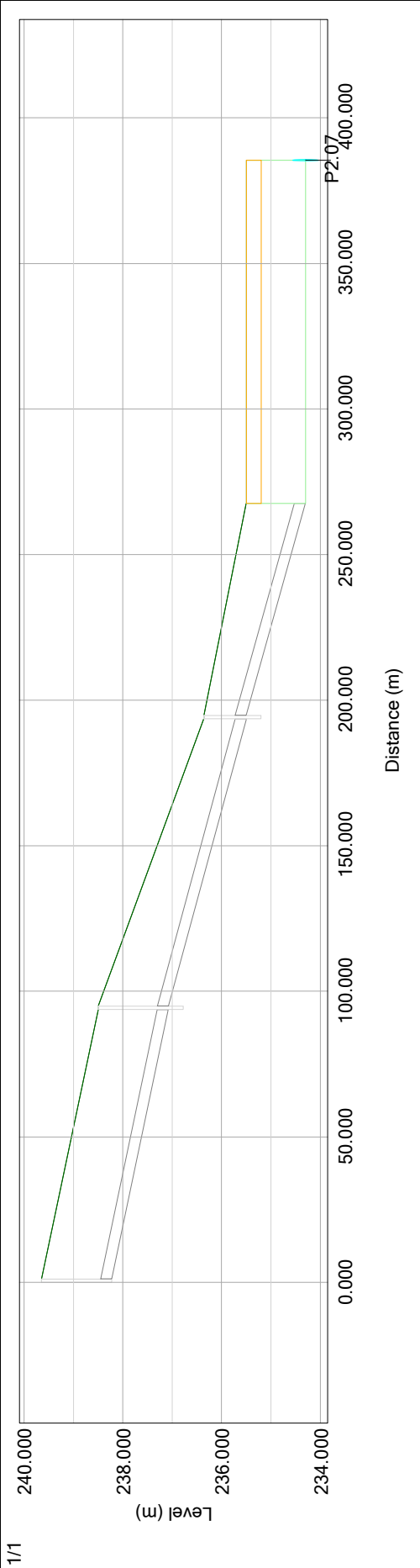
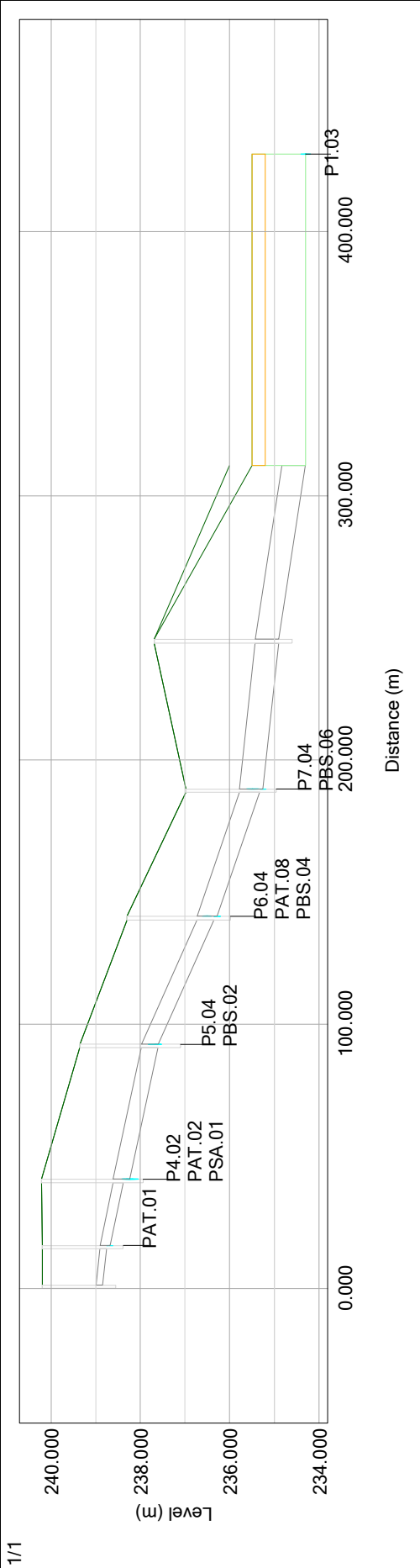


