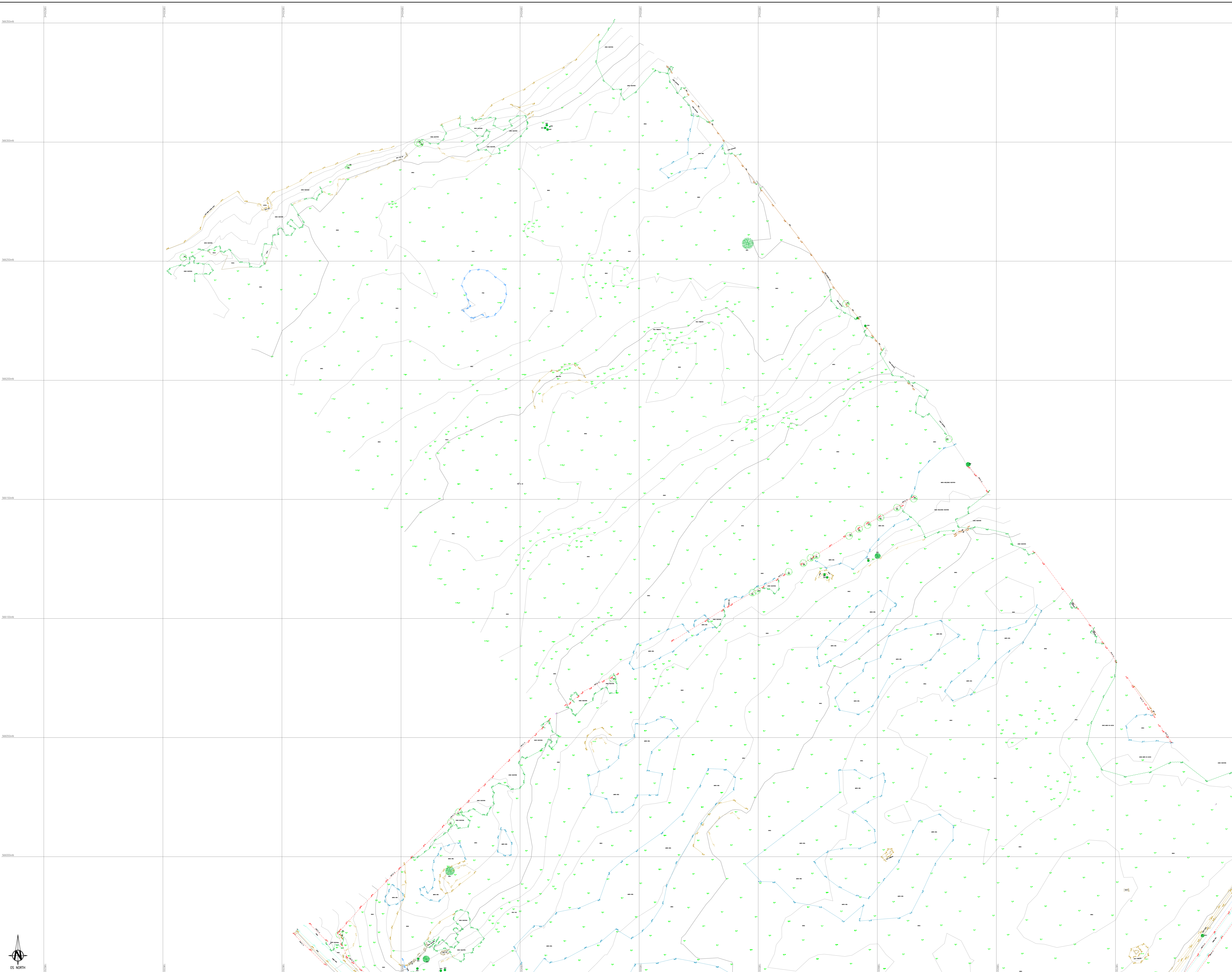


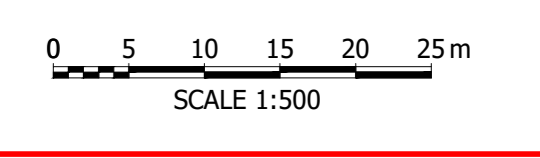
## APPENDIX A: TOPOGRAPHIC SURVEY



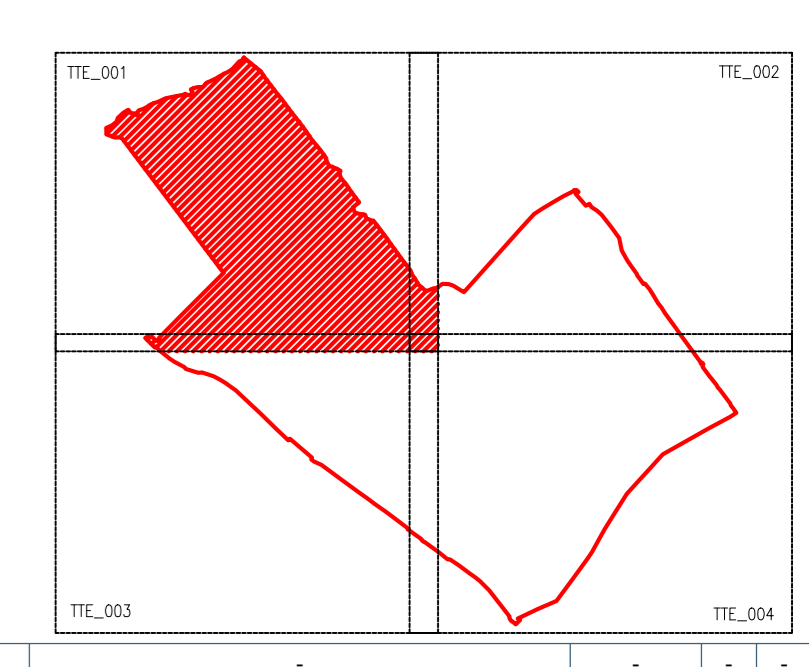
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  - LOCAL SCALE IS APPLIED TO THIS SURVEY

**TOPO LEGEND**

AERIAL MAST	AM	LADDER	LAD
AIR CON UNIT	AC	LAMPPOST	LP
AIR VALVE	AV	LAP FORM AREA	LFA
BARRETT	BA	LETTER BOX	LB
BED LEVEL	BA HL 1:1	MANHOLE	MH
BELLISHA BEACON	BB	MARKER PLATE BT	MF/B
BINS	B	MARKER PLATE ELEC	MF/E
BOLLARD	BO	MARKER PLATE GAS	MF/G
BONE WHEEL	BW	MARKER PLATE WATER	MF/W
BUILDING CONTAINER	BC	MARKER PLATE UNKNOWN	MF/U
BUS SHELTER/STOP	BS	MARKER PLATE WIRE	MF/W
CANES	CA	MARKER POST	MP
CABLE	CB	MARKER POST BT	MP/B
CABLE BRAY	CB	MARKER POST ELEC	MP/E
CABLE TV POINT	CTV	MARKER POST GAS	MP/G
CANOPY	CO	MARKER POST WATER	MP/W
CANOPY LEVEL	CO	METAL PLATE	MPL
CATTLE GRID	CG	MILE POST	MP
CHANNEL DRAIN	CD	MISCELLANEOUS ITEM	MISC
CHILD'S PLAY EQUIPMENT	CPE	MONITORING PILL	MON
CHIMNEY	CH	MONUMENT	MO
COLUMN	CLM	OH DUCT	OHD
CONCRETE	CONC	OH ELECTRIC LINES	OHE
CONCRETE BASE	CNB	OH PIPE	OHP
CORING LEVEL	CL	OH PLATFORM	OHP
CRASH BARRIER	CB	OH TELECOM LINES	OHTL
CROWN PIPES LEVEL	CPL	ORNAMENTAL MASONRY	OM
CROWN ROAD LEVEL	CR	OVERHEAD FIRM	OH
CYCLE HOOK	CH	PARKING TICKET MACHINE	TM
CYCLE SHED	CS	PEEL BOLLARD LIGHT	PBL
DROP BARRIER	DB	PETROL PUMP	PP
DROP BARRIER BOX	DBB	PIEZOMETER	PZ
DUCT	D	PLUMB	PL
DUCT GRADED	GD	POLE	P
EARTH ROD	ER	POST	PO
EAVES LEVEL	EL	RAIL JOINT	RJ
ELECTRICITY POLE	EP	RAIL SIGNAL POST	RSP
FE CHANUKK	FEC	RAIL SIGNALS GANTRY	RSG
FE HOUS	FHE	RAIL TRACK	RT
FE PALISADE	FEP	RAN WATER PIPE	RWP
FE PANEL	FEP	REFLECTION POST	RP
FE POST-RAIL	FEP	RETAINING WALL BASE	RWB
FE POST-WIRE	FEP	RETAINING WALL TOP	RWT
FE POSTS ONLY	FEP	ROD LEVEL	RL
FE MESH	FEM	ROAD MARK PLATE	RMP
FENCE	F	ROAD SIGN	RS
FIRE TENDRAT	FT	ROAD SIGN	RS
FLOOD LIGHT	FL	ROAD SIGN	RS
FLOOR LEVEL	FL	ROCK FACE BTM	RFB
FOOTPATH	FP	ROCK FACE TOP	RFT
FRENCH DRAIN	FD	SETTING OUT	SO
GABION EDGE	GE	SON	SN
GAS BOTTLE STORE	GBS	SON	SN
GAS INLET	GI	SOFT LEVEL	SL
GAS VALVE	GV	SPEED RESTRICTOR	SR
GATE DOUBLE	GD	STAND PIPE	SP
GATE POST	GP	STAYWIRE	STW
GATE SINGLE	GS	STOP TAP	ST
GATE TURNSTILE	GT	STOP VALVE	SV
GRILLE	G	STORAGE SHED	SH
GRIT BIN	GB	SURFACE SCAM	S
GULLY	G	TACTILE PAVING	TAC
HANDRAIL	HR	TELEGRAPH POLE	TP
HEIGH	H	TELEPHONE CALL BOX	TCB
HEIGHT RESTRICTOR	HR	THRESHOLD LEVEL	TL
IC BRITISH TELECOM	IC/BT	TRAFFIC LIGHT	TL
IC CABLE TV	IC/CA	TREE STUMP	TS
IC ELECTRIC	IC/E	VENT PIPE	VP
INSPECTION BOX	IB	WALL	WA
INSPECTION COVER	IC	WASH-OUT VALVE	WO
INVERT LEVEL	IL	WATER LEVEL	WL
KERB BEEP	KB	WATER METER	WM
KERB OUTLET	KO	WKR LEVEL	WRL
KERB TOP HIGHRISE	KTH		



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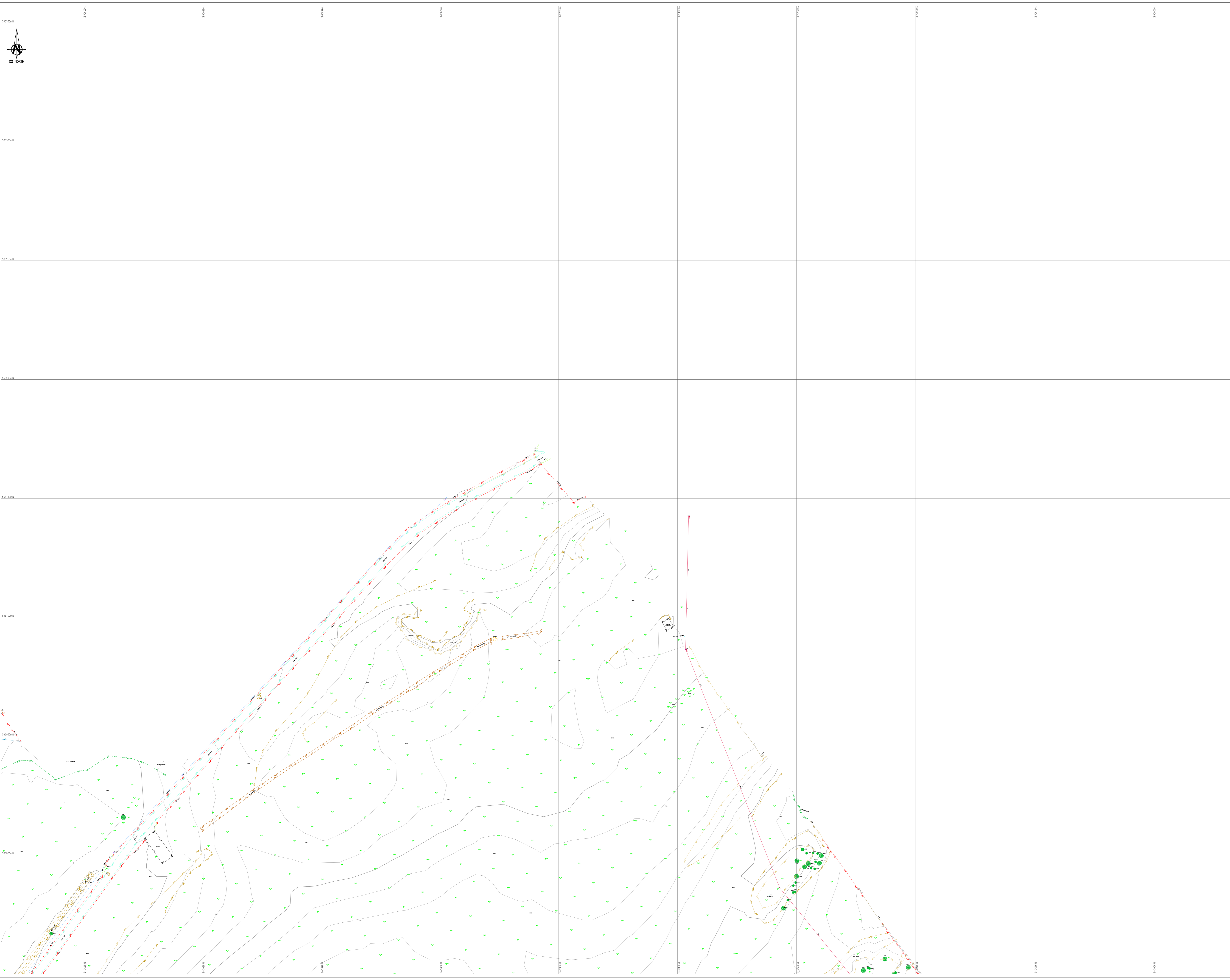
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 STRANRAER, DG9 ORF**

Sheet Title:  
**2D TOPOGRAPHICAL SURVEY  
 SHEET 1 OF 4**

Sheet Project Number	800004	Drawn By	MD	Checked By	CP	Date	13/09/24	Scale @ A0	1:500	Subsidiary	S3
TTC Sheet Number	000000	Discipline	000000	Level	000000	Type/Code		Revision		Author	
<b>B067657 - TTE - 00 - 2D - PL - G - 001 A</b>											

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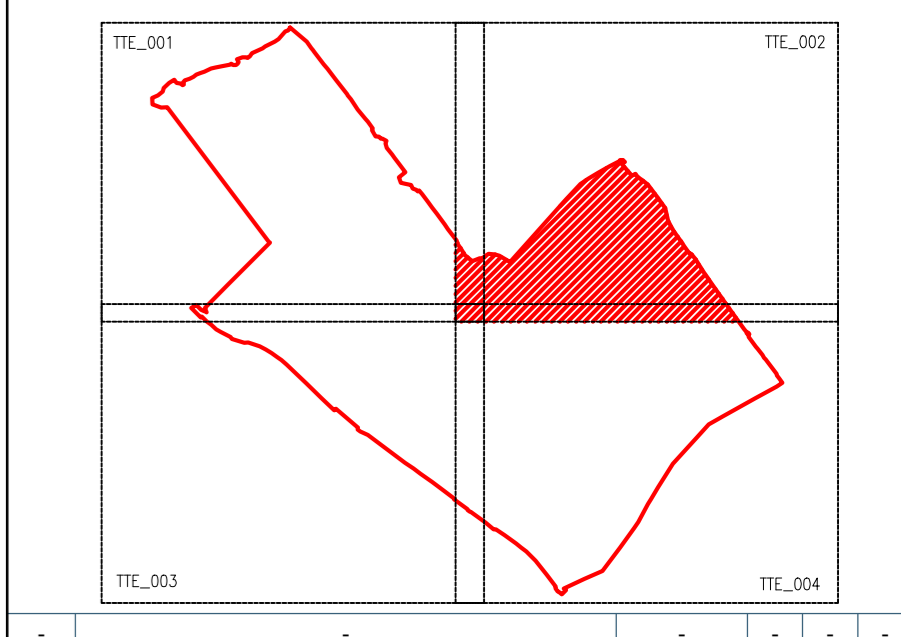
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  3. LOCAL SCALE IS APPLIED TO THIS SURVEY

