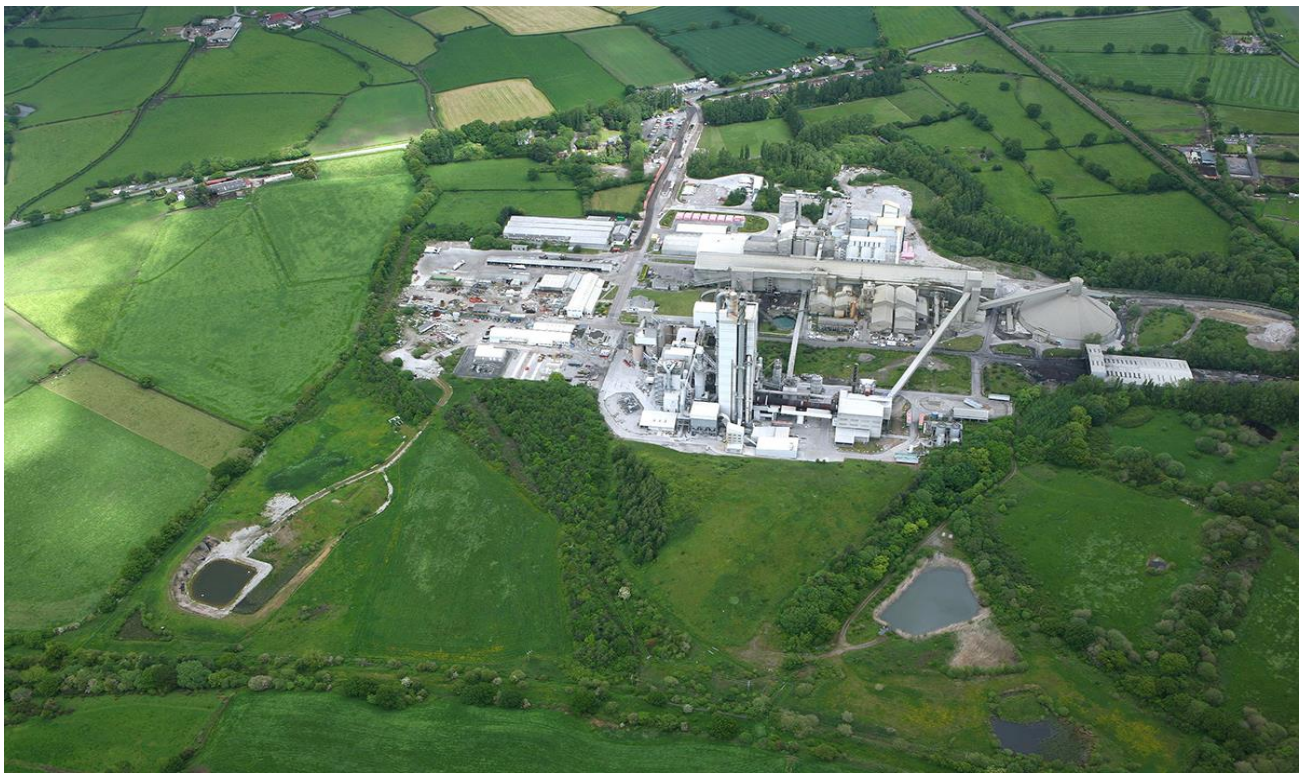
HEIDELBERG MATERIALS

Heidelberg Materials - Padeswood Carbon Capture Plant

Temporary Perimeter Drainage Technical Note

Document no. Rev A: 215000-00190-000-CI-TEN-00010



17 February 2026

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Rev	Description	Originator	Reviewer	Worley Approver	Revision Date
Rev A	Issued for Information	A. Dunn	J. Weston	S. Siong	17 February 2026