Page 1	
Project:	Company Address:
Modified date 26/03/2024 File C&S_Energy_BESS_P10 - Option 1 - Revelled - Rep...	Designed by LukeFalgate Checked by InfoDrainage 2025.4
Profile - Road 1	Horizontal Scale 1:2106, Vertical Scale 1:129



Junction	1.01	1.02	1.03
Type	Manhole	Manhole	Manhole
CL (m)	239.651	238.502	236.359
IL (m)	238.226	236.777	235.200
Connection	P1.01	P1.02	P1.03
Type	Pipe	Pipe	Pipe
Curved	No	No	No
Length (m)	92.538	98.599	72.837
Diam (mm)	225	225	225
Height (mm)			
U/S IL (m)	238.226	237.077	235.500
D/S IL (m)	237.077	235.500	234.300
C. Splay (mm)			
SWC			
Type			Pond
EL (m)			Pond
BL (m)			235.500
			234.300

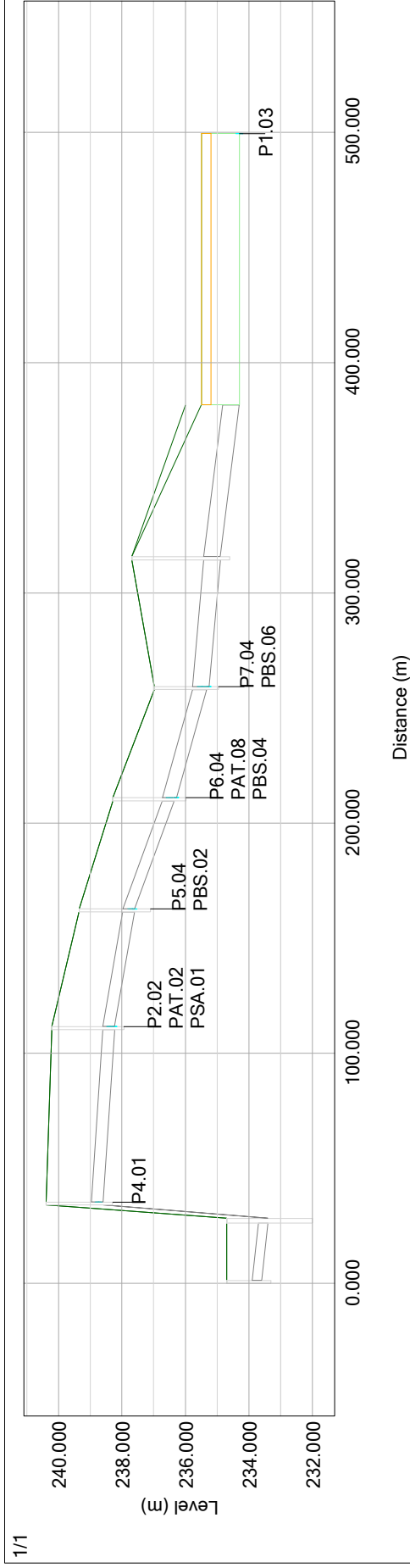
Project:	Company Address:	Page 2
Modified date 26/03/2024 File C&S_Energy_BESS_P10 - Option 1 - Revelvelled - Rep...	Designed by LukeFalgate Checked by InfoDrainage 2025.4	
Profile - Road 2	Horizontal Scale 1:2320, Vertical Scale 1:142	



Junction	2.01	2.03	2.04	2.05	2.06	2.07
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole
CL (m)	240.200	240.220	239.360	238.300	236.980	237.691
IL (m)	238.550	237.935	237.100	235.980	234.955	234.600
Connection	P2.01	P2.03	P2.04	P2.05	P2.06	P2.07
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Curved	No	No	No	No	No	No
Length (m)	13.802	49.665	46.948	46.950	55.127	65.773
Diam (mm)	150	375	375	450	525	525
Height (mm)						
U/S IL (m)	238.850	238.235	237.600	236.280	235.255	234.900
D/S IL (m)	238.760	237.600	236.355	235.330	234.900	234.300
C. Splay (mm)						
SWC						
Type						Pond
EL (m)						Pond
BL (m)						235.500
						234.300