**TOPO LEGEND**

ADPHL MAST	AM	LADDER	LAD
AIR CON UNIT	AC	LAMPPOST	LP
AIR VALVE	AV	LAY DOWN AREA	LDA
BARRETT	BA HL 1.7	LETTER BOX	LB
BED LEVEL	BL	MARSH	M
BELUSHI BEACON	BB	MARKER PLATE BT	MF/B
BIRD	BN	MARKER PLATE ELEC	MF/E
BOLLARD	B	MARKER PLATE GAS	MF/G
BONE WHEEL	BW	MARKER PLATE METEOR	MF/M
BUILDING CONTAINER	BC/CONT/CONTAINER	MARKER PLATE UNKNOWN	MF/U
BUS SHELTER/STOP	BS	MARKER PLATE WETTER	MF/W
CABLE	CAW(EL/G/W)	MARKER POST	MP
CABLE BRAY	CB	MARKER POST BT	MP/B
CABLE TV POINT	CTV	MARKER POST ELEC	MP/E
CANON	CA	MARKER POST GAS	MP/G
CANOPY LEVEL	CL	MARKER POST WATER	MP/W
CATTLE GRID	CG	METAL PLATE	MPL
CHANNEL DRAIN	CD	NILE POST	NP
CHILD'S PLAY EQUIPMENT	CPE	MISCELLANEOUS ITEM	MISC
CHIMNEY	CH	MONITORING PILE	MON
COLUMN	CLM	MONUMENT	MO
CONCRETE	CONC	OH BELONG	OHB
CONCRETE BASE	CMB	OH DUCT	OHD
COFFIN LEVEL	COL	OH ELECTRIC LINES	OHE
CROWN PIPES LEVEL	CPL	OH PAPERIDGE	OHPB
CRASH BARRIER	CB HL 1.7	OH PIPES	OHP
CROWN ROAD LEVEL	CRCL	OH PLATFORM	OHP
CYCLE HOOK	CH	OH TELECOM LINES	OHTL
CYCLE SHED	CS	ORNAMENTAL MASONRY	OM
DROP BARRIER	DB	OVERHEAD FIRM	OH
DROP BARRIER BOX	DBB	PARKING TICKET MACHINE	TM
DUCT	DU	PEEL BOLLARD LIGHT	PBL
DUCT GRATED	DGU	PETROL PUMP	PP
EARTH ROD	ER	Piezometer	PZ
ELECTRICITY POLE	EP	POST	P
FE CHANLINK	FECCL HL 1.7	RAIL JOINT	RJ
FE HOUS	FEM HL 1.7	RAIL SIGNAL POST	RS
FE PALISADE	FEP HL 1.7	RAIL SIGNALS GANTRY	RSO
FE PANEL	FEP HL 1.7	RAIL TRACK	RT
FE POST-RAIL	FEP HL 1.7	RAN WATER PIPE	RWP
FE POST-WIRE	FEP HL 1.7	REFLECTOR POST	RP
FE POSTS ONLY	FEP HL 1.7	RETAINING WALL TOP	RWT
FE WEDGES	FEM HL 1.7	ROAD MARK PLATE	RMP
FENCE	FENC HL 1.7	ROAD SIGN	RS
FIRE HOSERAT	FRH	ROAD SIGN	RS
FLOOD LIGHT	FL	ROCK FACE BTM	RFB
FLOOR LEVEL	FL	ROCK FACE TOP	RFT
FRENCH DRAIN	FD	SETTING OUT	SO
GARDEN EDGE	GE	SETTING OUT	SO
GAS BOTTLE STORE	GBS	SON	SN
GAS INLET	GI	SOFT LEVEL	SL
GATE DOUBLE	GD	SPEED RESTRICTOR	SR
GATE POST	GP	STAND PIPE	SP
GATE SINGLE	GS	STAYWIRE	SW
GRILLE	GR	STILE	ST
GRIT BIN	GB	STOP TAP	ST
GULLY	GU	STOP VALVE	SV
HANDRAIL	HDR HL 1.7	STORAGE SHED	SH
HEIGHT RESTRICTOR	HR	SUBURB SCAP	S
IC BRITISH TELECOM	ICBT	TACTILE PAVING	TAC
IC CABLE TV	ICC/A	TELEGRAPH POLE	TP
IC ELECTRIC	IC/E	TELEPHONE CALL BOX	TCB
INSPECTION BOX	IB	THRESHOLD LEVEL	TL
INSPECTION COVER	IC	TREE STAMP	TS
KORB BEEP	KB	VENT PIPE	VP
KORB OUTLET	KO	WASH-OUT VALVE	WO
KORB TOP HIGHRISE	KTHR	WATER LEVEL	WL
		WATER METER	WM
		WER LEVEL	WRL

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Sheet Title:  
**2D TOPOGRAPHICAL SURVEY  
SHEET 2 OF 4**

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Date	13/09/24	Date	13/09/24				
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Date	13/09/24	Date	13/09/24				

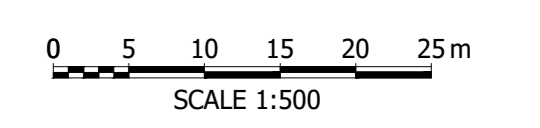


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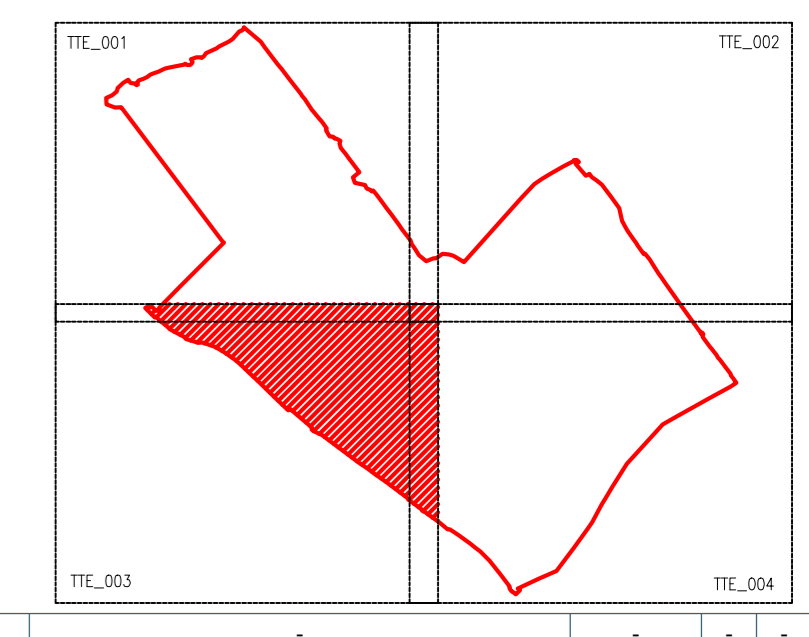
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- 3. LOCAL SCALE IS APPLIED TO THIS SURVEY

**TOPO LEGEND**

ASPHALT W/ST	AM	LADDER	LAD
AIR CON UNIT	AC	LAMPPOST	LP
AIR VALVE	AV	LAP DOWN AREA	LDA
BARRIER	BA	LETTER BOX	LB
BIG LEVEL	BL	MARSH	MA
BELUSHA BEACON	BB	MARKER PLATE BT	MP/B
BING	BN	MARKER PLATE ELEC	MP/E
BOLLARD	B	MARKER PLATE GAS	MP/G
BONE HOLE	BH	MARKER PLATE MISC	MP/M
BUILDING CONTAINER	BC	MARKER PLATE UNKNOWN	MP/U
BUS SHELTER/STOP	BS	MARKER PLATE WATER	MP/W
CANTEE	CA	CONTAINER	CON
CABLE	CB	MARKER POST	MP
CABLE TRAY	CT	MARKER POST BT	MP/B
CABLE TV POINT	CTV	MARKER POST ELEC	MP/E
CANOPY	CY	MARKER POST GAS	MP/G
CANOPY LEVEL	CL	MARKER POST WATER	MP/W
CATTLE GRID	CG	METAL PLATE	MPL
CHANNEL DRAIN	CD	MILE POST	MP
CHILD'S PLAY EQUIPMENT	CPE	MISCELLANEOUS ITEM	MISC
CHIMNEY	CH	MONITORING P/N	MON
COLUMN	CLM	MONUMENT	MON
CONCRETE	CON	OH BLENDING	OHB
CONCRETE BASE	CNB	OH DUCT	OHD
CORNER LEVEL	CL	OH ELECTRIC LINES	OHE
CROWN PIPES LEVEL	CPL	OH PAPERIDGE	OHPB
CRASH BARRIER	CB	OH PIPES	OHP
CROWN ROAD LEVEL	CR	OH PLATFORM	OHP
CYCLE RACK	CR	OH TELECOM LINES	OHTL
CYCLE SHED	CS	ORNAMENTAL MASONRY	OM
DROP BARRIER	DB	PARKING TICKET MACHINE	TM
DROP BARRIER BOX	DBB	PEEL BOLLARD LIGHT	PBL
DUCT	D	PEEL PLAMP	PLP
DUCT GRATED	DG	PIEZOMETER	PZ
EARTH ROD	ER	PUNY	PUN
EAVES LEVEL	EL	POST	P
ELECTRICITY POLE	EP	RAIL JOINT	RJ
FE CHANUKK	FECL	RAIL SIGNAL POST	RSP
FE HOUS	FEH	RAIL SIGNALS GANTRY	RS
FE PALISADE	FEH	RAIL TRACK	RT
FE PANEL	FEH	RAN WATER PIPE	RWP
FE POST-RAIL	FEPR	REFLECTION POST	RP
FE POST-WIRE	FEPW	RETAINING WALL BASE	RWB
FE POSTS ONLY	FEPO	RETAINING WALL TOP	RWT
FE MESH	FEPM	ROAD LEVEL	RL
FENCE	FE	ROAD MARK PLATE	RMP
FIRE INSULANT	FI	ROAD SIGN	RS
FLOOD LIGHT	FL	ROAD SIGN	RS
FLOOR LEVEL	FL	ROCK FACE BTM	RFB
FOOTPATH	FP	ROCK FACE TOP	RFT
FRENCH DRAIN	FD	ROCKING EYE	RE
GARDEN EDGE	GE	SETTING OUT	SO
GAS BOTTLE STORE	GBS	SON	SN
GAS INLET	GI	SOFT LEVEL	SL
GAS VALVE	GV	SPEED RESTRICTOR	SR
GATE DOUBLE	GD	STAND PIPE	SP
GATE POST	GP	STAYWIRE	SW
GATE SINGLE	GS	STILE	ST
GATE TURNSTILE	GT	STOP TAP	ST
GRILLE	G	STOP VALVE	SV
GRIT BIN	GB	STORAGE SHED	SH
GULLY	G	SUBURB SIGN	S
HANDRAIL	HR	TELEPHONE POLE	T
HEIGHT RESTRICTOR	HR	TELEPHONE CALL BOX	TCB
I.C. BRITISH TELECOM	ICBT	THRESHOLD LEVEL	TL
I.C. CABLE TV	ICCA	TREE STAMP	TS
I.C. ELECTRIC	ICE	VENT PIPE	VP
INSPECTION BOX	IB	WALL	W
INSPECTION COVER	IC	WASHOUT VALVE	WO
KERR BEEP	KB	WATER LEVEL	WL
KERR OUTLET	KO	WATER METER	WM
KERR TOP HIGHRISE	KTH	WKR LEVEL	WKL



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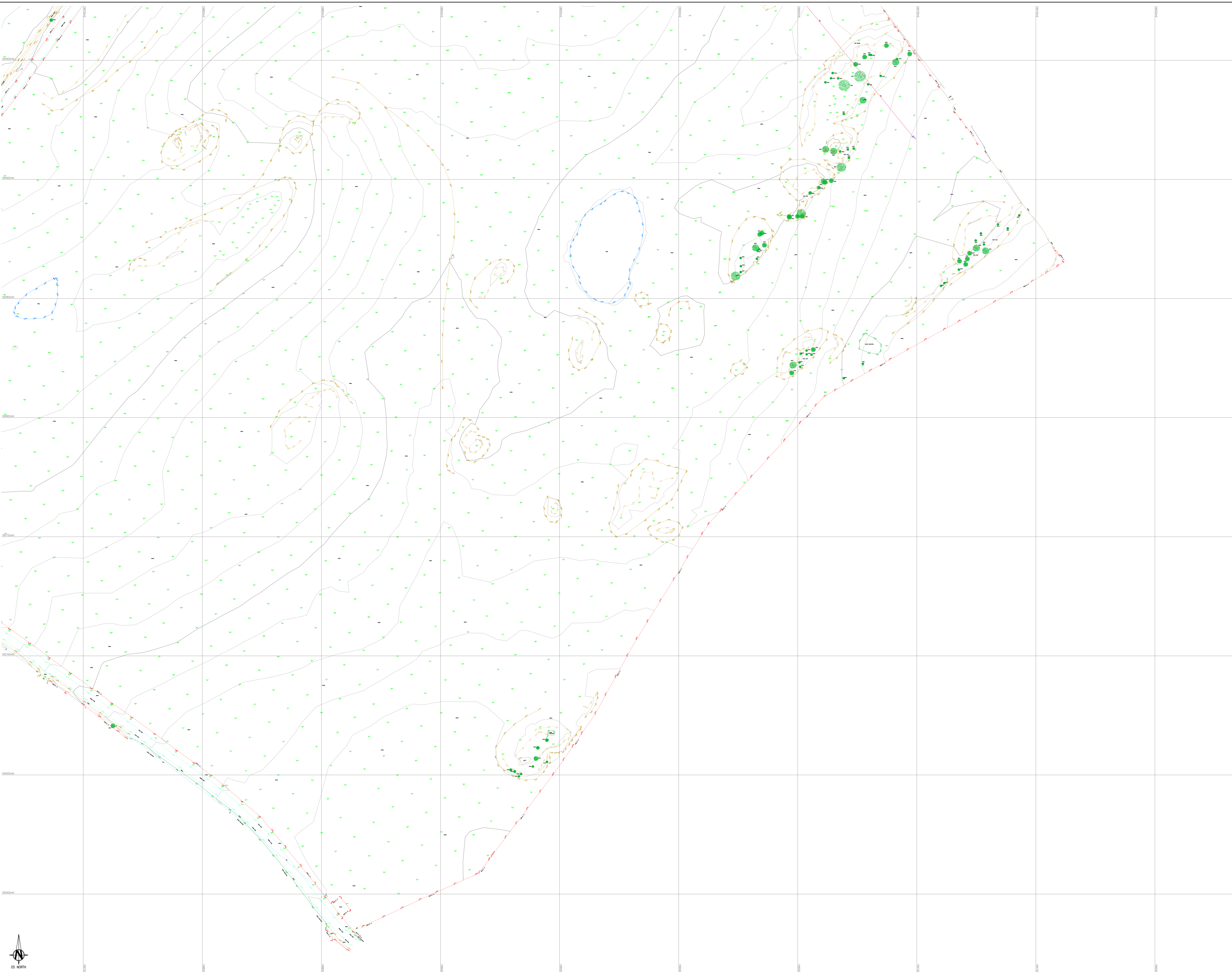
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 SHEET 3 OF 4**

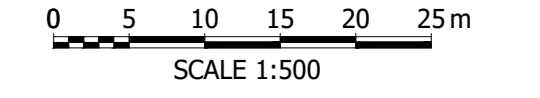
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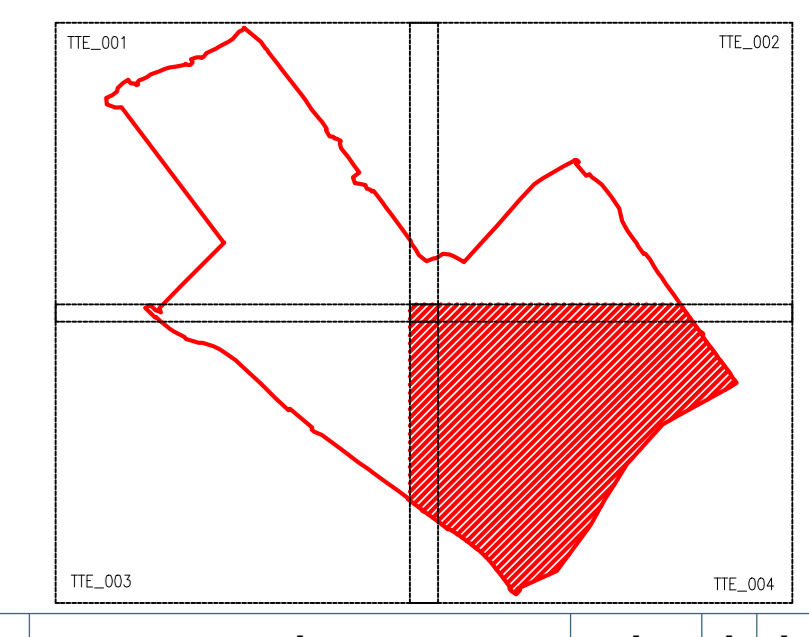
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  - LOCAL SCALE IS APPLIED TO THIS SURVEY.

