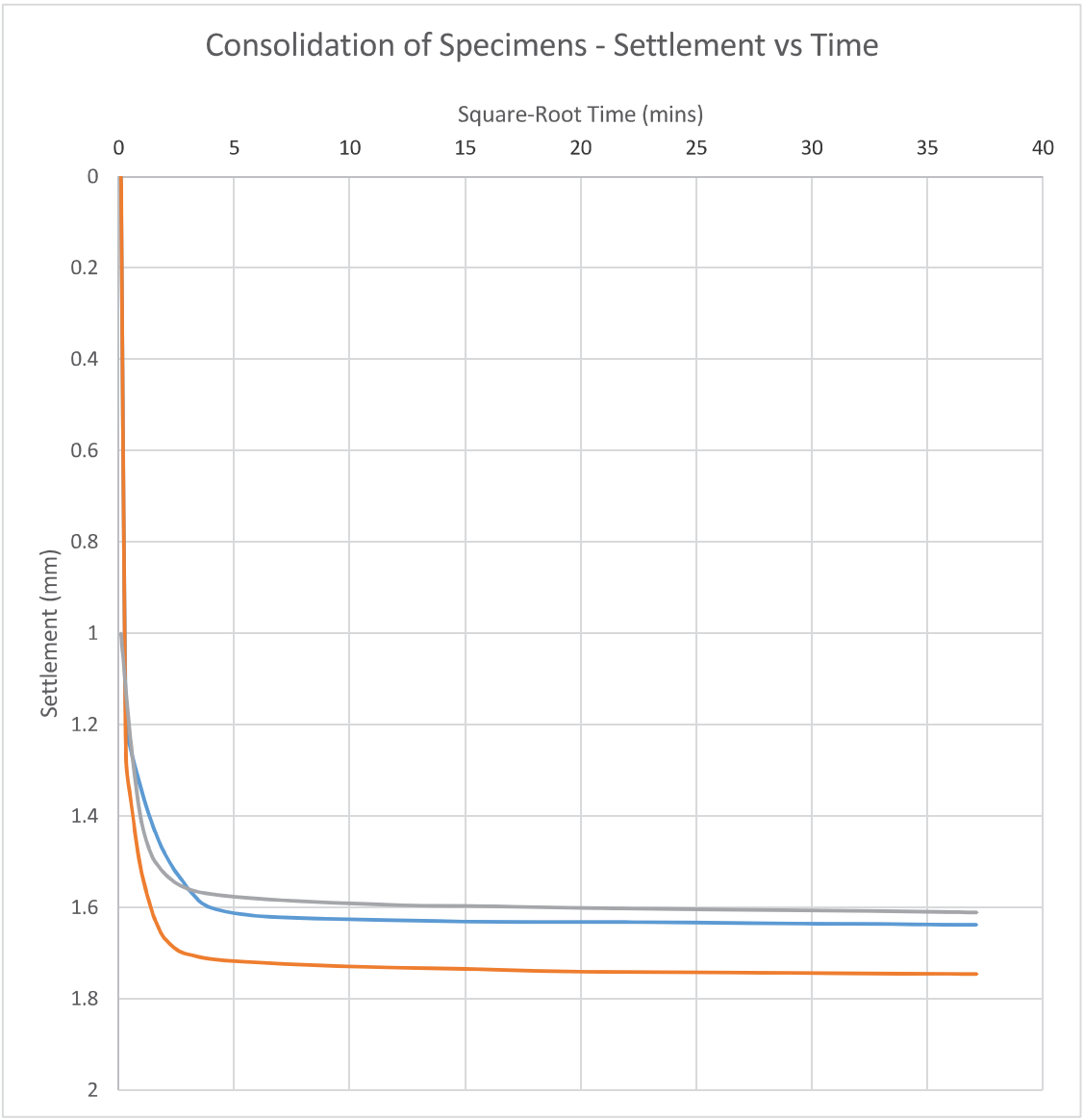
c' (kPa)	0
ϕ' (degrees)	40

* denotes customer supplied information
Opinions and Interpretations are outside the scope of accreditation
The results relate to the specimen in as received condition unless otherwise stated.

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	BH01	Depth (m)	2.0	Sample No.	154151



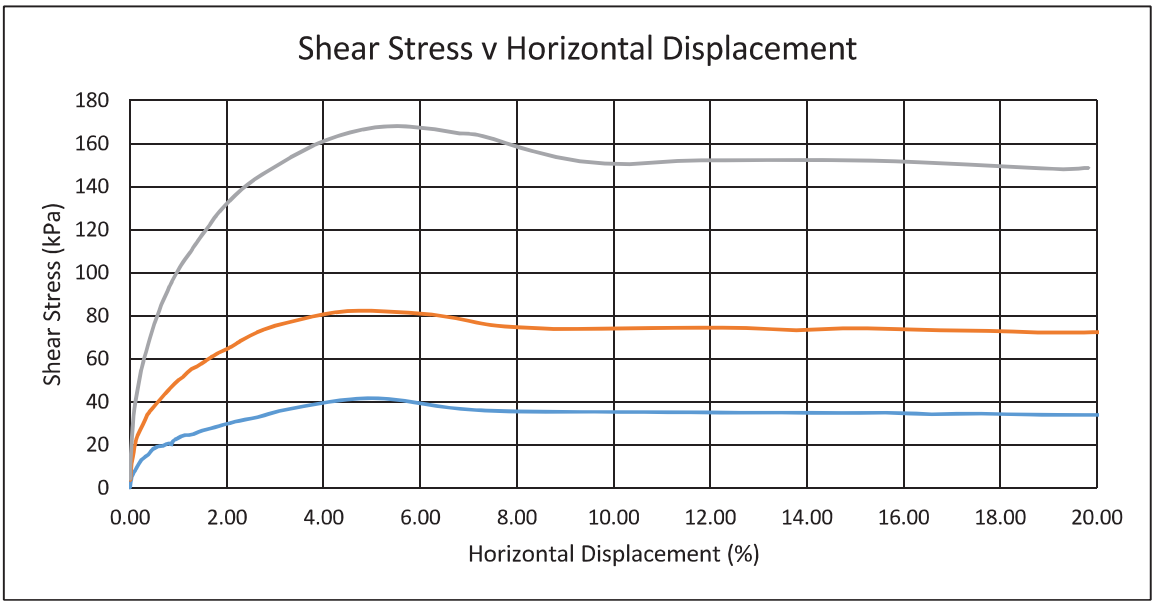
Determination of Shear Strength by Direct Shear

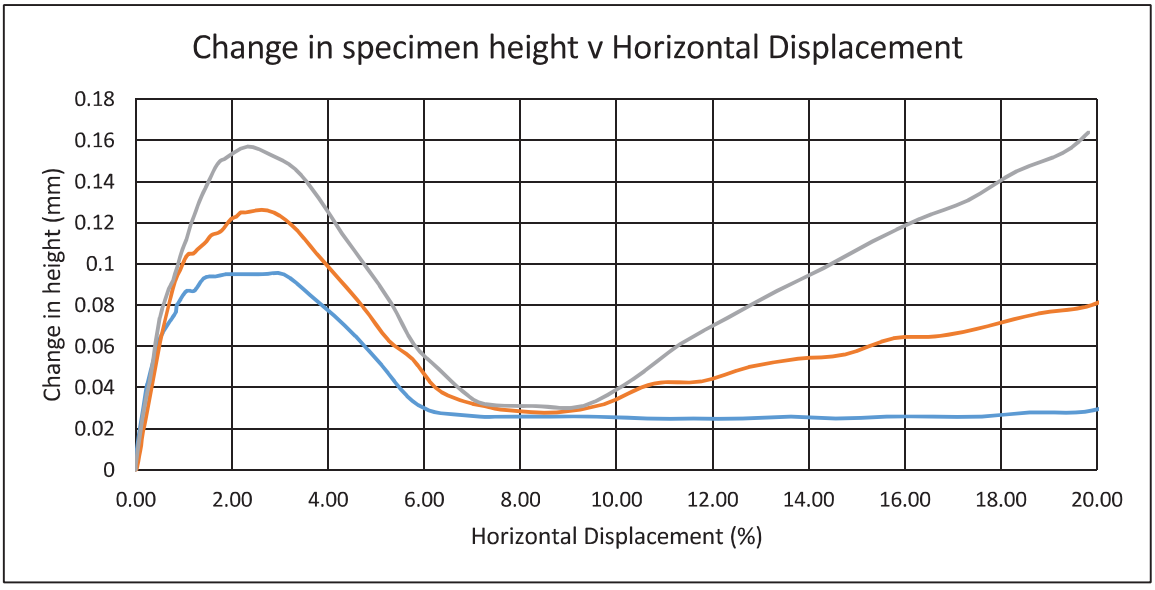
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: BH01 Depth (m) 2.0 Sample No. 154151

Report No. R126747





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date	Page 3 of 3
		12/10/21	

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town | Contract No. 23412

Location*: BH01 | Depth (m)* 3.0 | Sample No.* 154151

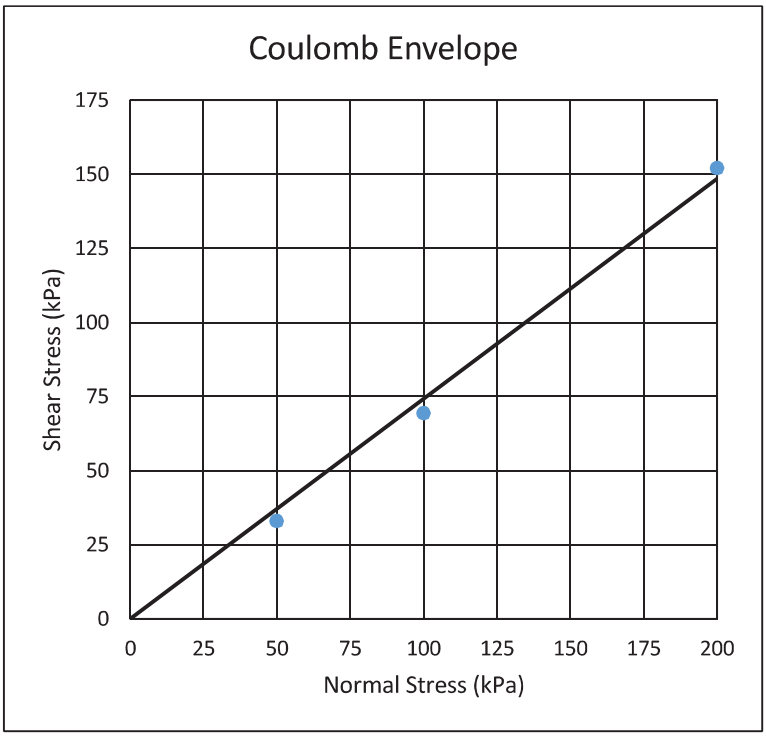
Report No. R126748 | Customer: Monaghan County Council

Sample Received: - | Testing started: 11/10/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Grey sandy SILT/CLAY with occasional roots

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	28	28	28
Initial Bulk Density (Mg/m^3)	2.09	2.09	2.08
Initial Dry Density (Mg/m^3)	1.63	1.63	1.62
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	32.96	69.33	152.107
Horizontal displacement at failure (mm)	3.96	11.14	4.55
Rate Horizontal displacement (mm/min)	0.071	0.097	0.097
Condition (Dry (D) / Submerged (S))	S	S	S

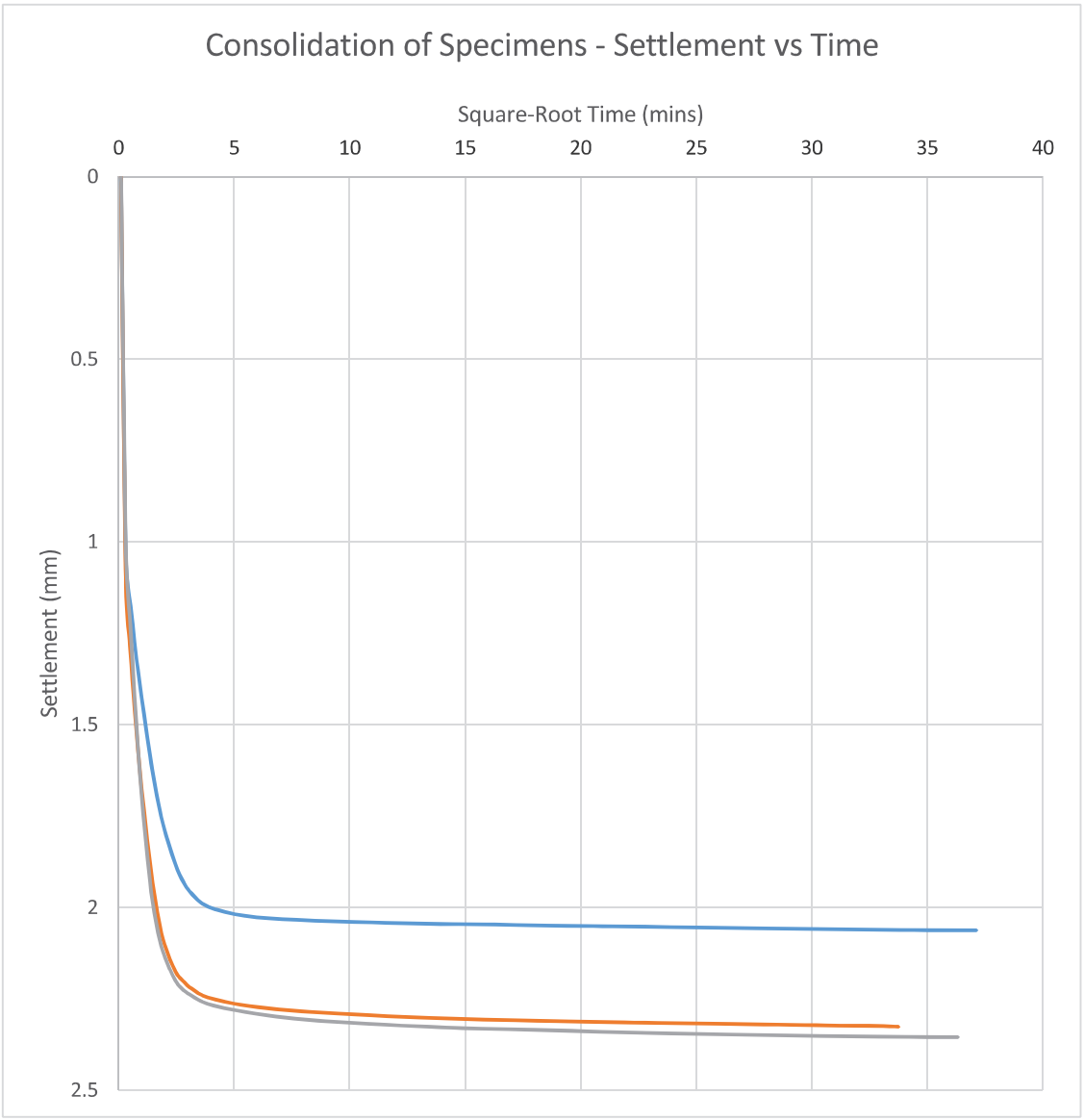


c' (kPa)	0
ϕ' (degrees)	37

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	BH01	Depth (m)	3.0	Sample No.	154151



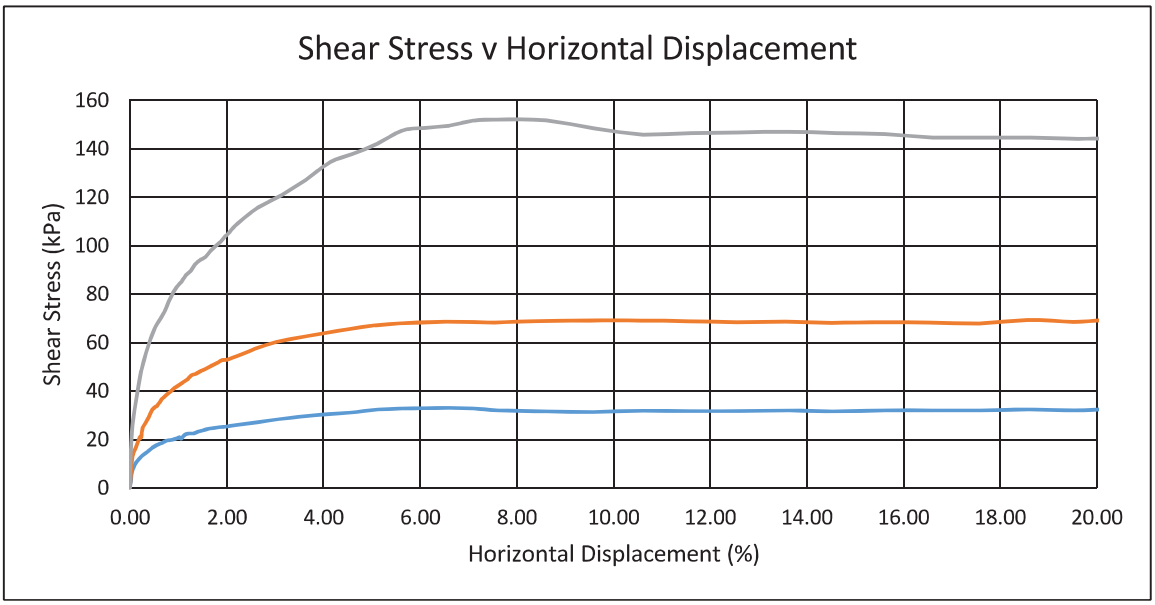
Determination of Shear Strength by Direct Shear

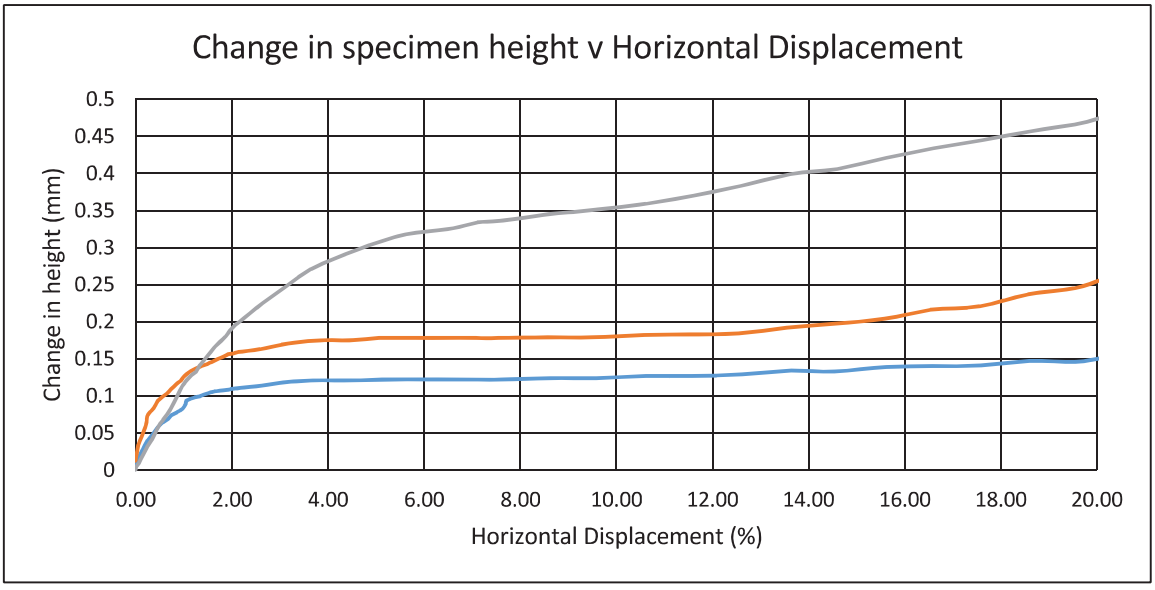
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: BH01 Depth (m) 3.0 Sample No. 154151

Report No. R126748





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date	Page 3 of 3
		13/10/21	

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

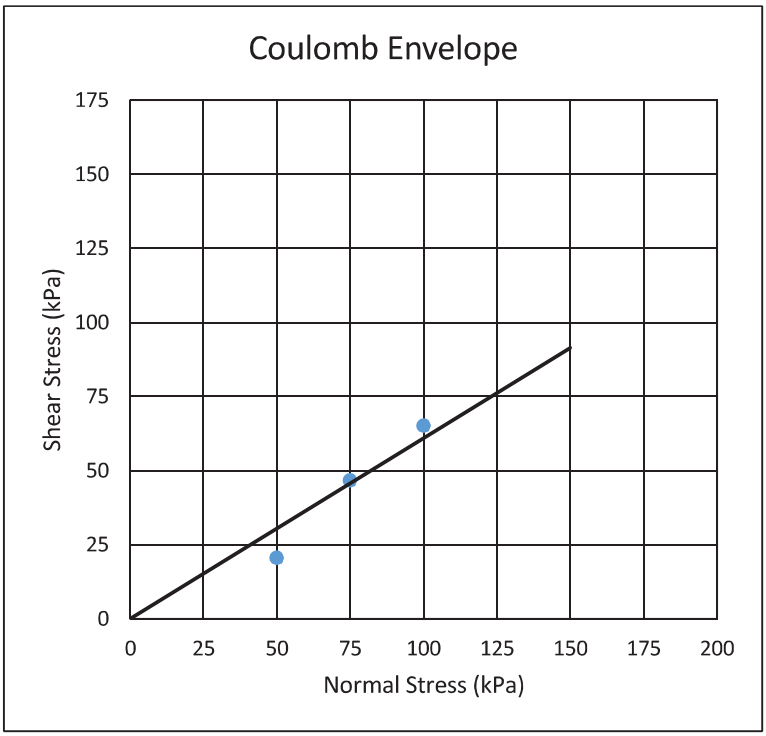
ISO 17025 IVNAB ACCREDITED TESTING DETAILED IN SCOPE REG NO.1331

Contract:	Monaghan Town			Contract No.	23412
Location*:	TP1	Depth (m)*	1.0-1.2	Sample No.*	157598
Report No.	R126749			Customer:	Monaghan County Council
Sample Received:	-			Testing started:	27/09/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Brown sandy slightly gravelly SILT/CLAY with roots

	Specimen		
	1	2	3
Normal Stress (kPa)	50	75	100
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	19.0	19.0	19.0
Initial Bulk Density (Mg/m^3)	1.39	1.39	1.38
Initial Dry Density (Mg/m^3)	1.17	1.16	1.16
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	20.59	46.74	65.147
Horizontal displacement at failure (mm)	9.47	11.78	11.95
Rate Horizontal displacement (mm/min)	0.082	0.24	0.22
Condition (Dry (D) / Submerged (S))	S	S	S



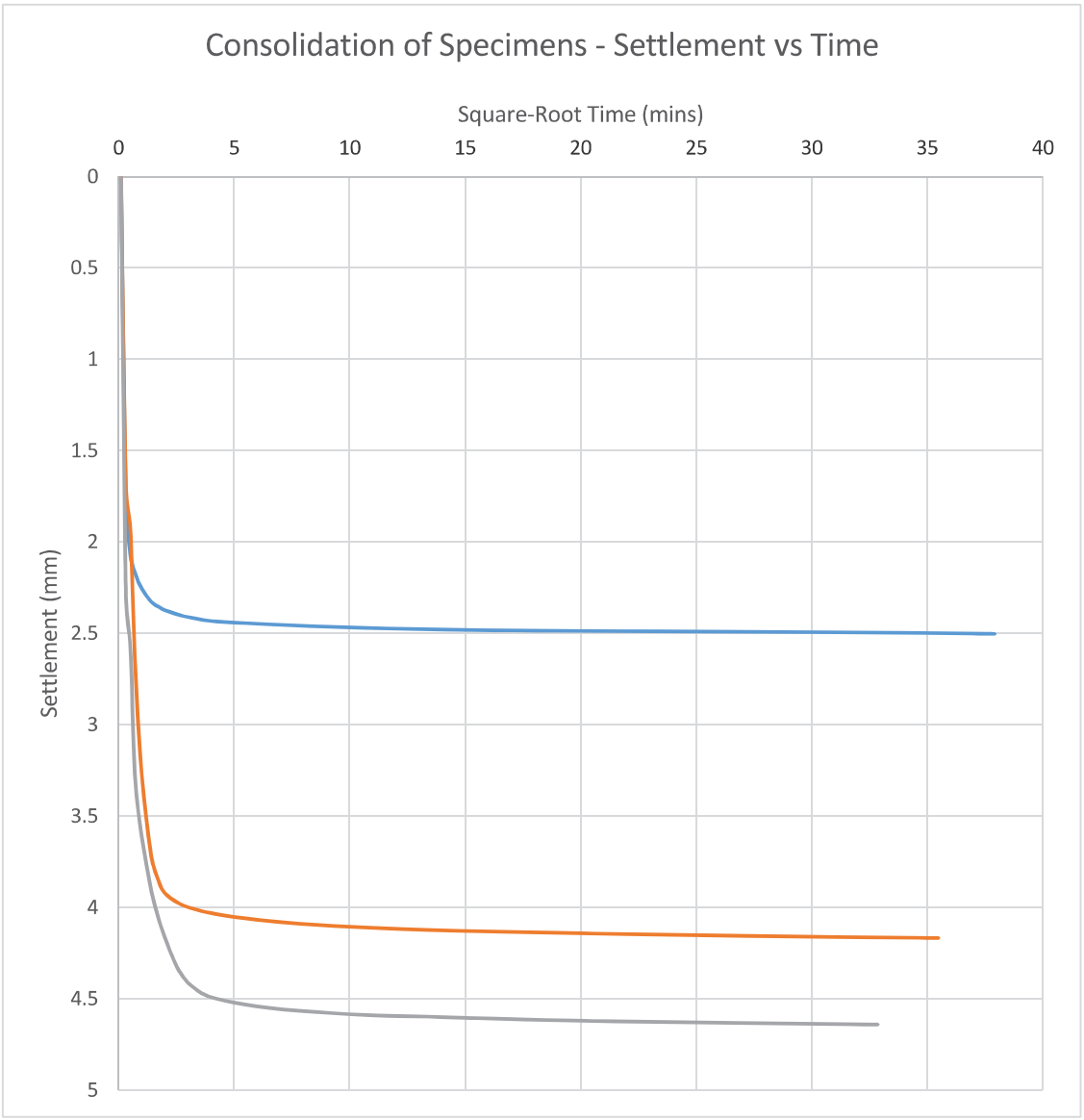
c' (kPa)	0
ϕ' (degrees)	32

* denotes customer supplied information
Opinions and Interpretations are outside the scope of accreditation
The results relate to the specimen in as received condition unless otherwise stated.

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	TP1	Depth (m)	1.0-1.2	Sample No.	157598



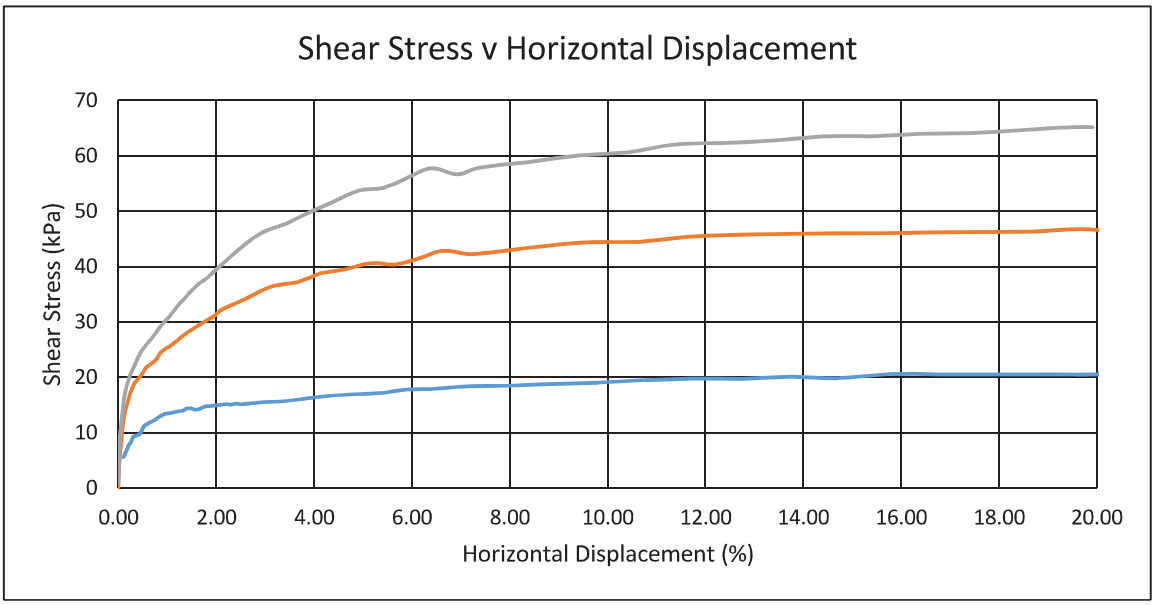
Determination of Shear Strength by Direct Shear

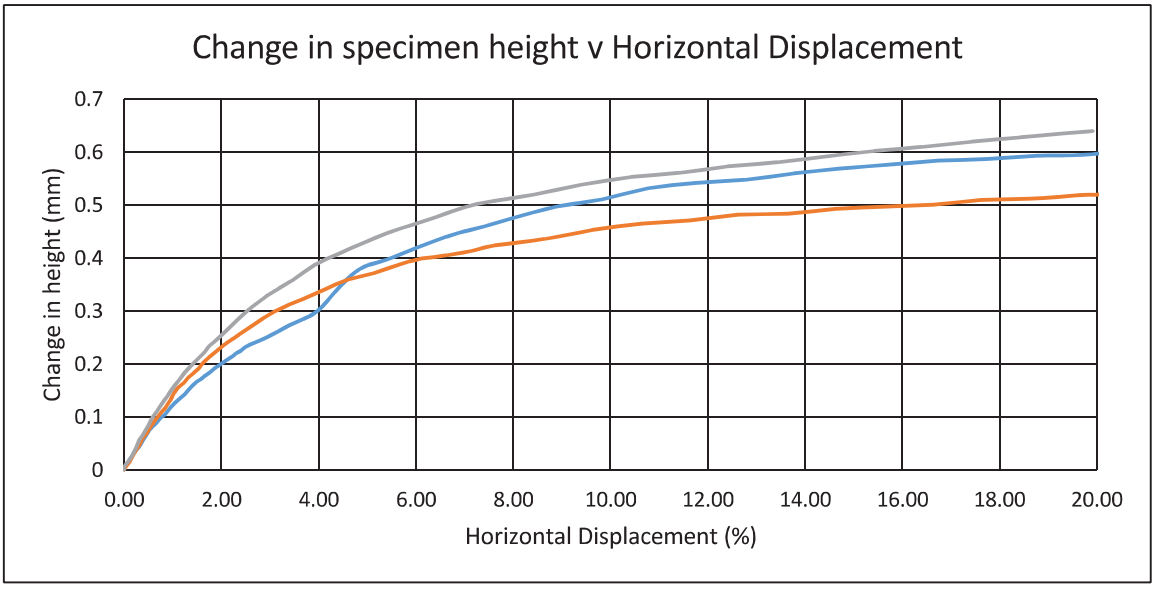
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: TP1 Depth (m) 1.0-1.2 Sample No. 157598