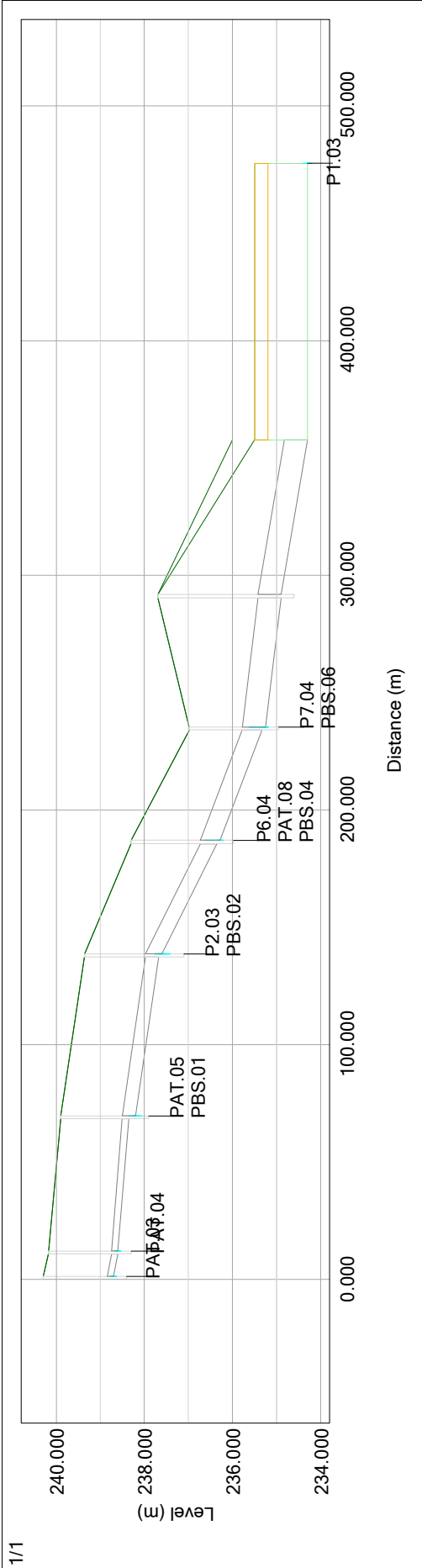


Project: Company Address:		Page 3 I DRN
Modified date 26/03/2024 File C&S_Energy_BESS_p10 - Option 1 - Relevellved - Rep...	Designed by LukeFalgate Checked by	
InfoDrainage 2025.4 Horizontal Scale 1:2685, Vertical Scale 1:202		
Profile - GIS		



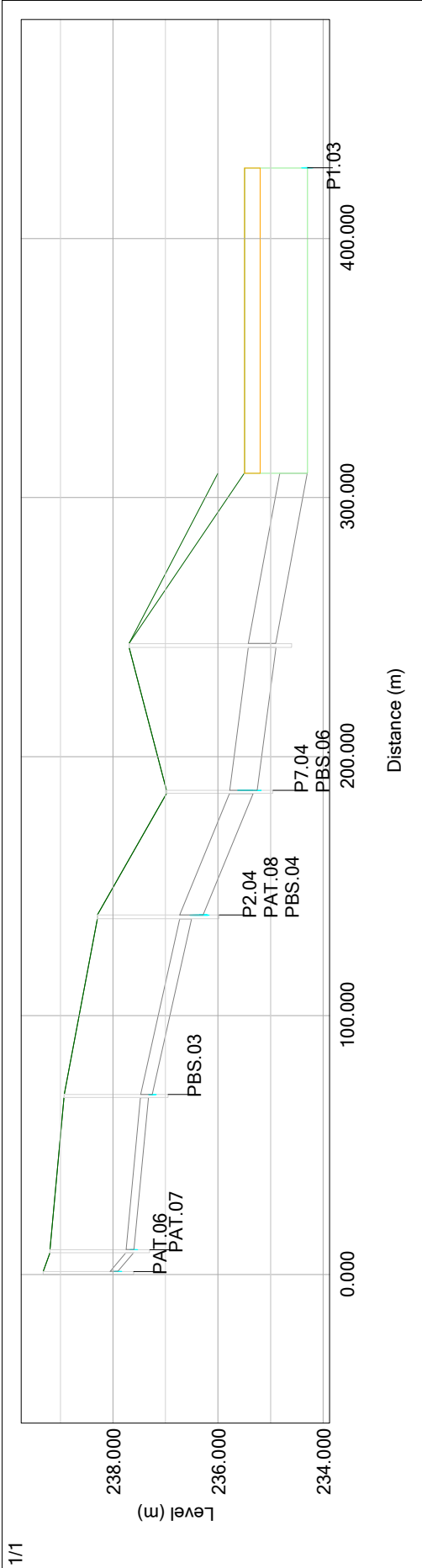
Junction		3.01	4.02	2.03	2.04	2.05	2.06	2.07
Type	Manhole	Manhole		Manhole	Manhole	Manhole	Manhole	Manhole
CL (m)	234.700	240.400		239.360	238.300	236.980	237.691	
IL (m)	233.300	238.300		237.100	235.980	234.955	234.600	
Connection		P3.01	P4.02	P2.03	P2.04	P2.05	P2.06	P2.07
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Curved	No	No	No	No	No	No	No	No
Length (m)	24.882	74.992	49.665	46.948	46.950	55.127	65.773	
Diam (mm)	300	375	375	375	450	525	525	
Height (mm)								
U/S IL (m)	233.600	238.600	238.235	237.600	236.280	235.255	234.900	
D/S IL (m)	233.400	238.235	237.600	236.355	235.330	234.900	234.300	
C. Splay (mm)								
SWC								Pond
Type								Pond
EL (m)								235.500
BL (m)								234.300