Revision History

Rev	Status	Section	Description of Change
A	IFI	All	Issued for Information

Holds

No	Section	Description	Input From	Planned Date

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1. Project Introduction

Heidelberg Materials (HM) has become a partner in the HyNet Northwest consortium, which aims to create the world's first low-carbon industrial cluster in the region of Northwest England. The proposed hydrogen and carbon capture and storage (CCS) industrial cluster will play a critical role in the UK's transition to net zero greenhouse gas emissions and the fight against climate change. As part of 'Making Net Zero Possible', Asset Improvement programme options to decarbonise COMPANY cement plant are being considered. Carbon Capture (CC) is one of the key technologies being developed as a route to decarbonisation. COMPANY cement plant located at Padeswood which currently produces about 110 ton per hour (tph) of clinker, has been selected by DESNZ as a track 1 phase 2 carbon capture project. The PROJECT will enable carbon capture from the existing cement kiln 4 and from a new Combined Heat and Power (CHP) plant designed to provide the heat and electricity required to operate the Carbon Capture and Compression (CCC) plant. Captured CO_2 will be transported by pipeline to the HyNet CO_2 main pipeline at Northop Hall AGI for onward transportation to storage offshore in depleted gas fields operated by Eni UK. The PROJECT will enable the production of net zero cement for use in the UK construction industry.

The pre-FEED study was completed in March 2023 by Worley. Based on the pre-FEED study, an amine-based post combustion CO_2 capture technology has been selected as a suitable technology for capturing 95% of the CO_2 emissions from cement plant.

A consortium between Mitsubishi Heavy Industries (MHI) and Worley delivered the FEED package for the Heidelberg Material (HM) Padeswood CCS Project. The overall FEED package utilizing MHI's Carbon capture technology was completed in November 2024.

The capture plant is generally considered a green field development, with some elements of brownfield in the integration and tie-ins with the cement plant.

2. Document Purpose

This technical note covers the temporary storm water drainage system for the proposed Heidelberg Materials Padeswood Carbon Capture Plant site shown in yellow in Figure 2-1.