Report No. R126749





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date	Page 3 of 3
		30/09/21	

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town | Contract No. 23412

Location*: TP3 | Depth (m)* 1.0 | Sample No.* 153474

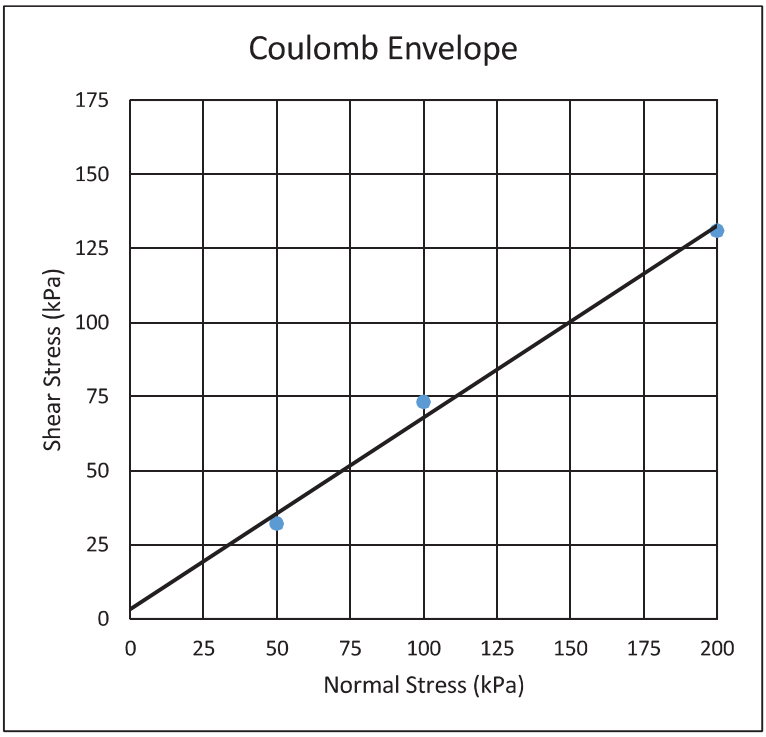
Report No. R126750 | Customer: Monaghan County Council

Sample Received: - | Testing started: 28/09/21

Method of Preparation: <2mm material compacted into cutter at as received Moisture content

Description: Brown slightly sandy slightly gravelly SILT/CLAY

	Specimen		
	1	2	3
Normal Stress (kPa)	50	100	200
Length/Width (mm)	60.0 x 60.0	60.0 x 60.0	60.0 x 60.0
Height (mm)	23.0	23.0	23.0
Initial Moisture Content (%)	26	26	26
Initial Bulk Density (Mg/m^3)	1.97	1.97	1.98
Initial Dry Density (Mg/m^3)	1.56	1.57	1.57
Particle Density (Mg/m^3) (Assumed)	2.65	2.65	2.65
Maximum Shear Stress (kPa)	32.12	73.14	130.92
Horizontal displacement at failure (mm)	4.04	4.71	4.7
Rate Horizontal displacement (mm/min)	0.054	0.026	0.026
Condition (Dry (D) / Submerged (S))	S	S	S



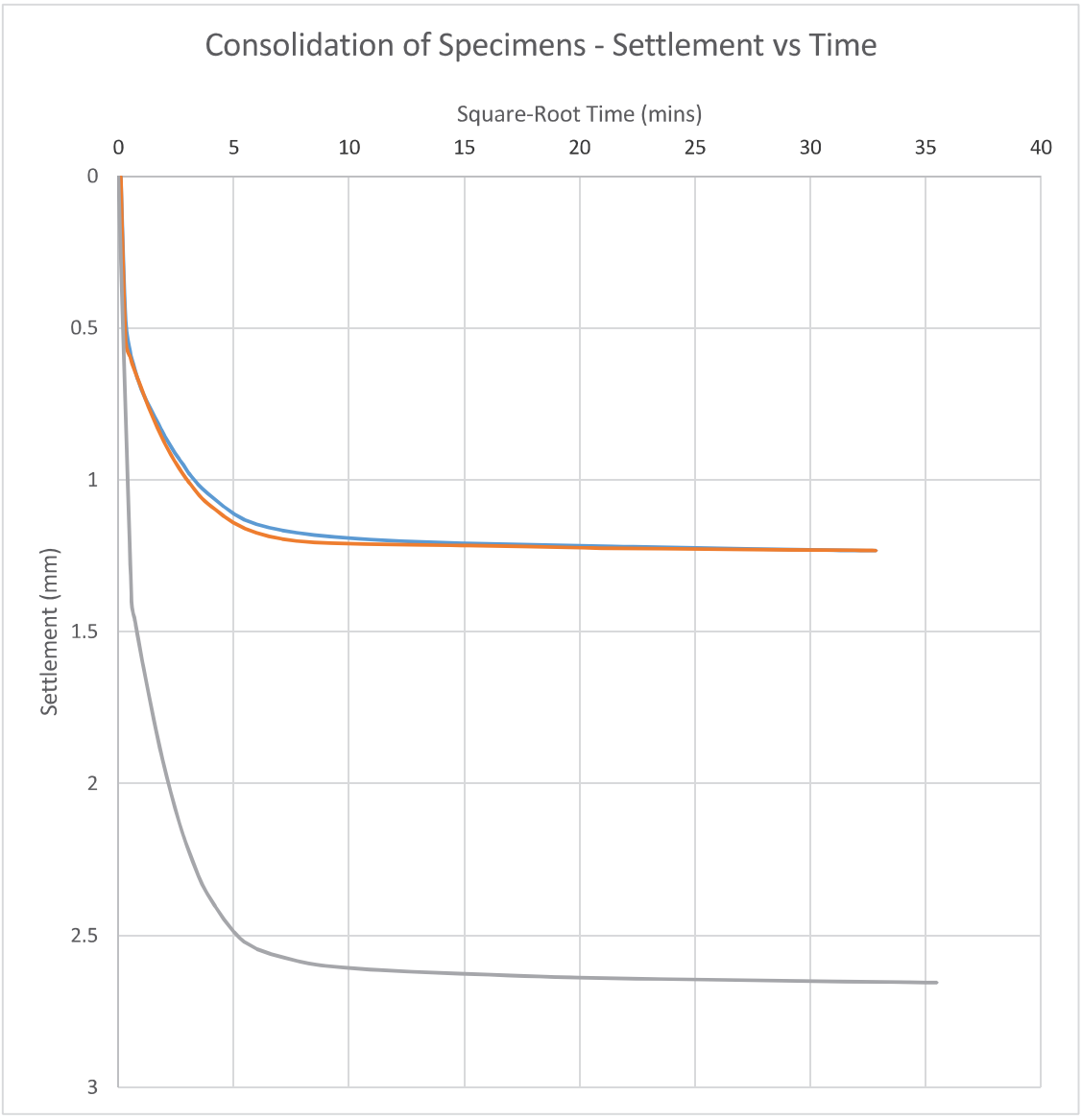
c' (kPa)	3
ϕ' (degrees)	33

* denotes customer supplied information
Opinions and Interpretations are outside the scope of accreditation
The results relate to the specimen in as received condition unless otherwise stated.

Determination of Shear Strength by Direct Shear

Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract:	Monaghan Town			Contract No.	23412
Location:	TP3	Depth (m)	1.0	Sample No.	153474



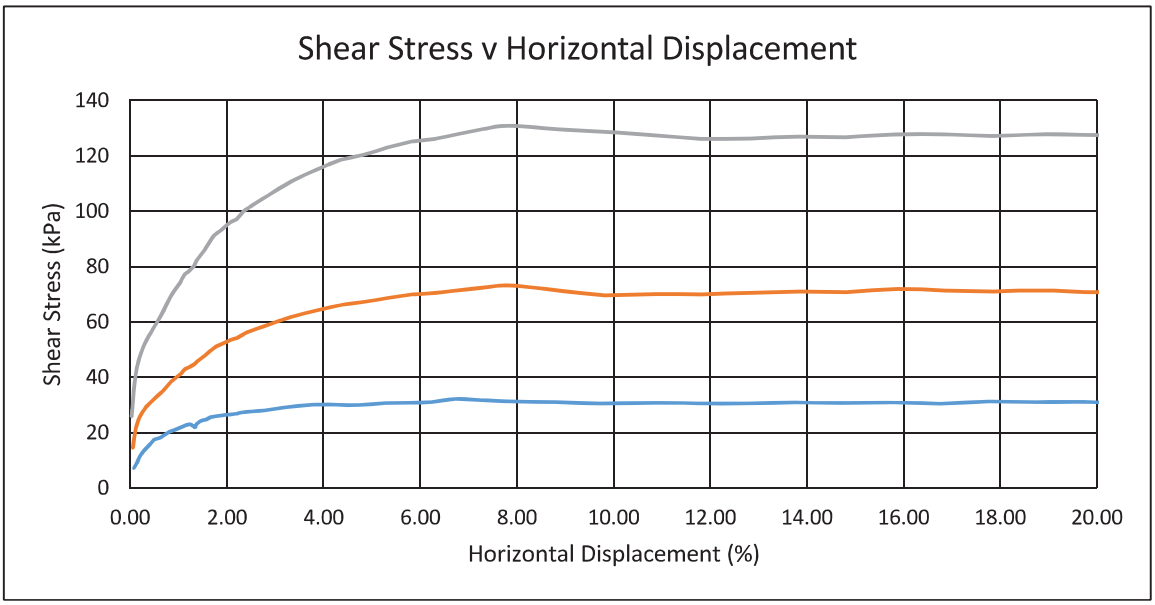
Determination of Shear Strength by Direct Shear

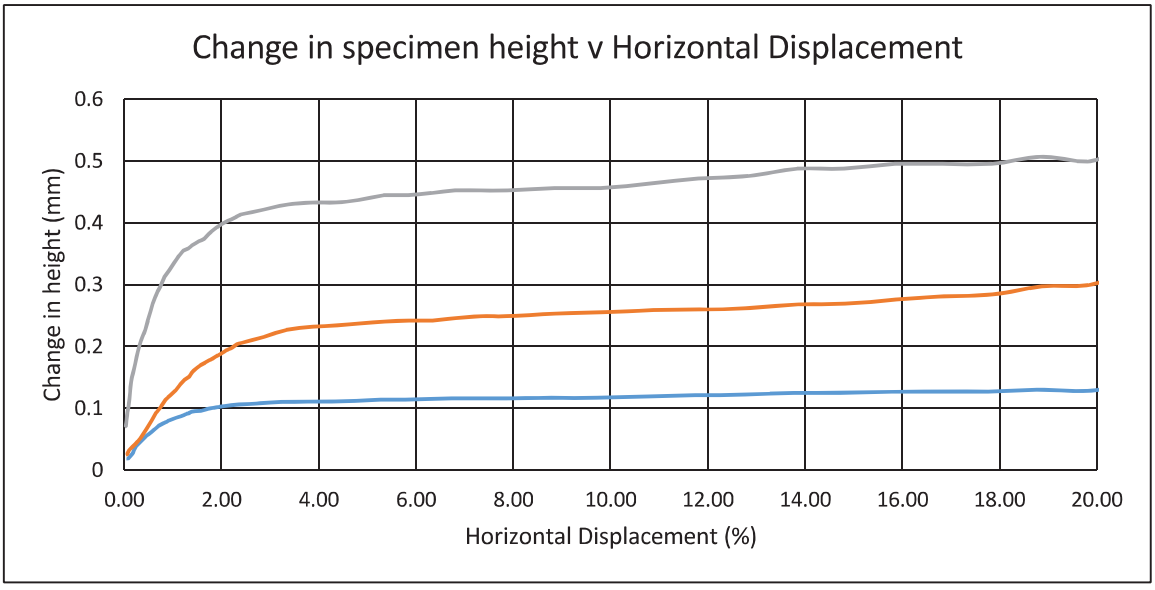
Small Shearbox Apparatus BS1377:Part 7:1990, Clause 4

Contract: Monaghan Town Contract No. 23412

Location: TP3 Depth (m) 1.0 Sample No. 153474

Report No. R126750





Results relate to the specimen tested. Approved signatories ☐ J Barrett (Quality Manager) ☐ H Byrne (Laboratory Manager)	Approved by	Date
		01/10/21

Appendix 7 - Geotechnical Rock Laboratory Records

(Diametrial) POINT LOAD STRENGTH INDEX TEST DATA

Contract: Monaghan Town
Contract no. 23412
Date of test: 23/09/2021

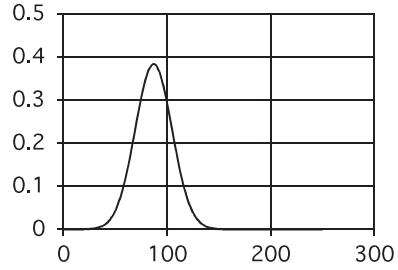
Sample Type: Core

RC No.	Depth m	D (Diameter) mm	P (failure load) kN	F	Is (index strength) Mpa	Is(50) (index strength) Mpa	*UCS MPa	Type	Orienation
RC01	6.2	78	22.0	1.222	3.62	4.42	88	d	//
	6.6	78	26.0	1.222	4.27	5.22	104	d	//
	8.0	78	24.0	1.222	3.94	4.82	96	d	//
	8.3	78	15.0	1.222	2.47	3.01	60	d	//
	8.8	78	28.0	1.222	4.60	5.62	112	d	//
	9.4	78	22.0	1.222	3.62	4.42	88	d	//
	10.4	78	20.0	1.222	3.29	4.02	80	d	//
	10.6	78	19.0	1.222	3.12	3.81	76	d	//
	10.8	78	23.0	1.222	3.78	4.62	92	d	//
RC02	5.9	78	24.0	1.222	3.94	4.82	96	d	//
	6.3	78	27.0	1.222	4.44	5.42	108	d	//
	7.4	78	25.0	1.222	4.11	5.02	100	d	//
	7.8	78	25.0	1.222	4.11	5.02	100	d	//
	8.0	78	21.0	1.222	3.45	4.22	84	d	//
	8.1	78	11.0	1.222	1.81	2.21	44	d	//
	8.6	78	18.0	1.222	2.96	3.61	72	d	//
	9.2	78	19.0	1.222	3.12	3.81	76	d	//

Statistical Summary Data	Is(50)	UCS*
Number of Samples Tested	17	17
Minimum	2.21	44
Average	4.36	87
Maximum	5.62	112
Standard Dev.	0.89	18
Upper 95% Confidence Limit	6.09	121.89
Lower 95% Confidence Limit	2.62	52.43

Comments:
*UCS taken as k x Point Load Is(50): k= 20

*UCS Normal Distribution Curve



Abbreviations	
i	irregular
a	axial
b	block
d	diametral

approx. orientation to planes of weakness/bedding	
U	unknown
P	perpendicular
//	parallel

Appendix 8 - Chemical Laboratory Records

eurofins | Chemtest
Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

UKAS TESTING
2183

Final Report

Report No.:	21-30124-1
Initial Date of Issue:	06-Sep-2021
Client	IGSL
Client Address:	M7 Business Park Naas County Kildare Ireland
Contact(s):	Darren Keogh
Project	Monaghan Town - South Dublin Street and Backlands

Quotation No.:		**Date Received:**	31-Aug-2021
Order No.:		**Date Instructed:**	27-Aug-2021
No. of Samples:	7		
Turnaround (Wkdays):	7	**Results Due:**	07-Sep-2021
Date Approved:	06-Sep-2021		

Approved By:

Details: Glynn Harvey, Technical Manager

Results - Soil

Project: Monaghan Town - South Dublin Street and Backlands

Client: IGSL				**Chemtest Job No.:**	21-30124	21-30124	21-30124	21-30124	21-30124	21-30124	21-30124
Quotation No.:				**Chemtest Sample ID.:**	1269758	1269759	1269760	1269761	1269762	1269763	1269764
Order No.:				Client Sample Ref.:	A163475	AA163476	AA153476	AA154153	AA154153	AA154153	AA157599
				Sample Location:	BH001	BH001	BH001	BH003	BH003	BH003	BRE Test 1
				Sample Type:	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL	SOIL
				Top Depth (m):	0.00	0.30	0.70	0.00	0.30	0.70	0.40
				Bottom Depth (m):	0.20	0.50	0.90	0.20	0.50	0.90	0.60
Determinand	**Accred.**	**SOP**	**Units**	**LOD**							
Moisture	N	2030	%	0.020	13	21	24	4.0	3.8	4.7	6.7
pH	U	2010		4.0	[A] 8.5	[A] 8.3	[A] 7.5	[A] 8.9	[A] 9.0	[A] 9.0	
pH (2.5:1)	N	2010		4.0							[A] 8.7
Magnesium (Water Soluble)	N	2120	g/l	0.010							[A] 0.43
Sulphate (2:1 Water Soluble) as SO4	U	2120	g/l	0.010	[A] 0.061	[A] 0.052	[A] < 0.010	[A] 0.076	[A] 0.081	[A] 0.081	[A] 0.037
Total Sulphur	U	2175	%	0.010							[A] 0.17
Chloride (Water Soluble)	U	2220	g/l	0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010	[A] < 0.010
Nitrate (Water Soluble)	N	2220	g/l	0.010							< 0.010
Ammonium (Water Soluble)	U	2220	g/l	0.01							< 0.01
Sulphate (Acid Soluble)	U	2430	%	0.010							[A] 0.068

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1269758	A163475		BH001		A	Amber Glass 250ml
1269758	A163475		BH001		A	Plastic Tub 500g
1269759	AA163476		BH001		A	Amber Glass 250ml
1269759	AA163476		BH001		A	Plastic Tub 500g
1269760	AA153476		BH001		A	Amber Glass 250ml
1269760	AA153476		BH001		A	Plastic Tub 500g
1269761	AA154153		BH003		A	Amber Glass 250ml
1269761	AA154153		BH003		A	Plastic Tub 500g
1269762	AA154153		BH003		A	Amber Glass 250ml
1269762	AA154153		BH003		A	Plastic Tub 500g
1269763	AA154153		BH003		A	Amber Glass 250ml
1269763	AA154153		BH003		A	Plastic Tub 500g
1269764	AA157599		BRE Test 1		A	Amber Glass 250ml
1269764	AA157599		BRE Test 1		A	Plastic Tub 500g

Test Methods

SOP	Title	Parameters included	Method summary
2010	pH Value of Soils	pH	pH Meter
2030	Moisture and Stone Content of Soils(Requirement of MCERTS)	Moisture content	Determination of moisture content of soil as a percentage of its as received mass obtained at <37°C.
2040	Soil Description(Requirement of MCERTS)	Soil description	As received soil is described based upon BS5930
2120	Water Soluble Boron, Sulphate, Magnesium & Chromium	Boron; Sulphate; Magnesium; Chromium	Aqueous extraction / ICP-OES
2175	Total Sulphur in Soils	Total Sulphur	Determined by high temperature combustion under oxygen, using an Eltra elemental analyser.
2220	Water soluble Chloride in Soils	Chloride	Aqueous extraction and measurememt by 'Aquakem 600' Discrete Analyser using ferric nitrate / mercuric thiocyanate.
2430	Total Sulphate in soils	Total Sulphate	Acid digestion followed by determination of sulphate in extract by ICP-OES.

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

For all other tests the samples were dried at < 37°C prior to analysis
All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Eurofins Chemtest Ltd
Depot Road
Newmarket
CB8 0AL
Tel: 01638 606070
Email: info@chemtest.com

2183

Final Report

Report No.:	21-31291-1		
Initial Date of Issue:	21-Oct-2021		
Client	IGSL		
Client Address:	M7 Business Park Naas County Kildare Ireland		
Contact(s):	Darren Keogh		
Project	Dublin Street, Monaghan		
Quotation No.:		**Date Received:**	04-Oct-2021
Order No.:		**Date Instructed:**	04-Oct-2021
No. of Samples:	1		
Turnaround (Wkdays):	14	**Results Due:**	21-Oct-2021
Date Approved:	21-Oct-2021		
Approved By:			
Details:	Glynn Harvey, Technical Manager		

Results - Water

Project: 23412 - Dublin Street, Monaghan

Client: IGSL			**Chemtest Job No.:**		21-31291
Quotation No.:			**Chemtest Sample ID.:**		1275753
Order No.:			Client Sample Ref.:		2001
			Sample Location:		RC01
			Sample Type:		WATER
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
pH	U	1010		N/A	[A] 7.8
Electrical Conductivity	U	1020	µS/cm	1.0	[A] 520
Chloride	U	1220	mg/l	1.0	[A] 22
Ammonia (Free)	N	1220	mg/l	0.050	[A] < 0.050
Nitrite	U	1220	mg/l	0.020	[A] < 0.020
Nitrate	U	1220	mg/l	0.50	[A] < 0.50
Sulphate	U	1220	mg/l	1.0	[A] 38
Cyanide (Total)	U	1300	mg/l	0.050	[A] < 0.050
Potassium	U	1455	mg/l	0.50	[A] 3.0
Arsenic (Dissolved)	U	1455	µg/l	0.20	[A] 0.78
Boron (Dissolved)	U	1455	µg/l	10.0	[A] 92
Cadmium (Dissolved)	U	1455	µg/l	0.11	[A] < 0.11
Chromium (Dissolved)	U	1455	µg/l	0.50	[A] 4.7
Copper (Dissolved)	U	1455	µg/l	0.50	[A] 0.66
Mercury (Dissolved)	14	1455	µg/l	0.05	[A] < 0.05
Manganese (Dissolved)	U	1455	µg/l	0.50	[A] 40
Nickel (Dissolved)	U	1455	µg/l	0.50	[A] 3.1
Lead (Dissolved)	U	1455	µg/l	0.50	[A] < 0.50
Zinc (Dissolved)	U	1455	µg/l	2.5	[A] < 2.5
Aliphatic TPH >C5-C6	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C6-C8	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C8-C10	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C10-C12	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C12-C16	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C16-C21	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C21-C35	N	1675	µg/l	0.10	[A] < 0.10
Aliphatic TPH >C35-C44	N	1675	µg/l	0.10	[A] < 0.10
Total Aliphatic Hydrocarbons	N	1675	µg/l	5.0	[A] < 5.0
Aromatic TPH >C5-C7	N	1675	µg/l	0.10	[A] <0.10
Aromatic TPH >C7-C8	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C8-C10	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C10-C12	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C12-C16	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C16-C21	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C21-C35	N	1675	µg/l	0.10	[A] < 0.10
Aromatic TPH >C35-C44	N	1675	µg/l	0.10	[A] < 0.10
Total Aromatic Hydrocarbons	N	1675	µg/l	5.0	[A] <5.0
Total Petroleum Hydrocarbons	N	1675	µg/l	10	[A] <10.0
Benzene	U	1760	µg/l	1.0	[A] < 1.0
Toluene	U	1760	µg/l	1.0	[A] < 1.0

Results - Water

Project: 23412 - Dublin Street, Monaghan

Client: IGSL			**Chemtest Job No.:**		21-31291
Quotation No.:			**Chemtest Sample ID.:**		1275753
Order No.:			Client Sample Ref.:		2001
			Sample Location:		RC01
			Sample Type:		WATER
Determinand	**Accred.**	**SOP**	**Units**	**LOD**	
Ethylbenzene	U	1760	µg/l	1.0	[A] < 1.0
m & p-Xylene	U	1760	µg/l	1.0	[A] < 1.0
o-Xylene	U	1760	µg/l	1.0	[A] < 1.0
Methyl Tert-Butyl Ether	N	1760	µg/l	1.0	[A] < 1.0
Naphthalene	U	1800	µg/l	0.10	[A] < 0.10
Acenaphthylene	U	1800	µg/l	0.10	[A] < 0.10
Acenaphthene	U	1800	µg/l	0.10	[A] < 0.10
Fluorene	U	1800	µg/l	0.10	[A] < 0.10
Phenanthrene	U	1800	µg/l	0.10	[A] < 0.10
Anthracene	U	1800	µg/l	0.10	[A] < 0.10
Fluoranthene	U	1800	µg/l	0.10	[A] < 0.10
Pyrene	U	1800	µg/l	0.10	[A] < 0.10
Benzo[a]anthracene	U	1800	µg/l	0.10	[A] < 0.10
Chrysene	U	1800	µg/l	0.10	[A] < 0.10
Benzo[b]fluoranthene	U	1800	µg/l	0.10	[A] < 0.10
Benzo[k]fluoranthene	U	1800	µg/l	0.10	[A] < 0.10
Benzo[a]pyrene	U	1800	µg/l	0.10	[A] < 0.10
Indeno(1,2,3-c,d)Pyrene	U	1800	µg/l	0.10	[A] < 0.10
Dibenz(a,h)Anthracene	U	1800	µg/l	0.10	[A] < 0.10
Benzo[g,h,i]perylene	U	1800	µg/l	0.10	[A] < 0.10
Total Of 16 PAH's	U	1800	µg/l	2.0	[A] < 2.0
Total Phenols	U	1920	mg/l	0.030	[A] < 0.030

Deviations

In accordance with UKAS Policy on Deviating Samples TPS 63. Chemtest have a procedure to ensure 'upon receipt of each sample a competent laboratory shall assess whether the sample is suitable with regard to the requested test(s)'. This policy and the respective holding times applied, can be supplied upon request.The reason a sample is declared as deviating is detailed below. Where applicable the analysis remains UKAS/MCERTs accredited but the results may be compromised.

Sample:	Sample Ref:	Sample ID:	Sample Location:	Sampled Date:	Deviation Code(s):	Containers Received:
1275753	2001		RC01		A	Coloured Winchester 1000ml
1275753	2001		RC01		A	EPA Vial 40ml

Test Methods

SOP	Title	Parameters included	Method summary
1010	pH Value of Waters	pH	pH Meter
1020	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Electrical Conductivity and Total Dissolved Solids (TDS) in Waters	Conductivity Meter
1220	Anions, Alkalinity & Ammonium in Waters	Fluoride; Chloride; Nitrite; Nitrate; Total; Oxidisable Nitrogen (TON); Sulfate; Phosphate; Alkalinity; Ammonium	Automated colorimetric analysis using 'Aquakem 600' Discrete Analyser.
1300	Cyanides & Thiocyanate in Waters	Free (or easy liberatable) Cyanide; total Cyanide; complex Cyanide; Thiocyanate	Continuous Flow Analysis.
1455	Metals in Waters by ICP-MS	Metals, including: Antimony; Arsenic; Barium; Beryllium; Boron; Cadmium; Chromium; Cobalt; Copper; Lead; Manganese; Mercury; Molybdenum; Nickel; Selenium; Tin; Vanadium; Zinc	Filtration of samples followed by direct determination by inductively coupled plasma mass spectrometry (ICP-MS).
1675	TPH Aliphatic/Aromatic split in Waters by GC-FID(cf. Texas Method 1006 / TPH CWG)	Aliphatics: >C5–C6, >C6–C8, >C8– C10, >C10–C12, >C12–C16, >C16–C21, >C21– C35, >C35– C44Aromatics: >C5–C7, >C7–C8, >C8– C10, >C10–C12, >C12–C16, >C16– C21, >C21– C35, >C35– C44	Pentane extraction / GCxGC FID detection
1760	Volatile Organic Compounds (VOCs) in Waters by Headspace GC-MS	Volatile organic compounds, including BTEX and halogenated Aliphatic/Aromatics. (cf. USEPA Method 8260)	Automated headspace gas chromatographic (GC) analysis of water samples with mass spectrometric (MS) detection of volatile organic compounds.
1800	Speciated Polynuclear Aromatic Hydrocarbons (PAH) in Waters by GC-MS	Acenaphthene; Acenaphthylene; Anthracene; Benzo[a]Anthracene; Benzo[a]Pyrene; Benzo[b]Fluoranthene; Benzo[ghi]Perylene; Benzo[k]Fluoranthene; Chrysene; Dibenz[ah]Anthracene; Fluoranthene; Fluorene; Indeno[123cd]Pyrene; Naphthalene; Phenanthrene; Pyrene	Pentane extraction / GCMS detection
1920	Phenols in Waters by HPLC	Phenolic compounds including: Phenol, Cresols, Xylenols, Trimethylphenols Note: Chlorophenols are excluded.	Determination by High Performance Liquid Chromatography (HPLC) using electrochemical detection.