Project:	Company Address:	Page 5
Modified date 26/03/2024 File C&S_Energy_BEES_P10 - Option 1 - Revelled - Rep...	Designed by LukeFalgate Checked by InfoDrainage 2025.4	
Profile - Road 4	Horizontal Scale 1:2612, Vertical Scale 1:144	



Junction	5.01	5.03	2.04	2.05	2.06	2.07	
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole	
CL (m)	240.300	239.900	239.360	238.300	236.980	237.691	
IL (m)	238.400	237.900	237.100	235.980	234.955	234.600	
Connection	P5.02	P5.03	P2.04	P2.05	P2.06	P2.07	
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe	
Curved	No	No	No	No	No	No	
Length (m)	9.595	56.429	46.948	46.950	55.127	65.773	
Diam (mm)	150	150	375	450	525	525	
Height (mm)							
U/S IL (m)	238.700	238.600	237.600	236.280	235.255	234.900	
D/S IL (m)	238.600	238.350	236.675	236.355	235.330	234.900	
C. Splay (mm)							
SWC							
Type							Pond
EL (m)							Pond
BL (m)							235.500
							234.300

Project:		Company Address:	Page 6
Modified date 26/03/2024 File C&S_Energy_BESS_P10 - Option 1 - Revelled - Rep...		Designed by LukeFalgate Checked by InfoDrainage 2025.4	
Profile - Road 5		Horizontal Scale 1:2366, Vertical Scale 1:121	



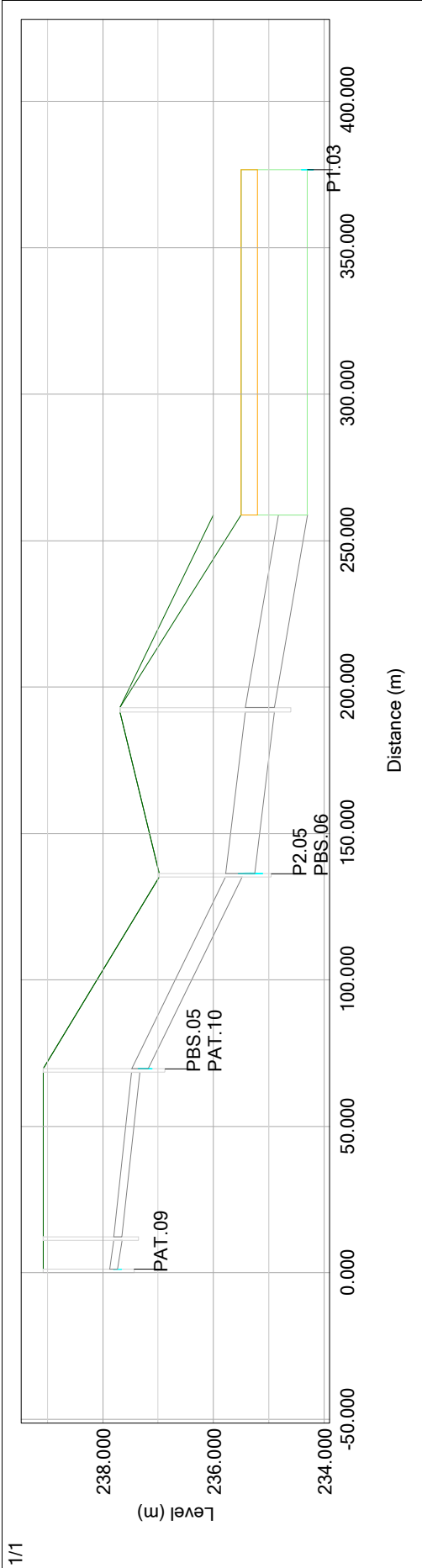
Junction		6.01	6.03	2.05	2.06	2.07
Type	Manhole	Manhole	Manhole	Manhole	Manhole	Manhole
CL (m)	239.330	238.930	238.300	236.980	237.691	
IL (m)	237.605	236.950	235.980	234.955	234.600	
Connection		P6.02	P6.03	P6.04	P2.05	P2.06
Type	Pipe	Pipe	Pipe	Pipe	Pipe	Pipe
Curved	No	No	No	No	No	No
Length (m)	7.216	58.739	67.748	46.950	55.127	65.773
Diam (mm)	150	150	225	450	525	525
Height (mm)						
U/S IL (m)	237.905	237.600	237.250	236.280	235.255	234.900
D/S IL (m)	237.600	237.325	236.505	235.330	234.900	234.300
C. Splay (mm)						
SWC						
Type						Pond
EL (m)						Pond
BL (m)						235.500
						234.300