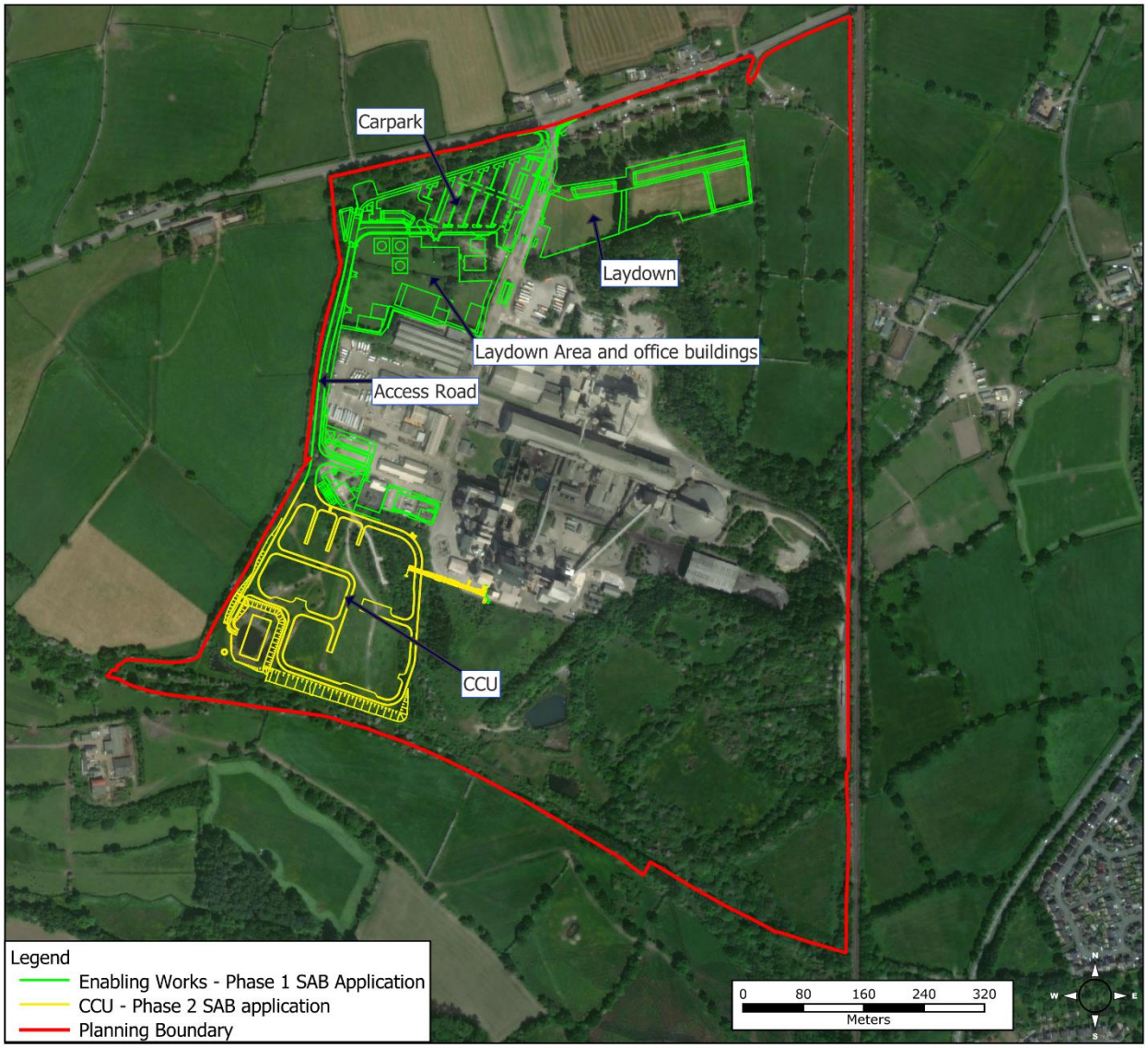


Figure 2-1: The proposed Heidelberg Materials Padeswood Carbon Capture Plant site, including the proposed car park located towards the North of the plant.

3. Abbreviations, Definitions & References

3.1 Abbreviations

Acronym	Definition
AGI	Above Ground Installation
aMSL	Above Mean Sea Level
BGS	British Geological Survey
BS	British Standard
BSI	British Standards Institution
CSA	Civil, Structural & Architectural
CBR	California Bearing Ratio
CCC	Carbon capture and compression
CCS	Carbon Capture and Storage
CCU	Carbon Capture Unit
CIRIA	Construction Industry Research and Information Association
CHP	Combined heat and power
CO_2	Carbon Dioxide
DESNZ	Department for Energy Security and Net Zero
DMRB	Design Manual for Roads and Bridges
EN	Euro Norm (i.e. European Standard)
FEED	Front End Engineering Design
FEH	Flood Estimation Handbook
FFL	Finished Floor Level
GL	Grade Level
HDPE	High Density Polyethylene
HM	Heidelberg Materials
HPP	High Point Finish Paving
ISO	International Organization for Standards
LPP	Low Point Finish Paving
LLFA	Local Lead Flood Authority
MCHW	Manual of Contract Documents for Highway Works
MHI	Mitsubishi Heavy Industries
P&ID	Piping and Instrumentation Diagram
PD	Published Documents (BSI)
SuDS	Sustainable Drainage Systems
SAB	SuDS Approval Body
Tph	Ton per hour
TPO	Tree Protection Order
TOC	Top of Concrete level
UK	United Kingdom

Table 3-1 - List of Abbreviations

3.2 Definitions

Term	Definition
COMPANY	Heidelberg Materials
CONTRACTOR	Consortium of Worley Europe Limited and Mitsubishi Heavy Industries Limited (MHI)
LICENSOR	MHI entering a Licensing Agreement with the CLIENT
PROJECT	Padeswood Carbon Capture Plant
SUPPLIER/VENDOR/WORKS CONTRACTOR	Company / organisation suppling equipment, materials or services.
SUB-SUPPLIER	The organisation selected by the SUPPLIER/VENDOR/ WORKS CONTRACTOR to supply the part of equipment and services.
WORK	Shall mean all and any of the WORKs and / or services and / or materials required to be provided under the Contract with CLIENT.
shall and must	Indicates mandatory requirements
Should	Indicates that a provision is not mandatory but recommended as good practice.
May	Used to indicate that optional action is available

Table 3-2 - List of Definitions

3.3 Order of Precedence

The requirements of the standards and publications referenced in this document shall be applied in the following order of precedence:

1. Government Acts, Regulations, and Statutory Requirements
2. Project Drawings
3. This Document
4. Referenced Specifications and Publications
5. Referenced Codes & Standards

Any conflict between the minimum requirements of the above documents shall be brought to the CONTRACTOR's attention for resolution.