**TOPO LEGEND**

AERIAL MAP	AM	LADDER	LAD
AIR CON UNIT	AC	LAMPPOST	LP
AIR WAVE	AW	LAY DOWN AREA	LDA
BARRER	BA	LETTER BOX	LB
BED LEVEL	BA HL 1.1	MARSH	MR
BELUSH BEACON	BB	MARKER PLATE BT	MB/B
BENCH MARK	BM	MARKER PLATE ELEC	ME/C
BOLLARD	B	MARKER PLATE GAS	MG/C
BONE HOLE	BH	MARKER PLATE UNKNOWN	MU/C
BUILDING CONTAINER	BC/CONTAINER	MARKER PLATE METE	ME/W
BUS SHALTY/STOP	BS	MARKER POST	MP
CANET	CAV(EL/G/W)	MARKER POST BT	MP/B
CABLE	CB	MARKER POST ELEC	MP/E
CABLE BRAY	CB	MARKER POST GAS	MP/G
CABLE TV POINT	CTV	MARKER POST WATER	MP/W
CANON	CA	MARSH AREA	MA
CANOPY	CA	METAL PLATE	MPL
CANYON LEVEL	CL	MILE POST	MP
CATTLE GRID	CG	MISCELLANEOUS ITEM	MSIC
CHANNEL DRAIN	CD	MONITORING PILE	MOP
CHILD'S PLAY EQUIPMENT	CPE	MONUMENT	MO
CHURCH	CH	OH BLEEDING	OHB
COLUMN	CLM	OH DUCT	OHD
CONCRETE	CONC	OH ELECTRIC LINES	OHE
CONCRETE BASE	CMB	OH PIPEBRIDGE	OHPB
COFFIN LEVEL	COL	OH PIPES	OHP
CRASH BARRIER	CB HL 1.1	OH PLATFORM	OHP
CROWN PIPES LEVEL	CP	OH TELECOM LINES	OHL
CROWN ROAD LEVEL	CR	ORNAMENTAL MASONRY	OM
CYCLE SHED	CS	OVERHEAD FIRM	OF
CYCLE SHED	CS	PARKING TICKET MACHINE	TM
DAMP BARRE	DB	PEEL BOLLARD LIGHT	PBL
DAMP BARRE BOX	DBB	PETROL PUMP	PP
DAMP BARRE POST	DBP	PIEZOMETER	PZ
DUCT	DU	PURCH	CP
DUCT GRATED	GD	POST	P
EARTH ROAD	ER	POST	PO
EAKES LEVEL	EL	RAIL JOINT	RJ
ELECTRICITY POLE	EP	RAIL SIGNAL POST	RS
FE CHAINLINK	FECN HL 1.1	RAIL SIGNAL CANTARY	RSC
FE FENCE	FE HL 1.1	RAIL TRACK	RT
FE FALSADE	FEF HL 1.1	RANK WATER PIPE	RWP
FE FENCE	FE HL 1.1	REFLECTION POST	RP
FE POST+RAIL	FEPR HL 1.1	RETAINING WALL BASE	RWB
FE POST+WIRE	FEW HL 1.1	RETAINING WALL TOP	RWT
FE POSTS ONLY	FEPO HL 1.1	ROAD LEVEL	RL
FE MESH	FEHL HL 1.1	ROAD MARK PLATE	RMP
FENCE	FEHL HL 1.1	ROAD SIGN	RS
FIRE TRESHOLD	FT	ROAD SIGN	RS
FLOOD LIGHT	FL	ROCK FACE BTM	RFB
FLOOR LEVEL	FL	ROCK FACE TOP	RFT
FOOTPATH	FP	ROODING EYE	RE
FRENCH DRAIN	FD	SETTING OUT	SO
GARDEN EDGE	GE	SIGN	SN
GAS BOTTLE STORE	GBS	SION	SI
GAS INLET	GI	SOFT LEVEL	SL
GAS VALVE	GV	SPEED RESTRICTOR	SR
GATE DOUBLE	GD	STAND PIPE	SP
GATE POST	GP	STAYWIRE	STW
GATE SINGLE	GS	STRLE	STR
GATE TURNSTILE	GT	STOP TAP	ST
GRILLE	GR	STOP VALVE	SV
GRIET BIN	GB	STORAGE SHED	SS
GULLY	GU	SUBURSE SCAP	S
HANDRAIL	HDR HL 1.1	TACTILE PAVING	TAC
HEDGE	H	TELEGRAPH POLE	TP
HEIGHT RESTRICTOR	HR	TELEPHONE CALL BOX	TCB
IC BRUSH TELECOM	ICB	THRESHOLD LEVEL	TL
IC CABLE TV	ICCA	TREE STAMP	TS
IC ELECTRIC	ICE	WALL	W
INSPECTION BOX	IB	VENT PIPE	VP
INSPECTION COVER	IC	WASHOUT VALVE	WV
INVERT LEVEL	IL	WATER LEVEL	WL
KERB BUMP	KB	WATER METER	WM
KERB OUTLET	KO	WATER METER	WM
KERB TOP HIGHRISE	KTH	WKR LEVEL	WKL



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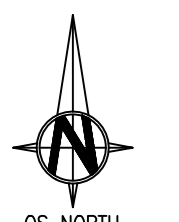
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STRANRAER, DG9 0RF**

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**2D TOPOGRAPHICAL SURVEY  
SHEET 4 OF 4**

Sheet Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A0	Substability
XXXXXX	MP	13/09/24	CP	13/09/24	SP	13/09/24	1:500	53
TTC Project Number	Drawn	Checked	Approved	Scale	Rev	Rev	Rev	Rev
B067657 - TTE - 00 - 2D - PL - G - 004	A	A	A	A	A	A	A	A



## APPENDIX B: SCOTTISH WATER SEWER ASSET PLAN



Warning! Damaging a large diameter trunk main (12"/300mm and above) can result in loss of life and major water supply and water quality problems. If you're planning any extension work in the vicinity of any large diameter mains shown on our maps, you must contact Scottish Water to arrange a site visit 08000 778 778 WELL IN ADVANCE OF THE WORKS

Plotted By: sheila.macvicar@national-one-call.co.uk



The representation of physical assets and the boundaries of areas in which Scottish Water and others have an interest does not necessarily imply their true positions. For further details contact the appropriate District office.

Date: 19/09/2024

## OP-WOOXK552 Waste Water Plan

0 12.5 25 50 Meters

SCALE: 1:2,646

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 6 Buchanan Gate  
 Stepps  
 Glasgow  
 G33 6FB

Tel No: 08000 778 778

## APPENDIX C: SEPA GROUNDWATER FLOOD RISK MAP





## Map Legend

Groundwater

■ Low Likelihood

■ Potentially Vulnerable Areas

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The maps are indicative and of a strategic nature. Whilst all reasonable effort has been made to ensure that the flood maps are accurate for their intended purpose, no warranty is given by SEPA in this regard. Within any modelling technique there is inherent uncertainty. SEPA has assessed the confidence it has in the maps and has shaded areas where data is not appropriate for use or where no data is available. It is inappropriate for these maps to be used to assess flood risk to an individual property.

### Acknowledgements

The maps were developed using data from various sources. Full acknowledgement of data providers and participating parties is from the [flood maps](#).

### Maps creation dates

**Created:** January 2014 This supersedes the Indicative River and Coastal Flood Map (Scotland)

**Updated:** 3 March 2015

**Updated:** 2 December 2015

The flood maps reflect the knowledge and data that was available to be incorporated at the time of publication.

For further queries please contact [flooding@sepa.org.uk](mailto:flooding@sepa.org.uk)

## APPENDIX D: SEPA RESERVOIRS INUNDATION MAP



## Map Legend

■ Reservoirs Inundation Map

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You may only use the Controlled Reservoirs Register for your own personal use or to enable fulfilling your duties as a reservoir manager, or an appointed reservoir engineer, in accordance with the Reservoirs (Scotland) Act 2011 only. The use of the Controlled Reservoirs Register by local authorities is permitted to assist with current reservoir duties (1975 Act) until SEPA becomes the regulator (April 2016).

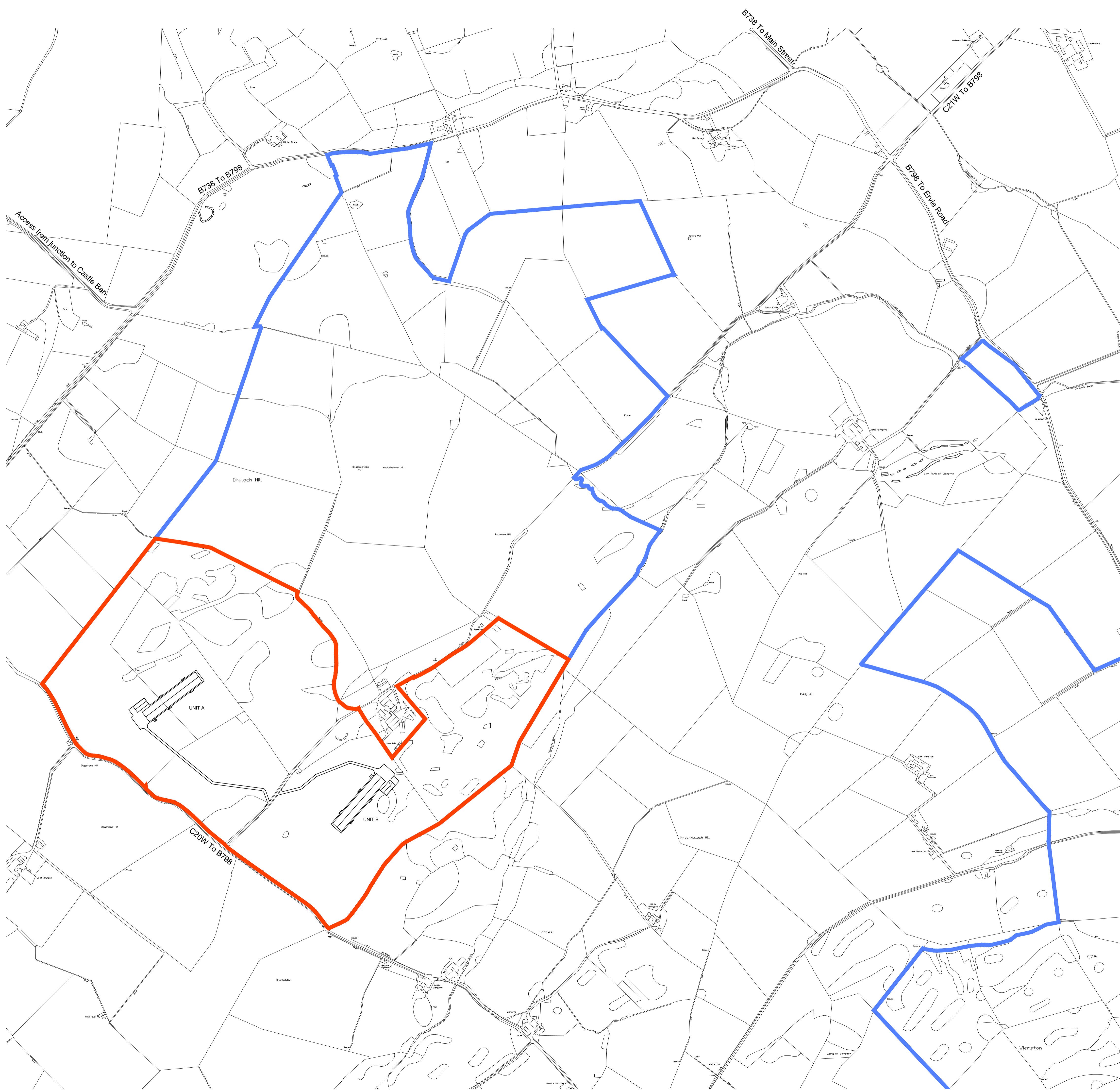
Within any modelling technique there is inherent uncertainty. The reservoir inundation maps are indicative only and of a strategic nature. Whilst all reasonable effort has been made to ensure that the reservoir inundation maps are accurate for their intended purpose, no warranty is given by SEPA in this regard.

The Controlled Reservoirs Register displays the potential extent of uncontrolled releases of water from a reservoir should they occur. They do not reflect the potential consequences of an uncontrolled release of water occurring or the current flood risk that exists.

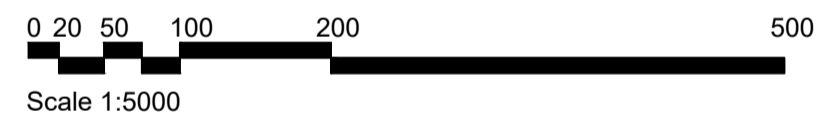
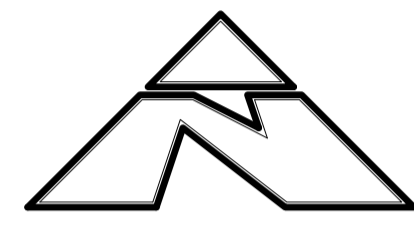
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## APPENDIX E: DEVELOPMENT PROPOSALS



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Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer

Location Plan

scale	size	date	drawn	checked
1/5000	A1	SEP 2024	SB	MB

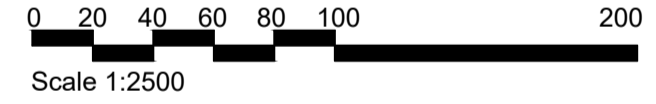
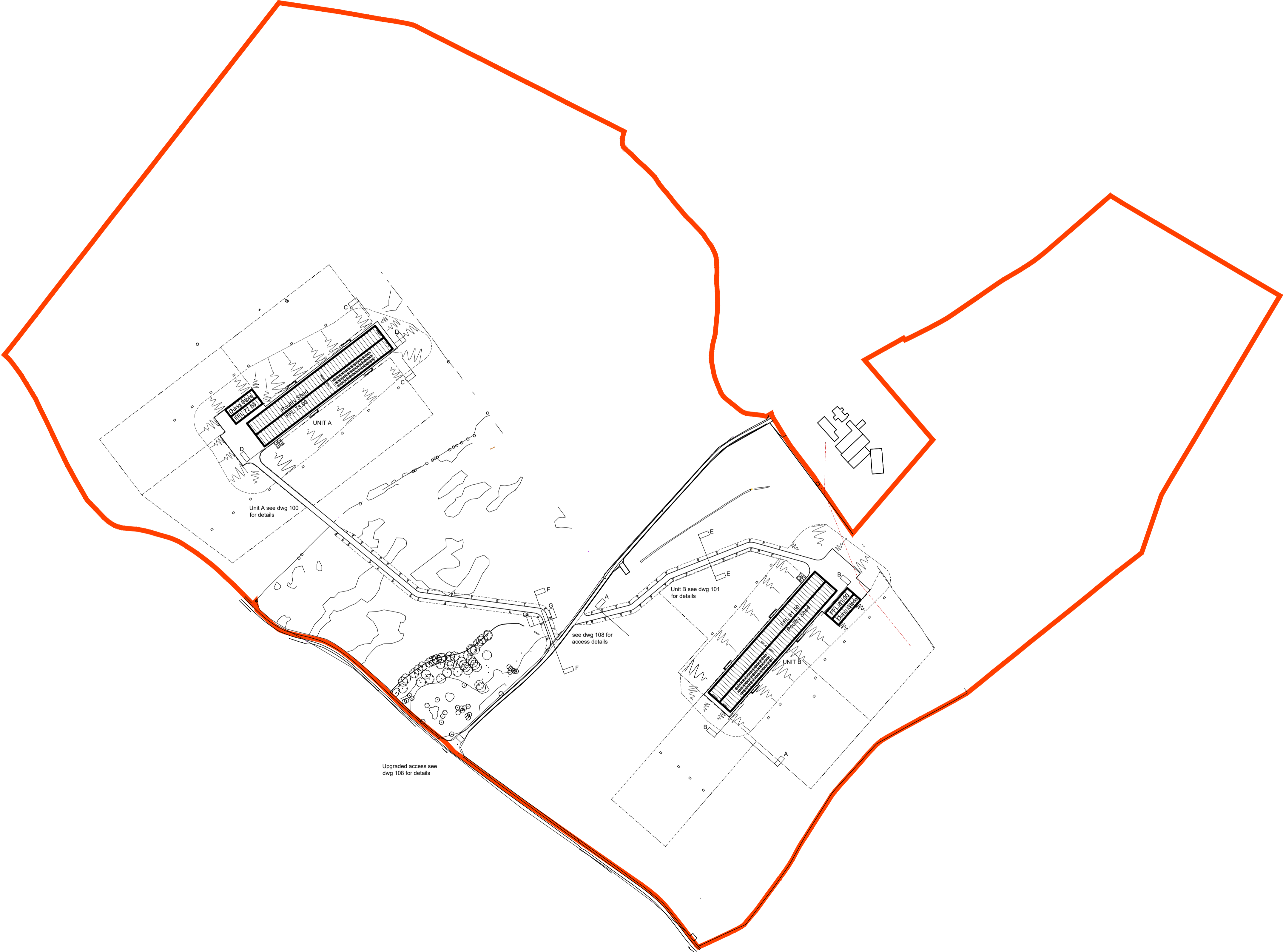
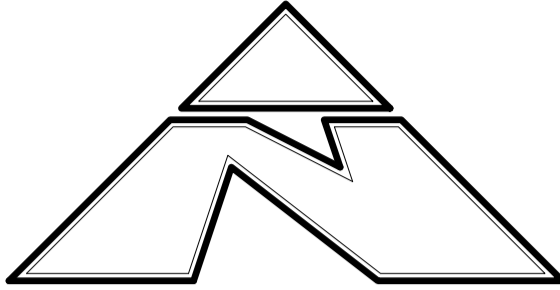
drawing status  
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Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer

Block Plan as Proposed

scale	size	date	drawn	checked
1/2500	A1	SEP 2024	SB	MB

drawing status  
 PLANNING APPLICATION

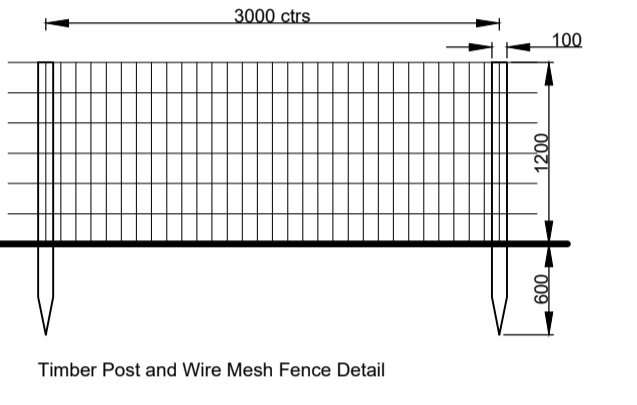
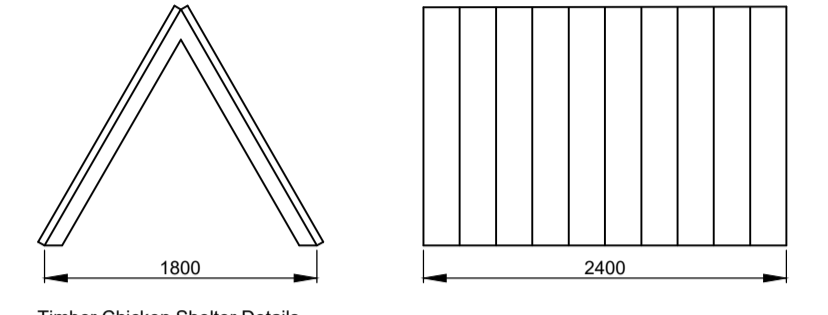
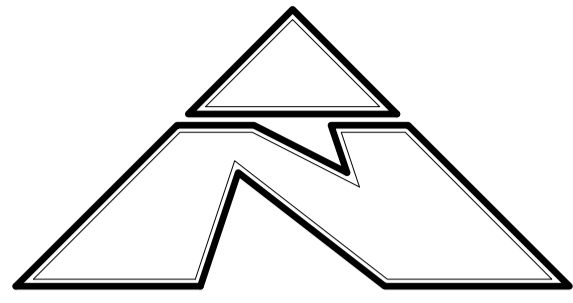
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AT3887	P002	

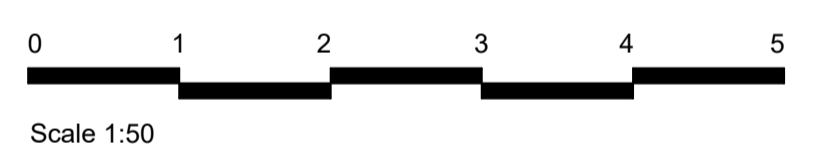


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Symbol Key

- 2.4mx1.8m Shelter Hut
- 3.6m wide gate
- Mesh Fence



Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer  
 title  
 Unit A Site Plan and Fence Details  
 as Proposed

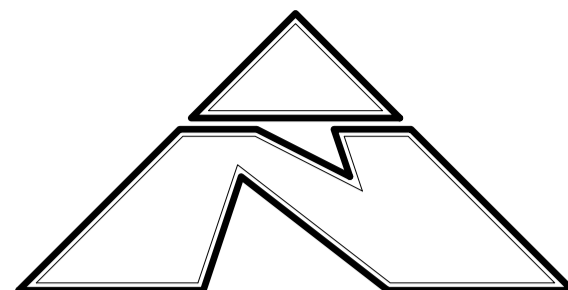
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1/50	A1	SEP 2024	SB	MB

drawing status  
 PLANNING APPLICATION

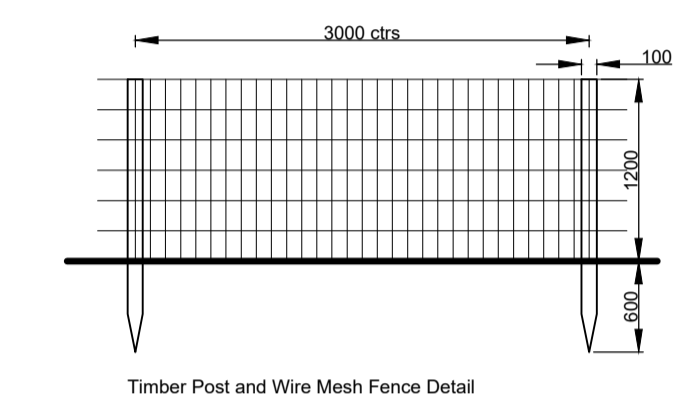
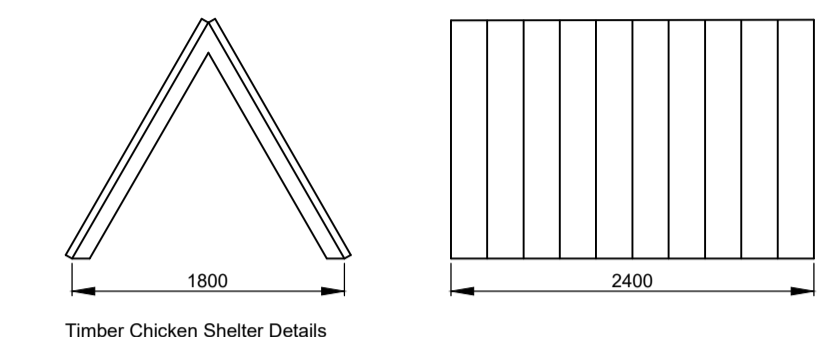
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project no.	drawing no.	revision
AT3887	P100	

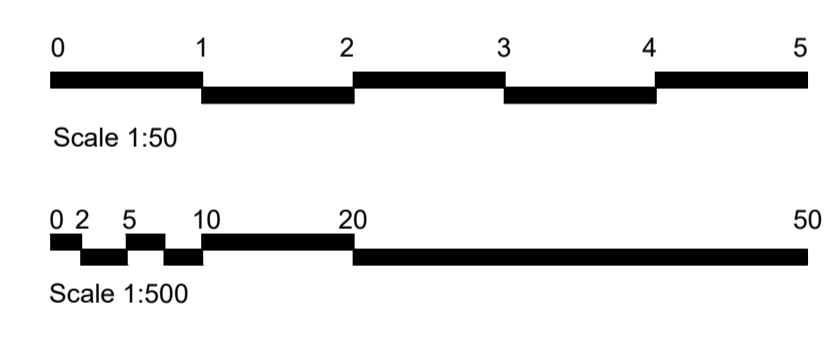


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Symbol Key

- 2.4m x 1.8m Shelter Hut
- 3.6m wide gate
- Mesh Fence



Revision	Description	By	Chk
project			

Mr T Drummond  
Proposed Egg Production Plant  
Mains of Dhuloch  
Kirkcolm  
Stranraer

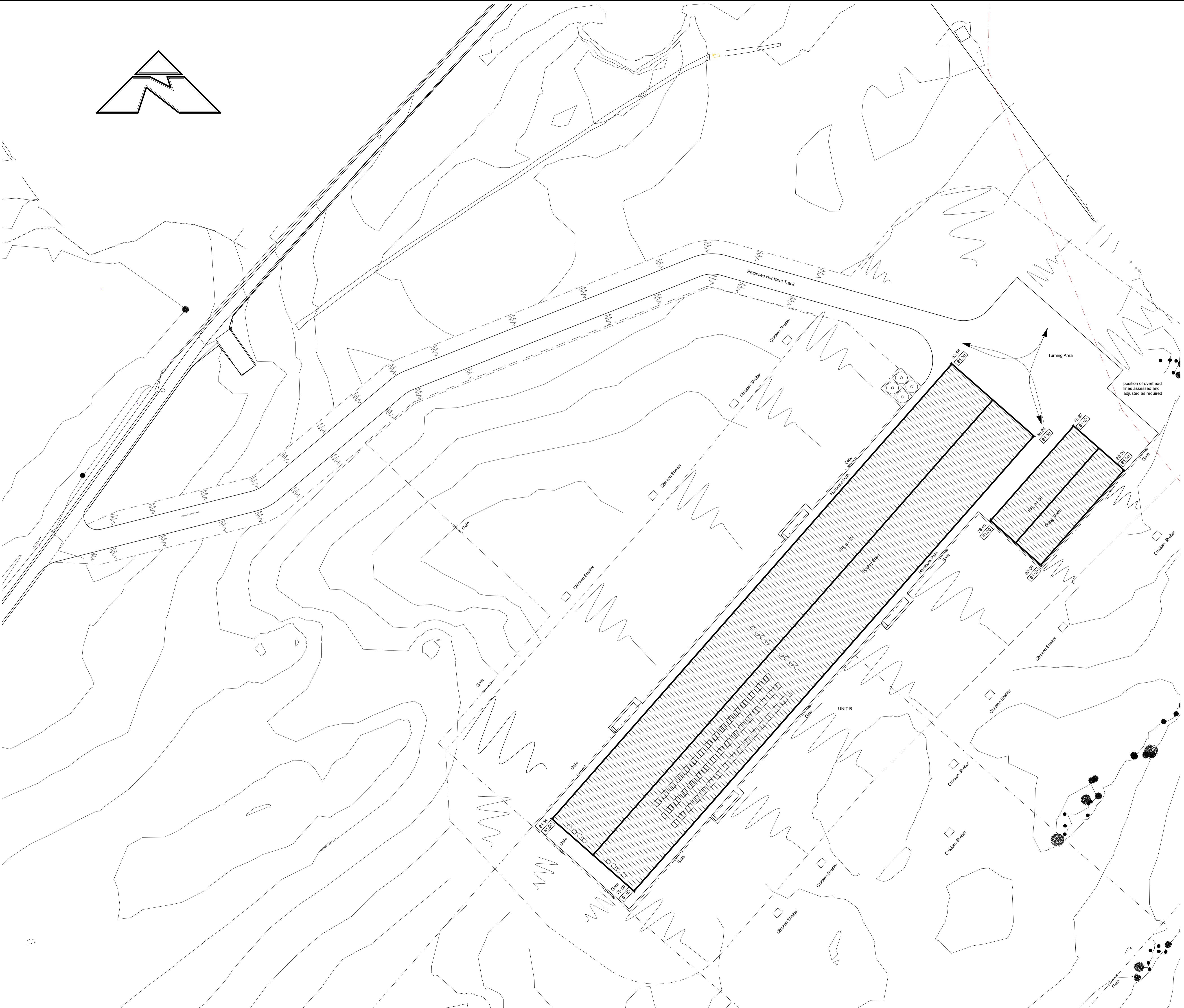
Unit B Site Plan and Fence Details  
as Proposed

scale	size	date	drawn	checked
1/50	A1	SEP 2024	SB	MB
drawing status				
PLANNING APPLICATION				

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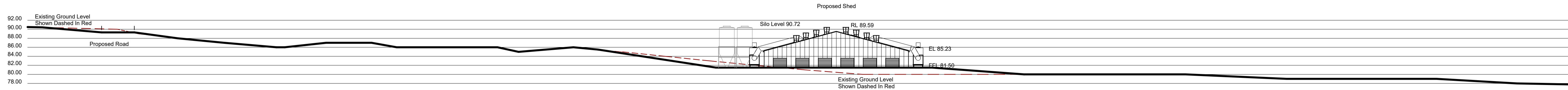


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AT3887	P101	

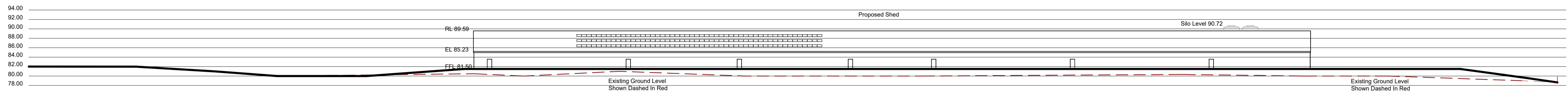




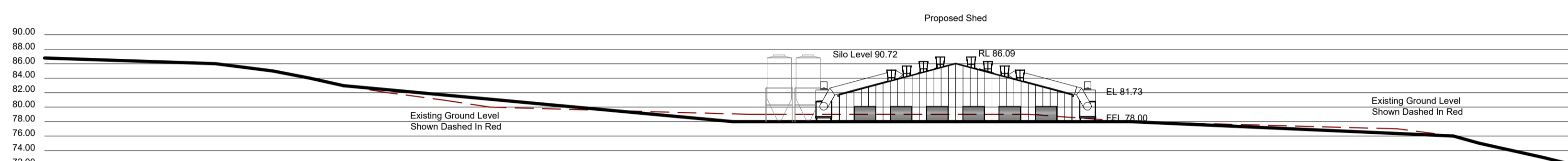
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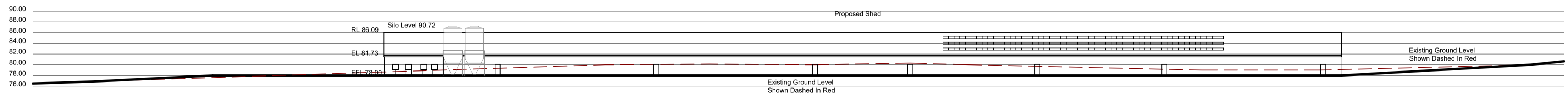
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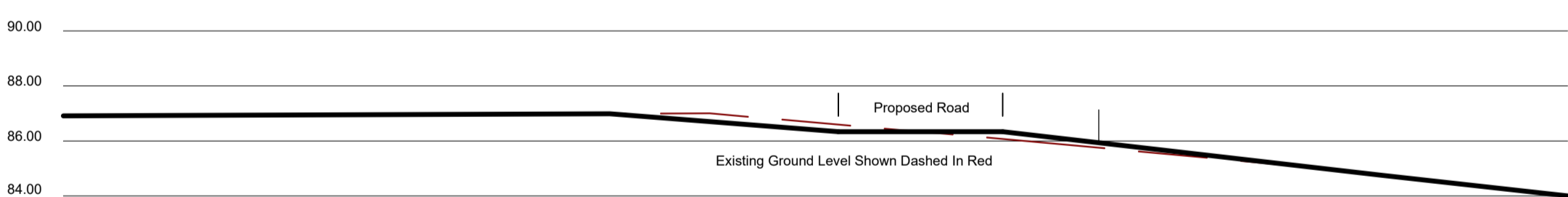
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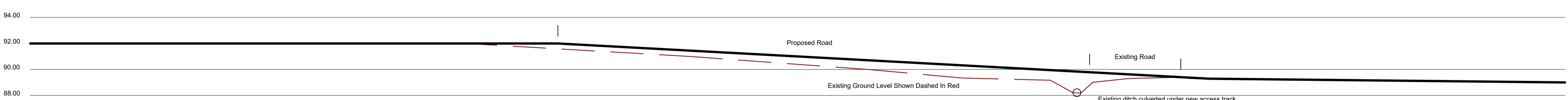
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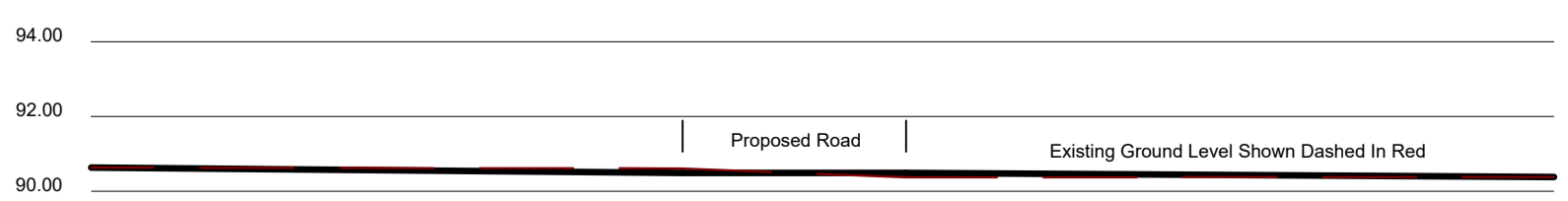
Section D-D