Report Information

Key	
U	UKAS accredited
M	MCERTS and UKAS accredited
N	Unaccredited
S	This analysis has been subcontracted to a UKAS accredited laboratory that is accredited for this analysis
SN	This analysis has been subcontracted to a UKAS accredited laboratory that is not accredited for this analysis
T	This analysis has been subcontracted to an unaccredited laboratory
I/S	Insufficient Sample
U/S	Unsuitable Sample
N/E	not evaluated
<	"less than"
>	"greater than"
SOP	Standard operating procedure
LOD	Limit of detection

Comments or interpretations are beyond the scope of UKAS accreditation
The results relate only to the items tested
Uncertainty of measurement for the determinands tested are available upon request
None of the results in this report have been recovery corrected
All results are expressed on a dry weight basis

The following tests were analysed on samples as received and the results subsequently corrected to a dry weight basis TPH, BTEX, VOCs, SVOCs, PCBs, Phenols

14

All Asbestos testing is performed at the indicated laboratory
Issue numbers are sequential starting with 1 all subsequent reports are incremented by 1

Sample Deviation Codes

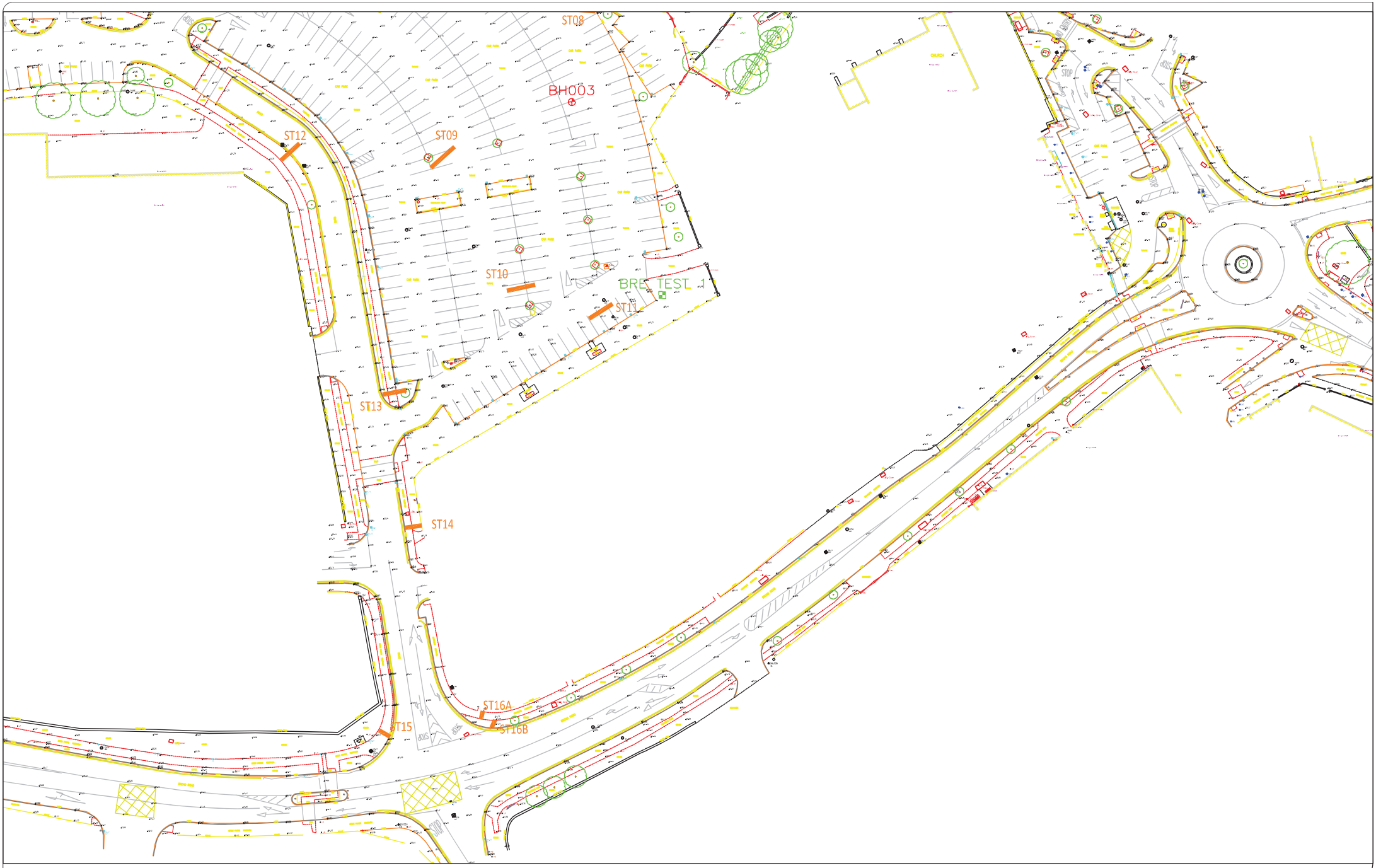
A - Date of sampling not supplied
B - Sample age exceeds stability time (sampling to extraction)
C - Sample not received in appropriate containers
D - Broken Container
E - Insufficient Sample (Applies to LOI in Trommel Fines Only)

Sample Retention and Disposal

All soil samples will be retained for a period of 30 days from the date of receipt
All water samples will be retained for 14 days from the date of receipt
Charges may apply to extended sample storage

If you require extended retention of samples, please email your requirements to:
customerservices@chemtest.com

Appendix 9 - Exploratory Hole Site Plan



North

Borehole Location

Trial Pit Location

Soakaway Location

ST Slit Trench Location

IGSL

IGSL Limited
Unit F M7 Business Park, Naas, Co. Kildare
Tel. 045 846176 Fax 045 846187
Email: info@igsl.ie

SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	20/10	Layout Plan

Project:	Monaghan Town - Dublin Street regeneration Project				
Component:	Ground Investigation Contract				
Title:	Location Plan				
Designed:	CK	Date:	20/10	File Name:	23412
Drawn:	CK	Date:	20/10	Original Scale:	1:750 @A3
Checked:	MK	Date:	20/10	Date:	20/10/2021

Drawing No: 23412-000-101

North

Borehole Location

Trial Pit Location

Soakaway Location

ST Slit Trench Location

IGSL

IGSL Limited
Unit F M7 Business Park, Naas, Co. Kildare
Tel. 045 846176 Fax 045 846187
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SITE INVESTIGATION
&
GEOTECHNICAL SPECIALISTS

Rev	By	Date	Description
0	CK	20/10	Layout Plan

Project:	Monaghan Town - Dublin Street regeneration Project
Component:	Ground Investigation Contract
Title:	Location Plan

Designed:	CK	Date:	20/10	File Name: 23412	Drawing No: 23412-000-102
Drawn:	CK	Date:	20/10	Original Scale: 1:750 @A3	
Checked:	MK	Date:	20/10	Date: 20/10/2021	

Appendix

8a

Data Gathered from National Biodiversity Data Centre (NBDC)

Feature name	Species group	Species name	Record count	Date of last record	Title of dataset	Designation
Custom	amphibian	Common Frog (Rana temporaria)	3	15/06/2003	Irish National Frog Database	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Custom	amphibian	Smooth Newt (Lissotriton vulgaris)	2	29/06/2010	Newt Survey 2010-2014	Protected Species: Wildlife Acts
Custom	annelid	Aulodrilus pluriseta	1	31/12/1971	Aquatic Oligochaeta of Ireland	
Custom	annelid	Glossiphonia complanata	1	19/09/2007	River Biologists' Database (EPA)	
Custom	annelid	Lumbriculus variegatus	1	31/12/1971	Aquatic Oligochaeta of Ireland	
Custom	annelid	Spirosperma ferox	1	31/12/1971	Aquatic Oligochaeta of Ireland	
Custom	annelid	Stylodrilus heringianus	1	31/12/1971	Aquatic Oligochaeta of Ireland	
Custom	bird	Barn Owl (Tyto alba)	5	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Barn Swallow (Hirundo rustica)	30	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Black-billed Magpie (Pica pica)	49	18/05/2012	Birds of Ireland	
Custom	bird	Blackcap (Sylvia atricapilla)	23	18/05/2012	Birds of Ireland	
Custom	bird	Black-headed Gull (Larus ridibundus)	16	14/04/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Blue Tit (Cyanistes caeruleus)	48	18/05/2012	Birds of Ireland	
Custom	bird	Bohemian Waxwing (Bombycilla garrulus)	1	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Brambling (Fringilla montifringilla)	5	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Carrion Crow (Corvus corone)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	

Custom	bird	Chaffinch (Fringilla coelebs)	50	18/05/2012	Birds of Ireland	
Custom	bird	Coal Tit (Periparus ater)	42	18/05/2012	Birds of Ireland	
Custom	bird	Common Blackbird (Turdus merula)	51	18/05/2012	Birds of Ireland	
Custom	bird	Common Bullfinch (Pyrrhula pyrrhula)	42	18/05/2012	Birds of Ireland	
Custom	bird	Common Buzzard (Buteo buteo)	27	06/10/2017	Birds of Ireland	
Custom	bird	Common Chiffchaff (Phylloscopus collybita)	31	18/05/2012	Birds of Ireland	
Custom	bird	Common Coot (Fulica atra)	28	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Crossbill (Loxia curvirostra)	2	06/09/2016	Birds of Ireland	
Custom	bird	Common Cuckoo (Cuculus canorus)	11	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Common Goldeneye (Bucephala clangula)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Grasshopper Warbler (Locustella naevia)	11	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Common Kestrel (Falco tinnunculus)	24	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Kingfisher (Alcedo atthis)	10	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Linnet (Carduelis cannabina)	14	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Moorhen (Gallinula chloropus)	44	18/05/2012	Birds of Ireland	
Custom	bird	Common Pheasant (Phasianus colchicus)	27	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species

Custom	bird	Common Pochard (Aythya ferina)	7	31/12/2001	Irish Wetland Birds Survey (I-WeBS) 1994-2001.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Raven (Corvus corax)	13	11/02/2012	Birds of Ireland	
Custom	bird	Common Redshank (Tringa totanus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Common Sandpiper (Actitis hypoleucos)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Snipe (Gallinago gallinago)	28	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Common Starling (Sturnus vulgaris)	45	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Swift (Apus apus)	15	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Tern (Sterna hirundo)	1	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Common Whitethroat (Sylvia communis)	10	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Common Wood Pigeon (Columba palumbus)	49	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species

Custom	bird	Corn Crake (Crex crex)	5	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Eurasian Collared Dove (Streptopelia decaocto)	19	18/05/2012	Birds of Ireland	
Custom	bird	Eurasian Curlew (Numenius arquata)	13	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Eurasian Dotterel (Charadrius morinellus)	1	12/05/2005	Rare birds of Ireland	
Custom	bird	Eurasian Hobby (Falco subbuteo)	1	01/07/2014	Rare birds of Ireland	
Custom	bird	Eurasian Jackdaw (Corvus monedula)	51	04/08/2017	Birds of Ireland	
Custom	bird	Eurasian Jay (Garrulus glandarius)	21	18/05/2012	Birds of Ireland	
Custom	bird	Eurasian Siskin (Carduelis spinus)	20	14/04/2012	Birds of Ireland	
Custom	bird	Eurasian Sparrowhawk (Accipiter nisus)	22	31/12/2011	Bird Atlas 2007 - 2011	

Custom	bird	Eurasian Teal (Anas crecca)	9	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Eurasian Tree Sparrow (Passer montanus)	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Eurasian Treecreeper (Certhia familiaris)	33	18/05/2012	Birds of Ireland	
Custom	bird	Eurasian Wigeon (Anas penelope)	7	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Eurasian Woodcock (Scolopax rusticola)	11	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	European Golden Plover (Pluvialis apricaria)	4	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	European Goldfinch (Carduelis carduelis)	38	18/05/2012	Birds of Ireland	
Custom	bird	European Greenfinch (Carduelis chloris)	38	14/04/2012	Birds of Ireland	
Custom	bird	European Robin (Erithacus rubecula)	56	18/05/2012	Birds of Ireland	
Custom	bird	Fieldfare (Turdus pilaris)	14	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Goldcrest (Regulus regulus)	41	18/05/2012	Birds of Ireland	
Custom	bird	Great Bittern (Botaurus stellaris)	1	31/12/1955	Rare birds of Ireland	Protected Species: Wildlife Acts

Custom	bird	Great Cormorant (Phalacrocorax carbo)	10	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Great Crested Grebe (Podiceps cristatus)	18	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Great Egret (Ardea alba)	1	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Great Spotted Woodpecker (Dendrocopos major)	1	18/08/2016	Birds of Ireland	
Custom	bird	Great Tit (Parus major)	50	18/05/2012	Birds of Ireland	
Custom	bird	Grey Heron (Ardea cinerea)	33	14/04/2012	Birds of Ireland	
Custom	bird	Grey Partridge (Perdix perdix)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Grey Plover (Pluvialis squatarola)	1	29/02/1984	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Grey Wagtail (Motacilla cinerea)	26	31/12/2011	Bird Atlas 2007 - 2011	

Custom	bird	Greylag Goose (Anser anser)	3	31/12/2011	Bird Atlas 2007 - 2011	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Hawfinch (Coccothraustes coccothraustes)	1	31/12/1890	Rare birds of Ireland	
Custom	bird	Hedge Accentor (Prunella modularis)	46	18/05/2012	Birds of Ireland	
Custom	bird	Herring Gull (Larus argentatus)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Hooded Crow (Corvus cornix)	44	18/05/2012	Birds of Ireland	
Custom	bird	House Martin (Delichon urbicum)	19	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	House Sparrow (Passer domesticus)	39	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Jack Snipe (Lymnocryptes minimus)	1	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section III Bird Species
Custom	bird	Lesser Black-backed Gull (Larus fuscus)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Lesser Redpoll (Carduelis cabaret)	26	14/04/2012	Birds of Ireland	
Custom	bird	Little Egret (Egretta garzetta)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Custom	bird	Little Grebe (Tachybaptus ruficollis)	8	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Long-eared Owl (Asio otus)	9	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Long-tailed Tit (Aegithalos caudatus)	28	18/05/2012	Birds of Ireland	
Custom	bird	Mallard (Anas platyrhynchos)	40	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section I Bird Species
Custom	bird	Meadow Pipit (Anthus pratensis)	30	31/12/2011	Bird Atlas 2007 - 2011	

Custom	bird	Merlin (Falco columbarius)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Mew Gull (Larus canus)	3	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Mistle Thrush (Turdus viscivorus)	45	18/05/2012	Birds of Ireland	
Custom	bird	Mute Swan (Cygnus olor)	29	11/02/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Northern Lapwing (Vanellus vanellus)	18	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bird	Northern Wheatear (Oenanthe oenanthe)	1	31/07/1972	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972.	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Peregrine Falcon (Falco peregrinus)	5	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species
Custom	bird	Pied Wagtail (Motacilla alba subsp. yarrellii)	7	04/08/2017	Birds of Ireland	
Custom	bird	Redwing (Turdus iliacus)	20	23/10/2017	Birds of Ireland	
Custom	bird	Reed Bunting (Emberiza schoeniclus)	29	03/02/2017	Birds of Ireland	
Custom	bird	Rock Pigeon (Columba livia)	13	04/08/2017	Birds of Ireland	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species
Custom	bird	Rook (Corvus frugilegus)	50	04/08/2017	Birds of Ireland	
Custom	bird	Sand Martin (Riparia riparia)	9	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Sedge Warbler (Acrocephalus schoenobaenus)	18	18/05/2012	Birds of Ireland	
Custom	bird	Sky Lark (Alauda arvensis)	9	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Song Thrush (Turdus philomelos)	48	18/05/2012	Birds of Ireland	
Custom	bird	Spotted Flycatcher (Muscicapa striata)	16	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List

Custom	bird	Stock Pigeon (Columba oenas)	2	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Stonechat (Saxicola torquata)	2	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Tufted Duck (Aythya fuligula)	16	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex II, Section I Bird Species || Protected Species: EU Birds Directive >> Annex III, Section II Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Water Rail (Rallus aquaticus)	13	18/05/2012	Birds of Ireland	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	White Wagtail (Motacilla alba)	36	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	White-throated Dipper (Cinclus cinclus)	16	31/12/2011	Bird Atlas 2007 - 2011	
Custom	bird	Whooper Swan (Cygnus cygnus)	11	31/12/2011	Bird Atlas 2007 - 2011	Protected Species: Wildlife Acts || Protected Species: EU Birds Directive || Protected Species: EU Birds Directive >> Annex I Bird Species || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Amber List
Custom	bird	Willow Warbler (Phylloscopus trochilus)	31	18/05/2012	Birds of Ireland	

Custom	bird	Winter Wren (Troglodytes troglodytes)	50	18/05/2012	Birds of Ireland	
Custom	bird	Yellowhammer (Emberiza citrinella)	7	31/07/1991	The Second Atlas of Breeding Birds in Britain and Ireland: 1988-1991	Protected Species: Wildlife Acts || Threatened Species: Birds of Conservation Concern || Threatened Species: Birds of Conservation Concern >> Birds of Conservation Concern - Red List
Custom	bony fish (Actinopterygii)	Perch (Perca fluviatilis)	1	31/12/1967	Freshwater Fish in Irish Lakes	
Custom	bony fish (Actinopterygii)	Pike (Esox lucius)	1	31/12/1967	Freshwater Fish in Irish Lakes	
Custom	bony fish (Actinopterygii)	Rudd (Scardinius erythrophthalmus)	1	31/12/1967	Freshwater Fish in Irish Lakes	
Custom	centipede	Geophilus flavus	2	01/01/1913	Centipedes of Ireland	
Custom	centipede	Geophilus insculptus	1	01/09/1912	Centipedes of Ireland	
Custom	centipede	Lithobius (Lithobius) forficatus	1	01/05/1968	Centipedes of Ireland	
Custom	centipede	Lithobius (Lithobius) variegatus	2	01/01/1913	Centipedes of Ireland	
Custom	conifer	Noble Fir (Abies procera)	1	22/08/2006	Species Data from the National Vegetation Database	
Custom	crustacean	Freshwater White-clawed Crayfish (Austropotamobius pallipes)	22	06/07/2010	River Biologists' Database (EPA)	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Custom	false scorpion (Pseudoscorpiones)	Common Chthonid (Chthonius (Chthonius) ischnocheles)	1	31/12/1912	Pseudoscorpions of Ireland	
Custom	fern	Broad Buckler-fern (Dryopteris dilatata)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	fern	Hard-fern (Blechnum spicant)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	fern	Lady-fern (Athyrium filix-femina)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	fern	Polypody (Polypodium vulgare)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	fern	Scaly Male-fern (Dryopteris affinis)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	fern	Soft Shield-fern (Polystichum setiferum)	1	26/04/2005	Species Data from the National Vegetation Database	

Custom	flatworm (Turbellaria)	Arthurdendyus triangulatus	2	29/10/2012	New Zealand Flatworm (Arthurdendyus triangulates) Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Custom	flowering plant	Alder (Alnus glutinosa)	2	14/06/2017	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	American Skunk-cabbage (Lysichiton americanus)	1	07/03/2019	Online Atlas of Vascular Plants 2012-2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Ash (Fraxinus excelsior)	6	14/06/2017	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Barren Strawberry (Potentilla sterilis)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Beech (Fagus sylvatica)	4	25/04/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Bird Cherry (Prunus padus)	1	31/12/1929	BSBI tetrad data for Ireland	
Custom	flowering plant	Blackthorn (Prunus spinosa)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Bluebell (Hyacinthoides non-scripta)	6	09/05/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Bog Stitchwort (Stellaria alsine)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Bogbean (Menyanthes trifoliata)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Bottle Sedge (Carex rostrata)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Bramble (Rubus fruticosus agg.)	5	25/04/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Branched Bur-reed (Sparganium erectum)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Broad-leaved Dock (Rumex obtusifolius)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Broad-leaved Pondweed (Potamogeton natans)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Brooklime (Veronica beccabunga)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Brown Sedge (Carex disticha)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Bugle (Ajuga reptans)	1	27/05/2009	Species Data from the National Vegetation Database	

Custom	flowering plant	Bulbous Rush (Juncus bulbosus)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Bulrush (Typha latifolia)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Bush Vetch (Vicia sepium)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Canadian Waterweed (Elodea canadensis)	1	19/09/2007	River Biologists' Database (EPA)	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Carnation Sedge (Carex panicea)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cat's-ear (Hypochaeris radicata)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cherry Laurel (Prunus laurocerasus)	1	26/04/2005	Species Data from the National Vegetation Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Custom	flowering plant	Cleavers (Galium aparine)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cock's-foot (Dactylis glomerata)	3	21/08/2016	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Common Bent (Agrostis capillaris)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Chickweed (Stellaria media)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Cottongrass (Eriophorum angustifolium)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Dog-violet (Viola riviniana)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Duckweed (Lemna minor)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Knapweed (Centaurea nigra)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Mouse-ear (Cerastium fontanum)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Nettle (Urtica dioica)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Ragwort (Senecio jacobaea)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Sedge (Carex nigra)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Sorrel (Rumex acetosa)	7	27/05/2009	Species Data from the National Vegetation Database	

Custom	flowering plant	Common Spotted-orchid (Dactylorhiza fuchsii)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Common Water-starwort (Callitriche stagnalis)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cow Parsley (Anthriscus sylvestris)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cowbane (Cicuta virosa)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Creeping Bent (Agrostis stolonifera)	12	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Creeping Buttercup (Ranunculus repens)	6	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Creeping Thistle (Cirsium arvense)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Crested Dog's-tail (Cynosurus cristatus)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Cuckooflower (Cardamine pratensis)	6	09/05/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Curled Dock (Rumex crispus)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Curled Pondweed (Potamogeton crispus)	1	19/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Daisy (Bellis perennis)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Devil's-bit Scabious (Succisa pratensis)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Downy Birch (Betula pubescens)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Eared Willow (Salix aurita)	1	22/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Early-purple Orchid (Orchis mascula)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Elder (Sambucus nigra)	1	29/05/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Enchanter's-nightshade (Circaea lutetiana)	2	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	False Hook-lobed Dandelion (Taraxacum pseudohamatum)	1	31/12/1986	BSBI tetrad data for Ireland	
Custom	flowering plant	False Oat-grass (Arrhenatherum elatius)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	False-brome (Brachypodium sylvaticum)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Field Wood-rush (Luzula campestris)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Floating Bur-reed (Sparganium angustifolium)	1	31/12/1929	BSBI tetrad data for Ireland	
Custom	flowering plant	Floating Sweet-grass (Glyceria fluitans)	2	27/05/2009	Species Data from the National Vegetation Database	

Custom	flowering plant	Foxglove (Digitalis purpurea)	1	25/04/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Germander Speedwell (Veronica chamaedrys)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Giant Hogweed (Heracleum mantegazzianum)	5	05/08/2016	Online Atlas of Vascular Plants 2012-2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Glaucous Sedge (Carex flacca)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Goat Willow (Salix caprea)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Gorse (Ulex europaeus)	2	05/02/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Greater Bird's-foot-trefoil (Lotus pedunculatus)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Greater Spearwort (Ranunculus lingua)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Greater Stitchwort (Stellaria holostea)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Guelder-rose (Viburnum opulus)	1	03/06/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Hairy Sedge (Carex hirta)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Hawthorn (Crataegus monogyna)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Hazel (Corylus avellana)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Heath Bedstraw (Galium saxatile)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Heath Wood-rush (Luzula multiflora)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Hedge Bindweed (Calystegia sepium)	1	09/10/2019	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Herb-Robert (Geranium robertianum)	3	29/05/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Himalayan Knotweed (Persicaria wallichii)	1	21/08/2016	National Invasive Species Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)

Custom	flowering plant	Hogweed (Heracleum sphondylium)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Holly (Ilex aquifolium)	2	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Honeysuckle (Lonicera periclymenum)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Horse-chestnut (Aesculus hippocastanum)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Hybrid Black-poplar (Populus nigra x deltoides = P. x canadensis)	2	31/12/1969	BSBI tetrad data for Ireland	
Custom	flowering plant	Hybrid Sweet-grass (Glyceria fluitans x notata = G. x pedicellata)	2	31/12/1986	BSBI tetrad data for Ireland	
Custom	flowering plant	Indian Balsam (Impatiens glandulifera)	1	07/12/2017	Online Atlas of Vascular Plants 2012-2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Irish Whitebeam (Sorbus hibernica)	1	13/06/2019	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Ivy (Hedera helix)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Ivy-leaved Crowfoot (Ranunculus hederaceus)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Japanese Knotweed (Fallopia japonica)	3	12/06/2019	Online Atlas of Vascular Plants 2012-2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Least Bur-reed (Sparganium natans)	1	31/12/1929	BSBI tetrad data for Ireland	
Custom	flowering plant	Lesser Bulrush (Typha angustifolia)	1	31/12/1986	BSBI tetrad data for Ireland	
Custom	flowering plant	Lesser Celandine (Ranunculus ficaria)	3	10/03/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Lesser Spearwort (Ranunculus flammula)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Lesser Water-parsnip (Berula erecta)	1	31/12/1929	BSBI tetrad data for Ireland	
Custom	flowering plant	Lords-and-Ladies (Arum maculatum)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Lousewort (Pedicularis sylvatica)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh Cinquefoil (Potentilla palustris)	6	27/05/2009	Species Data from the National Vegetation Database	

Custom	flowering plant	Marsh Pennywort (Hydrocotyle vulgaris)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh Ragwort (Senecio aquaticus)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh Thistle (Cirsium palustre)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh Willowherb (Epilobium palustre)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh Woundwort (Stachys palustris)	1	21/08/2016	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Marsh-bedstraw (Galium palustre)	6	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Marsh-marigold (Caltha palustris)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Meadow Buttercup (Ranunculus acris)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Meadow Foxtail (Alopecurus pratensis)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Meadow Vetchling (Lathyrus pratensis)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Meadowsweet (Filipendula ulmaria)	6	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Opposite-leaved Golden-saxifrage (Chrysosplenium oppositifolium)	2	07/03/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Pedunculate Oak (Quercus robur)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Peppermint (Mentha aquatica x spicata = M. x piperita)	1	31/12/1929	BSBI tetrad data for Ireland	
Custom	flowering plant	Perennial Rye-grass (Lolium perenne)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Pineappleweed (Matricaria discoidea)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Potentilla erecta x anglica = P. x suberecta	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Primrose (Primula vulgaris)	9	09/05/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Purple-loosestrife (Lythrum salicaria)	1	19/09/2007	River Biologists' Database (EPA)	
Custom	flowering plant	Ragged-Robin (Lychnis flos-cuculi)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Ramsons (Allium ursinum)	1	13/04/2016	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Red Clover (Trifolium pratense)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Red Fescue (Festuca rubra)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Reed Canary-grass (Phalaris arundinacea)	1	19/09/2007	River Biologists' Database (EPA)	

Custom	flowering plant	Rhododendron ponticum	1	25/05/2019	Online Atlas of Vascular Plants 2012-2020	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	flowering plant	Ribwort Plantain (Plantago lanceolata)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Rosebay Willowherb (Chamerion angustifolium)	2	14/06/2017	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Rough Meadow-grass (Poa trivialis)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Rusty Willow (Salix cinerea subsp. oleifolia)	2	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Salix cinerea	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Sanicle (Sanicula europaea)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Selfheal (Prunella vulgaris)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Sharp-flowered Rush (Juncus acutiflorus)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Shining Pondweed (Potamogeton lucens)	1	31/12/1986	BSBI tetrad data for Ireland	
Custom	flowering plant	Short-fruited Willowherb (Epilobium obscurum)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Silverweed (Potentilla anserina)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Smooth Meadow-grass (Poa pratensis)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Soft-rush (Juncus effusus)	8	21/08/2016	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Spear Thistle (Cirsium vulgare)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Spindle (Euonymus europaeus)	1	04/09/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Spotted Dandelion (Taraxacum maculosum)	1	31/12/1986	BSBI tetrad data for Ireland	
Custom	flowering plant	Star Sedge (Carex echinata)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Sweet Vernal-grass (Anthoxanthum odoratum)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Sycamore (Acer pseudoplatanus)	2	26/04/2005	Species Data from the National Vegetation Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Custom	flowering plant	Tall Tutsan (Hypericum androsaemum x hircinum = H. x inodorum)	2	31/12/2010	BSBI tetrad data for Ireland	
Custom	flowering plant	Taraxacum aggregate	4	28/03/2018	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Thyme-leaved Speedwell (Veronica serpyllifolia)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Tormentil (Potentilla erecta)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Trailing Tormentil (Potentilla anglica)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Tufted Hair-grass (Deschampsia cespitosa)	3	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Velvet Bent (Agrostis canina)	4	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Water Mint (Mentha aquatica)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Wavy Bitter-cress (Cardamine flexuosa)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	White Clover (Trifolium repens)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	White Sedge (Carex curta)	1	28/05/2007	Species Data from the National Vegetation Database	
Custom	flowering plant	Wild Angelica (Angelica sylvestris)	5	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Wild Privet (Ligustrum vulgare)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Wild Strawberry (Fragaria vesca)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Winter Heliotrope (Petasites fragrans)	1	22/12/2017	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Wood Anemone (Anemone nemorosa)	4	10/03/2020	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Wood Avens (Geum urbanum)	2	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Wood-sedge (Carex sylvatica)	2	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Wood-sorrel (Oxalis acetosella)	2	21/05/2016	Online Atlas of Vascular Plants 2012-2020	
Custom	flowering plant	Wych Elm (Ulmus glabra)	3	22/08/2006	Species Data from the National Vegetation Database	
Custom	flowering plant	Yellow Iris (Iris pseudacorus)	1	26/04/2005	Species Data from the National Vegetation Database	
Custom	flowering plant	Yellow Pimpernel (Lysimachia nemorum)	1	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Yellow Sedge (Carex viridula)	2	27/05/2009	Species Data from the National Vegetation Database	
Custom	flowering plant	Yorkshire-fog (Holcus lanatus)	12	27/05/2009	Species Data from the National Vegetation Database	

Custom	fungus	Blue Spot Knight (Tricholoma columbetta)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Candlesnuff Fungus (Xylaria hypoxylon)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Clouded Funnel (Clitocybe nebularis)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Common Bonnet (Mycena galericulata)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Common Inkcap (Coprinopsis atramentaria)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Deceiver (Laccaria laccata)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Fiery Milkcap (Lactarius pyrogalus)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Fly Agaric (Amanita muscaria var. muscaria)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Honey Fungus (Armillaria mellea)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Inocybe sindonia	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Jellybaby (Leotia lubrica)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Livid Pinkgill (Entoloma sinuatum)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Nitrous Bonnet (Mycena leptocephala)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Oakbug Milkcap (Lactarius quietus)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Rufous Milkcap (Lactarius rufus)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Russet Toughshank (Collybia dryophila)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Silky Piggyback (Asterophora parasitica)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Snapping Bonnet (Mycena vitilis)	1	18/10/2003	Fungal Records for Ireland	
Custom	fungus	Sulphur Tuft (Hypholoma fasciculare var. fasciculare)	1	18/10/2003	Fungal Records for Ireland	
Custom	harvestman (Opiliones)	Leiobunum blackwalli	1	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Leiobunum rotundum	1	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Mitopus morio	1	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Nelima gothica	1	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Nemastoma bimaculatum	3	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Oligolophus hanseni	2	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Oligolophus tridens	1	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Paroligolophus agrestis	2	02/10/1995	Harvestmen (Opiliones) of Ireland	
Custom	harvestman (Opiliones)	Phalangium opilio	1	02/10/1995	Harvestmen (Opiliones) of Ireland	

Custom	hornwort	Smooth Hornwort (Phaeoceros laevis)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	horsetail	Water Horsetail (Equisetum fluviatile)	8	27/05/2009	Species Data from the National Vegetation Database	
Custom	insect - beetle (Coleoptera)	7-spot Ladybird (Coccinella septempunctata)	3	18/04/2019	Ladybirds of Ireland	
Custom	insect - beetle (Coleoptera)	Agabus (Acatodes) sturmii	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Agabus (Gaurodytes) affinis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Agabus (Gaurodytes) bipustulatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Agabus (Gaurodytes) paludosus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Agabus (Gaurodytes) unguicularis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Anacaena globulus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Colymbetes fuscus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Dytiscus semisulcatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Elmis aenea	2	03/07/2007	River Biologists' Database (EPA)	
Custom	insect - beetle (Coleoptera)	Enochrus coarctatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Enochrus testaceus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Graptodytes pictus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Great Diving Beetle (Dytiscus marginalis)	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Gyrinus caspius	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Haliplus (Haliplinus) ruficollis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Haliplus (Haliplus) confinis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Haliplus (Liaphlus) flavicollis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Haliplus (Neohaliplus) lineatocollis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Helophorus (Atracthelophorus) brevipalpis	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydraena britteni	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydraena riparia	1	12/10/1909	Water Beetles of Ireland	

Custom	insect - beetle (Coleoptera)	Hydrobius fuscipes	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus angustatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus erythrocephalus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus gyllenhalii	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus memnonius	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus nigrita	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus palustris	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus striola	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus tessellatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Hydroporus umbrosus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Ilybius fuliginosus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Ilybius quadriguttatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Laccobius bipunctatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Limnebius truncatellus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Ochthebius (Homalochthebius) minimus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - beetle (Coleoptera)	Porhydrus lineatus	1	12/10/1909	Water Beetles of Ireland	
Custom	insect - butterfly	Green-veined White (Pieris napi)	14	14/05/2019	Butterflies of Ireland	
Custom	insect - butterfly	Large White (Pieris brassicae)	3	10/06/2019	Butterflies of Ireland	
Custom	insect - butterfly	Meadow Brown (Maniola jurtina)	8	12/08/2019	Butterflies of Ireland	
Custom	insect - butterfly	Orange-tip (Anthocharis cardamines)	10	19/04/2020	Butterflies of Ireland	
Custom	insect - butterfly	Painted Lady (Vanessa cardui)	1	26/08/2019	Butterflies of Ireland	
Custom	insect - butterfly	Peacock (Inachis io)	8	26/08/2019	Butterflies of Ireland	
Custom	insect - butterfly	Red Admiral (Vanessa atalanta)	3	04/09/2020	Butterflies of Ireland	
Custom	insect - butterfly	Ringlet (Aphantopus hyperantus)	12	28/07/2019	Butterflies of Ireland	
Custom	insect - butterfly	Silver-washed Fritillary (Argynnis paphia)	1	31/12/1978	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
Custom	insect - butterfly	Small Heath (Coenonympha pamphilus)	2	31/12/1977	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	Threatened Species: Near threatened
Custom	insect - butterfly	Small Tortoiseshell (Aglais urticae)	6	09/09/2020	Butterflies of Ireland	

Custom	insect - butterfly	Small White (Pieris rapae)	7	05/08/2020	Butterflies of Ireland	
Custom	insect - butterfly	Speckled Wood (Pararge aegeria)	14	29/09/2019	Butterflies of Ireland	
Custom	insect - butterfly	Wall (Lasiommata megera)	1	31/12/1978	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	Threatened Species: Endangered
Custom	Insect - butterfly	Wood White (Leptidea sp.)	3	31/12/1977	Distribution Atlas of Butterflies in Ireland 1979 (An Foras Forbartha)	
Custom	insect - dragonfly (Odonata)	Azure Damselfly (Coenagrion puella)	2	05/06/2000	Dragonfly Ireland	
Custom	insect - dragonfly (Odonata)	Banded Demoiselle (Calopteryx splendens)	1	31/08/2020	Dragonfly Ireland 2019 to 2024	
Custom	insect - dragonfly (Odonata)	Blue-tailed Damselfly (Ischnura elegans)	3	26/08/2019	Dragonfly Ireland 2019 to 2024	
Custom	insect - dragonfly (Odonata)	Brown Hawker (Aeshna grandis)	4	26/08/2019	Dragonfly Ireland 2019 to 2024	
Custom	insect - dragonfly (Odonata)	Common Blue Damselfly (Enallagma cyathigerum)	4	15/09/2020	Dragonfly Ireland 2019 to 2024	
Custom	insect - dragonfly (Odonata)	Common Darter (Sympetrum striolatum)	1	28/07/2019	Dragonfly Ireland 2019 to 2024	
Custom	insect - dragonfly (Odonata)	Large Red Damselfly (Pyrrhosoma nymphula)	1	08/06/1919	Dragonfly Ireland	
Custom	insect - dragonfly (Odonata)	Variable Damselfly (Coenagrion pulchellum)	4	05/06/2000	Dragonfly Ireland	
Custom	insect - earwig (Dermaptera)	Common Earwig (Forficula auricularia)	1	22/08/2005	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
Custom	insect - flea (Siphonaptera)	Rabbit Flea (Spilopsyllus cuniculi)	2	31/12/1996	Fleas (Siphonaptera) of Ireland	
Custom	insect - hymenopteran	Bombus (Bombus) terrestris	1	04/04/2017	Bees of Ireland	
Custom	insect - hymenopteran	Common Carder Bee (Bombus (Thoracombus) pascuorum)	1	09/05/2019	Bees of Ireland	
Custom	Insect - hymenopteran	Synopeas aceris	1	19/04/2012	Platygastridae (Hymenoptera) of Ireland	
Custom	Insect - hymenopteran	Synopeas rhanis	1	27/04/2011	Platygastridae (Hymenoptera) of Ireland	
Custom	insect - mayfly (Ephemeroptera)	Serratella ignita	1	03/07/2007	River Biologists' Database (EPA)	
Custom	insect - moth	Anthophila fabriciana	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Brimstone Moth (Opisthograptis luteolata)	2	09/07/1999	Moths Ireland	
Custom	insect - moth	Brown House-moth (Hofmannophila pseudospretella)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Bryotropha domestica	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Bryotropha terrella	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Celypha lacunana	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Common Carpet (Epirrhoe alternata)	1	09/07/1999	Moths Ireland	