An alternate specification or design may only be used when it satisfies the government and statutory requirements and offers a benefit to the project. All such alternatives shall require approval from CONTRACTOR.

3.4 References

3.4.1 Codes and Standards

Document Number	Title
BS EN 752:2017	Drain and sewer systems outside buildings - Sewer system management - CORR: October 31, 2019; CORR: February 28, 2022
	North Wales Flood Guide, Rev 3, March 2025
	Adapting to Climate Change: Guidance for Flood and Coastal Erosion Risk Management Authorities in Wales, August 2022

Document Number	Title
1091-SHRSK-XX-XX-RP-L-6000	Padeswood Carbon Capture And Storage plant, North Wales, Landscape and Ecological Management Plan, September 2025

Table 3-3 - List of referenced Codes and Standards.

3.4.2 Project Documents

Document Number	Title
215000-00190-000-CI-CRT-00001	CSA Design Criteria
215000-00190-000-CI-DAL-01034	Temporary Perimeter Drainage Layout–Carbon Capture Plant (CCP)
215000-00190-000-CI-DAL-01035	Temporary Perimeter Drainage Profiles-Carbon Capture Plant (CCP)
215000-00190-000-CI-DAL-01036	Temporary Perimeter Drainage Details–Carbon Capture Plant (CCP)–Sheet 01
215000-00190-000-CI-DAL-01046	Temporary Perimeter Drainage Details–Carbon Capture Plant (CCP)-Sheet 02
215000-00190-000-PR-PHL-00004	Drainage Philosophy
215000-00190-740-PR-PID-00050	Piping And Instrumentation Diagram Interceptor and Balancing Pond
215000-00190-000-CI-REP-00007	Surface Water Management Plan
215000-00190-000-CM-PLN-00006	Pre-Construction Information

Table 3-4 - List of referenced Project Documents.

4. Storm Water Drainage System

The temporary storm water drainage system for the CCU area will be based on the 1 in 10-year event. The drainage system is designed to have no flooding up to and including a 1 in 30-year event. Network simulation is undertaken for 1 in 30-year events plus 10% climate change allowance, see section 4.2 below.

The 1 in 100-year event is not considered for these areas as they will only be in use for approximately 3 years. For the same reason a climate change factor of 10% will be used for these areas.

4.1 SuDS Standards Compliance

Sustainable drainage systems manage the quality and quantity of water. SuDS can take many forms, both above and below ground and can consist of open water, planted or landscaped features. This is discussed in more detail in the Landscaping and Ecological Management Plan (HMUK, 2025).

The SuDS Approval Body (SAB) will assess the design of the drainage systems to see if they meet the 6 Welsh Government (WG) standards below

S1. Surface water runoff destination

S2. Surface water runoff hydraulic control

S3. Water quality

S4. Amenity

S5. Biodiversity

S6. Design of drainage for construction

4.1.1 Surface water runoff destination

S1 defines a drainage hierarchy for surface water runoff destination. As much runoff should be directed to the highest priority level possible before considering lower levels. Level 1 is the highest priority and Level 5 the lowest.

Level 1 – Collected for use

Level 2 – Infiltrated to ground

Level 3 – Discharged to surface water body

Level 4 – Discharged to surface water sewer, highway drain or other drainage system

Level 5 – Discharged to combined sewer

The temporary surface water drainage system will discharge to a surface water body. This run-off will not be re-used due to the remoteness from locations of possible re-use and its temporary nature.

Disposal by infiltration is not possible due to poor infiltration rates, typically 10^{-7}mm/hr. This meets the requirements of Level 3 for Phase 1b.

4.1.2 Surface water runoff hydraulic control

S2 requires flood risk management to be provided including control of peak runoff rate and volume to protect people, developments and receiving water bodies. It applies to discharges to surface water bodies, surface water sewers and combined sewers.

Where possible, interception of the first 5mm of rainfall is preferable so there is no discharge from the site from rainfall events of less than 5mm. This reduces pollutant load. Vegetated and soil-based features are particularly effective at achieving this. Interception of events under 5mm are not expected to reach the temporary attenuation pond due to the construction sites granular nature. Mitigation of flood risk for the receiving surface water bodies has been done for the 30-year event. Runoff rates will be no greater than the 30-year greenfield event. For volume control, the site is protected from flooding by ensuring there is no flooding of the drainage system in a 30-year event.