Section E-E



Section F-F



Section G-G



Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer

Site Sections as Proposed

scale	size	date	drawn	checked
1/200	A1	SEP 2024	SB	MB

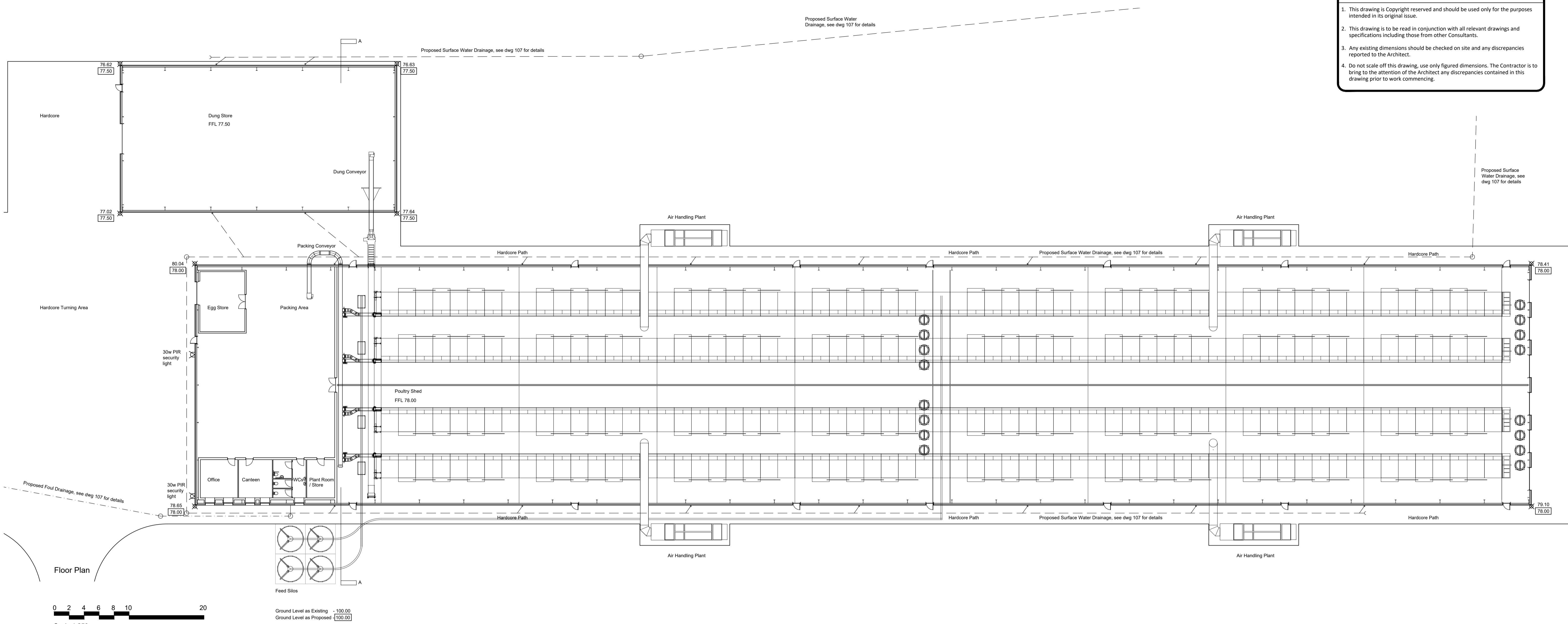
drawing status  
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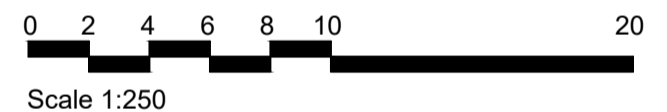


project no.	drawing no.	revision no.
AT3887	P102	

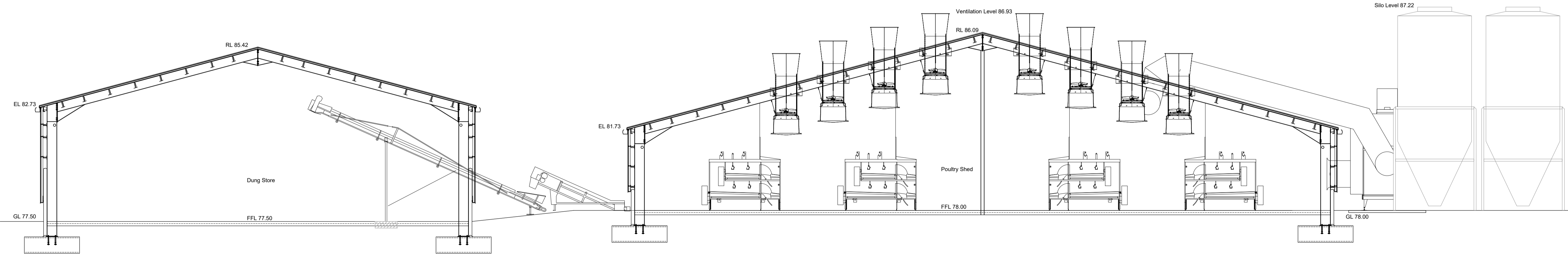
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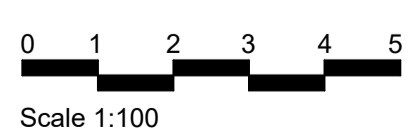
Floor Plan



Ground Level as Existing - 100.00  
Ground Level as Proposed - 100.00



Section A-A



Revision	Description	By	Chk

project  
**Mr T Drummond**  
**Proposed Egg Production Plant**  
**Mains of Dhuloch**  
**Kirkcolm**  
**Stranraer**

title  
**Unit A Floor Plan and Section**  
**as Proposed**

scale	size	date	drawn	checked
1/100	1/250	A1	OCT 2024	SB MB

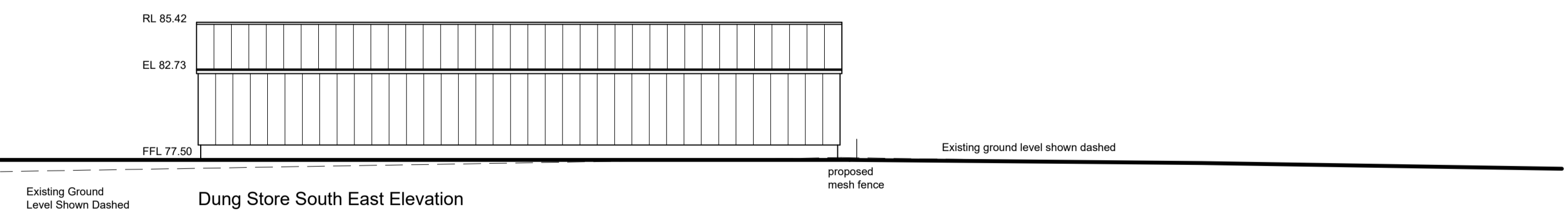
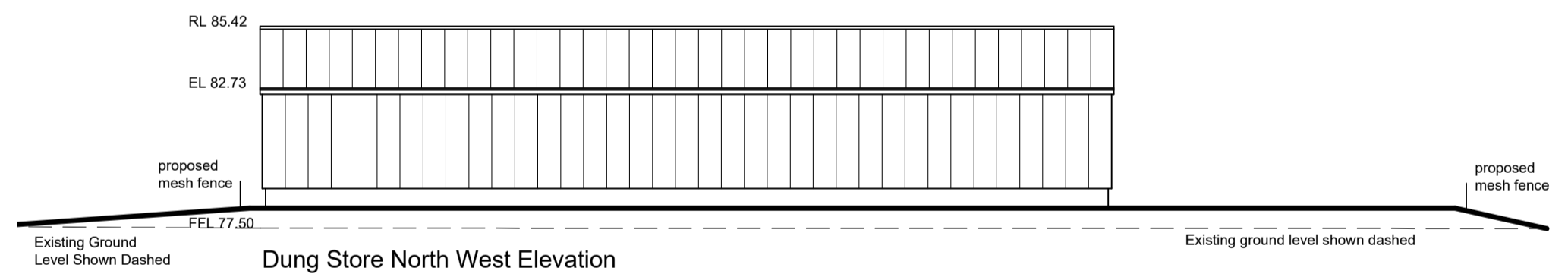
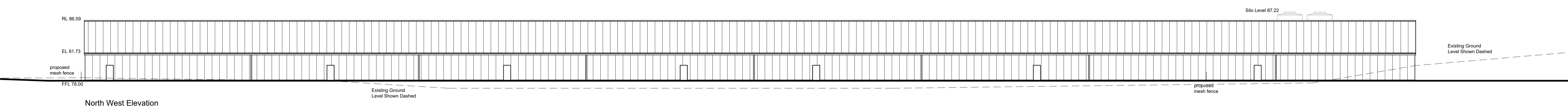
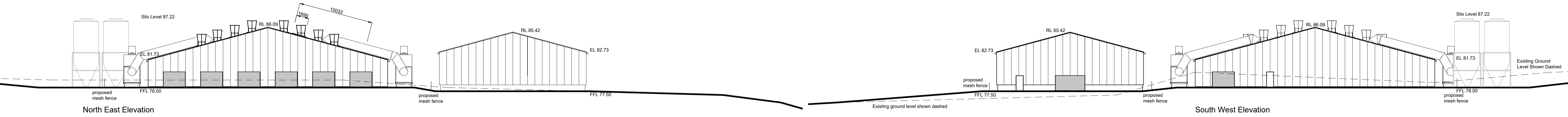
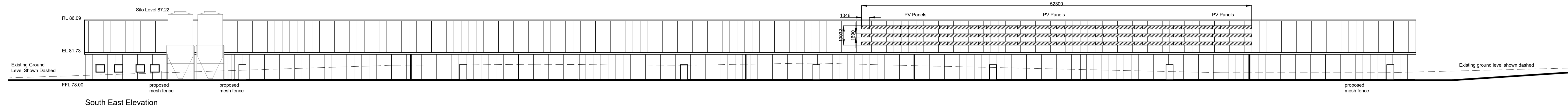
drawing status  
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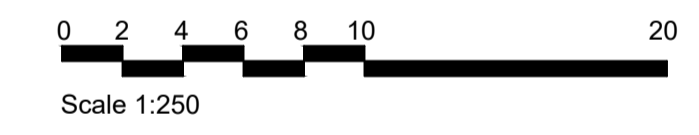


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AT3887	P103	

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- Schedule of Finishes:**
- Roof - Juniper Green profiled PP coated steel roof cladding panels (no rooflights) with matching flashings.
  - Rainwater Goods - Black PP coated aluminium rainwater goods.
  - Walls - Juniper Green profiled PP coated steel wall cladding panels with matching flashings & precast concrete panel base course.
  - Windows and Doors - Black PP coated aluminium roller doors.  
Black painted timber fire exit doors.  
Black upvc windows.



Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer

---

title  
 Unit A Elevations as Proposed

scale	size	date	drawn	checked
1/250	A1	OCT 2024	SB	MB

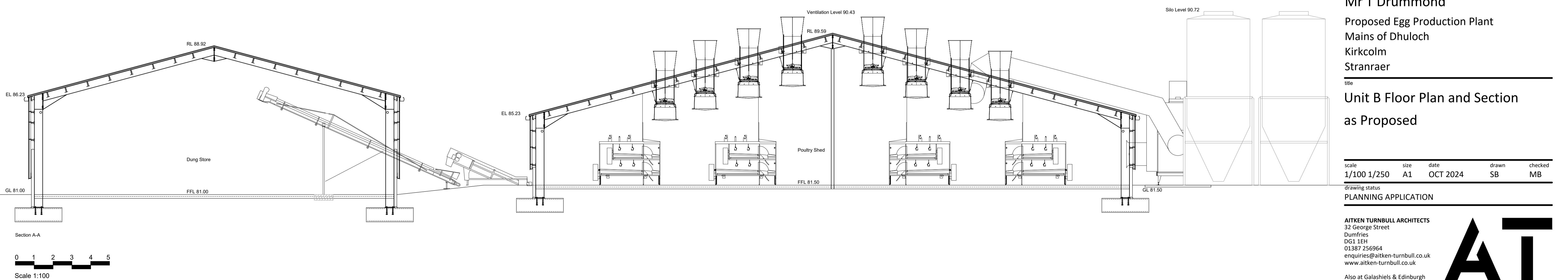
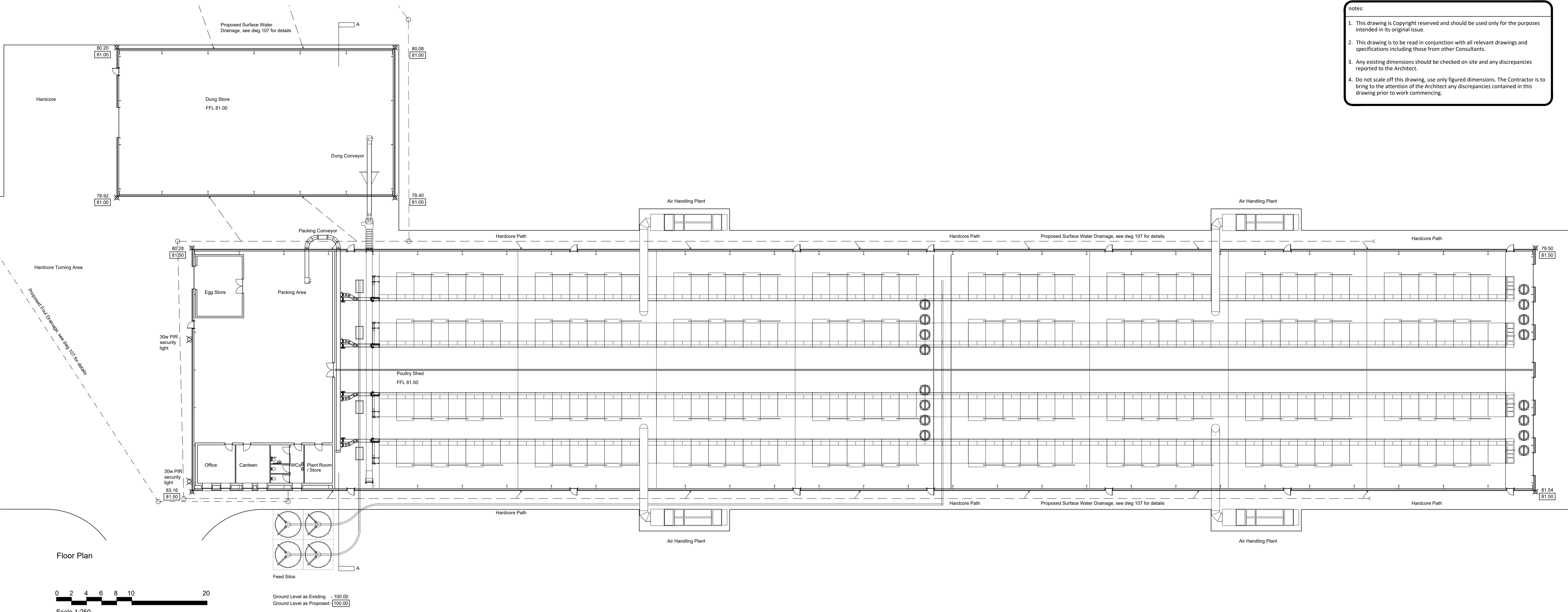
drawing status  
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project no.	drawing no.	revision
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Revision	Description	By	Chk
project			

Mr T Drummond  
Proposed Egg Production Plant  
Mains of Dhuloch  
Kirkcolm  
Stranraer

Unit B Floor Plan and Section  
as Proposed

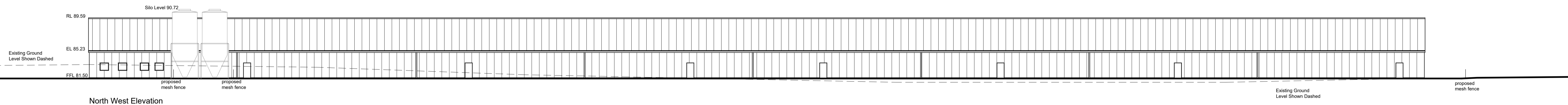
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1/100	1/250	A1	OCT 2024	SB MB

Drawing status  
**PLANNING APPLICATION**

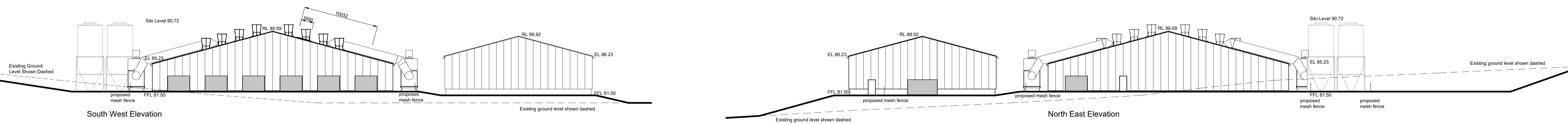
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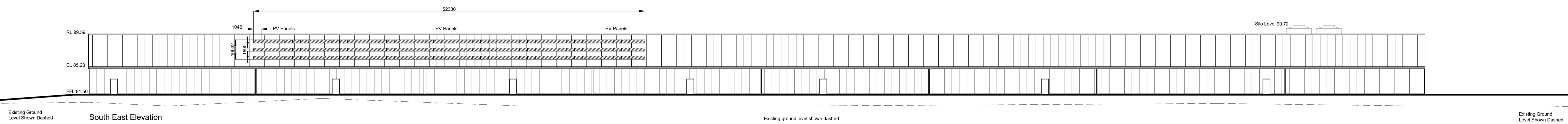


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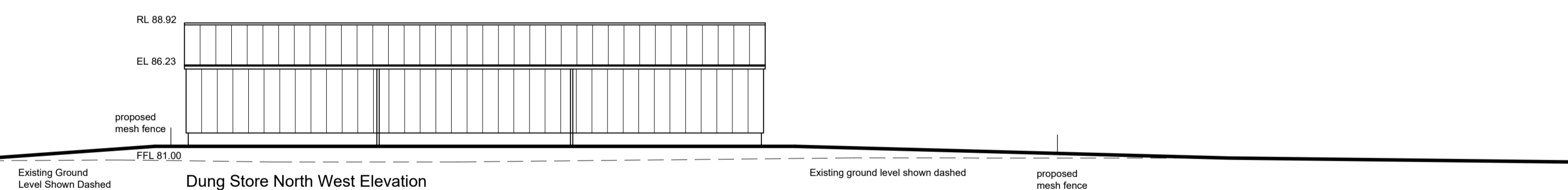


South West Elevation

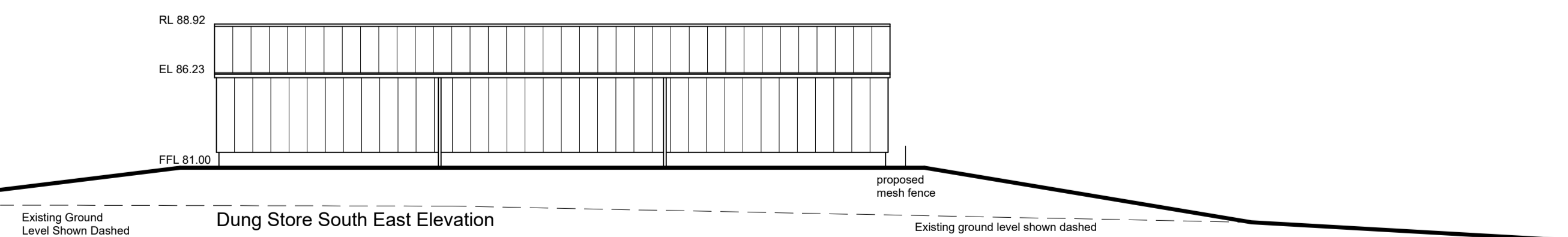
North East Elevation



South East Elevation



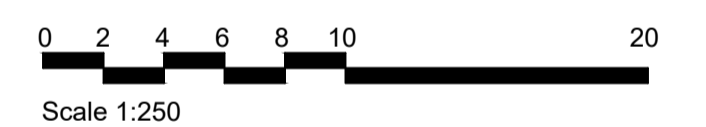
Dung Store North West Elevation



Dung Store South East Elevation

**Schedule of Finishes:**

- Roof - Juniper Green profiled PP coated steel roof cladding panels (no rooflights) with matching flashings.
- Rainwater Goods - Black PP coated aluminium rainwater goods.
- Walls - Juniper Green profiled PP coated steel wall cladding panels with matching flashings & precast concrete panel base course.
- Windows and Doors - Black PP coated aluminium roller doors. Black painted timber fire exit doors. Black upvc windows.