Custom	insect - moth	Common Grass-veneer (Agriphila tristella)	2	10/08/2003	Moths Ireland	
Custom	insect - moth	Crinan Ear (Amphipoea crinanensis)	1	31/08/1911	Moths Ireland	
Custom	insect - moth	Death's-head Hawk-moth (Acherontia atropos)	1	31/12/1900	Moths Ireland	
Custom	insect - moth	Eucosma cana	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Furness Dowd (Blastobasis adustella)	1	20/06/1971	Moths Ireland	
Custom	insect - moth	Garden Carpet (Xanthorhoe fluctuata)	1	21/08/2016	Moth Records of Ireland	
Custom	insect - moth	Garden Grass-veneer (Chrysoteuchia culmella)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Garden Pebble (Evergestis forficalis)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Green Carpet (Colostygia pectinataria)	1	21/08/2016	Moth Records of Ireland	
Custom	insect - moth	Least Yellow Underwing (Noctua interjecta)	1	21/08/2016	Moth Records of Ireland	
Custom	insect - moth	Little Grey (Dipleurina lacustrata)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Middle-barred Minor (Oligia fasciuncula)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Pseudococcyx posticana	2	26/04/1971	Moths Ireland	
Custom	insect - moth	Purple Clay (Diarsia brunnea)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Red-barred Tortrix (Ditula angustiorana)	2	12/05/1971	Moths Ireland	
Custom	insect - moth	Riband Wave (Idaea aversata)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Round-winged Muslin (Thumatha senex)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Shaded Broad-bar (Scotopteryx chenopodiata)	1	10/08/2003	Moths Ireland	
Custom	insect - moth	Small China-mark (Cataclysta lemnata)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Smoky Wainscot (Mythimna impura)	1	21/08/2016	Moth Records of Ireland	
Custom	insect - moth	Snout (Hypena proboscidalis)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Spectacle (Abrostola tripartita)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Stenoptilia bipunctidactyla	5	31/12/1903	Microlepidoptera collections (National Museum of Ireland)	
Custom	insect - moth	Straw Grass-veneer (Agriphila straminella)	2	10/08/2003	Moths Ireland	
Custom	insect - moth	Swallow-tailed Moth (Ourapteryx sambucaria)	1	09/07/1999	Moths Ireland	
Custom	insect - moth	Twin-spotted Quaker (Orthosia munda)	1	30/04/1894	Moths Ireland	
Custom	insect - moth	Udea lutealis	1	10/08/2003	Moths Ireland	
Custom	insect - orthopteran	Common Green Grasshopper (Omocestus viridulus)	2	21/07/2011	Grasshoppers, Crickets and Allied Insects (Orthoptera) of Ireland	
Custom	insect - true bug (Hemiptera)	Cicadella viridis	1	21/08/2016	General Biodiversity Records from Ireland	

Custom	insect - true bug (Hemiptera)	Common Backswimmer (Notonecta (Notonecta) glauca)	1	21/08/2016	True Bugs (Heteroptera) of Ireland	
Custom	insect - true bug (Hemiptera)	Common Green Capsid (Lygocoris (Lygocoris) pabulinus)	1	31/12/1911	True Bugs (Heteroptera) of Ireland	
Custom	insect - true bug (Hemiptera)	Green Shieldbug (Palomena prasina)	1	21/08/2016	True Bugs (Heteroptera) of Ireland	
Custom	insect - true bug (Hemiptera)	Sloe Shieldbug (Dolycoris baccarum)	1	21/08/2016	True Bugs (Heteroptera) of Ireland	
Custom	insect - true bug (Hemiptera)	Sphagnum Bug (Hebrus (Hebrusella) ruficeps)	1	12/10/1900	True Bugs (Heteroptera) of Ireland	
Custom	insect - true fly (Diptera)	Eristalis arbustorum	5	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Eristalis horticola	1	23/08/2012	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Eristalis pertinax	2	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Eristalis tenax	3	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Helophilus hybridus	2	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Helophilus pendulus	5	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Marmalade Hoverfly (Episyrphus balteatus)	1	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Melanostoma scalare	1	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Neoascia podagrica	3	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Platycheirus albimanus	2	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Platycheirus granditarsus	1	25/09/1971	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Rhingia campestris	3	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Sericomyia silentis	1	14/09/2013	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Syrphus vitripennis	1	24/09/1971	Hoverflies (Syrphidae) of Ireland	
Custom	insect - true fly (Diptera)	Zodion cinereum	1	02/08/1958	Conopidae of Ireland	
Custom	liverwort	Anomalous Flapwort (Mylia anomala)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Bifid Crestwort (Lophocolea bidentata)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Blueish Veilwort (Metzgeria violacea)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Bog Pouchwort (Calypogeia sphagnicola)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern

Custom	liverwort	Bog-moss Flapwort (Odontoschisma sphagni)	1	31/07/1900	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Chiloscyphus polyanthos	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Cliff Scalewort (Porella cordaeana)	1	31/12/1904	Bryophytes of Ireland	Threatened Species: Near threatened
Custom	liverwort	Common Frillwort (Fossombronia pusilla)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Common Liverwort (Marchantia polymorpha)	2	31/12/1980	Bryophytes of Ireland	
Custom	liverwort	Common Pouchwort (Calypogeia fissa)	2	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Crenulated Flapwort (Jungermannia gracillima)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Dilated Scalewort (Frullania dilatata)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Endive Pellia (Pellia endiviifolia)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Even Scalewort (Radula complanata)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Forked Veilwort (Metzgeria furcata)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Greasewort (Aneura pinguis)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Greater Featherwort (Plagiochila asplenioides)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Jagged Notchwort (Lophozia incisa)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Lesser Featherwort (Plagiochila porelloides)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Marchantia polymorpha subsp. polymorpha	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Marchantia polymorpha subsp. ruderalis	3	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Notched Pouchwort (Calypogeia arguta)	3	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Overleaf Pellia (Pellia epiphylla)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Pinnate Scalewort (Porella pinnata)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	St Winifrid's Other Moss (Chiloscyphus pallescens)	1	31/12/1980	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Two-horned Pincerwort (Cephalozia bicuspidata)	2	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	Western Pouncewort (Lejeunea lamacerina)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	liverwort	White Earwort (Diplophyllum albicans)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	millipede	Brachyiulus pusillus	1	30/04/1979	Millipedes of Ireland	

Custom	millipede	Common Flat-backed Millipede (Polydesmus angustus)	2	02/10/1995	Millipedes of Ireland	
Custom	millipede	Cylindroiulus britannicus	1	30/04/1979	Millipedes of Ireland	
Custom	millipede	Eyed Flat-backed Millipede (Nanogona polydesmoides)	1	02/10/1995	Millipedes of Ireland	
Custom	millipede	Ophyiulus pilosus	1	02/10/1995	Millipedes of Ireland	
Custom	millipede	Polydesmus coriaceus	1	30/04/1979	Millipedes of Ireland	
Custom	millipede	White-legged Snake Millipede (Tachypodoiulus niger)	2	02/10/1995	Millipedes of Ireland	
Custom	mollusc	Ancylus fluviatilis	3	19/09/2007	River Biologists' Database (EPA)	
Custom	mollusc	Arion (Arion)	2	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Arion (Carinarion)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Arion (Kobeltia)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Brown Lipped Snail (Cepaea (Cepaea) nemoralis)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Carychium	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Cellar Snail (Oxychilus (Oxychilus) cellarius)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Clear Glass Snail (Aegopinella pura)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Cochlicopa	3	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Columella aspera	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Common Bithynia (Bithynia (Bithynia) tentaculata)	3	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Common Bladder Snail (Physa fontinalis)	2	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Common Chrysalis Snail (Lauria (Lauria) cylindracea)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Common Whorl Snail (Vertigo (Vertigo) pygmaea)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Near threatened
Custom	mollusc	Dusky Slug (Arion (Mesarion) subfuscus)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Dwarf Pond Snail (Galba (Galba) truncatula)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Dwarf Snail (Punctum (Punctum) pygmaeum)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Eccentric Grass Snail (Vallonia cf. excentrica)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	English Chrysalis Snail (Leiostyla (Leiostyla) anglica)	2	18/06/1969	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Custom	mollusc	Euconulus	1	31/12/1913	All Ireland Non-Marine Molluscan Database	

Custom	mollusc	Field Slug (Deroceras (Deroceras) agreste)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Data deficient
Custom	mollusc	Flat Valve Snail (Valvata (Valvata) cristata)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Garlic Snail (Oxychilus (Oxychilus) alliarius)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Glossy Glass Snail (Oxychilus (Oxychilus) navarricus subsp. helveticus)	1	31/12/1910	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Great Pond Snail (Lymnaea (Lymnaea) stagnalis)	3	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Hairy Snail (Trochulus (Trochulus) hispidus)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Hedgehog Slug (Arion (Kobeltia) intermedius)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Horny Orb Mussel (Sphaerium corneum)	4	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Keeled Ramshorn (Planorbis carinatus)	3	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Keeled Slug (Tandonia sowerbyi)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species
Custom	mollusc	Lake Limpet (Acroloxus lacustris)	1	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Large Amber Snail (Succinea putris)	1	31/12/1910	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Least Slippery Snail (Cochlicopa cf. lubricella)	1	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Lymnaea (Stagnicola)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Lymnaea (Stagnicola) fuscus	1	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Marsh Slug (Deroceras (Deroceras) laeve)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Marsh Whorl Snail (Vertigo (Vertigo) antivertigo)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Custom	mollusc	Milky Crystal Snail (Vitrea contracta)	1	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Netted Slug (Deroceras (Deroceras) reticulatum)	2	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Pellucid Glass Snail (Vitrina pellucida)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Pfeiffer's Amber Snail (Oxyloma (Oxyloma) elegans)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Plated Snail (Spermodea lamellata)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Endangered

Custom	mollusc	Porous Pea Mussel (Pisidium obtusale)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Prickly Snail (Acanthinula aculeata)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Near threatened
Custom	mollusc	Rayed Glass Snail (Nesovitrea (Perpolita) hammonis)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Rounded Snail (Discus (Gonyodiscus) rotundatus)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Shiny Glass Snail (Zonitoides (Zonitoides) nitidus)	3	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Short-ended Pea Mussel (Pisidium subtruncatum)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Smooth Glass Snail (Aegopinella nitidula)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Smooth Jet Slug (Milax gagates)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Strawberry Snail (Trochulus (Trochulus) striolatus)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Striated Whorl Snail (Vertigo (Vertigo) substriata)	2	31/12/1913	All Ireland Non-Marine Molluscan Database	Threatened Species: Near threatened
Custom	mollusc	Swan Mussel (Anodonta (Anodonta) cygnea)	1	18/06/1969	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Custom	mollusc	Tree Slug (Lehmannia marginata)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Tree Snail (Balea (Balea) perversa)	2	09/04/1982	All Ireland Non-Marine Molluscan Database	Threatened Species: Vulnerable
Custom	mollusc	Twisted Ramshorn (Bathyomphalus contortus)	1	31/12/1910	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Two-toothed Door Snail (Clausilia (Clausilia) bidentata)	3	09/04/1982	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Valve Snail (Valvata (Cincinna) piscinalis)	3	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Vitrea	2	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Wandering Snail (Radix balthica)	3	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	White Ramshorn (Gyraulus (Gyraulus) albus)	3	18/06/1969	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	White-lipped Ramshorn (Anisus (Anisus) leucostoma)	1	31/12/1910	All Ireland Non-Marine Molluscan Database	
Custom	mollusc	Yellow Slug (Limacus flavus)	1	31/12/1913	All Ireland Non-Marine Molluscan Database	
Custom	moss	Aloe Haircap (Pogonatum aloides)	3	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Amblystegium serpens var. serpens	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Awl-leaved Earth-moss (Pleuridium subulatum)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Barbula sardoa	1	15/05/1965	Bryophytes of Ireland	

Custom	moss	Big Shaggy-moss (Rhytidiadelphus triquetrus)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Bird's-claw Beard-moss (Barbula unguiculata)	4	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Blunt Feather-moss (Homalia trichomanoides)	2	31/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Bog Groove-moss (Aulacomnium palustre)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Broom Fork-moss (Dicranum scoparium)	2	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Brown Ditrichum (Ditrichum pusillum)	1	31/12/1912	Bryophytes of Ireland	Threatened Species: Data deficient
Custom	moss	Bruch's Pincushion (Ulota bruchii)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Bryum dichotomum	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Cape Thread-moss (Orthodontium lineare)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Capillary Thread-moss (Bryum capillare)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Bladder-moss (Physcomitrium pyriforme)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Cord-moss (Funaria hygrometrica)	3	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Feather-moss (Eurhynchium praelongum)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Haircap (Polytrichum commune)	1	30/06/1961	Bryophytes of Ireland	
Custom	moss	Common Pocket-moss (Fissidens taxifolius)	2	15/05/1965	Bryophytes of Ireland	
Custom	moss	Common Pottia (Tortula truncata)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Smoothcap (Atrichum undulatum)	4	31/08/2007	Bryophytes of Ireland	
Custom	moss	Common Striated Feather-moss (Eurhynchium striatum)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Common Tamarisk-moss (Thuidium tamariscinum)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Crisped Pincushion (Ulota crispa)	3	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Ctenidium molluscum var. molluscum	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Curly Crisp-moss (Trichostomum crispulum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Cylindric Beard-moss (Didymodon insulanus)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Cypress-leaved Plait-moss (Hypnum cupressiforme)	4	31/08/2007	Bryophytes of Ireland	

Custom	moss	Dotted Thyme-moss (Rhizomnium punctatum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Drab Brook-moss (Hygrohypnum luridum)	1	31/12/1910	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Drepanocladus revolvens sensu lato	1	31/12/1907	Bryophytes of Ireland	
Custom	moss	Dwarf Feather-moss (Eurhynchium pumilum)	1	15/05/1965	Bryophytes of Ireland	
Custom	moss	Dwarf Neckera (Neckera pumila)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Elegant Bristle-moss (Orthotrichum pulchellum)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Ephemerum serratum var. minutissimum	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fallacious Beard-moss (Didymodon fallax)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Feathery Bog-moss (Sphagnum cuspidatum)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Felted Thyme-moss (Rhizomnium pseudopunctatum)	1	31/12/1912	Bryophytes of Ireland	Threatened Species: Near threatened
Custom	moss	Fern-leaved Hook-moss (Cratoneuron filicinum)	3	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Field Forklet-moss (Dicranella staphylina)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fissidens bryoides	2	31/08/2007	Bryophytes of Ireland	
Custom	moss	Fissidens taxifolius var. taxifolius	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fissidens viridulus sensu lato	1	15/05/1965	Bryophytes of Ireland	
Custom	moss	Flat Neckera (Neckera complanata)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Floating Hook-moss (Warnstorfia fluitans)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fountain Apple-moss (Philonotis fontana)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fountain Feather-moss (Amblystegium tenax)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Near threatened || Threatened Species: Least concern
Custom	moss	Fox-tail Feather-moss (Thamnobryum alopecurum)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Fringed Bog-moss (Sphagnum fimbriatum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Frizzled Pincushion (Ulota phyllantha)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Giant Spear-moss (Calliergon giganteum)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Glittering Wood-moss (Hylocomium splendens)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Greater Water-moss (Fontinalis antipyretica var. antipyretica)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern

Custom	moss	Green-tufted Stubble-moss (Weissia controversa)	1	15/05/1965	Bryophytes of Ireland	
Custom	moss	Grey-cushioned Grimmia (Grimmia pulvinata)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Hair-pointed Feather-moss (Cirriphyllum piliferum)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Hart's-tongue Thyme-moss (Plagiomnium undulatum)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Heart-leaved Spear-moss (Calliergon cordifolium)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Heath Plait-moss (Hypnum jutlandicum)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Heath Star Moss (Campylopus introflexus)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Hornschuch's Beard-moss (Pseudocrossidium hornschuchianum)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Hutchins' Pincushion (Ulota hutchinsiae)	1	31/12/1912	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Hypnum cupressiforme sensu lato	3	15/05/1965	Bryophytes of Ireland	
Custom	moss	Intermediate Hook-moss (Drepanocladus cossonii)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Isothecium myosuroides var. myosuroides	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Juicy Silk-moss (Plagiothecium succulentum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Juniper Haircap (Polytrichum juniperinum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Larger Mouse-tail Moss (Isothecium alopecuroides)	2	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Lateral Cryphaea (Cryphaea heteromalla)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Lesser Bird's-claw Beard-moss (Barbula convoluta)	4	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Lesser Yoke-moss (Zygodon conoideus)	1	31/08/2007	Bryophytes of Ireland	
Custom	moss	Lindberg's Plait-moss (Hypnum lindbergii)	3	15/05/1965	Bryophytes of Ireland	
Custom	moss	Little Shaggy-moss (Rhytidiadelphus loreus)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Long-beaked Thyme-moss (Plagiomnium rostratum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Long-beaked Water Feather-moss (Rhynchostegium riparioides)	1	31/08/2007	Bryophytes of Ireland	
Custom	moss	Long-shanked Pincushion (Ptychomitrium polyphyllum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Lyell's Bristle-moss (Orthotrichum lyellii)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern

Custom	moss	Marsh Forklet-moss (Dicranella palustris)	1	30/06/1961	Bryophytes of Ireland	
Custom	moss	Matted Feather-moss (Sciuro-hypnum populeum)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Neat Feather-moss (Scleropodium purum)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Pale Glaucous Thread-moss (Pohlia wahlenbergii)	2	15/05/1965	Bryophytes of Ireland	
Custom	moss	Pale Thread-moss (Bryum pallens)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Palustriella commutata var. commutata	1	31/12/1910	Bryophytes of Ireland	
Custom	moss	Pea Bryum (Bryum ruderale)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Pointed Spear-moss (Calliergonella cuspidata)	5	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Purple-stalked Pocket-moss (Fissidens osmundoides)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Racomitrium heterostichum sensu lato	1	30/06/1961	Bryophytes of Ireland	
Custom	moss	Red Beard-moss (Bryoerythrophyllum recurvirostrum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Redshank (Ceratodon purpureus)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Red-stemmed Feather-moss (Pleurozium schreberi)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Revolute Beard-moss (Pseudocrossidium revolutum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Rigid Beard-moss (Didymodon rigidulus)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	River Feather-moss (Brachythecium rivulare)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Rock Pocket-moss (Fissidens dubius)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Rough-stalked Feather-moss (Brachythecium rutabulum)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Rufous Beard-moss (Bryoerythrophyllum ferruginascens)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Rusty Bog-moss (Sphagnum fuscum)	3	31/12/1900	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Schistidium apocarpum sensu lato	2	15/05/1965	Bryophytes of Ireland	
Custom	moss	Schreber's Forklet-moss (Dicranella schreberiana)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Sessile Grimmia (Schistidium apocarpum)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Sickle-leaved Hook-moss (Sanionia uncinata)	2	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Silky Forklet-moss (Dicranella heteromalla)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern

Custom	moss	Silky Wall Feather-moss (Homalothecium sericeum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Silver-moss (Bryum argenteum)	4	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Slender Pocket-moss (Fissidens exilis)	3	31/12/1965	Bryophytes of Ireland	Threatened Species: Vulnerable
Custom	moss	Spiky Bog-moss (Sphagnum squarrosum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Springy Turf-moss (Rhytidiadelphus squarrosus)	4	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Supine Plait-moss (Hypnum cupressiforme var. resupinatum)	3	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Swan's-neck Thyme-moss (Mnium hornum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Swartz's Feather-moss (Oxyrrhynchium hians)	2	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Tall Thyme-moss (Plagiomnium elatum)	1	31/12/1980	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Taper-leaved Earth-moss (Pleuridium acuminatum)	1	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Thick-nerved Apple-moss (Philonotis calcarea)	1	31/12/1912	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Transparent Fork-moss (Dichodontium pellucidum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Tree-moss (Climacium dendroides)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Urn Haircap (Pogonatum urnigerum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Variable Forklet-moss (Dicranella varia)	2	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Wall Screw-moss (Tortula muralis)	3	07/07/2012	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Wall Thread-moss (Bryum radiculosum)	1	31/12/1907	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Wood Bristle-moss (Orthotrichum affine)	1	31/08/2007	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Woolly Fringe-moss (Racomitrium lanuginosum)	1	30/06/1961	Bryophytes of Ireland	Threatened Species: Least concern
Custom	moss	Zygodon viridissimus var. viridissimus	2	15/05/1965	Bryophytes of Ireland	Threatened Species: Least concern
Custom	slime mould	Trichia varia	1	18/10/2003	General Biodiversity Records from Ireland	
Custom	spider (Araneae)	Araniella cucurbitina sensu lato	1	21/08/2016	Citizen Science Spider Records for Ireland	
Custom	spider (Araneae)	Metellina segmentata	1	21/08/2016	Citizen Science Spider Records for Ireland	
Custom	spider (Araneae)	Pachygnatha clercki	1	21/08/2016	Citizen Science Spider Records for Ireland	

Custom	spider (Araneae)	Xysticus cristatus	1	21/08/2016	Citizen Science Spider Records for Ireland	
Custom	terrestrial mammal	American Mink (Mustela vison)	1	05/09/2013	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	terrestrial mammal	Daubenton's Bat (Myotis daubentonii)	1	01/09/2006	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Eastern Grey Squirrel (Sciurus carolinensis)	8	31/12/2012	Irish Squirrel Survey 2012	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> EU Regulation No. 1143/2014 || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland)
Custom	terrestrial mammal	Eurasian Badger (Meles meles)	30	31/12/2014	Badger Setts of Ireland Database	Protected Species: Wildlife Acts
Custom	terrestrial mammal	Eurasian Red Squirrel (Sciurus vulgaris)	12	05/10/2018	Mammals of Ireland 2016-2025	Protected Species: Wildlife Acts
Custom	terrestrial mammal	European Otter (Lutra lutra)	4	19/08/2014	Atlas of Mammals in Ireland 2010-2015	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex II || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	European Rabbit (Oryctolagus cuniculus)	13	15/02/2015	Atlas of Mammals in Ireland 2010-2015	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> Medium Impact Invasive Species

Custom	terrestrial mammal	Fallow Deer (Dama dama)	1	22/05/1990	Badger and Habitats Survey of Ireland	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species || Invasive Species: Invasive Species >> Regulation S.I. 477 (Ireland) || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Feral Ferret (Mustela furo)	6	20/04/2007	National Feral Ferret (Mustela putoris furo) Database	Invasive Species: Invasive Species || Invasive Species: Invasive Species >> High Impact Invasive Species
Custom	terrestrial mammal	Irish Hare (Lepus timidus subsp. hibernicus)	4	18/05/1992	Badger and Habitats Survey of Ireland	
Custom	terrestrial mammal	Irish Stoat (Mustela erminea subsp. hibernica)	1	31/12/1982	Mammal Recording Scheme 1970-1985 (An Foras Forbartha)	
Custom	terrestrial mammal	Lesser Noctule (Nyctalus leisleri)	3	20/06/2012	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Pine Marten (Martes martes)	4	21/05/2018	Mammals of Ireland 2016-2025	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex V || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Pipistrelle (Pipistrellus pipistrellus sensu lato)	1	20/06/2012	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	Red Fox (Vulpes vulpes)	2	10/04/2018	Mammals of Ireland 2016-2025	
Custom	terrestrial mammal	Soprano Pipistrelle (Pipistrellus pygmaeus)	2	20/06/2012	National Bat Database of Ireland	Protected Species: EU Habitats Directive || Protected Species: EU Habitats Directive >> Annex IV || Protected Species: Wildlife Acts
Custom	terrestrial mammal	West European Hedgehog (Erinaceus europaeus)	6	31/12/1981	Mammal Recording Scheme 1970-1985 (An Foras Forbartha)	Protected Species: Wildlife Acts

Appendix

8b

Invasive Species Survey Report

OUTLINE INVASIVE SPECIES MANAGEMENT PLAN

Regeneration Scheme in Monaghan Town: Phase 1 South Dublin Street and Backlands

NI 2162 Monaghan Town:
South Dublin Street and
Backlands Ecology
OISMP
F01
15 August 2022

www.rpsgroup.com

Document Status

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F01	OISMP	S. O'Hara	S. Lowry	R. Holbeach	15/08/22

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Prepared by:

RPS Ireland Ltd (NI)

Samuel O'Hara
Senior Ecologist

Elmwood House, 74 Boucher Road
Belfast, Co. Antrim, BT12 6RZ

T 028 9066 7914
E samuel.ohara@rpsgroup.com

Prepared for:

Monaghan County Council

Noel Finnegan
A/Senior Executive Engineer

Corporate Assets Department
Monaghan County Council

T 00353 47 30500
E nfinnegan@monaghancoco.ie

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Appendices

1 INTRODUCTION

1.1 Introduction

RPS was commissioned by Monaghan County Council to produce an Outline Invasive Species Management Plan (OISMP) for lands at Monaghan Town Centre in association with the proposed Monaghan Town Regeneration Scheme Phase 1: South Dublin Street and Backlands.

1.2 Statement of Authority

The author, Samuel O'Hara, is a Senior Ecologist with RPS and holds a BSc (Hons) in Ecology and has over five years of experience in the field of ecology. Samuel has experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel is an Associate member of the CIEEM.

We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists. The information prepared and provided is accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2019).

1.3 Proposed Project

The proposed project is an urban regeneration scheme which will involve the demolition of buildings/properties; the provision of new streets, roads, public areas, car parking, pedestrian and cycle facilities; the provision of new utility services; urban landscaping; and the provision of public realm and amenity facilities.

The proposed development works will take between 12 - 24 months to complete and will comprise the following works:

- The demolition of buildings and structures, including street frontage buildings No's 8-11 Dublin Street and associated outbuildings and structures; the building to the rear of No. 24 Dublin Street; partial removal of the rear section of the Northern Standard building fronting the Lower Courthouse car park; storage sheds, walls, and fencing
- Construction of structural masonry walls and new facades/side elevations to No's 7 and 12-13 Dublin Street
- Creation of new urban civic spaces, streets, junctions, pedestrian pavements, steps, and cycle routes
- Construction of new public realm comprising new surfaces, kerbing, street furniture, public street and feature lighting, soft landscape planting, cycle parking and signage
- Clearance, regrading and creation of two potential development areas with supporting embankments, hardcore surfacing and boundary fencing
- New boundary treatments comprising walls, railings and fencing
- Alterations to the existing car parking layouts within the Courthouse car park and Lower Courthouse car park, and a reduction in long stay parking spaces
- Upgrading and installation of new utility services, CCTV, and a new ESB sub-station

- All associated site development works.

1.4 Site Description

The site consists of 2.1 ha of urban lands bordered by further areas of urban development to the north, east, south and west, comprising Monaghan Town Centre. The site consists of a range of largely urban habitats including buildings, hardstanding, amenity grassland, scrub and recolonising vegetation. The invasive non-native species Japanese Knotweed *Fallopia japonica* was recorded within the site of the proposed project.

1.5 Invasive Species

Invasive non-native species are defined as those that have been introduced, either intentionally or unintentionally, outside of their natural range and that present a threat to biodiversity. They can have a wide range of impacts on ecology, the environment and the economy. Once established they can be extremely difficult to control and costly to eradicate. It is also an offence to plant or otherwise cause to grow in the wild any plant listed on Part 1 of SI. No. 477 of 2011, European Communities (Birds and Natural Habitats) Regulations 2011.

2 LEGISLATION & PLANNING POLICY

The principal legislation in Ireland relating to invasive non-native species and relevant to the proposed development are set out below.

2.1 European Communities (Birds and Natural Habitats) Regulations 2011 [SI. 477]

It is an offence under Article 49 (2) of the European Communities (Birds and Natural Habitats) Regulations 2011 for any person to plant, disperse, allow to grow or cause to disperse, spread or otherwise cause to grow throughout the state any plant included in Part 1 of the Third Schedule. Japanese knotweed is included on the Third Schedule of the Regulations.

2.2 European Regulations

Regulation (EU) 1143/2014 on invasive alien species (the IAS Regulation) entered into force on 1 January 2015, fulfilling Action 16 of Target 5 of the EU 2020 Biodiversity Strategy, as well as Aichi Target 9 of the Strategic Plan for Biodiversity 2011-2020 under the Convention of Biological Diversity.

The core of the IAS Regulation is the list of Invasive Alien Species of Union concern ("the Union list").

The IAS Regulation provides for a set of measures to be taken across the EU in relation to invasive alien species included on the Union list. Three distinct types of measures are envisaged, which follow an internationally agreed hierarchical approach to combatting IAS:

Prevention: a number of robust measures aimed at preventing the intentional or unintentional introduction of IAS of Union concern into the EU.

Early detection and rapid eradication: Member States must put in place a surveillance system to detect the presence of IAS of Union concern as early as possible and take rapid eradication measures to prevent them from establishing.

Management: some IAS of Union concern are already established in certain Member States. Concerted management action is needed to prevent them from spreading any further and to minimize the harm they cause.

3 JAPANESE KNOTWEED

An Extended Phase 1 Habitat Survey was conducted on the 14th February 2020 and 23rd June 2020 within the site of the proposed project. Japanese knotweed was the only invasive alien species recorded within the site.

Japanese knotweed is an invasive non-native species in Ireland originating from Japan and northern China. It is a perennial plant with vigorous growth and consists of dense stands with extensive underground root systems known as rhizomes. These rhizomes, which can grow up to 7m from the parent plant and 3m below the ground and are responsible for the spread of the plant. If left unchecked the plant can cause considerable damage to biodiversity, buildings, hard surfaces and infrastructure. Japanese knotweed does not spread from seed. It is entirely spread by the movement of plant material or the movement of contaminated soil containing fragments of rhizome.

Japanese knotweed was recorded at approximately six locations within the site. The stands of knotweed are of varying size and are largely scattered around the site. An additional stand of knotweed (JK07) lies outside of the site boundary but within proximity to the project. Table 2 below provides descriptive details of each stand of knotweed. Figure 1 illustrates the location of the Japanese knotweed on the site.

Table 2: Details of Japanese Knotweed Stands Recorded in Monaghan Town Centre

Site Reference	Grid Reference	Average Height of Stem (cm)	Vegetation Composition	Proximity to Water	Slope	Approximate Area (m^2)
JK01	267357, 333631	120	Other Species Present	No	No	10.2
JK02	267335, 333687	150	Other Species Present	No	No	160
JK03	267310, 333661	110	Other Species Present	No	No	22.5
JK04	267291, 333683	150	Other Species Present	No	No	30
JK05	267256, 333654	50	JK Only	No	No	18
JK06	267257, 333639	25	JK Only	No	No	4
JK07	267155, 333622	150	Other Species Present	No	Yes	140

4 OUTLINE MANAGEMENT PLAN

4.1 Responsibility

The OISMP has been drafted prior to the grant of planning permission or procurement of a Contractor. The person responsible for the management of invasive non-native species on site and the implementation of the ISMP has therefore yet to be appointed. Once procured the Contractor will appoint an Environmental Manager (EM) and Ecological Clerk of Works (ECoW).