Exceedance event surface water runoff (above 30-year event) will flow to the existing ditch to the south of the site. The drainage channels contain the 100-year event flows. Flooding happens at the attenuation pond; volume of flooding is approximately 184m^3. Calculations for the 100-year event and its impact on the temporary drainage system are shown in Appendix C.

4.1.3 Water Quality

S3 requires treatment of surface water runoff to protect receiving waters and drainage systems. The most effective treatment systems are ones that maximize runoff volume reduction and use vegetation and surface treatment as close to the source of pollution as possible.

The drainage design incorporates the use of an attenuation pond, siltbuster and oil separator. This will remove suspended solids and any hydrocarbon pollutants. This development is of an industrial nature and therefore the opportunity for providing treatment via vegetation and surface features is limited. The Simple Index Approach as outlined by the CIRIA SuDS manual has been detailed in the Surface Water Management Plan.

4.1.4 Amenity

S4 requires SuDS design to maximize amenity benefits which include improved well-being and climate resilience. Visible open water and vegetation are preferable. As mentioned previously, this development is of an industrial nature, and the Phase 1b drainage features are temporary. Amenity use is therefore not considered for Phase 1b.

4.1.5 Biodiversity

S5 requires SuDS to maximize biodiversity benefits. Use of blue and green space can increase habitat opportunities and connectivity. SuDS can contribute to protection of local species and delivery of local biodiversity objectives. Biodiversity should be considered from the start of the design process to maximise benefits. As mentioned previously, this development is of an industrial nature, and the Phase 1b drainage features are temporary. Amenity use is therefore not considered for Phase 1b.

4.1.6 Design of drainage for construction, operation and maintenance

S6 requires design of robust SuDS which can be constructed, maintained and operated safely, sustainably, cost-effectively and in a timely manner. Impact on natural resources should be minimized and embodied carbon reduced.

CDM information can be found in document 215000-00190-000-CM-PLN-00006 Pre-Construction Information.

Refer 215000-00190-000-CI-REP-00007 – Surface Water Management Plan for the SuDS Maintenance Plan.

4.2 Rainfall

FEH (Flood Estimation Handbook) 2022 rainfall data shall be used in the design. InfoDrainage defaults to the FEH 2013 heading but the data used in FEH 2022 and is shown in Appendix C

Urban creep allowance factor shall be set at 1.0 as this is considered appropriate for its temporary nature

For pipe sizing a runoff coefficient of 0.95 has been assumed across the site.

A Cv of 1.0 shall be used for both summer and winter storms.

Climate change allowance factor is set at +10% due to the temporary nature of the works, likely no more than 3 years. The area will only be modelled up to and including a 30yr return period.

Applies across all of Wales	Total potential change anticipated for 2020s (2015-2039)	Total potential change anticipated for 2050s (2040-2069)	Total potential change anticipated for 2080s (2070-2115)
Upper estimate	10%	20%	40%
Central estimate	5%	10%	20%

To estimate stormwater runoff volumes, it has been assumed that:

- Gravel areas considered 50% impermeable.

Greenfield runoff rates and storage estimates are shown in Appendix A and B and the contributing area plans and tables are shown in Appendix E.

Actual storage volumes provided will be determined by the simulation results of the Infodrainage calculations.

4.2.1 Siltbuster and Oil Separator

A Siltbuster HB200R will be used in partnership with the attenuation pond to remove suspended solids form the discharge flow before release to the receiving watercourse. The siltbuster system selected will also include a suitable oil separation system, dissolved air flotation, to remove any hydrocarbons present.