Revision	Description	By	Chk
project			

Mr T Drummond  
 Proposed Egg Production Plant  
 Mains of Dhuloch  
 Kirkcolm  
 Stranraer

Unit B Elevations as Proposed

scale	size	date	drawn	checked
1/250	A1	OCT 2024	SB	MB

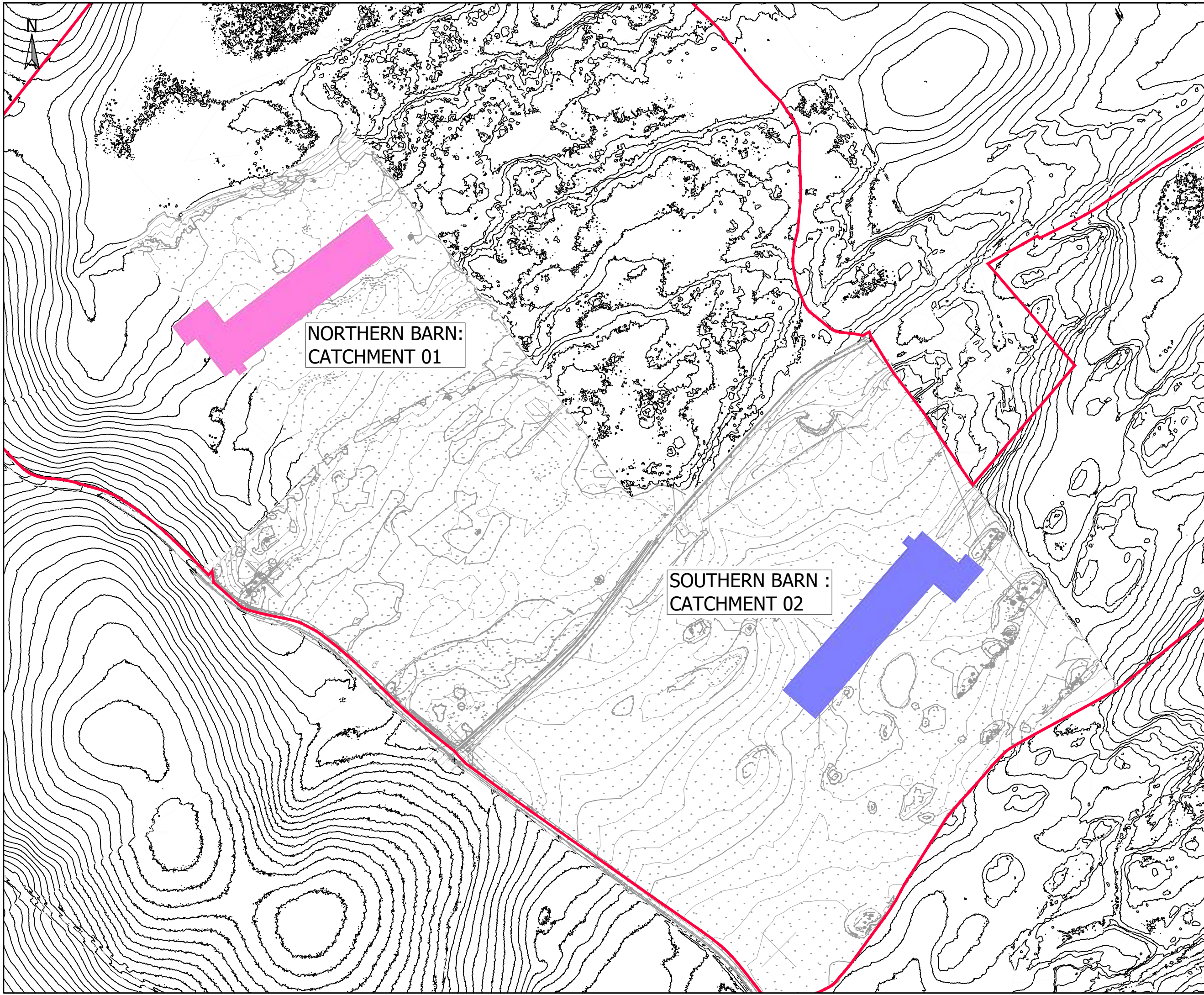
drawing status  
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project no.	drawing no.	revision
AT3887	P106	

## APPENDIX F: CATCHMENT AREAS PLAN



NORTHERN BARN:  
CATCHMENT 01

SOUTHERN BARN :  
CATCHMENT 02

- NOTES:
1. ALL DIMENSIONS IN METERS UNLESS STATED OTHERWISE.
  2. DO NOT SCALE FOR COSTING OR CONSTRUCTION PURPOSES.
  3. DRAWING BASED ON PLANNING SITE BASE.DWG AS RECEIVED.
  4. PROPOSED BARN'S TURNING CIRCLES / YARDS AREAS AND ACCESS TRACKS TO BE OF CRUSHED STONE AND THEREFORE CONSIDERED AS PERMEABLE.

LEGEND

	CATCHMENT 01 HARDSTANDING AREA: 0.778 HA
	CATCHMENT 02 HARDSTANDING AREA: 0.778 HA

DRAFT ISSUE

Rev	Description	Date	Drawn	Check	Appr	Scale
P02	UPDATED DUNG STORE LOCATION	17.12.2024	TK	LL	FH	
P01	PRELIMINARY FIRST ISSUE	30.10.2024	TK	LL	FH	

Issuing Office:  
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 Leeds, LS1 4ER, United Kingdom  
 Tel: +44 (0)113 278 7111  
 www.tetratetecheurope.com



Client:  
**AITKEN TURNBULL ARCHITECTS**

Project Name:  
**MAINS OF DHULOCH**

Sheet Title:  
**INDICATIVE IMPERMEABLE CATCHMENTS**

Model Reference: N/A

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A3	Status
784-B067657	TK	Oct '24	LL	Oct' 24	FH	Oct' 24	1:3,000	S0
Client Project Number	Originator	Function	Spatial	Form	Role	Number	Revision	
PRJ01	TTE	00	ZZ	DR	S	0000	P02	

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## APPENDIX G: GREENFIELD RUNOFF RATE CALCULATIONS



**Calculated by:** Tom Kearsley

**Site name:** Mains of Dhuloch

**Site location:** Mains of Dhuloch, DG9 0RF

## Site Details

**Latitude:** 54.94927° N

**Longitude:** 5.14172° W

**Reference:** 3790443442

**Date:** Sep 17 2024 17:09

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

**Runoff estimation approach:** IH124

## Site characteristics

**Total site area (ha):** 50

## Methodology

**Q<sub>BAR</sub> estimation method:** Calculate from SPR and SAAR

**SPR estimation method:** Calculate from SOIL type

## Notes

(1) Is  $Q_{BAR} < 2.0$  l/s/ha?

When  $Q_{BAR}$  is  $< 2.0$  l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

## Soil characteristics

	Default	Edited
<b>SOIL type:</b>	3	4
<b>HOST class:</b>	N/A	N/A
<b>SPR/SPRHOST:</b>	0.37	0.47

(2) Are flow rates  $< 5.0$  l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

## Hydrological characteristics

	Default	Edited
<b>SAAR (mm):</b>	1107	1122
<b>Hydrological region:</b>	2	2
<b>Growth curve factor 1 year:</b>	0.87	0.87
<b>Growth curve factor 30 years:</b>	1.95	1.95
<b>Growth curve factor 100 years:</b>	2.63	2.63
<b>Growth curve factor 200 years:</b>	2.99	2.99

(3) Is  $SPR/SPRHOST \leq 0.3$ ?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

**Greenfield runoff rates**

	Default	Edited

<b>Q<sub>BAR</sub> (l/s):</b>	245.56	419.23
<b>1 in 1 year (l/s):</b>	213.64	364.73
<b>1 in 30 years (l/s):</b>	478.84	817.5
<b>1 in 100 year (l/s):</b>	645.82	1102.57
<b>1 in 200 years (l/s):</b>	734.22	1253.49

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at [www.uksuds.com](http://www.uksuds.com). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at [www.uksuds.com/terms-and-conditions.htm](http://www.uksuds.com/terms-and-conditions.htm). The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

## APPENDIX H: QUICK STORAGE ESTIMATION CALCULATIONS

**Quick Storage Estimates 1 in 200 years plus 38% CC**

Catchment 01:

Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall

Return Period (years) 200

Version 2013 Point

Site GB 198789 566034 NW 98789 66034

Cv (Summer) 0.750

Cv (Winter) 0.840

Impervious Area (ha) 0.778

Maximum Allowable Discharge (l/s) 6.5

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 38

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 520 m<sup>3</sup> and 724 m<sup>3</sup>.  
These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

Catchment 02:

Quick Storage Estimate

Micro Drainage

Variables

FEH Rainfall

Return Period (years) 200

Version 2013 Point

Site GB 198789 566034 NW 98789 66034

Cv (Summer) 0.750

Cv (Winter) 0.840

Impervious Area (ha) 0.778

Maximum Allowable Discharge (l/s) 5.5

Infiltration Coefficient (m/hr) 0.00000

Safety Factor 2.0

Climate Change (%) 38

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

Quick Storage Estimate

Micro Drainage

Results

Global Variables require approximate storage of between 520 m<sup>3</sup> and 724 m<sup>3</sup>.  
These values are estimates only and should not be used for design purposes.

Analyse OK Cancel Help

Enter Area between 0.000 and 999.999

### Quick Storage Estimates 1 in 30 years

Catchment 01:

The screenshot shows the 'Quick Storage Estimates' software window. The 'Variables' tab is active, displaying the following settings:

Variable	Value
FEH Rainfall	FEH Rainfall
Return Period (years)	30
Version	2013
Port	Port
Site	GB 198789 566034 NW 98789 66034
Cv (Summer)	0.750
Cv (Winter)	0.840
Impervious Area (ha)	0.778
Maximum Allowable Discharge (l/s)	6.5
Infiltration Coefficient (m/hr)	0.00000
Safety Factor	2.0
Climate Change (%)	0

Buttons: Analyze, OK, Cancel, Help

Footer: Enter Climate Change between -100 and 500

The screenshot shows the 'Quick Storage Estimates' software window with the 'Results' tab active. The results are as follows:

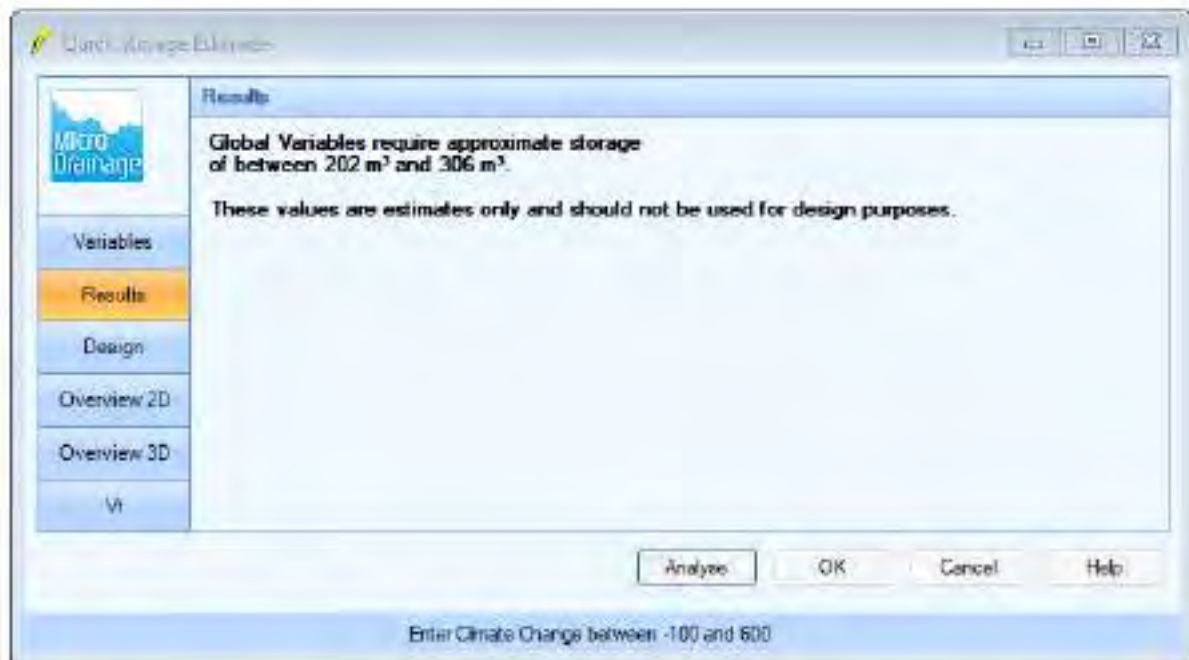
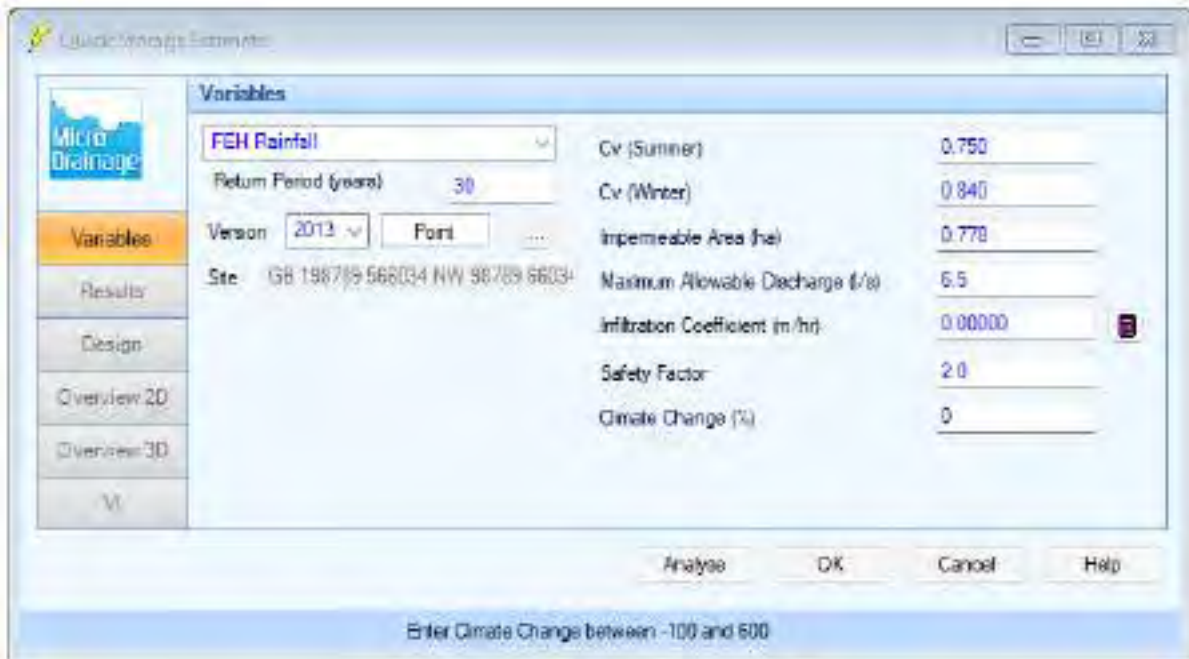
**Global Variables require approximate storage of between 202 m<sup>3</sup> and 306 m<sup>3</sup>.**