JBA Consulting							Page 1
The Old School House St. Joseph's Street Tadcaster LS24 9HA							
Date 04/05/2024 15:38				Designed by willdorman			
File				Checked by			
Micro Drainage				Source Control 2020.1			
Summary of Results for 100 year Return Period (+40%)							
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Overflow (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	99.414	1.614	90.0	0.0	90.0	24.2	O K
30 min Summer	99.445	1.645	90.0	0.0	90.0	24.7	O K
60 min Summer	98.834	1.034	90.0	0.0	90.0	15.5	O K
120 min Summer	97.998	0.198	89.2	0.0	89.2	3.0	O K
180 min Summer	97.954	0.154	69.2	0.0	69.2	2.3	O K
240 min Summer	97.926	0.126	56.8	0.0	56.8	1.9	O K
360 min Summer	97.894	0.094	42.4	0.0	42.4	1.4	O K
480 min Summer	97.876	0.076	34.3	0.0	34.3	1.1	O K
600 min Summer	97.865	0.065	29.1	0.0	29.1	1.0	O K
720 min Summer	97.856	0.056	25.1	0.0	25.1	0.8	O K
960 min Summer	97.845	0.045	20.1	0.0	20.1	0.7	O K
1440 min Summer	97.833	0.033	14.7	0.0	14.7	0.5	O K
2160 min Summer	97.824	0.024	10.9	0.0	10.9	0.4	O K
2880 min Summer	97.819	0.019	8.7	0.0	8.7	0.3	O K
4320 min Summer	97.814	0.014	6.2	0.0	6.2	0.2	O K
5760 min Summer	97.811	0.011	5.1	0.0	5.1	0.2	O K
7200 min Summer	97.810	0.010	4.4	0.0	4.4	0.2	O K
8640 min Summer	97.808	0.008	3.7	0.0	3.7	0.2	O K
10080 min Summer	97.808	0.008	3.5	0.0	3.5	0.1	O K
15 min Winter	99.787	1.987	90.0	0.0	90.0	29.8	Flood Risk
30 min Winter	99.592	1.792	90.0	0.0	90.0	26.9	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)		
15 min Summer	123.676	0.0	85.8	0.0	14		
30 min Summer	82.540	0.0	114.5	0.0	22		
60 min Summer	52.595	0.0	146.0	0.0	38		
120 min Summer	32.409	0.0	179.9	0.0	64		
180 min Summer	24.086	0.0	200.5	0.0	94		
240 min Summer	19.390	0.0	215.2	0.0	124		
360 min Summer	14.188	0.0	236.3	0.0	184		
480 min Summer	11.374	0.0	252.5	0.0	244		
600 min Summer	9.574	0.0	265.7	0.0	306		
720 min Summer	8.312	0.0	276.8	0.0	366		
960 min Summer	6.646	0.0	295.1	0.0	482		
1440 min Summer	4.839	0.0	322.3	0.0	714		
2160 min Summer	3.517	0.0	351.4	0.0	1080		
2880 min Summer	2.801	0.0	373.2	0.0	1468		
4320 min Summer	2.029	0.0	405.7	0.0	2196		
5760 min Summer	1.612	0.0	429.1	0.0	2896		
7200 min Summer	1.348	0.0	448.0	0.0	3672		
8640 min Summer	1.164	0.0	464.0	0.0	4320		
10080 min Summer	1.028	0.0	477.0	0.0	5192		
15 min Winter	123.676	0.0	96.1	0.0	15		
30 min Winter	82.540	0.0	128.3	0.0	23		
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JBA Consulting		Page 2					
The Old School House St. Joseph's Street Tadcaster LS24 9HA							
Date 04/05/2024 15:38							
File							
		Designed by willdorman					
		Checked by					
Micro Drainage		Source Control 2020.1					
Summary of Results for 100 year Return Period (+40%)							
Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Overflow (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
60 min Winter	98.474	0.674	90.0	0.0	90.0	10.1	O K
120 min Winter	97.954	0.154	69.4	0.0	69.4	2.3	O K
180 min Winter	97.916	0.116	52.3	0.0	52.3	1.7	O K
240 min Winter	97.894	0.094	42.2	0.0	42.2	1.4	O K
360 min Winter	97.869	0.069	31.2	0.0	31.2	1.0	O K
480 min Winter	97.855	0.055	24.9	0.0	24.9	0.8	O K
600 min Winter	97.847	0.047	21.0	0.0	21.0	0.7	O K
720 min Winter	97.840	0.040	18.1	0.0	18.1	0.6	O K
960 min Winter	97.832	0.032	14.5	0.0	14.5	0.5	O K
1440 min Winter	97.824	0.024	10.7	0.0	10.7	0.4	O K
2160 min Winter	97.817	0.017	7.8	0.0	7.8	0.3	O K
2880 min Winter	97.814	0.014	6.2	0.0	6.2	0.2	O K
4320 min Winter	97.810	0.010	4.6	0.0	4.6	0.2	O K