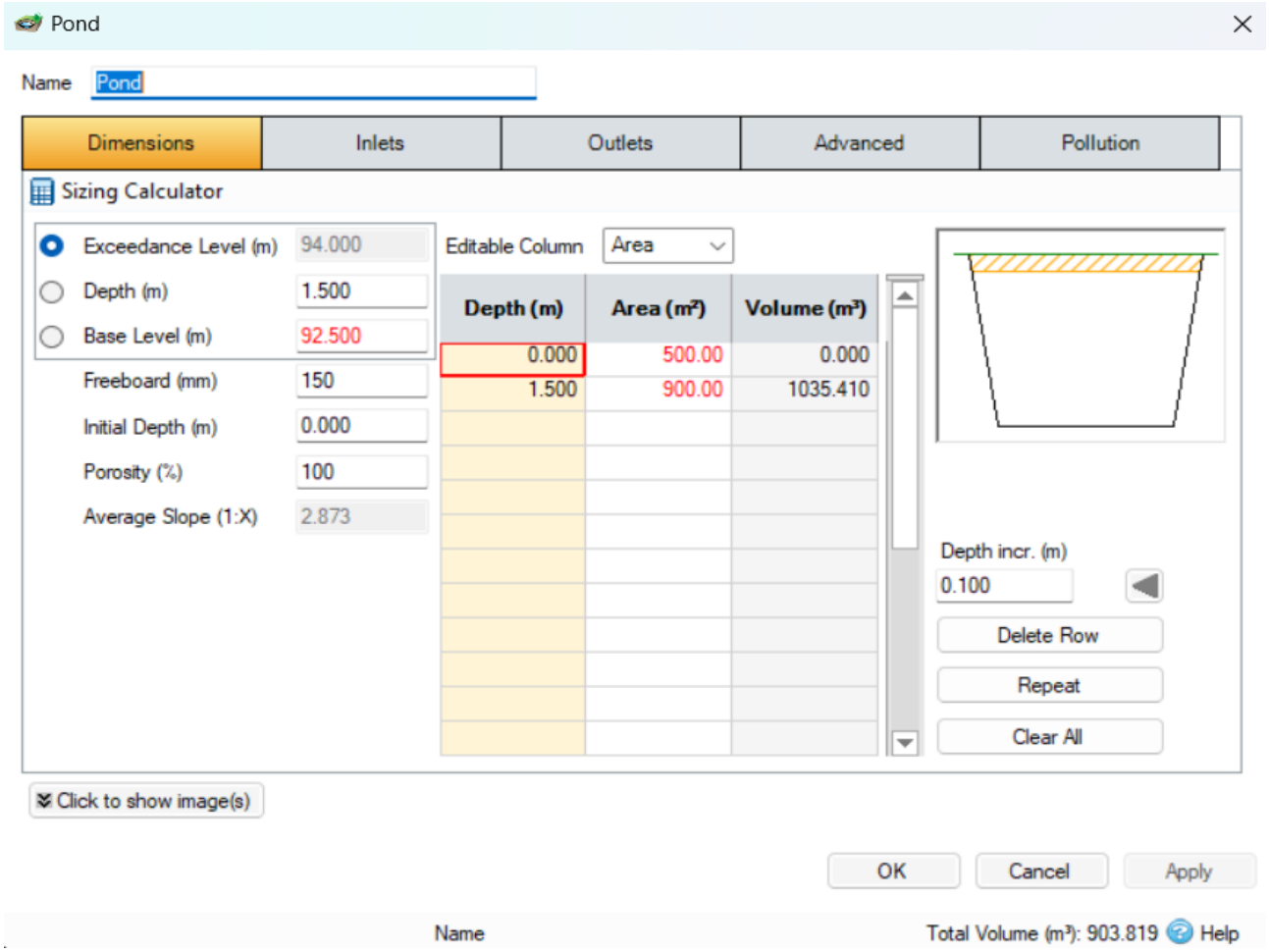
4.2.2 Discharge Flow Control

The discharge from the temporary holding pond to the siltbuster / separator will be by pump and set at the Qbar rate of 35l/s. This will then be discharged to the existing watercourse.

4.3 Temporary Drainage for CCU Area

Temporary drainage will be installed to cater for the surface water run-off from the CCU area during construction. This will consist of trapezoidal perimeter ditches, some pipework, trapezoidal toe ditches, an attenuation pond and a Siltbuster. Small internal drainage ditches will be dug by the works contractor as needed to drain the surface water runoff efficiently to the perimeter ditches. The drainage layout is shown on dwg 215000-00190-000-CI-DAL-01034.

The discharge will be limited to 35l/s and storage is provided in an attenuation pond with approximately 1035m^3 storage.