*These values are estimates only and should not be used for design purposes.*

Buttons: Analyze, OK, Cancel, Help

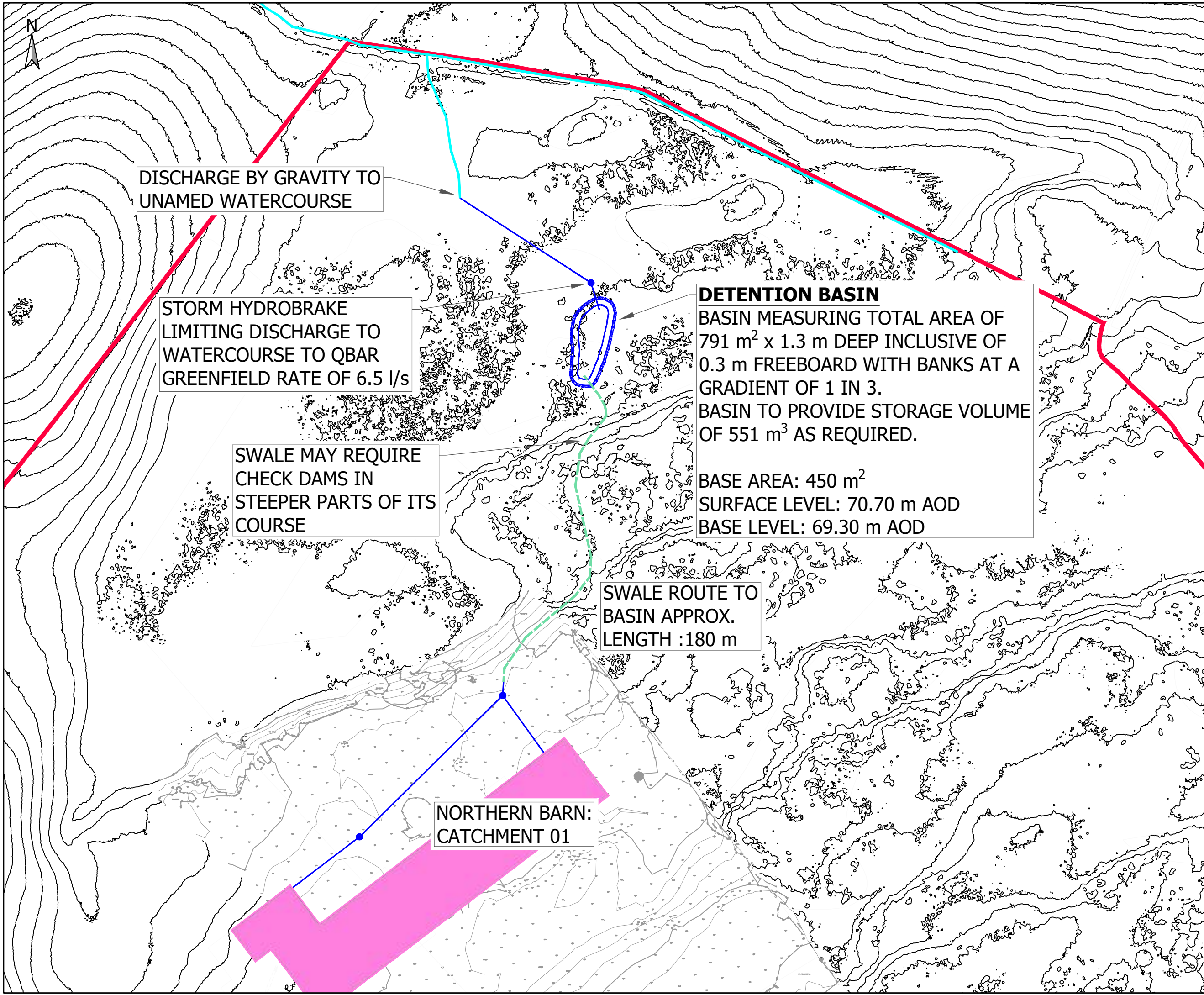
Footer: Enter Climate Change between -100 and 500

Catchment 02:



## APPENDIX I: SURFACE WATER DRAINAGE STRATEGY





DISCHARGE BY GRAVITY TO UNAMED WATERCOURSE

STORM HYDROBRAKE LIMITING DISCHARGE TO WATERCOURSE TO QBAR GREENFIELD RATE OF 6.5 l/s

SWALE MAY REQUIRE CHECK DAMS IN STEEPER PARTS OF ITS COURSE

SWALE ROUTE TO BASIN APPROX. LENGTH :180 m

NORTHERN BARN: CATCHMENT 01

**DETENTION BASIN**  
 BASIN MEASURING TOTAL AREA OF 791 m<sup>2</sup> x 1.3 m DEEP INCLUSIVE OF 0.3 m FREEBOARD WITH BANKS AT A GRADIENT OF 1 IN 3.  
 BASIN TO PROVIDE STORAGE VOLUME OF 551 m<sup>3</sup> AS REQUIRED.  
 BASE AREA: 450 m<sup>2</sup>  
 SURFACE LEVEL: 70.70 m AOD  
 BASE LEVEL: 69.30 m AOD

- NOTES:
1. ALL DIMENSIONS IN METERS UNLESS STATED OTHERWISE.
  2. DO NOT SCALE FOR COSTING OR CONSTRUCTION PURPOSES.
  3. DETAILED DESIGN WILL BE REQUIRED AT THE DETAILED DESIGN STAGE
  4. DRAWING BASED ON PROPOSED SITE PLAN, DWG PROPOSED SITE BASE AS RECEIVED IN OCTOBER 2024. DRAFT 0 BE UPDATED WITH LATEST DWG FILE WHEN RECEIVED.
  5. INFILTRATION TESTING IN ACCORDANCE WITH BRE365 MAY BE REQUIRED BY DUMFRIES AND GALLOWAY COUNCIL AT THE DETAILED DESIGN STAGE TO CONFIRM SITE SPECIFIC INFILTRATION RATES.
  6. SUDS DIMENSIONS AND LOCATIONS ARE INDICATIVE AND SUBJECT TO CHANGE. SURFACE WATER RUNOFF TO DISCHARGE INTO EXISTING WATERCOURSE AT EXISTING QBAR GREENFIELD RUNOFF RATE OF 6.5 l/s FOR THE NORTHERN BARN CATCHMENT DURING ALL EVENTS UP TO AND INCLUDING THE 1 IN 200 YEAR PLUS 38% CLIMATE CHANGE SCENARIO, SUBJECT TO AGREEMENT WITH DUMFRIES AND GALLOWAY COUNCIL.

**LEGEND**

- DETENTION BASIN
- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE SURFACE WATER SEWER MANHOLE
- PROPOSED SWALE
- EXISTING WATERCOURSE

**DRAFT ISSUE**

Rev	Description	Date	Drawn	Check	Appr	Scale
PO2	UPDATED DUNG STORE LOCATION	17.12.2024	TK	LL	FH	
PO1	PRELIMINARY FIRST ISSUE	20.11.2024	TK	LL	FH	

Issuing Office:  
**Tetra Tech Leeds**  
 3 Sovereign Square, Sovereign Street,  
 Leeds, LS1 4ER, United Kingdom  
 Tel: +44 (0)113 278 7111  
 www.tetrateteurope.com



Client:  
**AITKEN TURNBULL ARCHITECTS**

Project Name:  
**MAINS OF DHULOCH**

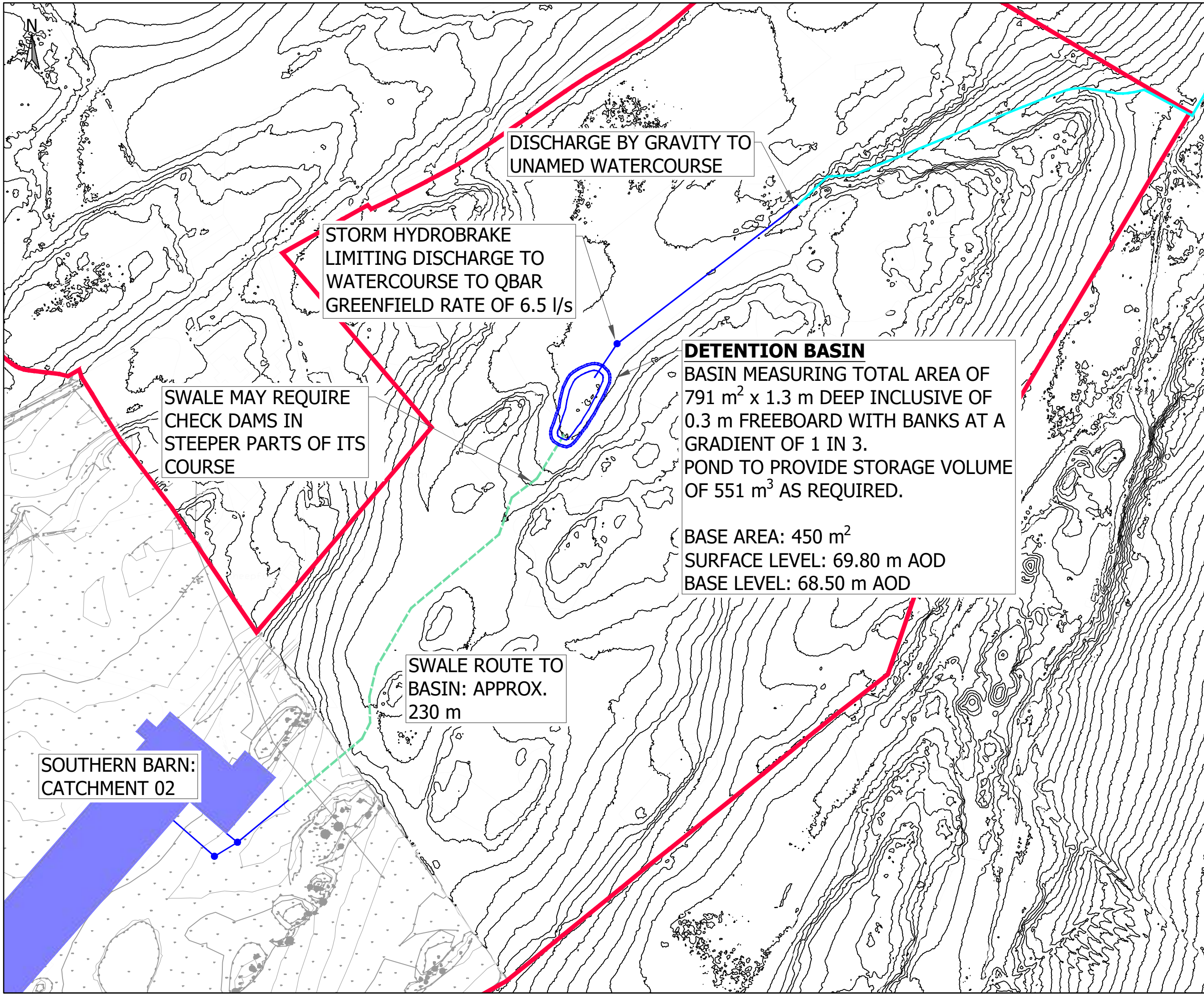
Sheet Title:  
**INDICATIVE SURFACE WATER LAYOUT - NORTHERN CATCHMENT (01)**

Model Reference: N/A

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale	Status
784-B067657	TK	Oct '24	LS	Oct' 24	FH	Oct' 24	1:1,750	S0

Client Project Number	Originator	Function	Spatial	Form	Role	Number	Revision						
PRJ01	-	TTE	-	00	-	ZZ	-	DR	-	S	-	0000	PO2

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DISCHARGE BY GRAVITY TO UNAMED WATERCOURSE

STORM HYDROBRAKE LIMITING DISCHARGE TO WATERCOURSE TO QBAR GREENFIELD RATE OF 6.5 l/s

SWALE MAY REQUIRE CHECK DAMS IN STEEPER PARTS OF ITS COURSE

**DETENTION BASIN**  
 BASIN MEASURING TOTAL AREA OF 791 m<sup>2</sup> x 1.3 m DEEP INCLUSIVE OF 0.3 m FREEBOARD WITH BANKS AT A GRADIENT OF 1 IN 3.  
 POND TO PROVIDE STORAGE VOLUME OF 551 m<sup>3</sup> AS REQUIRED.

BASE AREA: 450 m<sup>2</sup>  
 SURFACE LEVEL: 69.80 m AOD  
 BASE LEVEL: 68.50 m AOD

SWALE ROUTE TO BASIN: APPROX. 230 m

SOUTHERN BARN: CATCHMENT 02

- NOTES:
1. ALL DIMENSIONS IN METERS UNLESS STATED OTHERWISE.
  2. DO NOT SCALE FOR COSTING OR CONSTRUCTION PURPOSES.
  3. DETAILED DESIGN WILL BE REQUIRED AT THE DETAILED DESIGN STAGE
  4. DRAWING BASED ON PLANNING SITE BASE.DWG AS RECEIVED IN NOVEMBER 2024.
  5. INFILTRATION TESTING IN ACCORDANCE WITH BRE365 MAY BE REQUIRED BY DUMFRIES AND GALLOWAY COUNCIL AT THE DETAILED DESIGN STAGE TO CONFIRM SITE SPECIFIC INFILTRATION RATES.
  6. SURFACE WATER RUNOFF TO DISCHARGE INTO EXISTING WATERCOURSE AT EXISTING QBAR GREENFIELD RUNOFF RATE OF 6.5 l/s FOR THE SOUTHERN BARN CATCHMENT DURING ALL EVENTS UP TO AND INCLUDING THE 1 IN 200 YEAR PLUS 38% CLIMATE CHANGE SCENARIO, AS AGREED WITH DUMFRIES AND GALLOWAY COUNCIL.

**LEGEND**

- DETENTION BASIN
- PROPOSED PRIVATE SURFACE WATER SEWER
- PROPOSED PRIVATE SURFACE WATER SEWER MANHOLE
- PROPOSED SWALE
- EXISTING WATERCOURSE

**DRAFT ISSUE**

Rev	Description	Date	Drawn By	Checked By	Approved By	Scale	Sheet	Total
PO2	UPDATED DUNG STORE LOCATION	17.12.2024	TK	LL	FH			
PO1	PRELIMINARY FIRST ISSUE	20.11.2024	TK	LL	FH			

Issuing Office:  
**Tetra Tech Leeds**  
 3 Sovereign Square, Sovereign Street,  
 Leeds, LS1 4ER, United Kingdom  
 Tel: +44 (0)113 278 7111  
 www.tetrateteurope.com



Client:  
**AITKEN TURNBULL ARCHITECTS**

Project Name:  
**MAINS OF DHULOCH**

Sheet Title:  
**INDICATIVE SURFACE WATER LAYOUT - SOUTHERN CATCHMENT (02)**


Model Reference: N/A

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale	Sheet	Total
784-B067657	TK	Oct '24	LS	Oct' 24	FH	Oct' 24	1:1,750		50

Client Project Number	Originator	Function	Spatial	Form	Role	Number	Revision
PRJ01	TTE	00	ZZ	DR	S	0000	PO2

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## APPENDIX J: MICRO DRAINAGE SOURCE CONTROL CALCULATIONS


Tetra Tech Group Limited		Page 1
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 01	
Date 17/12/2024 File Catchment 01.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Half Drain Time : 731 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	68.843	0.443	0.0	6.5	6.5	222.4	O K
30 min Summer	68.991	0.591	0.0	6.5	6.5	307.3	O K
60 min Summer	69.131	0.731	0.0	6.5	6.5	393.0	O K
120 min Summer	69.206	0.806	0.0	6.5	6.5	441.1	O K
180 min Summer	69.239	0.839	0.0	6.5	6.5	462.8	O K
240 min Summer	69.256	0.856	0.0	6.5	6.5	473.9	O K
360 min Summer	69.268	0.868	0.0	6.5	6.5	481.6	O K
480 min Summer	69.265	0.865	0.0	6.5	6.5	479.7	O K
600 min Summer	69.255	0.855	0.0	6.5	6.5	473.0	O K
720 min Summer	69.244	0.844	0.0	6.5	6.5	465.6	O K
960 min Summer	69.223	0.823	0.0	6.5	6.5	452.3	O K
1440 min Summer	69.187	0.787	0.0	6.5	6.5	428.6	O K
2160 min Summer	69.138	0.738	0.0	6.5	6.5	397.2	O K
2880 min Summer	69.091	0.691	0.0	6.5	6.5	368.0	O K
4320 min Summer	68.989	0.589	0.0	6.5	6.5	305.9	O K
5760 min Summer	68.899	0.499	0.0	6.5	6.5	253.9	O K
7200 min Summer	68.826	0.426	0.0	6.5	6.5	212.7	O K
8640 min Summer	68.764	0.364	0.0	6.5	6.5	179.3	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	156.962	0.0	223.7	26
30 min Summer	108.843	0.0	310.6	41
60 min Summer	70.419	0.0	408.4	70
120 min Summer	40.816	0.0	473.5	128
180 min Summer	29.455	0.0	512.6	188
240 min Summer	23.330	0.0	541.3	246
360 min Summer	16.790	0.0	584.3	364
480 min Summer	13.309	0.0	617.4	482
600 min Summer	11.126	0.0	645.0	588
720 min Summer	9.620	0.0	669.0	632
960 min Summer	7.666	0.0	710.1	760
1440 min Summer	5.598	0.0	775.0	1020
2160 min Summer	4.125	0.0	865.4	1440
2880 min Summer	3.343	0.0	935.0	1852
4320 min Summer	2.512	0.0	1053.0	2644
5760 min Summer	2.070	0.0	1159.9	3400
7200 min Summer	1.794	0.0	1256.4	4112
8640 min Summer	1.604	0.0	1347.4	4840