The EM will be responsible for the implementation and sign-off of the ISMP, liaison with the ECoW, ensuring that all contractors, sub-contractors and site personnel are aware of the plan and that provisions are made for avoiding any further contamination of the site. The EM will also be responsible for ensuring that the ISMP is updated and revised in light of any emerging civil engineering design and in advance of eradication works.

The ECoW will be a person with the qualifications, training, skills and relevant experience to undertake appropriate survey and monitoring and to provide specialist advice in relation to invasive non-native species to site personnel on the necessary working practices required to safeguard the site and to aid compliance with relevant legislation. The ECoW will be responsible for survey and identification of invasive non-native species; supervising excavation and removal; supervising decontamination procedures; and monitoring.

The ISMP is a working document, its appendices and any revisions will be kept for future site owners.

4.2 Site Management Objectives

The main management objective is to eradicate Japanese knotweed located on site prior to commencement of initial site preparation works and the main construction contract.

4.3 Management Options

There are a number management options for the control of knotweed these include:

- Excavation & Removal Off Site
- Excavation & Burial On Site
- Bund Method (excavation & stockpiling for future treatment)
- In-situ Herbicide Treatment (stem injection or folia application)
- Combined Method (combined treatment of digging & herbicide)

It is not an acceptable option to consider doing nothing. Given the timescales involved, the only feasible management options for JK01 – 06, located within the site boundary, is excavation and either removal off site to landfill or burial on site. JK07 located outside of the site boundary will not be subject to management through herbicide treatment or other method targeting above ground growth as the area is not owned by the council and is outside of their control. However, contamination zones, within 7m of the stand, remain relevant to proposed excavation works. The location of Japanese knotweed is illustrated in Figure 1.

4.3.1 Preventing Further Spread

- Immediate priority should be given to setting up a Contamination Zone around each stand of Japanese knotweed. The Contamination Zone should extended 7m laterally from visible plant growth and hi-visibility hazard tape or barrier fencing mesh and signs should be erected warning of the presence of invasive non-native species. The Contamination Zone will demarcate the area of soil likely to be contaminated by the underground rhizome system of Japanese knotweed. No access should be allowed within the Contamination Zones.
- All contractors, sub-contractors and site personnel should be briefed on the presence and location of invasive non-native species; the site practices put in place to avoid further spread and contamination; and receive training in the identification of Japanese knotweed. A poster or leaflet highlighting the key features of the plant will be displayed in all communal areas. Signs should be erected in Contamination Zones. These measures will help to avoid the potential spread of invasive non-native species either around the site or off site.

4.3.2 Option 1: Excavation, Cell Formation & Burial on Site

- JK01 - 06 will be treated with herbicide immediately prior to excavation using stem injection and/or foliar application and left in-situ for a period of two weeks. Herbicide must be applied by a 'S*uitable Qualified and Fully Trained Operative'*. It is recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I.
- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Japanese knotweed on site. They should receive a tool box talk in the identification of this invasive non-native species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.
- Eradication works should avoid the use of machinery and vehicles with caterpillar tracks. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A Cell Formation Area will be identified and prepared prior to the excavation of all stands of Japanese knotweed. Cell formation will involve excavation of a pit to the require dimensions; installation of root barrier membrane to completely encapsulate the contaminated knotweed material; layering of sand to protect the membrane; insertion of contaminated knotweed material and all other contaminated material; adequate sealing of the root barrier membrane in accordance with manufacturer's instructions and finally capping off of the cell formation area to at least 2m deep.
- A haulage route and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Japanese knotweed contamination. The route barrier membrane will be protected from damage by a 100mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be removed off-site along with the last load of contaminated soil. The haulage route will be limited to

machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route and decontamination area will be sited in consultation with the ECoW.

- Where ground conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the plant growth area. It is possible that the volume may be reduced by the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The discarded contaminated material should be disposed of in the Cell Formation Area and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence.
- The appointed Contractor should provide a site plan indicating the location of the cell formation area, haulage routes & decontamination areas; a technical specification drawing for cell formation taking into account existing site conditions and underground services; and method statements detailing the procedures for Japanese knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Japanese knotweed eradication including:
  - Method Statement for Application of Herbicide to Japanese Knotweed
  - Method Statement for Cell Formation
  - Method Statement for Excavation of Japanese Knotweed
  - Method Statement for Loading & Transporting Japanese Knotweed
- Full details of the ISMP and the location of the cell formation area should be kept for future site owners.
- The following risks remain with Excavation, Cell Formation & Burial On Site; limitations to future construction works within the location of the cell formation area; limitations to construction of new services or maintenance of existing services; risk of re-establishment of Japanese knotweed if the root barrier membranes is incorrectly sealed or if the integrity of the membrane is breeched.

4.3.3 Option 2: Excavation & Removal Off-Site to Landfill

- Excavation and removal off-site to landfill should take place prior to the commencement of initial site preparation works and the main construction contract.
- JK01 – 06 should be treated with herbicide immediately prior to commencement of excavation using stem injection and/or folia application and left in-situ for a period of two weeks. Herbicide must be applied by a '*Suitable Qualified and Fully Trained Operative'*. Herbicide Records including details of herbicides used, dose rate, application rates and dates applied should be kept in Appendix I. It is

recommended that glyphosate is used to treat the knotweed. It should be noted however that glyphosate is a non-selective broad-spectrum systemic herbicide. Care should therefore be taken when using it around mature trees and desirable vegetation.

- All contractors, sub-contractors and site personnel working on site should first be briefed on the presence and location of Japanese knotweed on the site. They should receive a tool box talk in the identification of this invasive species and the site practices put in place to avoid committing an offence under relevant legislation. A poster or leaflet illustrating and highlighting the key features of the plant will be given to all contractors, sub-contractors and site personnel. These measures will help avoid the unintentional spread of invasive species either within the site or off site.
- Eradication works should avoid the use of machinery and vehicles with caterpillar tracks. Materials leaving or brought onto site should be checked to ensure that invasive non-native species do not leave or enter the site via this route.
- A haulage route, transfer site and decontamination area, protected with a root barrier membrane, will be set up and isolated by exclusion fencing and signs erected to indicate Japanese knotweed contamination. The route barrier membrane will be protected from damage by a 100 mm layer of sand above and below the membrane, topped with a layer of hardcore or other suitable material. All of this material will be removed off-site along with the last load of contaminated soil. The haulage route will be limited to machinery and vehicles involved in the transport of contaminated soil only. The location of the haulage route, transfer site and decontamination area will be sited in consultation with the ECoW.
- Where conditions allow knotweed stands should be excavated to the recommended minimum depth of 3m below ground level and within a perimeter of 7m from the knotweed growth area. It is possible that the volume may be reduced by the presence of the ECoW who would identify the rhizome during excavation. A single excavator with the sole purpose of excavating contaminated soil will be used throughout the entire excavation to reduce the risk of further contamination.
- The excavated soil will be transferred directly into a tipper truck within the transfer site. The truck will be filled to a maximum of 20cm from the top and securely covered to prevent any loss of material during transportation. The truck will then proceed to the decontamination area prior to leaving the site for a licence waste management facility. The EM will be responsible for ensuring all waste transfer documentation is in place in accordance with relevant legislation. Waste records should be kept in Appendix II.
- All machinery used in the excavation and transport of contaminated material must be brushed down in the decontamination area and then pressure washed immediately prior to leaving the site. Care must be taken to clean off all infective plant and soil material. All other equipment used on site including clothes and boots must also be cleaned. All machinery and vehicles will be inspected by the ECoW before being used for other work or taken off site. The decontamination area must be designed to collect and contain all contaminated material including soil, water and silt left behind after machinery and vehicles have been pressure washed. The material must be disposed of along with the other contaminated material and will not be allowed to contaminate drains, ditches or watercourses.
- Care must be taken to ensure that all equipment used on site is cleaned and free from knotweed material before leaving the site to avoid committing an offence under the European Communities Regulations 2011.

- The Contractor should provide a site plan indicating the location haulage routes & decontamination areas and method statements detailing the procedures for Japanese knotweed eradication.
- The Contractor should provide method statements detailing the procedures for Japanese knotweed eradication including:
  - Method Statement for Application of Herbicide to Japanese Knotweed
  - Method Statement for Excavation of Japanese Knotweed
  - Method Statement for Loading & Transporting Japanese Knotweed
- The Contractor should liaise with the relevant authorities to ensure compliance with all legislation, licence and permit requirements.

4.3.4 Ongoing Management

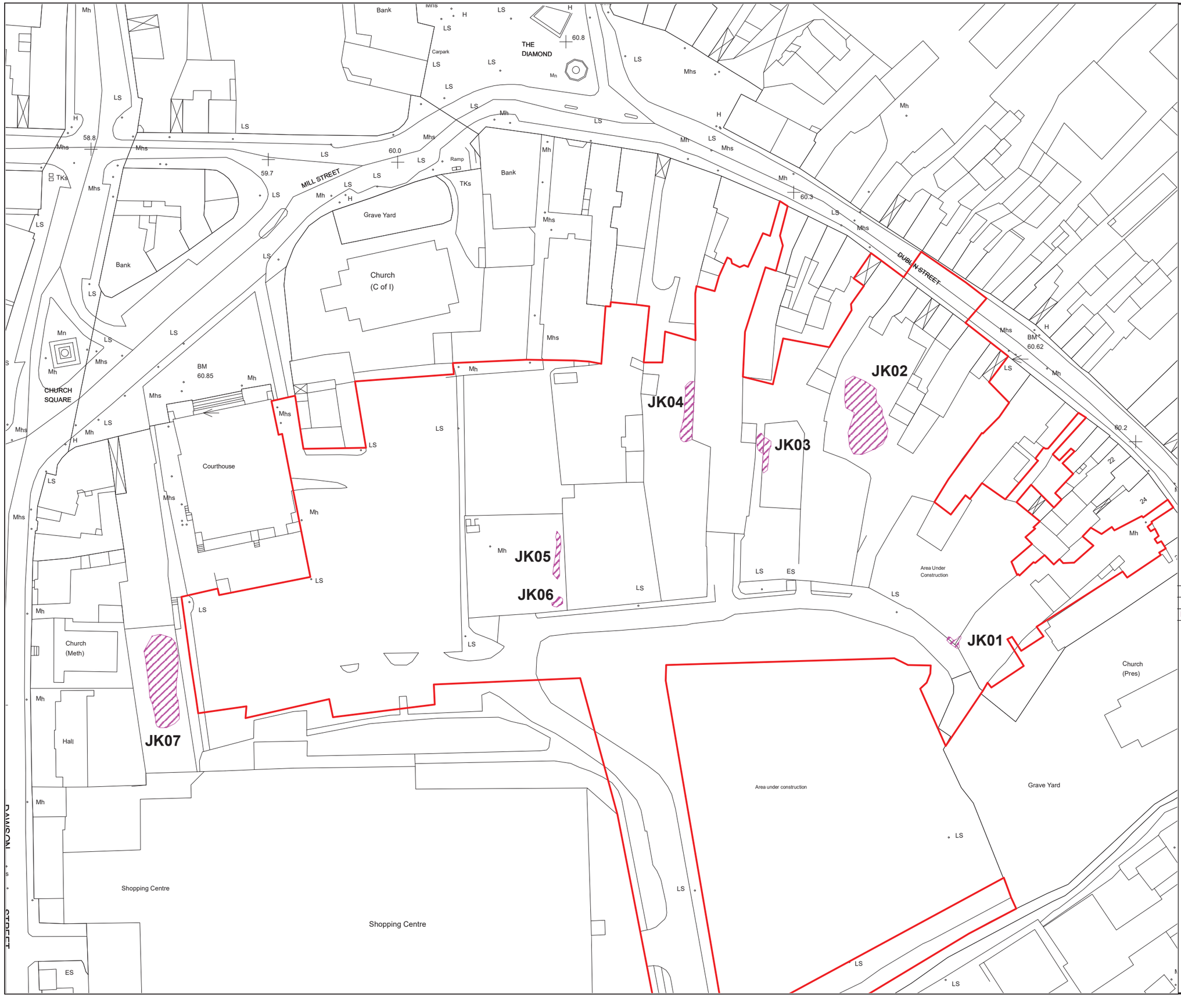
Maintenance of the proposed project will typically include the spraying or cutting of any proposed amenity grassland or vegetation to maintain proposed areas of hardstanding and public open space. As part of operational phase landscape management, periodic inspection for Japanese knotweed should be undertaken.

5 REFERENCES

CIEEM (2019) *Code of Professional Conduct*, Chartered Institute of Ecology and Environmental Management, Winchester

Figures

Figure 1: Location of Invasive Non-Native Species



Note

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.

2. If recieved electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Site Boundary

Japanese Knotweed Stands

Rev	Description	By	Ckd	Date

Elmwood House, 74 Boucher Road,
BELFAST, BT12 6RZ
T: 028 9066 7914

Monaghan County Council

Monaghan Town Centre

Invasive Species Survey Plan

Figure Number 1

Status	Scale @ A3	Date
Preliminary	**1:1250**	**24.06.20**

RPS Project Number **NI2162**

Revision **--**

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Appendix I

Herbicide Records

Attach details of herbicides used, dose rate and application rates and dates applied.

Appendix II

Waste Records

Attach details of waste records for any material containing invasive non-native species taken off site.

Appendix III

Monitoring Records

Attach copies of data collection sheets.

Appendix

8c

Ecological Survey for Bats

ECOLOGICAL SURVEY FOR BATS

Regeneration Scheme in Monaghan Town: Phase 1 South Dublin Street and Backlands

NI2162 Monaghan Town: South Dublin Street and Backlands- Ecology
ESB
F01
March 2021

www.rpsgroup.com

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Prepared by:

RPS Ireland Ltd (NI)

Samuel O'Hara
Senior Ecologist

Elmwood House, 74 Boucher Road
Belfast, Co. Antrim BT12 6RZ

T 028 9066 7914
E **samuel.ohara@rpsgroup.com**

Prepared for:

Monaghan County Council

Noel Finnegan
A/Senior Executive Engineer

Corporate Assets Department
Monaghan County Council

T 00353 47 30500
E **nfinnegan@monaghancoco.ie**

Contents

Figures

SUMMARY

RPS was commissioned by Monaghan County Council to undertake an Ecological Impact Assessment (EcIA) of lands within Monaghan town centre, in association with phase 1 of a proposed regeneration scheme for the town centre. This bat survey report includes the results of a desk study, preliminary appraisal of potential roost features for bats within the site and the findings of emergence/re-entry surveys conducted of a group of buildings within the site to inform the wider ecological impact assessment, as detailed within the Environmental Impact Assessment Report (EIAR) Chapter 8: Biodiversity to which this report is appended.

The proposed development is an urban regeneration scheme which will involve the demolition of buildings/properties, the provision of new streets, roads, public areas, car parking and pedestrian and cycle facilities; the provision of new utility services; urban landscaping and the provision of public realm and amenity facilities.

The site of the proposed project is approximately 2.6 ha in size and largely comprises hardstanding and buildings in addition to small areas of unmanaged semi-natural habitat including scrub, tall ruderal and recolonising hardstanding in addition to scattered trees and a number of hedgerows.

A number of buildings within the Application Site were noted to have potential to support roosting bats and will be lost as a result of the proposed development. These buildings were assessed as having low potential to support roosting bats and subject to emergence/re-entry survey. No roosting bats were recorded to be using these buildings.

No other opportunities for roosting bats were recorded during the surveys, with only low numbers of foraging bats recorded. On this basis and given the urban nature of the site, which is relatively disconnected from semi-natural habitats in the wider area it is not considered that the proposals would have potential to give rise to any significant impacts upon this group.

Should the proposals seek to deliver enhancement for bats it is recommended that bat boxes be incorporated into the scheme design.

1 INTRODUCTION

1.1 Introduction

RPS was commissioned by Monaghan County Council to undertake an Ecological Survey for Bats of lands within Monaghan town centre, in association with EIA for phase 1 of a proposed regeneration scheme for the town centre.

1.2 Ecological Survey for Bats

The Ecological Survey Report has been written in accordance with the Chartered Institute of Ecological and Environmental Management (CIEEM) *Guidelines for Ecological Report Writing* (CIEEM 2017). The aim of the report is to provide a description of the bat survey methods used; to provide the detailed results of bat surveys; and to provide an interpretation of the results. The Ecological Survey for Bats is used to inform the Ecological Impact Assessment (EcIA) set out within EIAR Chapter 8: Biodiversity to which this report is appended.

1.3 Legislation

All bats are protected species under the Wildlife Act 1976 and Wildlife (Amendment) Act 2000. Across Europe, they are further protected under the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention 1982), which, in relation to bats, exists to conserve all species and their habitats.

The Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention 1979, enacted 1983) was instigated to protect migrant species across all European boundaries. The Irish government has ratified both these conventions.

Also, the EC Directive on The Conservation of Natural habitats and of Wild Fauna and Flora (Habitats Directive 1992), seeks to protect rare species, including bats, and their habitats and requires that appropriate monitoring of populations be undertaken. All bat species are protected under Annex IV of the EU Habitats Directive, while the lesser horseshoe bat is listed under Annex II. Member states are required to designate Special Areas of Conservation for all species listed under Annex II in order to protect them.

1.4 Proposed Project

The proposed development is an urban regeneration scheme which will involve the demolition of buildings/properties, the provision of new streets, roads, public areas, car parking and pedestrian and cycle facilities; the provision of new utility services; urban landscaping and the provision of public realm and amenity facilities. Full description of the proposals is set out at Chapter 2 of the EIAR.

The location of the proposed project and the ecological study area are illustrated on Figure 8.1 of the EIAR.

2 METHODOLOGY

2.1 Statement of Authority

The author and ecological surveyor, Samuel O'Hara, is a Senior Ecologist with RPS and holds a BSc (Hons) in Ecology and has over five years of experience in the field of ecology. Samuel has experience of ecological field survey including habitat, mammal and bird survey and is a protected species license holder. Samuel is an Associate member of the CIEEM.

The information prepared and provided is true and accurate at the time of issue of this report and has been prepared and provided in accordance with the CIEEM Code of Professional Conduct (CIEEM 2013). We confirm that the professional judgement expressed herein is the true and bona fide opinion of our professional ecologists.

2.2 Preliminary Ecological Appraisal for Bats

A Preliminary Ecological Appraisal for Bats (PEAB) comprising of a desk study and site walkover has been completed for the proposed project.

Bat Conservation Ireland (BCI) was consulted in order to identify existing bat records within 1 km of the site of the proposed project. The information gathered during consultation is third party controlled data purchased for the purposes of this report only. RPS cannot guarantee its accuracy and cannot be held liable for any inaccuracies.

The aim of the site walkover was to observe, assess and record the potential suitability of the site of the proposed project to support bat roosting habitat, commuting habitat and/or foraging habitat. Habitat features were classified as negligible, low, moderate or high in accordance with Bat Conservation Trust (BCT) Good Practice Guidelines (Collins 2016).

2.3 Preliminary Roost Assessment of Structures

A Preliminary Roost Assessment (PRA) of structures within the site was carried out during daylight hours in accordance with Collins (2016). An external and internal inspection survey of structures was undertaken from the ground to look for potential and actual bat entry/exit points, evidence of bat roosts and signs of bat related activity in order to determine the presence of bats or likely presence of bats. Presence of bats is indicated primarily by their signs, such as staining, feeding signs/prey remains, and droppings.

2.4 Preliminary Roost Assessment of Trees

A Preliminary Roost Assessment (PRA) of trees within the site was carried out during daylight hours in accordance with the Collins (2016). An external inspection of trees was undertaken from the ground to identify Potential Roost Features (PRFs) and to determine the presence of bats or likely presence of bats. PRFs that may be used by bats include hollows, cavities, rot holes, hazard beams, cracks or splits, loose bark, knot holes, man-made holes, cankers, butt-rot, double-leaders and partially detached ivy.

2.5 Emergence/Re-Entry Surveys of Structures

Emergence/re-entry survey of structures was carried out to watch, listen and records bats exiting or entering potential roosts. A total of one dusk survey and one dawn survey were carried out by two surveyors in

August 2020. The surveys were carried out when weather conditions were forecast to consist of temperatures >10 °C with little or no wind or precipitation. Elekon Batlogger M bat detectors with real time full spectrum recording, an integrated Global Positioning System (GPS) and temperature logger were used to record bat echolocation calls for later sound analysis using Bat Explorer Software. The number of bats, bat species, bat behaviour and the direction of flight of each bat was also recorded where possible.

3 RESULTS

3.1 Preliminary Ecological Appraisal for Bats

Consultation with Bat Conservation Ireland identified a single historical record of bat roosts within 1km of the site of the proposed project. This record was that of a Leisler's bat *Nyctalus leisleri* roost located within the same Irish Grid square as the proposed development, with the description for the roost location being limited to Monaghan Town. The only other record returned was that of foraging common pipistrelle *Pipistrellus pipistrellus* and soprano pipistrelle *Pipistrellus pygmaeus*, from a location 0.3km to the north-west of the Application Site.

The potential suitability of the site to provide significant habitat for foraging and commuting bats is considered low. The site itself largely consists of hardstanding and buildings with some small areas of scrub, scattered trees, hedgerows and recolonising vegetation, which could be used by a small number of foraging bats. Foraging opportunities within 250 m are limited given the urban nature of the site and habitats within the site are not well linked to the wider landscape.

3.2 Preliminary Roost Assessment of Structures

A map illustrating the site boundary and the existing habitats on the site can be found in **Figure 8.3 Extended Phase 1 Habitat Map of the** EIAR**.**

The site supports a range of buildings of varying structure and age. The vast majority of these structures will however be retained in-situ within the proposed project. Of the buildings to be lost in order to facilitate the construction of the new vehicular access from Dublin Street, two joined structures were deemed to support features with potential to support roosting bats, namely gaps in soffiting and brickwork.

Structure Characteristics

The buildings to be lost to the proposed project, which were assessed as supporting features offering potential opportunities for roosting bats face onto Dublin Street and back onto an area of unmanaged tall ruderal habitat with Japanese knotweed. The locations of the buildings are shown at **Figure 1.0 Bat Roost Survey**.

The structures are two storey and three storey respectively and appear to be constructed from stone or brick with cement render and are of considerable age. The buildings support an arched walkway between Dublin Street and the rear entrances.

The roofs of both structures are pitched slate, with relatively old soffit and facia boards, supporting several gaps on the southern aspect. The chimneys of both buildings are brick and support a number of gaps in pointing and brickwork.

Given the locations of these structures, which are not connected to areas of semi-natural habitat in the wider area and are subject to artificial lighting, they were considered to have **low suitability** to support roosting bats.

Other buildings to be demolished to facilitate the proposed development were considered to offer negligible opportunities for roosting bats.

3.3 Preliminary Roost Assessment of Trees

While the Application Site supports a low number of mature and middle-age trees, none of these were recorded to support features which were considered to offer potential roosting opportunities for bats, such as splits, cracks, rot-holes, flaking bark or other features.

These trees are relatively isolated, within an urban area, and are subject to some degree of artificial lighting.

It is therefore considered that scattered trees within the Application Site offer **negligible opportunities** for roosting bats.

3.4 Emergence/Re-Entry Surveys of Structures

In order to ascertain the presence or absence of roosting bats within structures identified as offering low suitability emergence and re-entry surveys of these buildings were undertaken in August 2020. Table 1.0 includes a summary of the dates of these surveys in addition to the weather conditions.

Table 1.0 Bat Emergence/Re-entry Survey Details

Date	Type of survey	Sunset/sunrise time	Survey Start time	Survey End time	Av.Temp. (°C)	Wind	Precipitation
06.08.20	Emergence	20:18	19:50	21:50	16	Light breeze	None
24.08.20	Re-entry	05:20	03:35	05:30	12	Light breeze	None

Surveyor locations during these surveys are illustrated in **Figure 1.0 Bat Roost Survey**.

No bats were recorded emerging from or re-entering either of the buildings assessed as having low potential to support roosting bats during the surveys. It is considered therefore on the basis of this information, that the buildings to be lost in order to facilitate the proposals do not support roosting bats species.

During the surveys relatively limited bat activity was recorded, with passes limited to a relatively small number of common pipistrelle, soprano pipistrelle and Leisler's bat.

4 DISCUSSION & ANALYSIS OF RESULTS

On the basis of the findings detailed above it is considered that buildings within the Application Site which are to be demolished in order to facilitate construction of the proposed access road from Dublin Street, while considered to have low potential to support roosting bats, were not recorded to support roosting bats at the time of survey.

Trees within the Application Site were not noted to support features offering suitable opportunities for roosting bats.

The site offers limited opportunities for a low number of more common and widespread bat species, namely common pipistrelle, soprano pipistrelle and Leisler's bat.

It is therefore considered that the proposals will not have potential to give rise to significant impacts to bat populations in the locality or individual bats which may utilise the site for the purposes of foraging on an infrequent basis.

5 CONCLUSION

In relation to bats, there are no concerns in view of the proposed demolition works and wider proposals and no specific mitigation measures will be required.

Should the project seek to provide some measure of ecological enhancement, it is recommended that bat boxes be incorporated into the scheme design. These can be installed on existing retained structures where possible.

6 REFERENCES

Collins, J. (ed.) (2016) *Bat Surveys for Professional Ecologists: Good Practice Guidelines* (3rd edn), The Bat Conservation Trust, London.

Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) 1982.
Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) 1979.

CIEEM (2017) *Guidelines for Ecological Report Writing*, Chartered Institute of Ecology and Environmental Management, Winchester.

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

Wildlife Act 1976 and Wildlife (Amendment) Act 2000. Government of Ireland.

Figures

Ecological Survey for Bats

Note

1. This drawing has been prepared in accordance with the scope of RPS's appointment with its client and is subject to the terms and conditions of that appointment. RPS accepts no liability for any use of this document other than by its client and only for the purposes for which it was prepared and provided.

2. If recieved electronically it is the recipients responsibility to print to correct scale. Only written dimensions should be used.

3. This drawing should be read in conjunction with all other relevant drawings and specifications.

Site Boundary

Buildings (to be lost) with low potential for roosting bats.

Emergence/Re-entry Surveyor Locations

Rev	Description	By	Ckd	Date

Elmwood House, 74 Boucher Road,
BELFAST, BT12 6RZ
T: 028 9066 7914

Monaghan County Council

Monaghan Town Centre

Ecological Survey for Bats

Figure Number 1.0

Status	Scale @ A3	Date
Preliminary	**1:1250**	**19.03.21**

RPS Project Number	Revision
NI2162	**--**

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N

Appendix

9a

Scoping Study

SOUTH DUBLIN STREET REGENERATION

Scoping Study

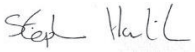
IBH0710
2
22 November 2021

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
F2	Document	S Houlihan	S Houlihan	B Daly	Nov 2021

Approval for issue

S Houlihan		29 November 2021

Prepared by:

RPS

Stephen Houlihan MSc BSc CMILT MTPS
Associate - Highways, Civil and Transportation

Elmwood House
74 Boucher Road, Belfast
Co. Antrim BT12 6RZ

T +44 2890 667 914
E stephen.houlihan@rpsgroup.com

Prepared for:

Monaghan County Council

Noel Finnegan
Senior Executive Engineer

The Glen
Glen Road
Co. Monaghan

Contents

Tables

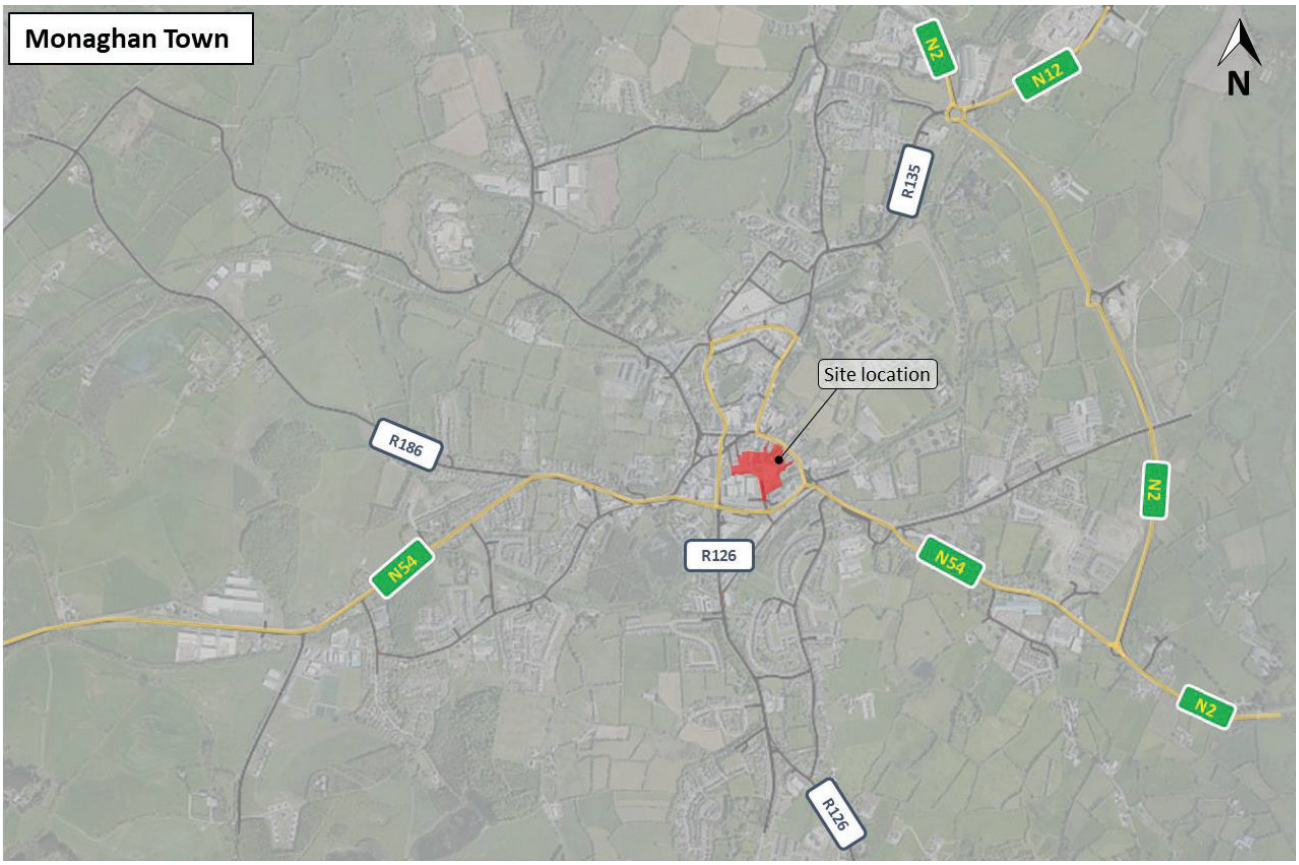
Figures

Appendices

1 INTRODUCTION

RPS was commissioned by Monaghan County Council to prepare an Environmental Impact Assessment Report (EIAR) for the proposed public realm development as part of the South Dublin Street and Backlands Regeneration Scheme. As part of the EIAR, a Traffic and Transportation Assessment (TTA) chapter will be prepared to include a traffic impact assessment as a result of the scheme. The key aim of the EIAR TTA is to determine the potential impacts of the improved street works and the introduction of a new access on Dublin Street. The site location in the context of Monaghan Town is presented in **Figure 1.1**.

Figure 1.1 – Site Location



1.1 Purpose of the report

The purpose of this scoping report is to outline the methodology and parameters to be undertaken as part of the EIAR TTA. It is anticipated that a EIAR TTA Chapter will be required to support the development application, which will be prepared in accordance with the relevant guidance.

1.2 Proposed Development

The regeneration area is split between two Masterplan areas, north and south of Dublin Street. The concept Masterplan for the southern lands, which forms the basis of this assessment, is outlined in **Figure 1.2** and is presented in greater detail in **Appendix A**.