5760 min Winter	97.809	0.009	3.9	0.0	3.9	0.1	O K
7200 min Winter	97.807	0.007	3.0	0.0	3.0	0.1	O K
8640 min Winter	97.806	0.006	2.8	0.0	2.8	0.1	O K
10080 min Winter	97.806	0.006	2.6	0.0	2.6	0.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Overflow Volume (m³)	Time-Peak (mins)		
60 min Winter	52.595	0.0	163.5	0.0	38		
120 min Winter	32.409	0.0	201.5	0.0	64		
180 min Winter	24.086	0.0	224.6	0.0	94		
240 min Winter	19.390	0.0	241.0	0.0	124		
360 min Winter	14.188	0.0	264.6	0.0	182		
480 min Winter	11.374	0.0	282.8	0.0	244		
600 min Winter	9.574	0.0	297.5	0.0	300		
720 min Winter	8.312	0.0	310.0	0.0	368		
960 min Winter	6.646	0.0	330.5	0.0	476		
1440 min Winter	4.839	0.0	361.0	0.0	734		
2160 min Winter	3.517	0.0	393.5	0.0	1092		
2880 min Winter	2.801	0.0	418.0	0.0	1468		
4320 min Winter	2.029	0.0	454.1	0.0	2136		
5760 min Winter	1.612	0.0	482.1	0.0	2872		
7200 min Winter	1.348	0.0	502.6	0.0	3328		
8640 min Winter	1.164	0.0	521.2	0.0	4496		
10080 min Winter	1.028	0.0	536.7	0.0	4760		
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JBA Consulting		Page 3																																										
The Old School House St. Joseph's Street Tadcaster LS24 9HA																																												
Date 04/05/2024 15:38 File	Designed by willdorman Checked by																																											
Micro Drainage Source Control 2020.1																																												
Rainfall Details <table><tr><td>Rainfall Model</td><td>FSR</td><td>Winter Storms</td><td>Yes</td></tr><tr><td>Return Period (years)</td><td>100</td><td>Cv (Summer)</td><td>0.750</td></tr><tr><td>Region</td><td>England and Wales</td><td>Cv (Winter)</td><td>0.840</td></tr><tr><td>M5-60 (mm)</td><td>18.600</td><td>Shortest Storm (mins)</td><td>15</td></tr><tr><td>Ratio R</td><td>0.366</td><td>Longest Storm (mins)</td><td>10080</td></tr><tr><td>Summer Storms</td><td>Yes</td><td>Climate Change %</td><td>+40</td></tr></table> Time Area Diagram Total Area (ha) 0.370 <table><thead><tr><th colspan="3">Time (mins) Area</th><th colspan="3">Time (mins) Area</th></tr><tr><th>From:</th><th>To:</th><th>(ha)</th><th>From:</th><th>To:</th><th>(ha)</th></tr></thead><tbody><tr><td>0</td><td>4</td><td>0.270</td><td>4</td><td>8</td><td>0.100</td></tr></tbody></table>			Rainfall Model	FSR	Winter Storms	Yes	Return Period (years)	100	Cv (Summer)	0.750	Region	England and Wales	Cv (Winter)	0.840	M5-60 (mm)	18.600	Shortest Storm (mins)	15	Ratio R	0.366	Longest Storm (mins)	10080	Summer Storms	Yes	Climate Change %	+40	Time (mins) Area			Time (mins) Area			From:	To:	(ha)	From:	To:	(ha)	0	4	0.270	4	8	0.100
Rainfall Model	FSR	Winter Storms	Yes																																									
Return Period (years)	100	Cv (Summer)	0.750																																									
Region	England and Wales	Cv (Winter)	0.840																																									
M5-60 (mm)	18.600	Shortest Storm (mins)	15																																									
Ratio R	0.366	Longest Storm (mins)	10080																																									
Summer Storms	Yes	Climate Change %	+40																																									
Time (mins) Area			Time (mins) Area																																									
From:	To:	(ha)	From:	To:	(ha)																																							
0	4	0.270	4	8	0.100																																							
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Project:		Company Address:	Page 7
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Profile - Road 6		Horizontal Scale 1:2093, Vertical Scale 1:115	