Tetra Tech Group Limited		Page 2
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 01	
Date 17/12/2024 File Catchment 01.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
10080 min Summer	68.714	0.314	0.0	6.5	6.5	153.0	O K
15 min Winter	68.892	0.492	0.0	6.5	6.5	249.8	O K
30 min Winter	69.055	0.655	0.0	6.5	6.5	345.6	O K
60 min Winter	69.207	0.807	0.0	6.5	6.5	441.8	O K
120 min Winter	69.292	0.892	0.0	6.5	6.5	497.5	O K
180 min Winter	69.330	0.930	0.0	6.5	6.5	523.5	O K
240 min Winter	69.351	0.951	0.0	6.5	6.5	537.7	O K
360 min Winter	69.368	0.968	0.0	6.5	6.5	549.8	O K
480 min Winter	69.370	0.970	0.0	6.5	6.5	551.1	O K
600 min Winter	69.364	0.964	0.0	6.5	6.5	546.9	O K
720 min Winter	69.353	0.953	0.0	6.5	6.5	539.6	O K
960 min Winter	69.326	0.926	0.0	6.5	6.5	520.7	O K
1440 min Winter	69.280	0.880	0.0	6.5	6.5	490.1	O K
2160 min Winter	69.210	0.810	0.0	6.5	6.5	443.2	O K
2880 min Winter	69.138	0.738	0.0	6.5	6.5	397.1	O K
4320 min Winter	68.967	0.567	0.0	6.5	6.5	293.4	O K
5760 min Winter	68.821	0.421	0.0	6.5	6.5	210.0	O K
7200 min Winter	68.709	0.309	0.0	6.5	6.5	150.2	O K
8640 min Winter	68.632	0.232	0.0	6.4	6.4	110.4	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.465	0.0	1433.9	5544
15 min Winter	156.962	0.0	250.8	26
30 min Winter	108.843	0.0	347.4	40
60 min Winter	70.419	0.0	457.5	70
120 min Winter	40.816	0.0	530.4	126
180 min Winter	29.455	0.0	574.2	184
240 min Winter	23.330	0.0	606.3	242
360 min Winter	16.790	0.0	654.3	356
480 min Winter	13.309	0.0	691.2	470
600 min Winter	11.126	0.0	722.0	580
720 min Winter	9.620	0.0	748.7	686
960 min Winter	7.666	0.0	794.3	800
1440 min Winter	5.598	0.0	864.4	1096
2160 min Winter	4.125	0.0	969.4	1560
2880 min Winter	3.343	0.0	1047.2	2020
4320 min Winter	2.512	0.0	1179.8	2820
5760 min Winter	2.070	0.0	1299.2	3528
7200 min Winter	1.794	0.0	1407.3	4192
8640 min Winter	1.604	0.0	1509.4	4848

Tetra Tech Group Limited		Page 3
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 01	
Date 17/12/2024 File Catchment 01.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
10080 min Winter	68.581	0.181	0.0	6.2	6.2	85.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Winter	1.465	0.0	1606.6	5456

Tetra Tech Group Limited		Page 4
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 01	
Date 17/12/2024 File Catchment 01.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	


Rainfall Details

Rainfall Model	FEH
Return Period (years)	200
FEH Rainfall Version	2013
Site Location	GB 198789 566034 NW 98789 66034
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+38

Time Area Diagram

Total Area (ha) 0.779

<b>Time (mins)</b>	<b>Area</b>	<b>Time (mins)</b>	<b>Area</b>	<b>Time (mins)</b>	<b>Area</b>
<b>From: To: (ha)</b>		<b>From: To: (ha)</b>		<b>From: To: (ha)</b>	
0	4 0.260	4	8 0.259	8	12 0.259

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3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 01	
Date 17/12/2024 File Catchment 01.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Model Details

Storage is Online Cover Level (m) 69.700

Infiltration Basin Structure

Invert Level (m) 68.400 Safety Factor 2.0  
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00  
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )
0.000	450.0	1.000	703.9	1.300	791.1

Hydro-Brake® Optimum Outflow Control


Unit Reference MD-SHE-0119-6500-1000-6500  
 Design Head (m) 1.000  
 Design Flow (l/s) 6.5  
 Flush-Flo™ Calculated  
 Objective Minimise upstream storage  
 Application Surface  
 Sump Available Yes  
 Diameter (mm) 119  
 Invert Level (m) 68.400  
 Minimum Outlet Pipe Diameter (mm) 150  
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	6.5	Kick-Flo®	0.649	5.3
Flush-Flo™	0.296	6.5	Mean Flow over Head Range	-	5.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	1.200	7.1	3.000	10.9	7.000	16.3
0.200	6.3	1.400	7.6	3.500	11.7	7.500	16.9
0.300	6.5	1.600	8.1	4.000	12.5	8.000	17.4
0.400	6.4	1.800	8.6	4.500	13.2	8.500	17.9
0.500	6.2	2.000	9.0	5.000	13.9	9.000	18.4
0.600	5.8	2.200	9.4	5.500	14.5	9.500	18.9
0.800	5.9	2.400	9.8	6.000	15.2		
1.000	6.5	2.600	10.2	6.500	15.7		




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3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 02	
Date 17/12/2024 File Catchment 02.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Half Drain Time : 731 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	68.843	0.443	0.0	6.5	6.5	222.4	O K
30 min Summer	68.991	0.591	0.0	6.5	6.5	307.3	O K
60 min Summer	69.131	0.731	0.0	6.5	6.5	393.0	O K
120 min Summer	69.206	0.806	0.0	6.5	6.5	441.1	O K
180 min Summer	69.239	0.839	0.0	6.5	6.5	462.8	O K
240 min Summer	69.256	0.856	0.0	6.5	6.5	473.9	O K
360 min Summer	69.268	0.868	0.0	6.5	6.5	481.6	O K
480 min Summer	69.265	0.865	0.0	6.5	6.5	479.7	O K
600 min Summer	69.255	0.855	0.0	6.5	6.5	473.0	O K
720 min Summer	69.244	0.844	0.0	6.5	6.5	465.6	O K
960 min Summer	69.223	0.823	0.0	6.5	6.5	452.3	O K
1440 min Summer	69.187	0.787	0.0	6.5	6.5	428.6	O K
2160 min Summer	69.138	0.738	0.0	6.5	6.5	397.2	O K
2880 min Summer	69.091	0.691	0.0	6.5	6.5	368.0	O K
4320 min Summer	68.989	0.589	0.0	6.5	6.5	305.9	O K
5760 min Summer	68.899	0.499	0.0	6.5	6.5	253.9	O K
7200 min Summer	68.826	0.426	0.0	6.5	6.5	212.7	O K
8640 min Summer	68.764	0.364	0.0	6.5	6.5	179.3	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	156.962	0.0	223.7	26
30 min Summer	108.843	0.0	310.6	41
60 min Summer	70.419	0.0	408.4	70
120 min Summer	40.816	0.0	473.5	128
180 min Summer	29.455	0.0	512.6	188
240 min Summer	23.330	0.0	541.3	246
360 min Summer	16.790	0.0	584.3	364
480 min Summer	13.309	0.0	617.4	482
600 min Summer	11.126	0.0	645.0	588
720 min Summer	9.620	0.0	669.0	632
960 min Summer	7.666	0.0	710.1	760
1440 min Summer	5.598	0.0	775.0	1020
2160 min Summer	4.125	0.0	865.4	1440
2880 min Summer	3.343	0.0	935.0	1852
4320 min Summer	2.512	0.0	1053.0	2644
5760 min Summer	2.070	0.0	1159.9	3400
7200 min Summer	1.794	0.0	1256.4	4112
8640 min Summer	1.604	0.0	1347.4	4840

Tetra Tech Group Limited		Page 2
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 02	
Date 17/12/2024 File Catchment 02.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
10080 min Summer	68.714	0.314	0.0	6.5	6.5	153.0	O K
15 min Winter	68.892	0.492	0.0	6.5	6.5	249.8	O K
30 min Winter	69.055	0.655	0.0	6.5	6.5	345.6	O K
60 min Winter	69.207	0.807	0.0	6.5	6.5	441.8	O K
120 min Winter	69.292	0.892	0.0	6.5	6.5	497.5	O K
180 min Winter	69.330	0.930	0.0	6.5	6.5	523.5	O K
240 min Winter	69.351	0.951	0.0	6.5	6.5	537.7	O K
360 min Winter	69.368	0.968	0.0	6.5	6.5	549.8	O K
480 min Winter	69.370	0.970	0.0	6.5	6.5	551.1	O K
600 min Winter	69.364	0.964	0.0	6.5	6.5	546.9	O K
720 min Winter	69.353	0.953	0.0	6.5	6.5	539.6	O K
960 min Winter	69.326	0.926	0.0	6.5	6.5	520.7	O K
1440 min Winter	69.280	0.880	0.0	6.5	6.5	490.1	O K
2160 min Winter	69.210	0.810	0.0	6.5	6.5	443.2	O K
2880 min Winter	69.138	0.738	0.0	6.5	6.5	397.1	O K
4320 min Winter	68.967	0.567	0.0	6.5	6.5	293.4	O K
5760 min Winter	68.821	0.421	0.0	6.5	6.5	210.0	O K
7200 min Winter	68.709	0.309	0.0	6.5	6.5	150.2	O K
8640 min Winter	68.632	0.232	0.0	6.4	6.4	110.4	O K


Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Summer	1.465	0.0	1433.9	5544
15 min Winter	156.962	0.0	250.8	26
30 min Winter	108.843	0.0	347.4	40
60 min Winter	70.419	0.0	457.5	70
120 min Winter	40.816	0.0	530.4	126
180 min Winter	29.455	0.0	574.2	184
240 min Winter	23.330	0.0	606.3	242
360 min Winter	16.790	0.0	654.3	356
480 min Winter	13.309	0.0	691.2	470
600 min Winter	11.126	0.0	722.0	580
720 min Winter	9.620	0.0	748.7	686
960 min Winter	7.666	0.0	794.3	800
1440 min Winter	5.598	0.0	864.4	1096
2160 min Winter	4.125	0.0	969.4	1560
2880 min Winter	3.343	0.0	1047.2	2020
4320 min Winter	2.512	0.0	1179.8	2820
5760 min Winter	2.070	0.0	1299.2	3528
7200 min Winter	1.794	0.0	1407.3	4192
8640 min Winter	1.604	0.0	1509.4	4848

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3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 02	
Date 17/12/2024 File Catchment 02.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Summary of Results for 200 year Return Period (+38%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (1/s)	Max Control (1/s)	Max Σ Outflow (1/s)	Max Volume (m³)	Status
10080 min Winter	68.581	0.181	0.0	6.2	6.2	85.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
10080 min Winter	1.465	0.0	1606.6	5456

Tetra Tech Group Limited		Page 4
3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 02	
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Innovyze	Source Control 2020.1	


Rainfall Details

Rainfall Model	FEH
Return Period (years)	200
FEH Rainfall Version	2013
Site Location	GB 198789 566034 NW 98789 66034
Data Type	Point
Summer Storms	Yes
Winter Storms	Yes
Cv (Summer)	0.750
Cv (Winter)	0.840
Shortest Storm (mins)	15
Longest Storm (mins)	10080
Climate Change %	+38

Time Area Diagram

Total Area (ha) 0.779

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From:	To: (ha)	From:	To: (ha)	From:	To: (ha)
0	4 0.260	4	8 0.259	8	12 0.259

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3 Sovereign Square Sovereign Street Leeds LS1 4ER	Mains of Dhuloch Catchment 02	
Date 17/12/2024 File Catchment 02.SRCX	Designed by TK Checked by LS	
Innovyze	Source Control 2020.1	

Model Details

Storage is Online Cover Level (m) 69.700

Infiltration Basin Structure

Invert Level (m) 68.400 Safety Factor 2.0  
 Infiltration Coefficient Base (m/hr) 0.00000 Porosity 1.00  
 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )	Depth (m)	Area (m <sup>2</sup> )
0.000	450.0	1.000	703.9	1.300	791.1

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SHE-0119-6500-1000-6500  
 Design Head (m) 1.000  
 Design Flow (l/s) 6.5  
 Flush-Flo™ Calculated  
 Objective Minimise upstream storage  
 Application Surface  
 Sump Available Yes  
 Diameter (mm) 119  
 Invert Level (m) 68.400  
 Minimum Outlet Pipe Diameter (mm) 150  
 Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	6.5	Kick-Flo®	0.649	5.3
Flush-Flo™	0.296	6.5	Mean Flow over Head Range	-	5.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	4.2	1.200	7.1	3.000	10.9	7.000	16.3
0.200	6.3	1.400	7.6	3.500	11.7	7.500	16.9
0.300	6.5	1.600	8.1	4.000	12.5	8.000	17.4
0.400	6.4	1.800	8.6	4.500	13.2	8.500	17.9
0.500	6.2	2.000	9.0	5.000	13.9	9.000	18.4
0.600	5.8	2.200	9.4	5.500	14.5	9.500	18.9
0.800	5.9	2.400	9.8	6.000	15.2		
1.000	6.5	2.600	10.2	6.500	15.7		

## APPENDIX K: CORRESPONDENCE WITH DGC

**From:** [Communities Flooding](#)  
**To:** [Kearsey, Tom](#)  
**Cc:** [Stewart, Liam](#); [Langdon, Elizabeth](#)  
**Subject:** RE: EXTERNAL: RE: DGC surface water drainage planning inbox  
**Date:** 16 December 2024 11:43:55  
**Attachments:** [image001.jpg](#)  
[image002.png](#)  
[image003.png](#)  
[image004.png](#)  
[image005.jpg](#)

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OFFICIAL

Good morning Tom

Thank you for sending the plans. The FRMT would have no objection to these proposals if formally consulted on a future planning application.

Kind regards,

Katia Rajovic (on behalf of)

**Flood Risk Management Team**

**Economy and Infrastructure**

Transport and Infrastructure

Dumfries and Galloway Council

Cargen Tower, Garroch Business Centre,  
Cargenbridge, Dumfries, DG2 8PN

**Tel:** 030 33 33 3000

**Email:** [communitiesflooding@dumgal.gov.uk](mailto:communitiesflooding@dumgal.gov.uk)

**Web:** [www.dumgal.gov.uk/flooding](http://www.dumgal.gov.uk/flooding)



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OFFICIAL

**From:** Kearsey, Tom <TOM.KEARSEY@tetrattech.com>

**Sent:** Monday, December 9, 2024 4:44 PM

**To:** Communities Flooding <CommunitiesFlooding@dumgal.gov.uk>

**Cc:** Stewart, Liam <LIAM.STEWART@tetrattech.com>; Langdon, Elizabeth <ELIZABETH.LANGDON@tetrattech.com>

**Subject:** RE: EXTERNAL: RE: DGC surface water drainage planning inbox

OFFICIAL

Good evening, Katia.

Thank you for your swift response to my query.

Further to my initial message, please find attached for your consideration, our proposed hardstanding catchment plans, and catchments' surface water layout plans for the site at Mains of Dhuloch.

Kind regards,  
Tom.

**Tom Kearsey, MSc, BSc** | Flood Risk Consultant

Pronouns: he, him, his

Direct **+44 020 7250 7545**

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**From:** Communities Flooding <[CommunitiesFlooding@dumgal.gov.uk](mailto:CommunitiesFlooding@dumgal.gov.uk)>

**Sent:** 09 December 2024 16:00

**To:** Kearsey, Tom <[TOM.KEARSEY@tetratech.com](mailto:TOM.KEARSEY@tetratech.com)>

**Subject:** RE: EXTERNAL: RE: DGC surface water drainage planning inbox

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Good afternoon Tom,

Thanks for your email. The proposal seems acceptable in principle, but for completeness, would you be able to send us a plan showing the location of the barns / detention basins etc, please?



Regards,

Katia Rajovic (on behalf of)

**Flood Risk Management Team**

**Economy and Infrastructure**

Transport and Infrastructure

Dumfries and Galloway Council

Cargen Tower, Garroch Business Centre,

Cargenbridge, Dumfries, DG2 8PN

**Tel:** 030 33 33 3000

**Email:** [communitiesflooding@dumgal.gov.uk](mailto:communitiesflooding@dumgal.gov.uk)

**Web:** [www.dumgal.gov.uk/flooding](http://www.dumgal.gov.uk/flooding)



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**From:** Kearsley, Tom <[TOM.KEARSEY@tetrattech.com](mailto:TOM.KEARSEY@tetrattech.com)>

**Sent:** Monday, December 9, 2024 12:08 PM

**To:** Communities Flooding <[CommunitiesFlooding@dumgal.gov.uk](mailto:CommunitiesFlooding@dumgal.gov.uk)>

**Subject:** EXTERNAL: RE: DGC surface water drainage planning inbox

OFFICIAL

Good afternoon, Euan.

Thanks for getting in touch. Please see the attached enquiry message.

Kind regards,

Tom.

**Tom Kearsley, MSc, BSc** | Flood Risk Consultant

Pronouns: he, him, his

Direct **+44 020 7250 7545**

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**From:** Communities Flooding <[CommunitiesFlooding@dumgal.gov.uk](mailto:CommunitiesFlooding@dumgal.gov.uk)>

**Sent:** 06 December 2024 12:01

**To:** Kearsy, Tom <[TOM.KEARSEY@tetrattech.com](mailto:TOM.KEARSEY@tetrattech.com)>

**Subject:** DGC surface water drainage planning inbox

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OFFICIAL

Good afternoon Tom

I have been forwarded your request for a Contact Email address to allow you to communicate on works.

If you use this shared email group – a member of the team will respond when able.

Kind regards.

Euan

### **Flood Risk Management Team**

#### **Economy and Infrastructure**

Transport and Infrastructure

Dumfries and Galloway Council

Cargen Tower, Garroch Business Centre,  
Cargenbridge, Dumfries, DG2 8PN

**Tel:** 030 33 33 3000

**Email:** [communitiesflooding@dumgal.gov.uk](mailto:communitiesflooding@dumgal.gov.uk)

**Web:** [www.dumgal.gov.uk/flooding](http://www.dumgal.gov.uk/flooding)

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