Figure 1.2 – South Dublin Street and Backlands Regeneration Scheme Masterplan Layout

The planning application will seek permission for the following works:

- Creation of new urban spaces, comprising streets and civic spaces:
  - New street, shared surface event space, and junction connecting Dublin Street into its backland areas - to be known as Charles Gavan Duffy Place
  - New street connecting the Courthouse car park to the new space, to be known as Charles Gavan Duffy Place
  - Realignment of Castle Street, its junction with N54 Macartan (Broad) Road, and the internal roads throughout the Courthouse and lower Courthouse car parks.
- Creation of new high quality public realm, comprising:
  - New pavements, high quality surfaces and kerbing, including resurfacing of existing pavements
  - New railings, bollards and pop-up power supply
  - Bicycle parking
  - Street furniture including bins and seats
  - Traffic calming ramps, pedestrian crossings
  - Boundary treatments and landscape planting
  - Demolition of 5 buildings, associated outbuildings and structures
  - Construction of new structural masonry walls and building facades
  - Regrading of land and new embankments, to create two future development plots
  - New / replacement street lighting and CCTV
  - Reduction in long stay car parking spaces
  - Utility and drainage improvements, including new utility services, upgrading of existing ESB services, Wi-Fi and Broadband; and
  - Associated site construction and access works

1.2.1 Site Access

It is proposed that vehicular access to the site will be provided via the existing accesses on Church Street, a realignment of the N54 Macartan (Broad) Road / Castle Street (to be renamed Farney Road) access; and a new 3-arm priority access on Dublin Street, to the south of The Diamond. The access will be designed to cater for Heavy Goods Vehicles access, with vehicle Swept Paths assessment and Road Safety Audits undertaken to inform the design.

1.2.2 Parking Provision

As there is no quantum of new floorspace proposed as part of the development, there will be no additional parking provided as part of the development. The development proposals do, however, propose to reduce the level of car parking within the Upper Courthouse car park, with the spaces reallocated for public realm and to facilitate walking and cycling to/from and within the site.

2 PROPSOED IMPROVEMETNS / MODIFICATIONS

A desktop baseline accessibility assessment will be undertaken to establish the existing transport provision serving the site and its surrounds. The assessment will consider travel by sustainable modes of transport including walking, cycling and public transport; and provides a brief assessment of available infrastructure and service provision.

2.1 Pedestrian, Cycling & Public Transport Facilities

As the site is located within an existing urban centre, pedestrian and cycling facilities are well established. A full assessment of walking and cycling facilities surrounding and within the site will be undertaken and presented within the EIAR TTA.

2.2 Public Transport

There are no changes to public transport facilities as part of the development proposals, with the site proposed to be catered for using existing provision. A review of public transport infrastructure surrounding the site will be presented within the EIAR TTA.

3 TRAFFIC IMPACT ASSESSMENT

3.1 Vehicle Trip Generation

3.1.1 Construction Phase

Although there is no contractor appointed at this stage, a review of the anticipated volumes of construction traffic and likely routes to access the site will be provided win the report. It is anticipated that construction traffic would utilise the strategic road network to access the site via Castle Street, as observed from HGV movements via the new traffic counts undertaken to inform the study.

3.1.2 Operational Phase

As mentioned, there will be no uplift in development floorspace as part of the proposals. The new access on Dublin Street, will however, result in some localised redistribution as set out below.

3.1.3 Trip Distribution

New traffic turning counts, queue and an Automatic Number Plate Recognition surveys were undertaken in October 2021 to establish existing traffic conditions in the vicinity of the site. The ANPR surveys also provide information on the level of traffic that is accessing the site from Castle Street (via Dublin Street) and Church Street, who will likely make use of the new access at Charles Gavan Duffy Place to access the site. Traffic Flow Diagrams illustrating the existing traffic on the network and the level of traffic likely to be diverted via the new Dublin Street / Charles Gavan Duffy Place access is presented in **Appendix B**.

3.2 Critical Time Period for Assessment

In order to determine base traffic flows within the study area, new classified traffic count surveys were undertaken by MHC Traffic Ltd on Thursday 23rd October 2021 at the following junctions.

From these surveys, it was determined that the morning and evening peak hours to be taken forward for a detailed traffic impact assessment will be as follows:

- Morning Peak: 0815-0915; and
- Evening Peak: 1715-1815.

Figure 3.1 - Location of Junction Turning Counts and Queue Surveys

J. No.	Junction Name
1	N54 Clones Road / Market Road / Park Street roundabout
2	N54 Market Road / Broad Road / Glen Road signalised junction
3a/b	a) N54 Broad Road / McNally's Car Park priority junction b) Glen Road / McNally's Car Park priority junction
4	N54 Broad Road / Castle Road / Castle Street priority junction
5	Canal Street / Mall Road / Go Petrol Station priority junction
6	N54 Broad Road / Dublin Street / Old Cross Square / Canal Street Rbt
7	Old Cross Square / Pound Hill priority junction
8a-d	a) Castle Road / Retail Park / Credit Union access b) Castle Street / Lower Courthouse Car Park (s) access c) Castle Street / Lower Courthouse Car Park (n) access d) Castle Street / Upper Courthouse Car Park access
9	Market Street / Park Street gyratory priority junction
10	Dawson Street / Church Square / Market Street signals / priority
11	Church Square / Car Park Exit & Car Park entrance
12	Church Square / Mill Street priority junction
13	North Road / Mill Street signals / priority junction
14	Dublin Street / The Diamond / Glaslough Street / Car Park priority junction

4 SITE OPERATION

For the purposes of assessing the traffic impact of the development, it is assumed that the proposed development will be constructed and operational by 2025. Future assessment years of 2030 (opening year + 5 years) and 2040 (opening year + 15 years) will also be considered at the new Dublin Street / Charles Gavan Duffy Place priority junction, in line with relevant guidelines.

5 TRAFFIC GROWTH

The Chartered Institute of Highways and Transportation (CIHT) Guidelines for traffic impact assessments makes the following comments to the application of traffic growth:

- Paragraph 3.7.12 of the CIHT guidelines indicates that:

  'local data should be used where possible, whether it be based on trip-end model predictions or a trends based projection of historic traffic counts'. The paragraph also indicates that 'trend data on its own cannot provide a realistic forecasting model. Hence the procedure often adopted is to compare trend data with National Road Traffic Forecasts and use this comparison to predict into the future'.

- Paragraph 3.1.17 of the CIHT guidelines properly highlights that applying growth onto the surrounding network and then adding development traffic could result in some double counting and therefore an over estimation of traffic flows.

- *National Road Traffic Forecasts* are also based on 'annual average traffic flows' and paragraph 3.7.14, bullet point 5, of the CIHT guidelines indicates that evidence suggests that peak hour activity is not increasing at a similar rate to off peak traffic levels.

Therefore, the application of any traffic growth during the peak hour periods could result in a significant overestimation of future year traffic volumes. However, for the purposes of this assessment, it is proposed to use the Transport Infrastructure Ireland (TII) Central Growth rates as indicated in **Table 1**. Surveyed traffic flows were converted to Passenger Car Units (PCU) using the conversion factors from the Transport for London Traffic Modelling Guidelines as shown in **Table 5.2.** As TII guidelines do not provide growth factors for PCUs, the factors in Table 1 were established by using the percentage Heavy Vehicles (HV) observed from the new traffic count surveys in **Appendix B**. PCUs are the standard format of assessing traffic within approved modelling software packages LinSig V.3 (for signalised junctions) and Junctions 9 (for priority and roundabout junctions).

Table 1: Traffic Grow Rates

Central Growth Rates			
	LV	HV	PCU
2021-2025	1.035	1.078	1.037
2021-2030	1.096	1.220	1.101
2030-2040	1.048	1.118	1.051

Table 2: Vehicle to PCU Conversion Factors

Vehicle to PCU Conversion Factors						
P/C	M/C	Car	LGV	OGV1	OGV2	Bus/Coach
0.2	0.4	1	1	1.5	2.3	2

6 CUMULATIVE ASSESSMENT DEVELOPMENT FLOWS (COMMITTED DEVELOPMENT)

A review of the Monaghan County Council Planning poral was undertaken to determine if there are any other significant generators of traffic within the vicinity of the proposed development site which have received planning approval but are yet to be constructed.

It was noted that planning permission was granted for a potential foodstore located at McNally's Car Park site. The traffic flows for this development were extracted from the traffic impact assessment undertaken by TPS Ltd. and added to the network to form the Base scenario (cumulative assessment). The traffic flows associated with the foodstore development are presented in **Appendix X**.

We would request that any additional committed developments be determined, to be included within the traffic impact assessment.

7 THRESHOLD ANALYSIS

We propose to use the 10% threshold level within this assessment. Any junctions that are found to have an impact of more than 10% will be assessed using the relevant junction capacity assessment tools, LinSig v.3 for signalised junctions and Junctions 9 for priority and roundabout junctions.

The threshold analysis within **Appendix B** shows that only the new Dublin Road / Charles Gavan Duffy Place priority junction demonstrates an impact of greater than 10%, with the Old Square Roundabout and N54 Macartan (Broad) Road demonstrating an overall reduction in traffic flows as a result of the new access at Charles Gavan Duffy Place and as traffic is diverted into the site at this location.

It is recognised that the N54 Macartan (Broad) Road / Dawson Street / Glen Road signalised junction suffers from localised congestion during peak periods. Given the proximity of this junction to the existing site access at Castle Street, reference to its operational capacity may also be considered within the EIAR TTA. However, it is noted that there are no mitigation measures proposed to improve this junction as part of the development proposals.

8 PROPOSED SENSITIVITY TESTING

There is no sensitivity testing proposed to be undertaken within the EIAR TTA.

9 ANY ADDITIONAL DETAIL AFFECTING TRANSPORTATION

There is no additional information associated with the scheme that would affect Transportation.

Appendix A – Proposed Site Layout

Appendix B – Traffic Flow Diagrams

Appendix

9b

RSA Stage 1

MONAGHAN TOWN – DUBLIN STREET REGENERATION PROJECT

Stage 1 Road Safety Audit

MGT0528-RPS-00-XX-RP0002
Stage 1 Road Safety Audit
S3.P01
5th January 2021

rpsgroup.com

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
S1.P01	Draft	PD	KMC	PD	28/10/2020
S3.P01	Review and Comment	PD	KMC	PD	05/01/2021

Approval for issue

PD	5 January 2021

Prepared by:

RPS

Prepared for:

Monaghan County Council

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RPS Engineering Services Limited, registered in Ireland No. 99795
The Registered office of each of the above companies is West Pier Business Campus, Dun Laoghaire, Co. Dublin, A96 N6T7

Contents

Appendices

1 INTRODUCTION

This report was prepared in response to a commission from Mark Finnegan of RPS Group, Galway Office on behalf of Monaghan County Council to undertake a Stage 1 Road Safety Audit (RSA) of the Monaghan Town – Dublin Street Regeneration Project, Co. Monaghan.

The independent RSA Audit Team comprised of:

Team Leader:	**Peter Dickson** BEng (Hon) MIEI Cert Comp RSA,
	RPS Consulting Engineers Ltd.
	TII Auditor Approval Ref: PD1324187
Team Member:	**Kieran McCafferty** MEng BEng (Hon) MIEI
	RPS Consulting Engineers Ltd.
	TII Auditor Approval Ref: KM3376501

The TII auditor approval letter is included in Appendix D.

This Stage 1 Road Safety Audit has been carried out generally in accordance with the requirements of Transport Infrastructure Ireland's (TII) standard for Road Safety Audits GE-STY-01024, December 2017 (formerly NRA HD19).

The audit comprised an examination of the site by the Audit Team in daylight on 13th October 2020. The weather on the day of the site visit was dry, and the road surface was dry. The traffic conditions on site were considered low. A number of pedestrians were noted during the site visit.

This scheme has been examined and this report compiled in respect of the consideration of those matters that have an adverse effect on road safety. It has not been examined or verified for compliance with any other standards or criteria. The problems identified in this report are considered by the Audit Team to require action in order to improve the safety of the scheme and minimise collision occurrence. A map of the problem locations is included in Appendix C.

Items not provided to the Audit Team were not examined as part of this Audit. Where the absence of these items constitutes a Road Safety Problem, these have been included as problems in these reports. Information not provided to the Audit Team for this Stage 1 Audit included cross sections, signage, road marking, drainage, landscaping details or swept path analysis.

A Road Safety Audit Feedback Form is attached in Appendix B to this report which lists the problems identified and this form requires completion by the Design Team Leader. If any of the recommendations within this safety audit report are not accepted, a written response is required, stating reasons for non-acceptance. Comments (if any) made within the report under the heading of Observation are intended to be for information only. Written responses to Observations are not required.

No previous Road Safety Audits have been undertaken on this scheme.

2 PROJECT BACKGROUND

The proposed Monaghan Town – Dublin Street Regeneration Project consists of the enhancement of the physical and spatial quality of the streets and spaces in the Dublin Street (South) Regeneration Plan area. The project will focus on enhancements to the urban realm, providing improved accessibility and connectivity to pedestrians, cyclists and drivers between Dublin Street and N54 Broad Road at the Monaghan Shopping Centre. Works are proposed to the existing carparks, access roads, Church Street Access, Broad Road and Dublin Street as well as the currently disused plots of land to the rear of Dublin Street known as the backland area.

The scheme extents are shown in Figure 2-1. The proposed works comprise:

- Demolition of four properties along Dublin Street;
- New building facades and associated retaining structures to facilitate a new junction to Dublin Street;
- The creation of new streets and civic spaces including:
    - New civic square, street and junction connecting the backland area to Dublin Street – to be known as Gavin Duffy Place;
    - New civic space to be known as Courthouse Square;
    - New street, to be known as Church Walk;
    - Realignment of an existing road, to create a promenade to be known as The Mall;
    - Realignment of an existing road, to be known as Farney Road;
- High quality public realm including:
    - New pavements, high quality surfaces and kerbing;
    - New railings, bollards and pop-up power supply;
    - Bicycle parking, bins, seating, trees and vegetation.
    - Traffic calming ramps, pedestrian crossings and signage;
- New / replacement street lighting and CCTV;
- Reduction in car parking;
- New utility services / upgrading of existing ESB services, WiFi and Broadband; and
- Associated civil engineering improvements.

It is intended the large area at the centre of the development hatched in purple will be reserved as a future development site with vehicular access intended on Church Walk. It is intended there will be a 60mm high kerb upstand between the natural stone paving within the carriageway and the footpaths on Church Walk. It is also proposed to relocate the existing recycling bins to the southern corner of the carpark adjacent to Farney Road.

The existing streets within the scheme extents comprise footpaths and carriageways with a number of narrow and inconsistent pedestrian facilities. The existing speed limit within the scheme extents is 50km/h. The surrounding land uses are predominantly commercial and retail.

Figure 2-1: Scheme extents

3 COLLISION DATA

No collision data was provided to the Audit Team. Collision data was examined on the RSA website (rsa.ie) between 2005 and 2016 within the scheme extents and immediate surrounds. Within the scheme extents there were 2no. minor injury collisions.

One minor injury collision occurred on Dublin Street in 2011 and involved a pedestrian.

One minor injury collision occurred on N54 Broad Road in 2014 and involved a pedestrian. This collision occurred in close proximity to the existing pedestrian crossing.

Figure 3-1: Collisions (Source: rsa.ie)

4 STAGE 1 RSA FINDINGS

4.1 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Collisions due to lack of junction control

At this stage in the design process, the road marking and signage designs have not been fully developed. It is proposed to alter the layout and operation of multiple junctions throughout the scheme, creating new or revised junction layouts.

The type of junction control throughout the scheme is not clear. Inappropriate or missing junction control, road markings or signage could lead to driver confusion and possible collisions.

Recommendation:

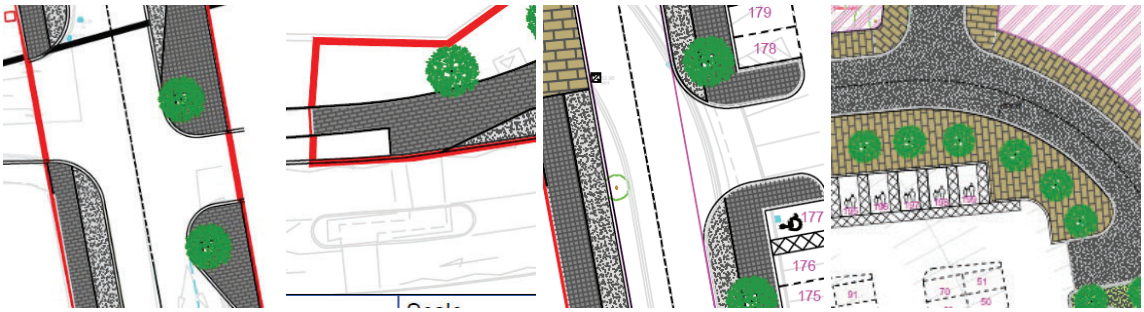
Appropriate junction control should be provided throughout the scheme.

4.2 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury incidents due to general lack of pedestrian crossings

In a number of locations throughout the scheme where the footpath and cycleways are broken across junctions and accesses, tactile paving or dropped kerbs have not been indicated on the drawings. The absence or incorrect layout of tactile paving or dropped kerbs could lead to possible trip/fall incidents for pedestrians.



Recommendation:

Appropriate dropped kerbs and tactile paving should be provided throughout the scheme at junctions, accesses and pedestrian crossings.

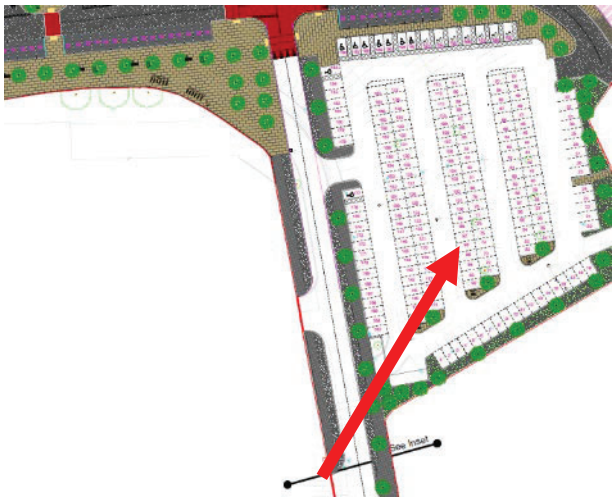
4.3 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injuries for pedestrians pushing trolleys

It is proposed to revise the layout of the two carparks to the side and rear of Monaghan Shopping Centre, including the Tesco supermarket. No direct pedestrian route is proposed from the front entrance of the shopping centre to the eastern carpark. In this location there is an existing raised table crossing which is proposed to be removed.

If a safe route for mobility impaired pedestrians or pedestrians pushing shopping trollies is not provided between the eastern carpark and the front shopping centre access, these pedestrians may have difficulty ascending or descending the full height kerbs. This could lead to trips or falls and result in possible personal injuries.



Recommendation:

An appropriate pedestrian route should be provided from the front entrance of the shopping centre to the eastern carpark.

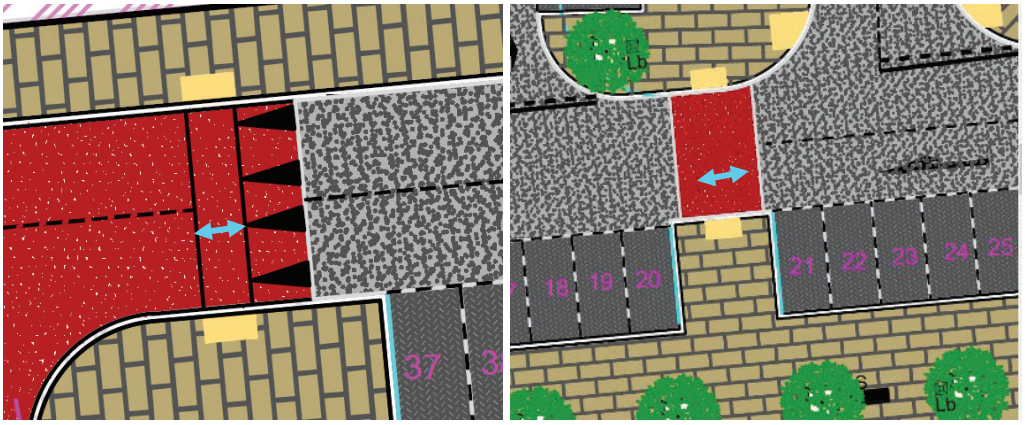
4.4 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury due to insufficient width for shopping trolleys and wheelchairs on raised pedestrian crossings

It is proposed to revise the layout of the two carparks to the side and rear of the Monaghan Shopping Centre. A number of raised table crossings are proposed with tactile paving approximately 1.6m wide, it is unclear if sufficient width is provided on the raised pedestrian crossings to allow two trolleys or a wheelchair and trolley to pass safely.

If insufficient width is provided on the raised ramps, pedestrians could slip down the sloped ramp into waiting vehicles, resulting in possible personal injuries.



Recommendation:

Sufficient width should be provided on the raised pedestrian crossings.

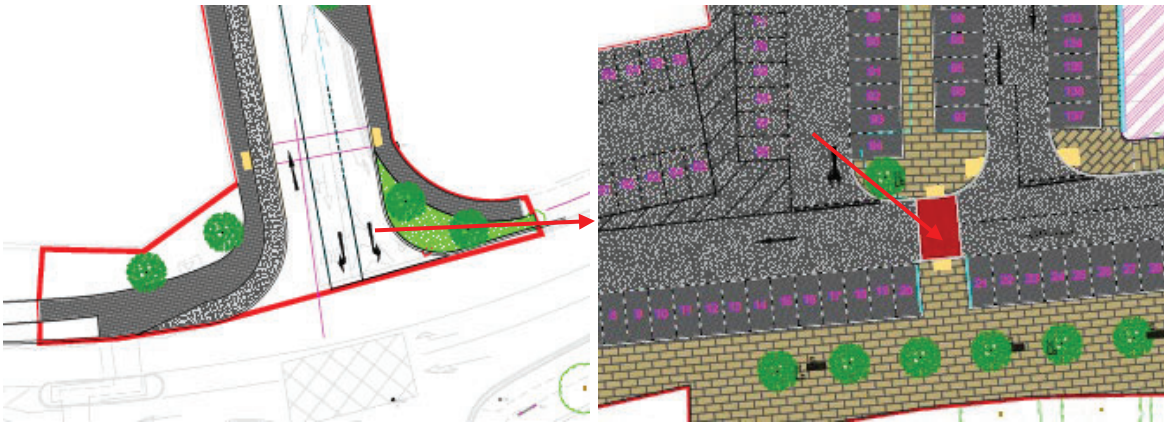
4.5 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Side impact collisions due to obscured visibility at priority junctions

A number of priority junctions are proposed throughout the scheme. In some locations, trees are proposed within the visibility splays of the junctions. This could obscure visibility for drivers at the junction, especially drivers in higher vehicles during heavy foliage periods.

If insufficient visibility at the junctions is provided, it could lead to a driver pulling out in front of an oncoming vehicle, resulting in possible side impact collisions.



Recommendation:

Sufficient visibility splays should be provided at junctions.

4.6 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian collisions due to narrow archway and termination of footpath

The eastern Church Street Access is proposed to be redeveloped with a similar layout to the existing with two narrow footpaths on each side of the street. Asphalt surfacing is proposed for vehicles along the street, giving them a sense of priority through the narrow archway. However, it was observed on site a significant number of pedestrians use this route and these pedestrians have to walk within the carriageway in front of oncoming vehicles.

Drivers entering the arch from Church Square may not expect a pedestrian to be in the carriageway in this location, especially drivers unfamiliar with the area or during poor visibility conditions. There is a risk that pedestrians may enter the carriageway in front of an oncoming vehicle, leading to possible vehicle-pedestrian collisions.

Recommendation:

Improved pedestrian facilities should be provided on the Church Street Access.

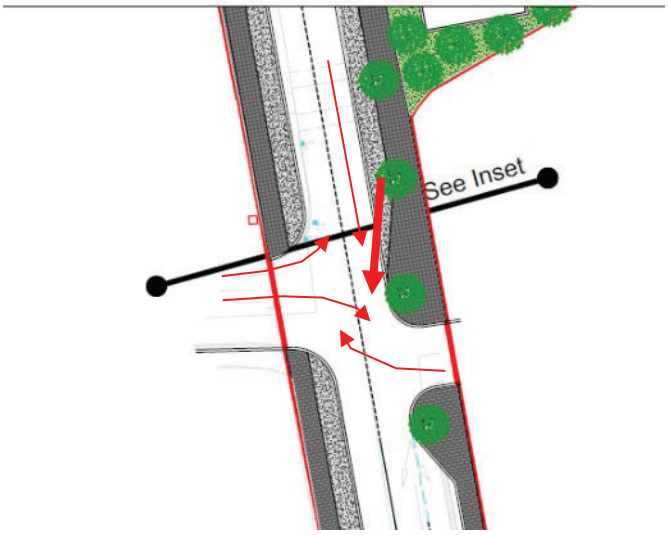
4.7 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-cyclist collisions as cyclists merge with traffic in the vicinity of a staggered crossroads junction

A new cycleway is proposed on Farney Road on both sides of the carriageway. The southbound cycleway is terminated in the centre of a staggered crossroads junction and cyclists traveling towards Broad Road are required to merge with the traffic lane here. Cyclists, especially during poor visibility condition, may fail to observe oncoming vehicles coming from behind, to the right and to the left.

Cyclists who fail to observe all of the vehicle movements may enter the traffic lane in front of an oncoming vehicle resulting in possible vehicle-cyclist collisions.



Recommendation:

The southbound cycleway should be terminated in a safe location.

4.8 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian collisions due to discontinuity of footpath

The footpath to the western extents of the carpark ties into an existing footpath on the western Church Street Access. At the tie-in point there are a number of existing planters which block the footpath for pedestrians, especially the mobility impaired.

Pedestrians on the western Church Street Access may have to walk within the carriageway around these planters where they are at an increased risk of being struck by a vehicle.

Recommendation:

Continuity of pedestrian facilities at the tie-in points should be provided.

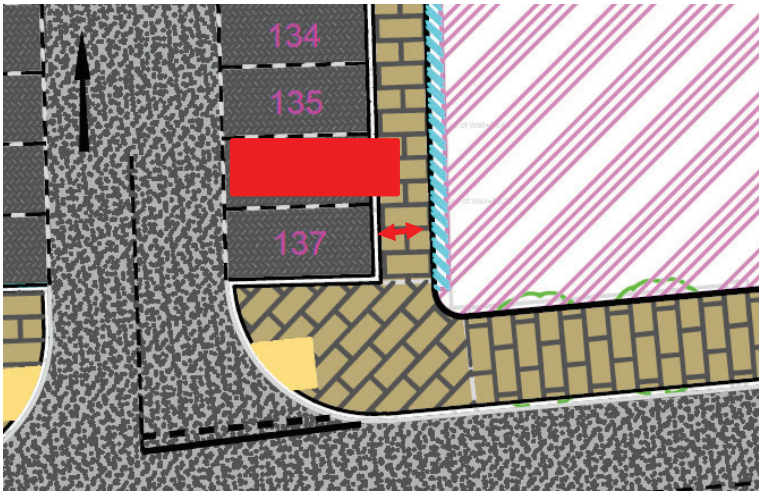
4.9 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian strike due to blocked footpath

A new footpath is proposed behind a row of perpendicular parking bays (number 121 – 137) with a wall also proposed at the back of the footpath. It is unclear if this footpath is of sufficient width for pedestrians if long vehicles in the parking bays overhang the footpath.

If vehicles overhang the footpath, mobility impaired pedestrians may choose to travel within the carriageway in this location where they are at an increased risk of being struck by a vehicle.



Recommendation:

Sufficient footpath width should be provided behind perpendicular parking bays.

4.10 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian collisions due to reduced visibility to the footpath

A new footpath and cycleway are proposed on Farney Road immediately adjacent to the existing boundary fence and gated access. Currently there is an existing grass strip between the wall and footpath which affords drivers exiting the access visibility to approaching pedestrians or cyclists.

It is unclear if there is sufficient visibility provided to approaching pedestrians or cyclists for drivers existing the access due to the high fence. Insufficient visibility to pedestrians or cyclists crossing the commercial access could lead to a reduced reaction time for drivers and possible vehicle-pedestrian or vehicle-cyclist collisions.

Recommendation:

Sufficient visibility to pedestrians and cyclists should be provided for drivers exiting the access.

4.11 Problem

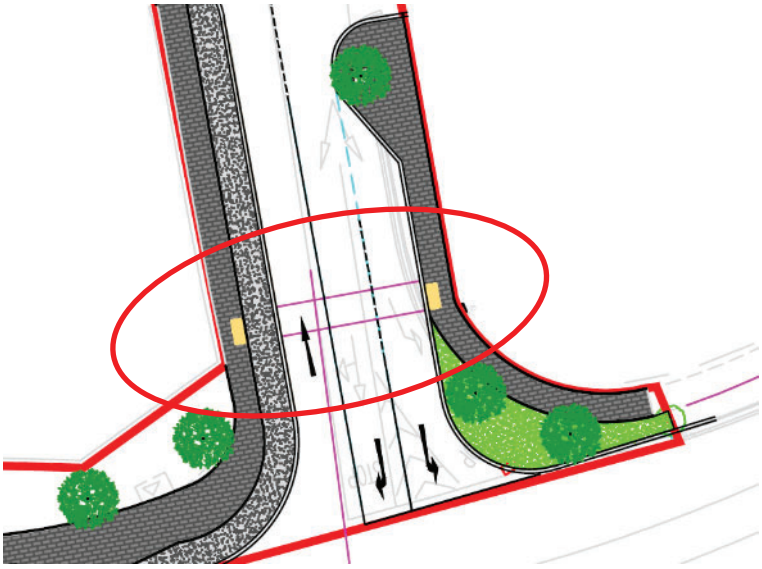
Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Pedestrian-vehicle collisions due to long pedestrian crossing of three traffic lanes and a cycleway

On Farney Road an uncontrolled pedestrian crossing of three traffic lanes and the cycleway is proposed, in close proximity to the N54 Broad Road priority crossroads junction. This pedestrian crossing is of significant length and pedestrians, especially the mobility impaired may have difficulty completing the crossing when the carriageway is clear, especially during peak traffic periods. This could lead to possible vehicle-pedestrian or cyclist-pedestrian collisions.

Pedestrians at the crossing may be inclined to wait within the cycleway rather than at the tactile paving location shown. This could lead to possible cyclist-pedestrian collisions within the cycleway.

Additionally, pedestrians making the crossing will also be required to descend/ascend a full height kerb at the traffic edge of the cycleway.



Recommendation:

A safer pedestrian crossing alternative should be provided of Farney Road.

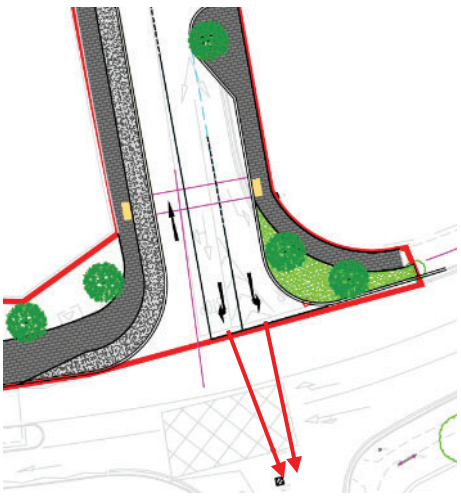
4.12 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Side swipe collisions due to the absence of a straight-ahead lane

At the existing N54 Broad Road crossroads junction there is currently a left turn only lane and a right/straight ahead lane into the service station. It is proposed to remove the straight-ahead lane and bring both lanes closer together by removing the white hatching.

It is considered the proposed layout could create confusion for drivers intending to continue straight ahead when leaving Farney Road. There is a risk that drivers in both lanes may attempt to continue straight ahead at the junction, resulting in possible side swipe collisions.



Recommendation:

Provision for drivers continuing straight ahead at the junction should be provided.