Junction		7.01	7.03	2.06	2.07
Type		Manhole	Manhole	Manhole	Manhole
CL (m)		239.080	239.080	236.980	237.691
IL (m)		237.430	236.875	234.955	234.600
Connection		P7.02	P7.03	P2.06	P2.07
Type		Pipe	Pipe	Pipe	Pipe
Curved		No	No	No	No
Length (m)		9.824	56.241	55.127	65.773
Diam (mm)		150	150	525	525
Height (mm)					
U/S IL (m)		237.730	237.650	235.255	234.900
D/S IL (m)		237.650	237.325	234.900	234.300
C. Splay (mm)					
SWC					
Type					Pond
EL (m)					Pond
BL (m)					235.500
					234.300

TECHNICAL NOTE

JBA Project Code: 2024s0202

Client: Ameresco Ltd

Date: July 2024

Produced by: George Williams BSc (Hons), MSc

Reviewed by: John Panesar BEng (Hons) CEng MICE

Title: C&S Energy BESS Drainage Maintenance Schedule

1 Introduction

This document is a stand-alone document that details the required maintenance schedule of each proposed element of the surface water drainage system designed for the C&S Energy Battery Energy Storage System (BESS) proposed for development by Ameresco Ltd. This should be read in conjunction with the proposed surface water drainage strategy. JBA were commissioned to provide this detailed surface water drainage strategy for the proposed site off Rownall Road, ST9 0BT.

The production of this document aims to detail the maintenance requirements for individual elements of the surface water drainage system and satisfy the requirements of Staffordshire County Council in their capacity as Lead Local Flood Authority (REF SMD/2022/0444).

The report is based on currently available and preliminary discussions. Proposals detailed within this report may be subject to alteration or adjustment following the completion of construction drawings and specific product specification.

2 Maintenance Schedule

All the drainage on site will be privately owned. Ameresco Ltd has an LTSA agreement with the client for 7 years from completion of construction of the BESS site and will be responsible for the maintenance during this time.

This document will detail the maintenance requirements for each element of the drainage system.

2.1 Surface Water Drainage System Maintenance Schedule

Table 1 details the following maintenance requirements are identified for the anticipated surface water drainage system.

Table 1 Surface Water Drainage Maintenance Schedule

Element	Activity	Frequency
Conveyance pipes and chambers	Visual inspection and jetting/cleaning	Every five years or as required
	Visual inspection for physical damage and remediation	Annually or as required
Catchpits and linear drainage channels	Visual inspection and jetting/cleaning	Annually or as required
	Visual inspection and replacement/re-setting covers and granting if damaged and/or dislodged	Annually or as required
Outlet control chambers with flow devices	Visual inspection and remediation of any faults	Annually or as required following

TECHNICAL NOTE

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Reviewed by: John Panesar BEng (Hons) CEng MICE

Title: C&S Energy BESS Drainage Maintenance Schedule

		significant storm events.
--	--	---------------------------

2.2 Permeable Paving Maintenance Requirements

The CIRIA SuDS Manual stipulates the following maintenance requirements for the proposed permeable paving elements which are detailed in Table 2.