4.13 Problem

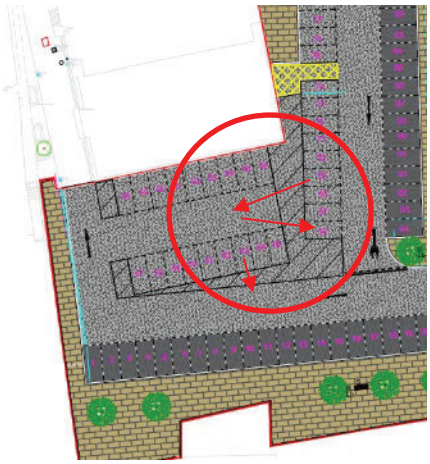
Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Pedestrian-vehicle collisions due to informal parking or driver short cuts

Road marking hatched areas have been proposed in both the eastern and western carparks. During high parking demand times, these hatched areas may attract informal parking or drivers may use these hatched areas as short cuts to access nearby parking spaces.

Pedestrians walking within the carparks are likely to use these hatched areas as informal walkways and standing areas. Vehicles parked informally in the hatched areas could obscure visibility to pedestrians walking in these locations, resulting in an increased likelihood of vehicle-pedestrian collisions.

Additionally, drivers attempting to drive through the hatched areas as a short cut may not expect a pedestrian to be walking in the hatched area, resulting in possible vehicle-pedestrian collisions.



Recommendation:

Road marking hatched areas within the carparks should not be provided where pedestrians are likely to walk or stand.

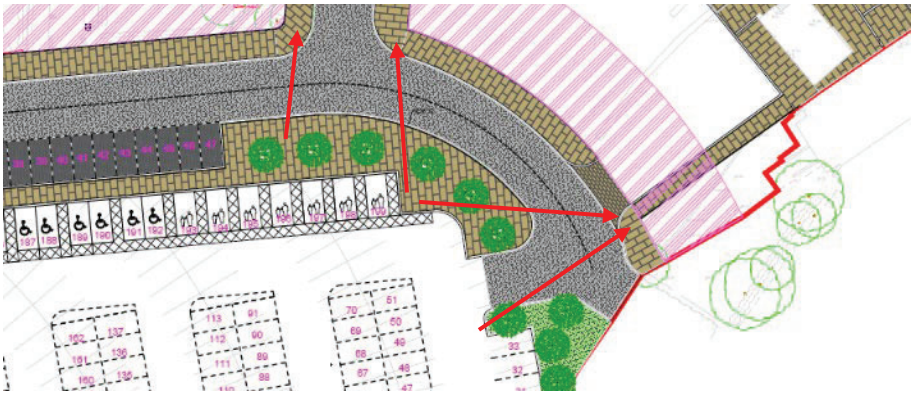
4.14 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury incidents due to no pedestrian crossing to the eastern end of The Mall

Three new pedestrian links are proposed to Dublin Street along with a new alignment of The Mall. It is considered drivers parking within the eastern carpark wishing to access the two most eastern pedestrian links are likely to cross The Mall at its eastern end, where no pedestrian crossings have been proposed.

If pedestrians cross The Mall in an unsafe location it could lead to trip incidents resulting in possible personal injuries.



Recommendation:

Pedestrian crossings should be provided of the Mall in appropriate locations.

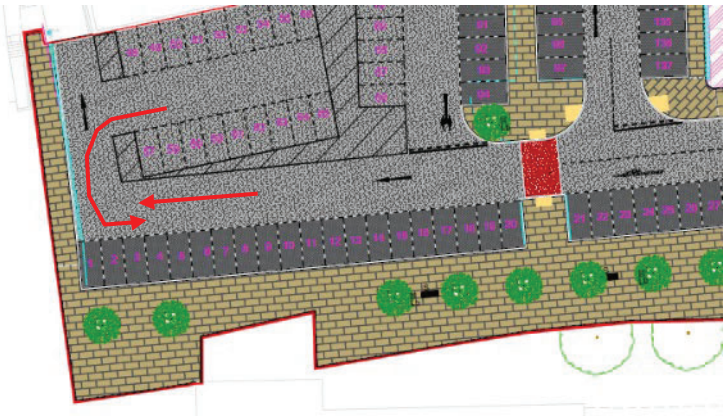
4.15 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Head on collisions due to ghost drivers in the carpark

It is proposed to provide a one-way carriageway within the western carpark so that drivers traveling towards the western end of the carpark have to exit the scheme via the western Church Street Access.

During peak parking times, as drivers attempt to find a parking space at the western end of the carpark, they may not wish to exit the scheme via Church Street Access. This could lead to drivers performing U-turns in the carriageway and traveling against the flow of traffic, resulting in possible low speed head on collisions.



Recommendation:

Drivers within the western extents of the scheme should be able to turn back towards The Mall.

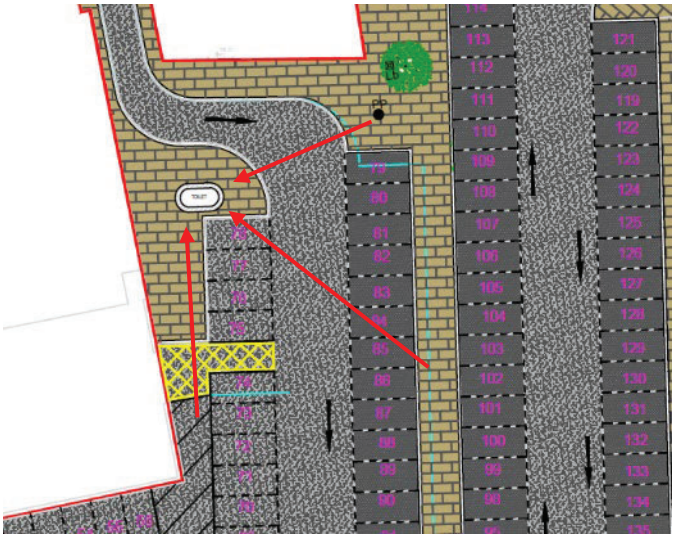
4.16 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury incidents due to no pedestrian crossing to the public toilet

The existing public toilet is proposed to be retained to the northwest of the proposed scheme. No direct pedestrian access to the public toilet has been proposed, particularly for the mobility or visually impaired.

If appropriate access to the toilet is not provided, pedestrians ascending or descending the kerb could trip resulting in possible personal injuries.



Recommendation:

Appropriate access for pedestrians should be provided to the public toilet.

4.17 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Difficulty for mobility impaired pedestrians / cyclists at steep gradient

Three new pedestrian/cyclist links are proposed to Dublin Street. On the eastern most link, there is an existing steep gradient leading to property accesses. It is unclear if the steep gradient is proposed to be retained.

If the steep gradient is retained mobility impaired pedestrians may have difficulty traversing the slope leading to possible trip or fall incidents.

Recommendation:

An appropriate gradient should be provided at the eastern Dublin Street link to the property accesses.

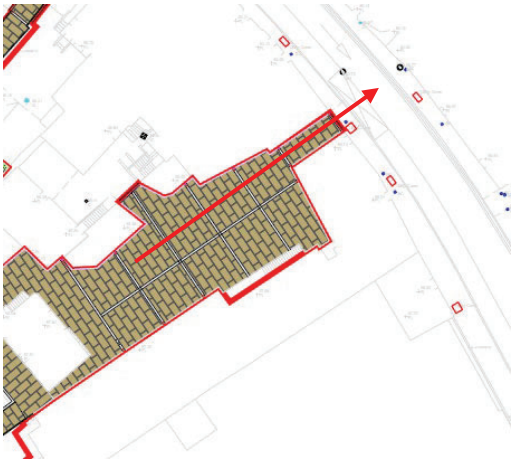
4.18 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian collisions with visually impaired pedestrians on Dublin Street

Three new pedestrian links are proposed to Dublin Street. On the eastern most link, no works are proposed to the existing footpath on Dublin Street where there is a low kerb into the carriageway.

There is a risk visually impaired pedestrians may not appreciate the end of the footway if the low kerb is retained and inadvertently step into the carriageway on Dublin Street, where they could be struck by a vehicle.



Recommendation:

Sufficient guidance for visually impaired pedestrians should be provided as to the termination of the footpath at the end of the pedestrian links to Dublin Street.

4.19 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury incidents from informal bicycle parking

It is unclear from the drawings if bicycle parking is proposed in the vicinity of Dublin Street and Church Walk. It appears that the only bicycle parking proposed is at the rear entrance to Monaghan Shopping Centre.

If sufficient bicycle parking is not provided it could lead to informal bicycle parking at poles or trees railings, blocking footpaths which could result in possible personal injury incidents.

Recommendation:

Sufficient bicycle parking should be provided throughout the scheme.

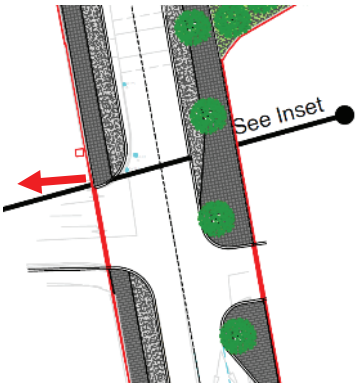
4.20 Problem

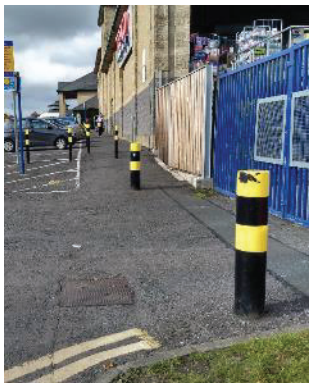
Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle pedestrian collisions due to discontinuity of footpath

There are currently poor pedestrian facilities connecting from the proposed scheme to the front of the Monaghan Shopping Centre access. On the existing layout the footpath is terminated with no tactile paving and pedestrians then are required to cross a delivery access and weave between bollards to access the shopping centre.

Visually impaired pedestrians traveling from the new scheme to the shopping centre access may have difficulty locating this informal footpath and inadvertently step into the carriageway or parking bays where they are at an increased risk of being struck by a vehicle.





Recommendation:

Continuity of pedestrian facilities at the tie-in points should be provided.

4.21 Problem

Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Personal injury incidents as cyclists attempt to merge with the proposed cycleway

A new cycleway is proposed on Farney Road which commences on the western side after the existing zebra crossing on Broad Road. However, it is unclear how cyclists will join the cycleway when traveling from the east off Broad Road.

If no facility for cyclists travelling from the east is provided to access the cycleway, cyclists may attempt to ascend the kerb at the junction radius, resulting in possible falls and personal injury incidents.

Recommendation:

A merge point for cyclists traveling from the east on Broad Road should be provided.

4.22 Problem

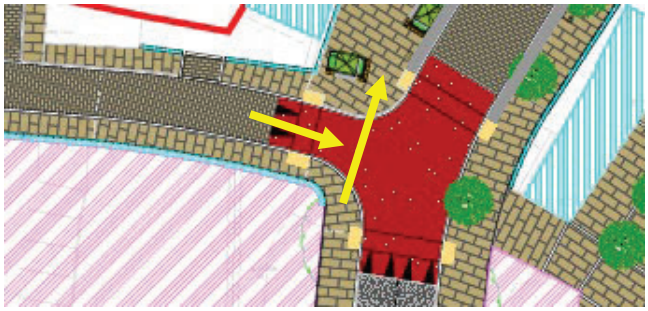
Drawing No: MGT0528-RPS-00-XX-DR-C-LA0001 SK04

Summary: Vehicle-pedestrian collisions due to the crossing location

Pedestrians traveling from The Mall to Gavin Duffy Place have to cross Church Walk at the raised table crossing. The pedestrian crossing at this location is set back from the junction mouth away

from the pedestrian desire line. It is considered pedestrians may not use the crossing and instead follow the desire line over the raised table.

Drivers undertaking turning manoeuvres at the junction may not expect a pedestrian to step into the carriageway away from crossing point. This could lead to a reduced reaction time for drivers to a crossing pedestrian, resulting in possible vehicle-pedestrian collisions.



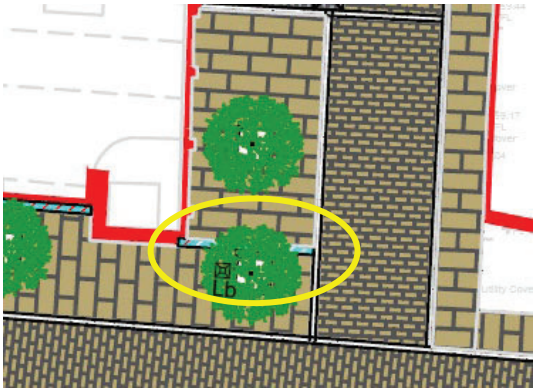
Recommendation:

The crossing point should be positioned within the pedestrian desire line.

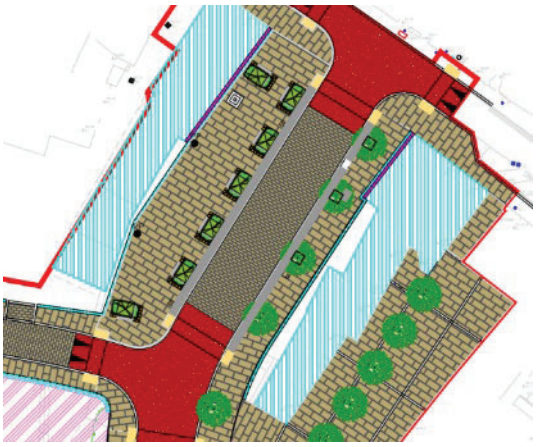
5 OBSERVATIONS

5.1 The existing pedestrian access to the Credit Union carpark is positioned behind a carparking space and it is not clear if it is proposed to be retained to removed. A proposal should be made for this informal access within the design.

5.2 It is unclear if a wall is proposed between Church Walk and the adjoining alleyway. If this is a wall it will significantly restrict the visibility of both drivers and pedestrians. A wall should not be proposed at this location

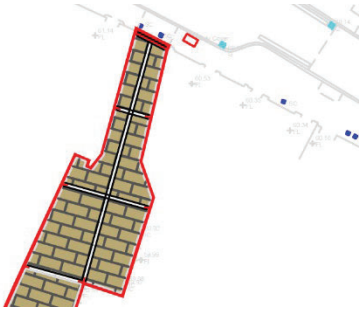


5.3 At this stage in the design process, the tree species has not been proposed. It is unclear if the positioning of trees throughout the scheme will overhang the carriageway. Ensure the positioning and species of trees selected will not overhang the carriageway.



5.4 It is unclear if appropriate space has been provided for parking ticket metres in the carparks. Provision should be made for parking ticket metres throughout the scheme

5.5 In some locations a white line is shown within a natural stone paved area. It is unclear if this is a visual kerb feature or a surface drainage channel. Drainage channels which may attract standing water during icy conditions should be avoided.



6 AUDIT STATEMENT

We certify that we have examined the drawings and other information listed in Appendix A and visited the site during the day of the 13th October 2020. The examination has been carried out with the sole purpose of identifying any features of the scheme that could be removed or modified in order to improve road safety.

The problems identified have been noted in this report together with suggestions for road safety improvement, which we recommend should be studied for improvement. The road safety audit has been conducted by the persons named below who have no involvement in the design of the scheme.

Peter Dickson	**Signed:**	
(Audit Team Leader)	**Date:**	05/01/2021
Kieran McCafferty	**Signed:**	
(Audit Team Member)	**Date:**	05/01/2021

Appendix A

Information Provided

Drawing/Document No.	Title	Status	Rev
MGT0528-RPS-00-XX-DR-C-LA0001 SK04	General Arrangements		P01.06

Appendix B

Audit Feedback Form

Appendix B - Road Safety Audit Feedback Form

Route / Scheme: Monaghan Town – Dublin Street Regeneration Project

Audit Stage: Stage 1 Road Safety Audit

Date Audit Completed: 21st October 2020

	To be Completed by Designer			*To be Completed by Audit Team Leader*
Paragraph No. in Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted**	**Alternative measures or reasons accepted by Auditors (yes/no)**
4.1	Yes	Yes		
4.2	Yes	Yes		
4.3	Yes	Yes		
4.4	Yes	Yes		
4.5	Yes	Yes		
4.6	Yes	No	A shared trafficked and pedestrian area will be provided on the eastern Church Street Access within the scheme extents. This will indicate to drivers of the potential of pedestrians within the access lane. The area north of the stone arch is outside of the scheme extents. Client will be informed of this problem and requested to provide a mitigating proposal during the detailed design stage.	Yes
4.7	Yes	Yes		
4.8	Yes	Yes		

	To be Completed by Designer			*To be Completed by Audit Team Leader*
Paragraph No. in Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted**	**Alternative measures or reasons accepted by Auditors (yes/no)**
4.9	Yes	Yes		
4.10	Yes	No	Tactile paving will be used to warn pedestrians that this is a crossing point. This access is a delivery access only and is lightly trafficked by professional drivers in a high seating position. Property owner will be contacted and internal signage warning drivers of presence of crossing pedestrians will be proposed.	Yes
4.11	Yes	Yes		
4.12	Yes	Yes		
4.13	Yes	Yes		
4.14	Yes	Yes		
4.15	Yes	Yes		
4.16	Yes	Yes		
4.17	Yes	No	The gradients where possible will be adjusted to improve ease of movement for mobility impaired users. In some locations due to existing built form this may not be possible as accesses are to privately owned buildings and adjusting these is not possible.	Yes
4.18	Yes	Yes		

	To be Completed by Designer			*To be Completed by Audit Team Leader*
Paragraph No. in Audit Report	**Problem accepted (yes/no)**	**Recommended measure accepted (yes/no)**	**Describe alternative measure(s). Give reasons for not accepting recommended measure. Only complete if recommended measure is not accepted**	**Alternative measures or reasons accepted by Auditors (yes/no)**
4.19	Yes	Yes		
4.20	Yes	Yes	This problem exists within privately owned lands. Landowner will be made aware of this problem and will be liaised with to mitigate this issue at detailed design stage	
4.21	Yes	Yes		
4.22	Yes	Yes		

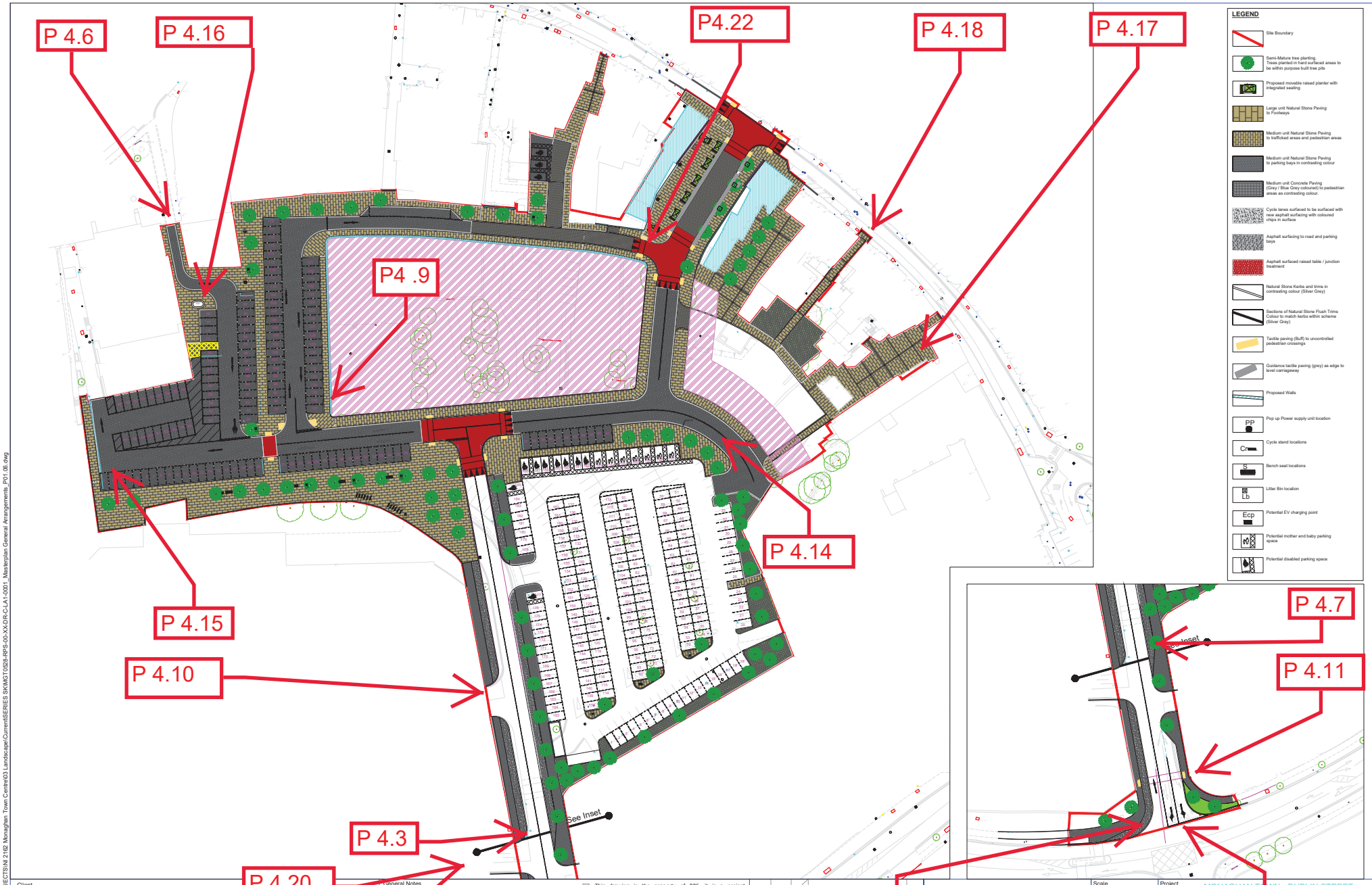
Signed **Designer** **Date 04/01/2021**

Signed **Audit Team Leader** **Date** 05/01/2021

Signed **Employer** **Date** 6 Jan 21

Appendix C

Problem Locations



Q:\Projects\ALL RPSES PROJECTS\NI 2162 Monaghan Town Centre\03 Landscape\Current\SERIES SK\MGT0528-RPS-00-XX-DR-C-LA1-0001_Masterplan General Arrangements_P01.06.dwg

Client

Comhairle Contae Mhuineacháin
Monaghan County Council

General Notes

(i) Hard copies, dwf and pdf will form a controlled issue of the drawing. All other formats (dwg etc.) are deemed to be an uncontrolled issue and any work carried out based on these files is at the recipients own risk. RPS will not accept any responsibility for any errors from the use of these files, either by human error by the recipient, listing of the un-dimensioned measurements, compatibility with the recipients software, and any errors arising when these files are used to aid the recipients drawing production, or setting out on site.

(ii) DO NOT SCALE, use figured dimensions only.

(iii) This drawing is the property of RPS, it is a project confidential classified document. It must not be copied used or its contents divulged without prior written consent. The needs and expectations of client and RPS must be considered when working with this drawing.

(iv) Information including topographical survey, geotechnical investigation and utility detail used in the design have been provided by others.

(v) All Levels refer to Ordnance Survey Datum, Malin Head.

Rev	Date	Drn	Chk	Amendment / Issue	App
P01.06	Sept.'20	sa		Issued for Review	

Model File Identifier: -

Scale: 1:500 @ A1, 1:1000 @ A3

Created on: February 2020

Sheets: of 01

Project: MONAGHAN TOWN - DUBLIN STREET PROJECT

Title: General Arrangements

File Identifier: MGT0528-RPS-00-XX-DR-C-LA0001 - SK04

Status: DRAFT

Rev: P01.06

Appendix D

Audit Team Approval

Peter Dickson

From: TII Systems Notification <noreply@tii.systems>
Sent: Tuesday 1 December 2020 11:02
To: Mark Finnegan
Cc: roadsafetyaudits@nra.ie; Fiona.Bohane@corkrdo.ie; Alastair.DeBeer@TII.ie; Bryan.kennedy@TII.ie; LCurtis@Kerrycoco.ie; Peter Dickson; Kieran McCafferty
Subject: RSAAS - Road Safety Audit Approvals System - Audit Approval 12923150/14901/Stage 1

Importance: High

Mark Finnegan
West Pier Business Campus
Dun Laoghaire
Co Dublin

Date: 01/12/2020

Our Ref: 12923150/14901/Stage 1

re: N54 Monaghan Town, South Dublin St & Backlands Regeneration

APPROVAL OF ROAD SAFETY AUDIT TEAM, Stage 1

Dear Mark Finnegan,

The following members of the proposed road safety audit team are approved to carry out the Stage 1 road safety audit of N54 Monaghan Town, South Dublin St & Backlands Regeneration.

1. Peter Dickson - RPS Consulting Engineers - Leader
2. Kieran Mc Cafferty - RPS Consulting Engineers - Member

A copy of all audit reports, design team response and exception reports must be uploaded through RSAAS. Successful upload of these reports and completion of the audit approval process is necessary for any further audit approval on this scheme.

Yours sincerely,

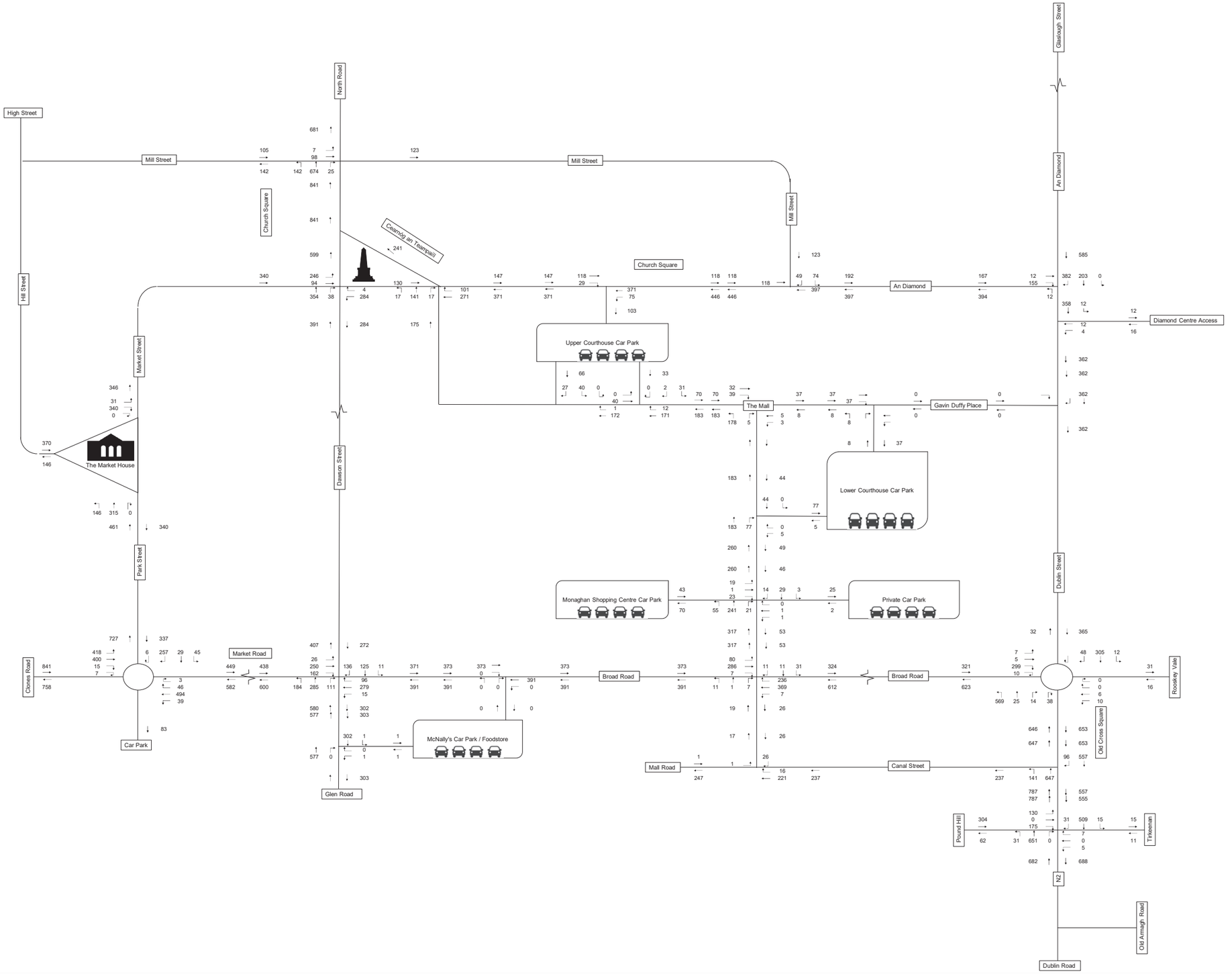
Lucy Curtis

Regional Road Safety Engineer
roadsafetyaudits@tii.ie

Appendix

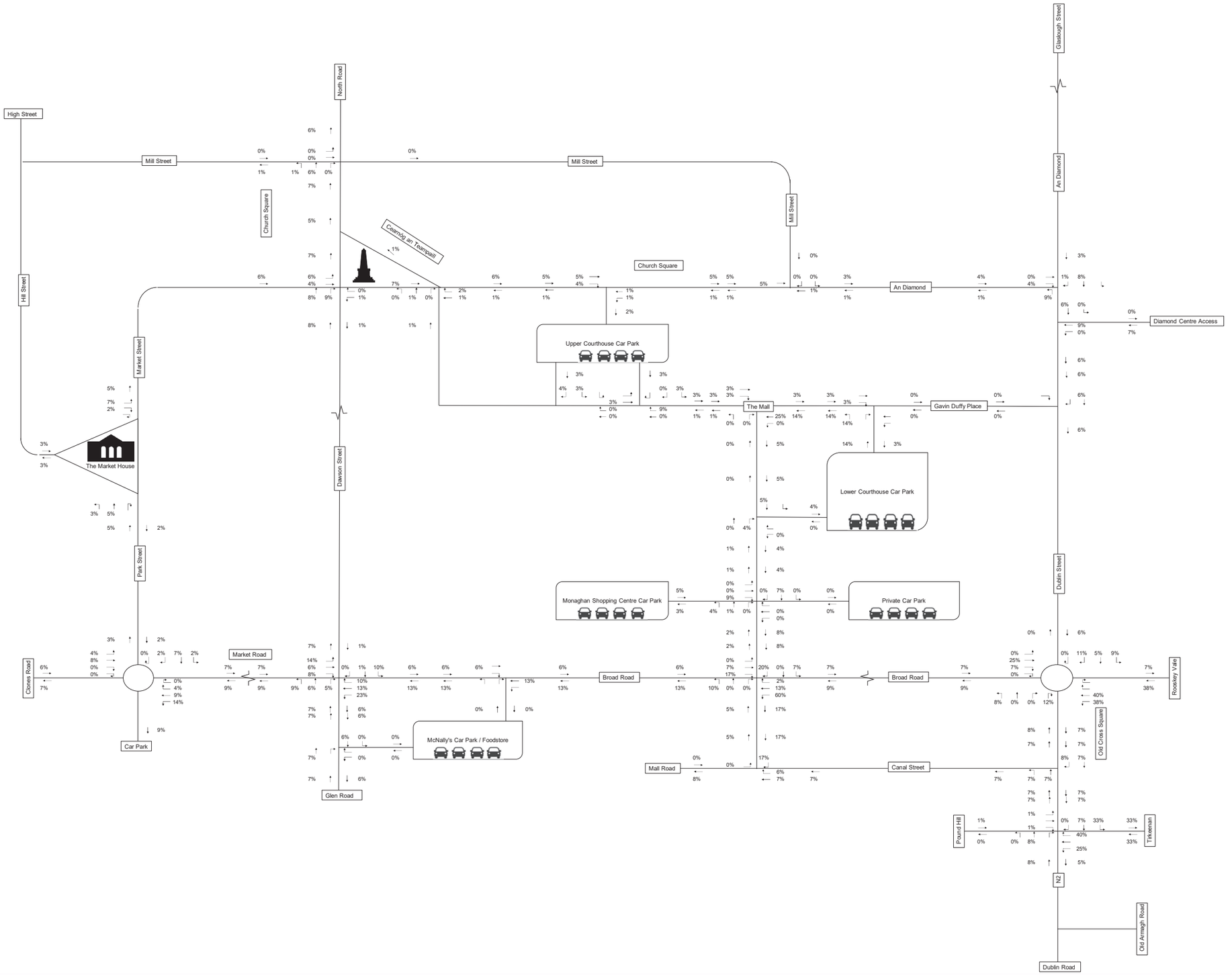
9c

Existing Traffic Flows



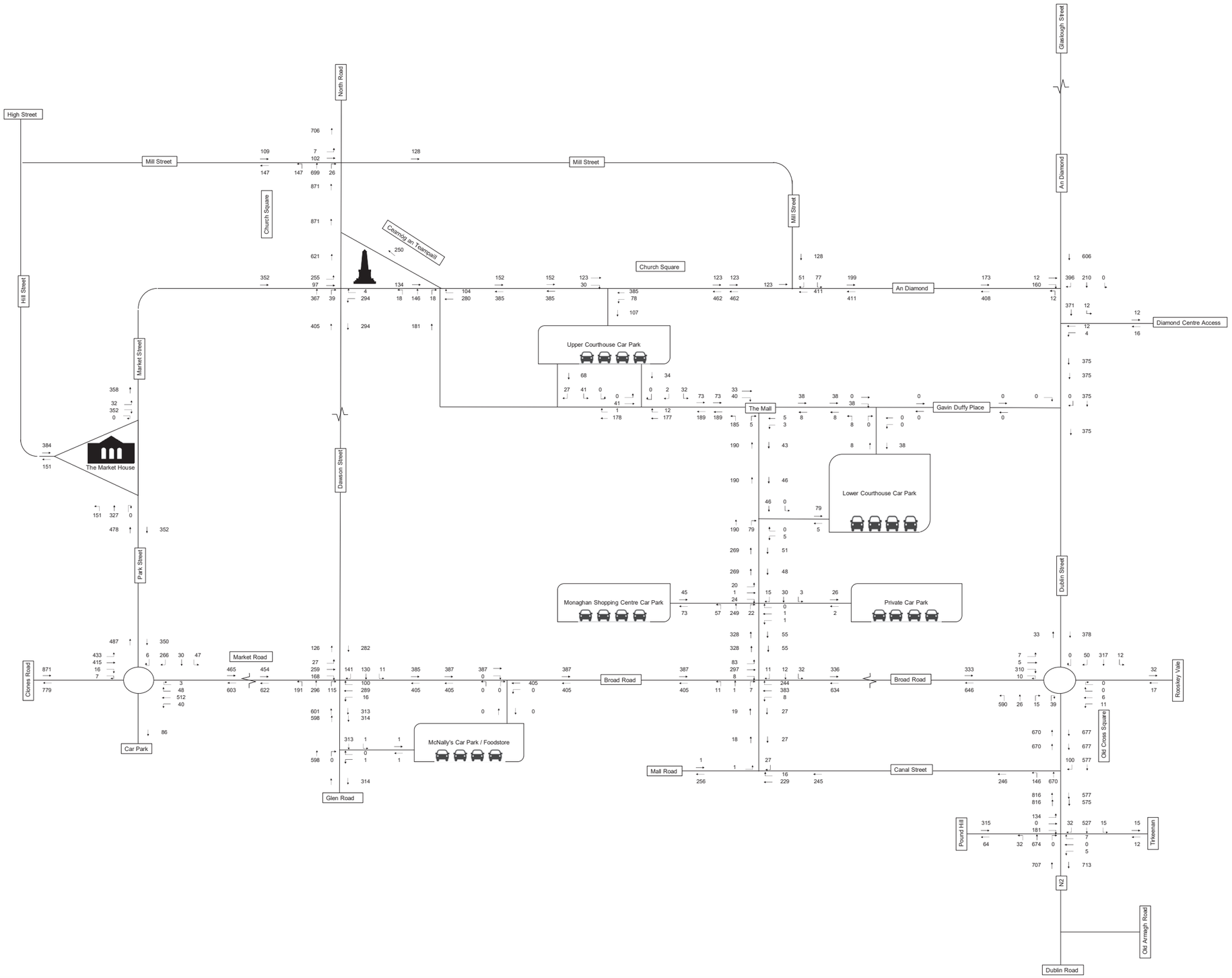
MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2021 Existing Flows
PCUs
AM Peak 08:15-09:15



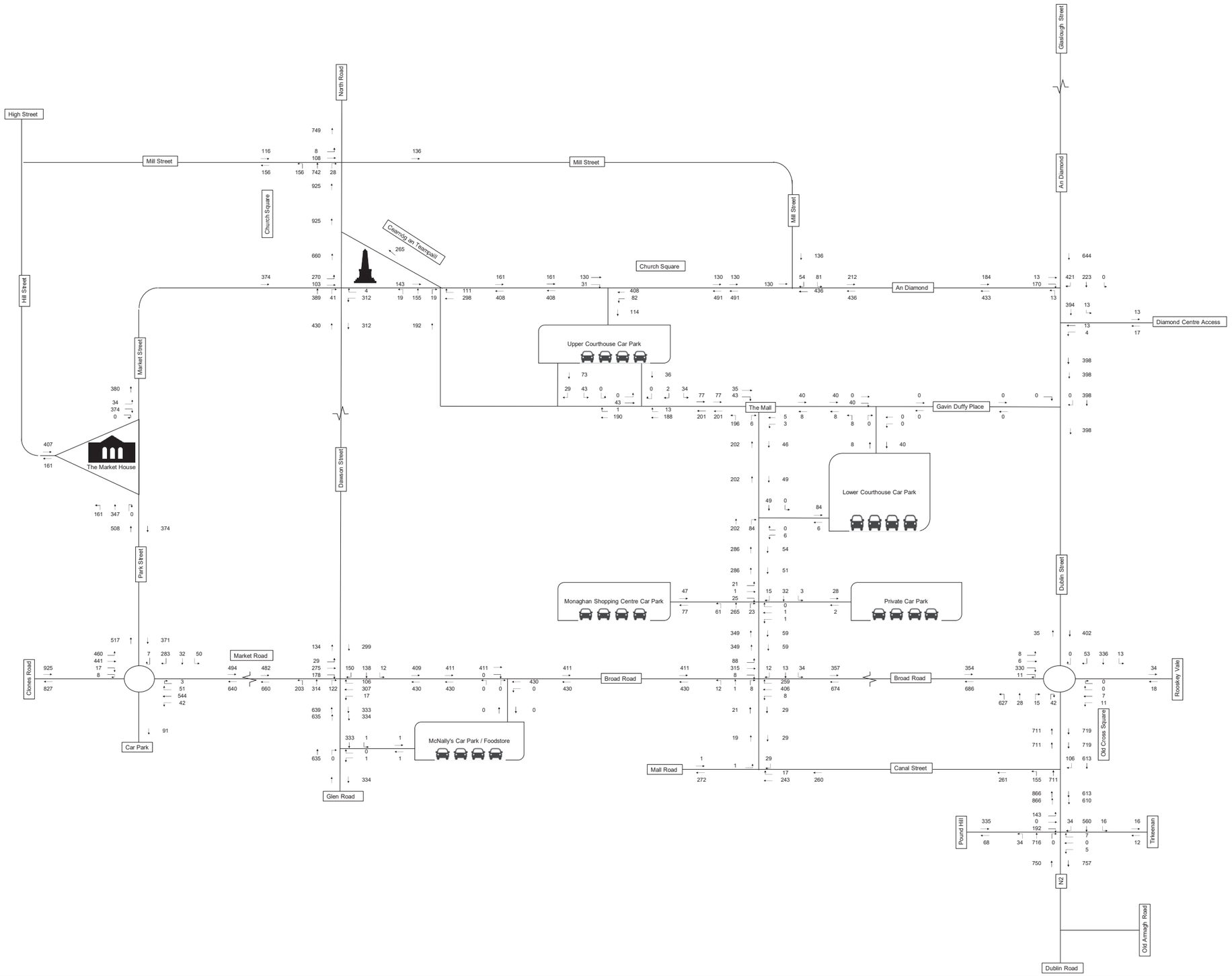
MAKING COMPLEX EASY

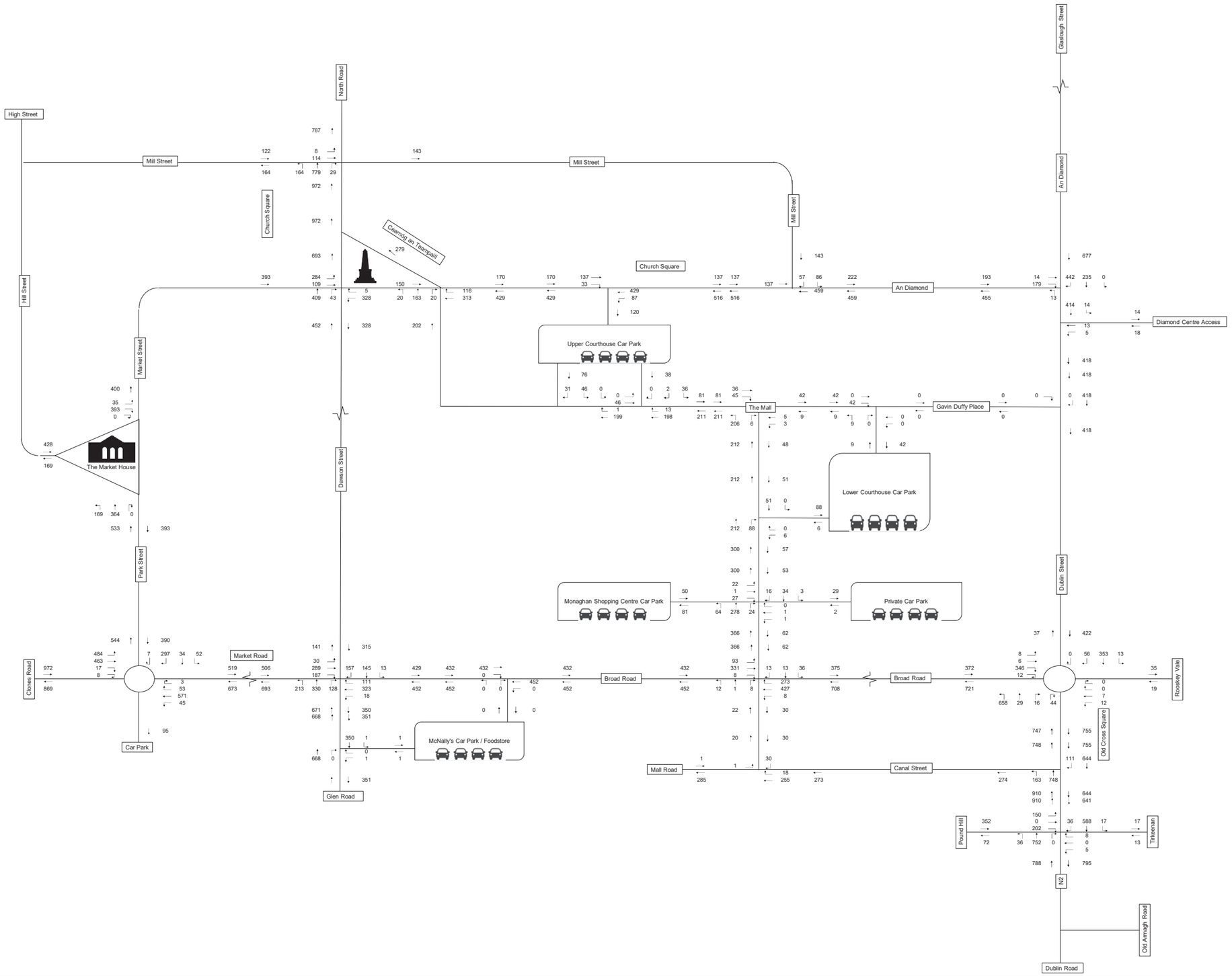
IBH0710 Monaghan Public Realm
2021 Existing Flows
% HV
AM Peak 08:15-09:15



MAKING COMPLEX EASY

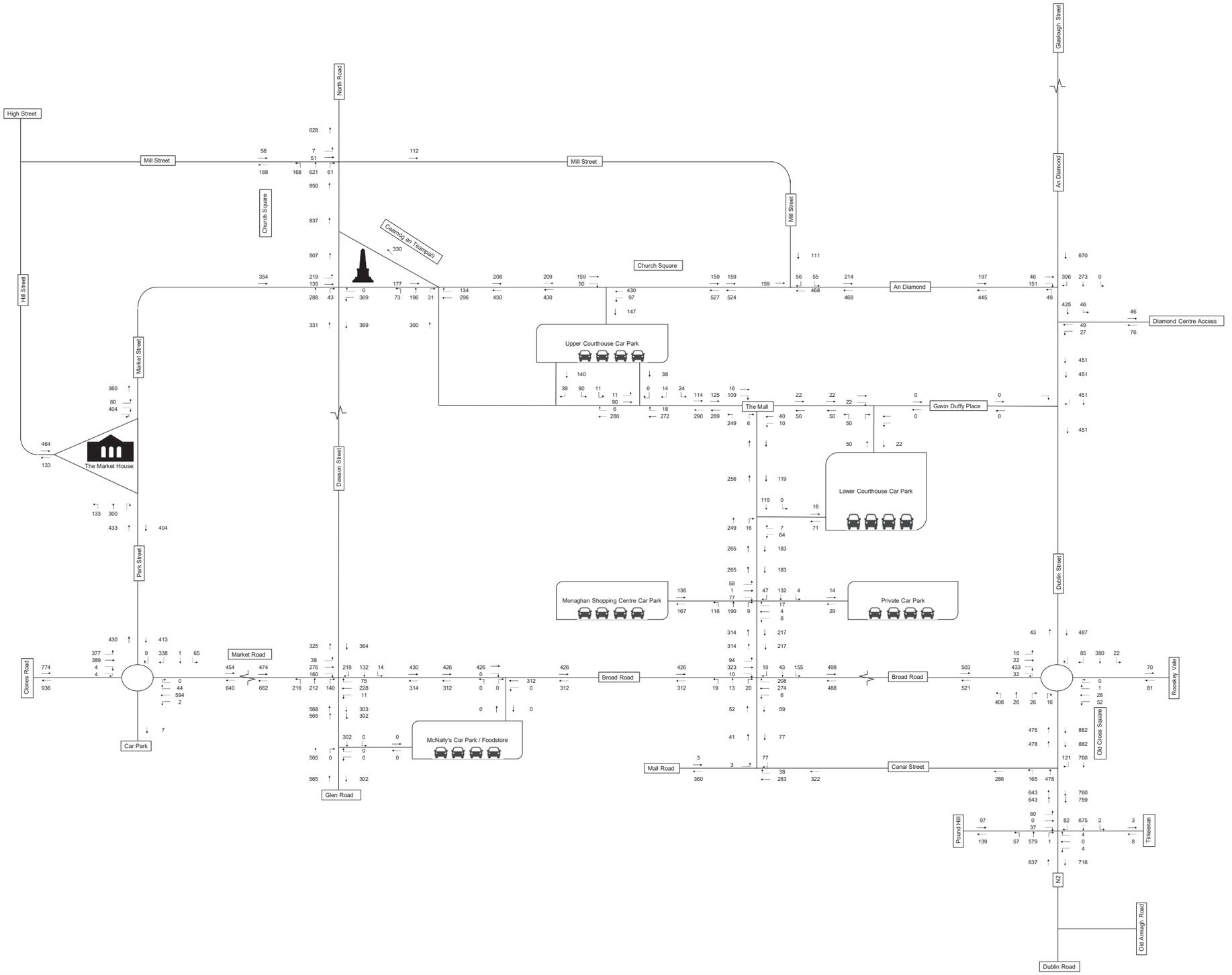
IBH0710 Monaghan Public Realm
2025 Existing Flows
PCU
AM Peak 08:15-09:15


High Street
Mill Street
North Road
Church Square
Cearnóg an Teampaill
Church Square
Mill Street
Mill Street
Glaslough Street
An Diamond
An Diamond
Diamond Centre Access
Hill Street
Market Street
Upper Courthouse Car Park
The Market House
Dawson Street
The Mall
Gavin Duffy Place
Lower Courthouse Car Park
Park Street
Monaghan Shopping Centre Car Park
Private Car Park
Dublin Street
Cloones Road
Market Road
Broad Road
Broad Road
Car Park
McNally's Car Park / Foodstore
Mall Road
Canal Street
Old Cross Square
Rooskey Vale
Pound Hill
Tirkeenan
N2
Old Armagh Road
Glen Road
Dublin Road



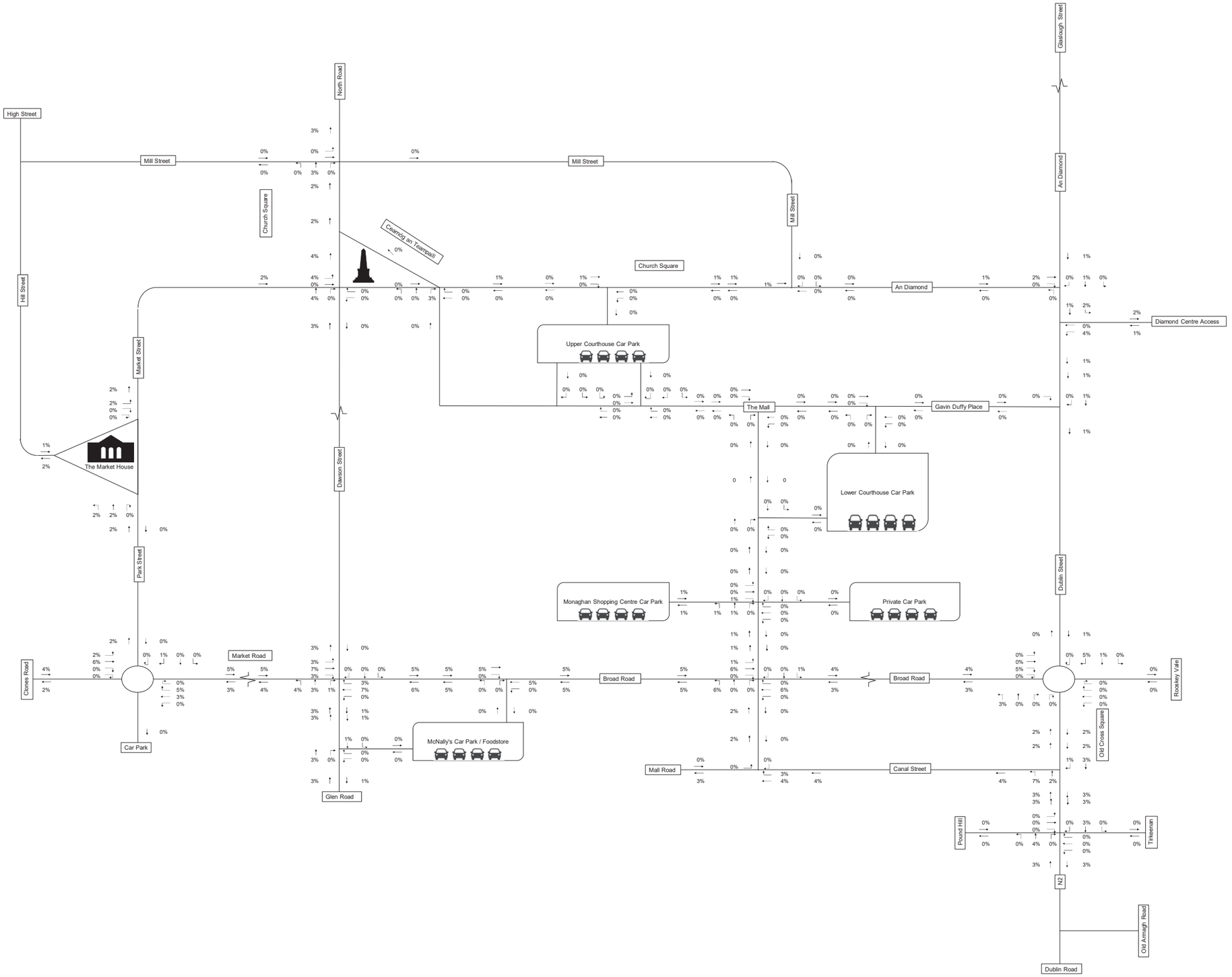
MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2040 Existing Flows
PCU
AM Peak 08:15-09:15



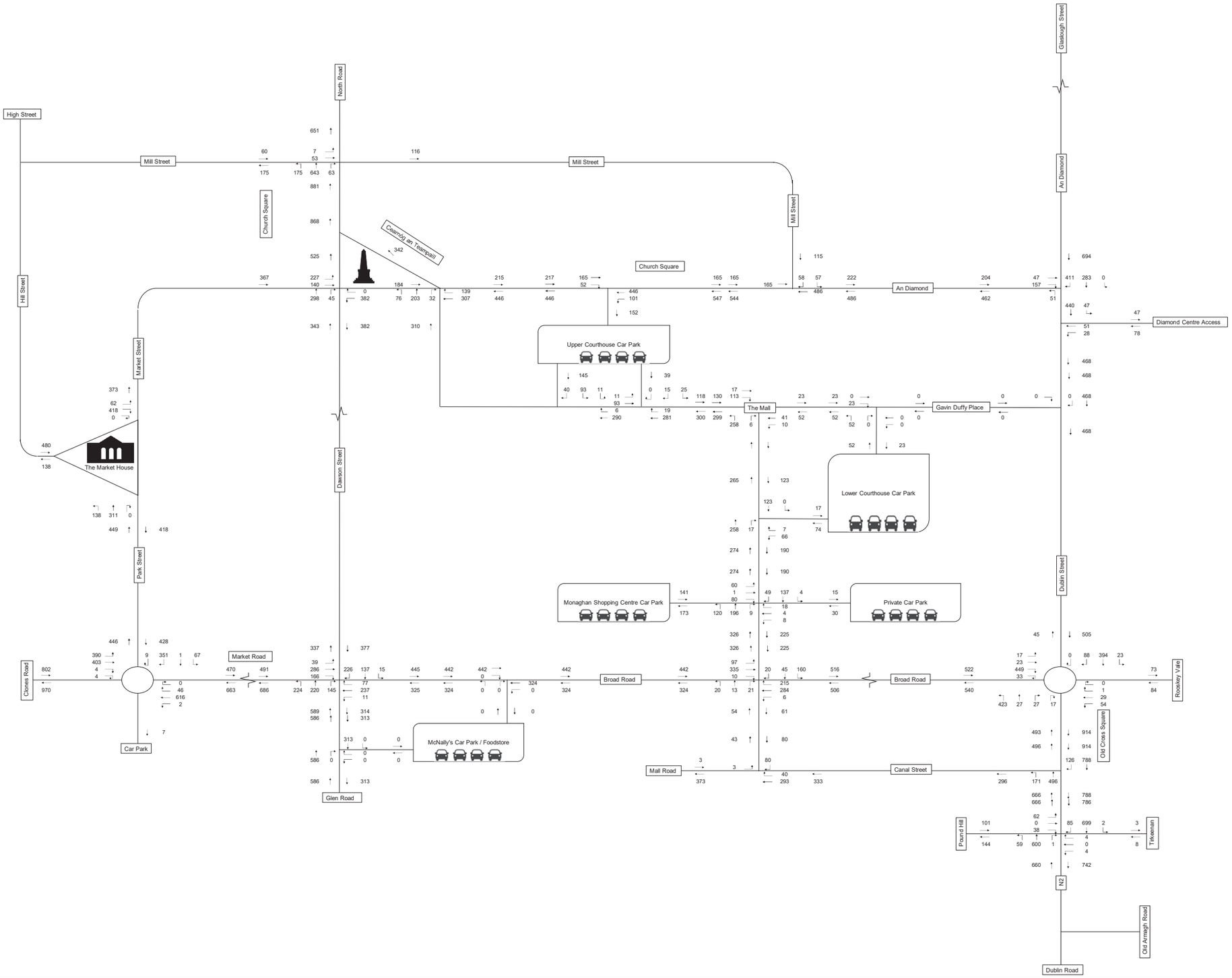
MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2021 Existing Flows
PCUs
PM Peak 17:15-18:15



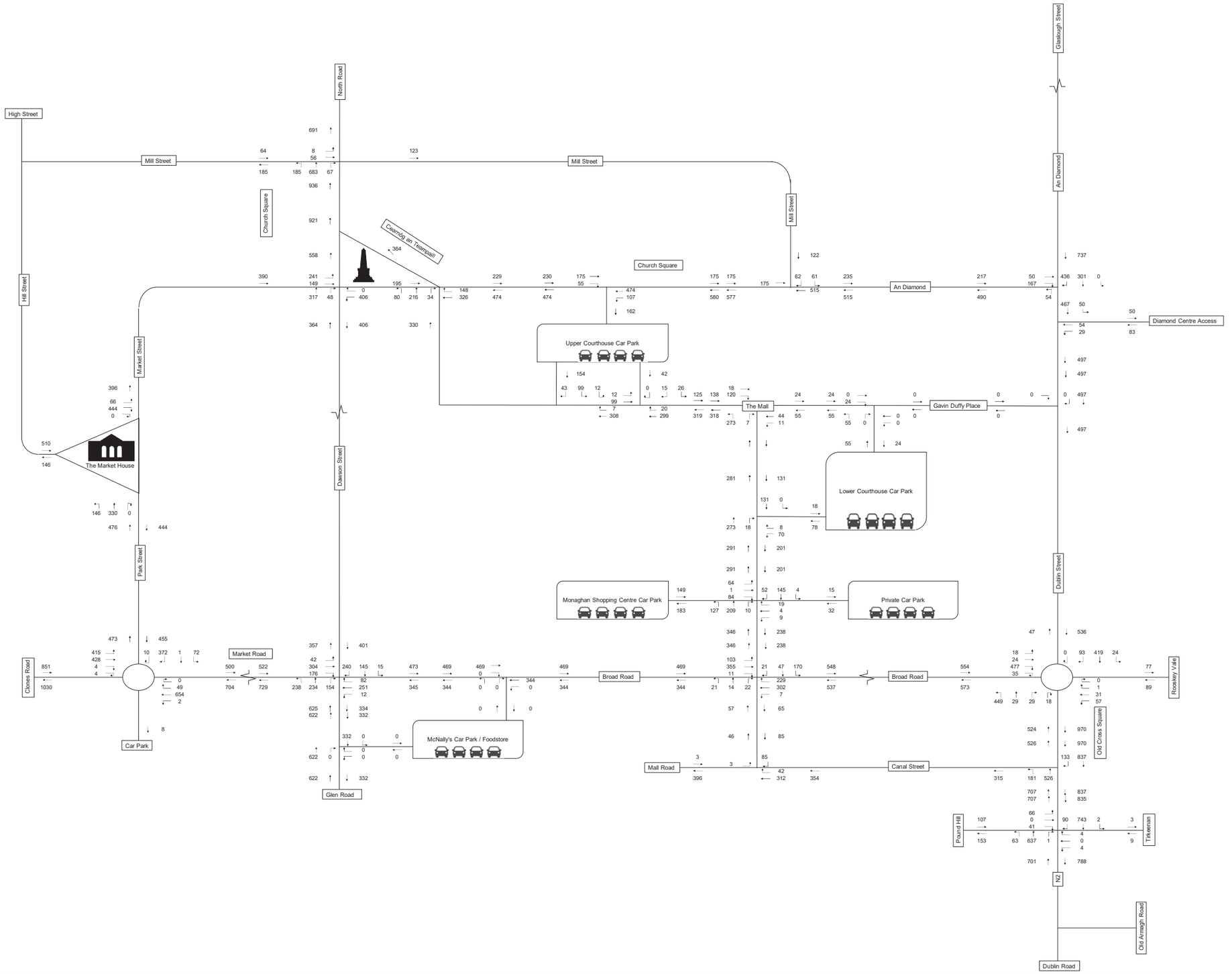
MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2021 Existing Flows
% HV
PM Peak 17:15-18:15



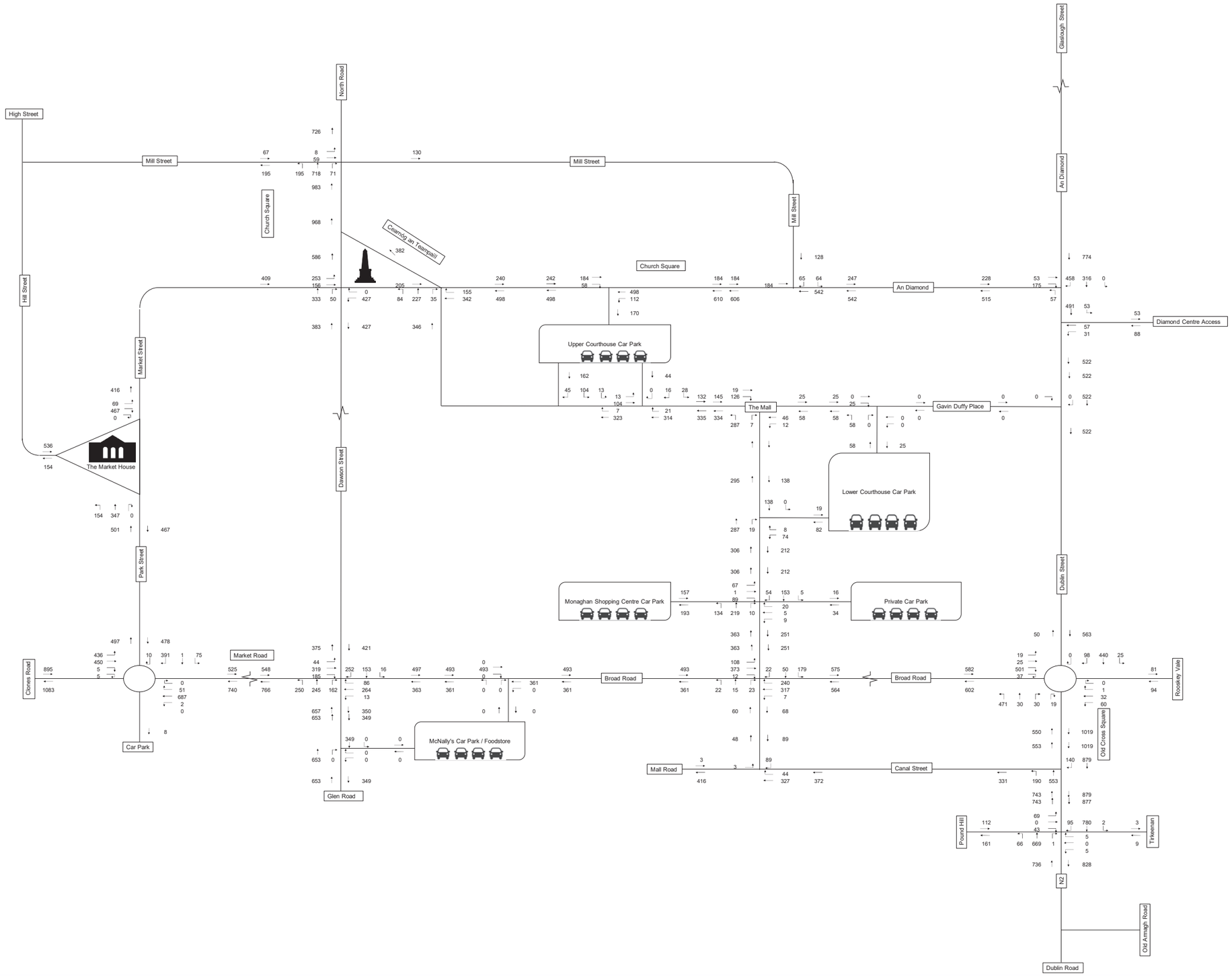
MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2025 Existing Flows
PCUs
PM Peak 17:15-18:15



MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2030 Existing Flows
PCUs
PM Peak 17:15-18:15



MAKING COMPLEX EASY

IBH0710 Monaghan Public Realm
2040 Existing Flows
PCUs
PM Peak 17:15-18:15

Appendix

9d

Committed & Base Traffic