In addition, the maintaining party of the drainage system should adhere to the manufacturer's recommendations in relation to the operation of specific drainage elements.

Table 2 Permeable Paving Maintenance Schedule

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall or reduced frequency as required based on site-specific observations of clogging or manufacturers' recommendations - pay particular attention to areas where water runs onto the pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment.
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required - once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of paving	As required
	Remedial work to any depression, rutting and cracked or broken	As required

TECHNICAL NOTE

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Title: C&S Energy BESS Drainage Maintenance Schedule

	blocks considered detrimental to the structural performance or a hazard to users and replace lost jointing material.	
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth - if required, take remedial action	Three monthly 48hr after large storms in the first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

2.3 Swale Maintenance Requirements

The CIRIA SuDS Manual stipulates the following maintenance requirements for the proposed swales that form part of the surface water drainage strategy and is detailed in Table 3.

- Swales are not present in the drainage strategy; however, there is a swale currently part of the land drainage system. Following site investigation, it will be determined whether this asset will be made redundant or kept as part of the land drainage network. If the asset is to be used, the below maintenance regime should be adopted.

Table 3 Swale Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly, or as required
	Cut grass- to retain grass height within the specified design range	Monthly (during growing season), or as required
	Manage other vegetation and remove nuisance plants	Monthly at the start, then as required

TECHNICAL NOTE

JBA Project Code: 2024s0202

Client: Ameresco Ltd

Date: July 2024

Produced by: George Williams BSc (Hons), MSc

Reviewed by: John Panesar BEng (Hons) CEng MICE

Title: C&S Energy BESS Drainage Maintenance Schedule

	Inspect inlets, outlets and overflows for blockages, and clear them if required	Monthly
	Inspect infiltration surfaces for ponding, compaction, and silt accumulation, and record areas where water is ponding for >48h hours	Monthly or when required
	Inspect vegetation coverage	Monthly for 6 months, quarterly for 2 years, then half yearly
	Inspect inlets and facility surfaces for silt accumulation and establish appropriate silt removal frequencies.	Half yearly
Occasional Maintenance	Reseed areas of poor vegetation growth, and alter plant types to better suit conditions if required	As required or if bare soil is exposed over 10% or more of the swale treatment area.
Remedial Actions	Repair erosion or other damage by re-turfing or reseed	As required
	Relevel uneven surfaces and reinstate the design level	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of soil surface.	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at the top of filter strip	As required
	Remove and dispose of oils or petrol residues using safe standard practices	As required

TECHNICAL NOTE

JBA Project Code: 2024s0202

Client: Ameresco Ltd

Date: July 2024

Produced by: George Williams BSc (Hons), MSc

Reviewed by: John Panesar BEng (Hons) CEng MICE

Title: C&S Energy BESS Drainage Maintenance Schedule

2.4 Detention Basin Maintenance

The CIRIA SuDS Manual stipulates the following maintenance requirements for the proposed detention basin that form part of the surface water drainage strategy and are detailed in Table 4 below.

Table 4 Detention Basin Maintenance Requirements

Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Remove litter and debris	Monthly
	Cut grass- for spillways and access routes	Monthly (during growing season), or as required
	Cut grass - meadow grass in and around the basin	Half yearly (spring-before nesting season, and autumn)
	Manage other vegetation and remove nuisance plants	Monthly (at start, then as required)
	Inspect inlets, outlets and overflows for blockages, and clear if required	Monthly
	Inspect bankside, structures, pipework etc for evidence of physical damage	Monthly
	Inspect inlets and facility surfaces for silt accumulation. Establish appropriate silt removal frequencies	Monthly (for first year) then annually or as required
	Check any penstocks and other mechanical devices	Annually
	Tidy all dead growth before the start of the growing season	Annually
	Remove sediment from inlets, outlet and forebay	Annually (or as required)
	Manage wetland plants in outlet pool- where provided.	Annually
Occasional maintenance	Reseed areas of poor vegetation growth	As required