Treatment to remove the suspended solids will be by a Siltbuster, model HB200R which can treat a flow rate up to 55.6l/s. Oil removal will be by a suitable oil separator to be proved by Siltbuster to work in series with the suspended solids removal unit.

The temporary drainage calculations for the CCU area and shown in Appendix C.

4.4 Summary

This technical note covers only the CCU temporary drainage.

There will be no flooding of the temporary works site during a storm event up to and including a 30-year event.

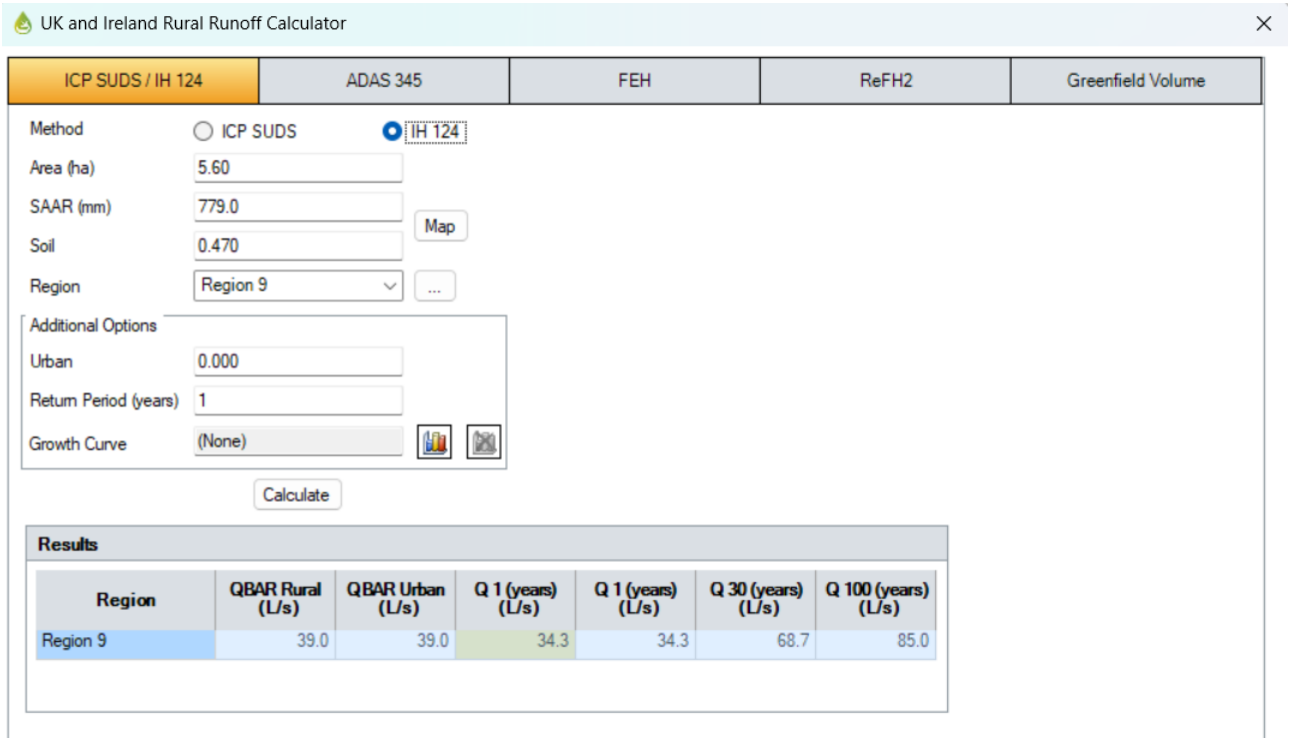
The required storage is provided in the form of an attenuation pond and ditches.

Required water quality is achieved using a Siltbuster with suitable oil separator.

Amenity and biodiversity are not considered due to the works temporary construction nature.

It is our belief that this report shows in sufficient detail that the SuDS requirements have been considered and met.

Appendix A. Surface Water Run-off Calculations – Temporary CCU Area


UK and Ireland Rural Runoff Calculator
ICP SUDS / IH 124
ADAS 345
FEH
ReFH2
Greenfield Volume
Method
ICP SUDS
IH 124
Area (ha)
5.60
SAAR (mm)
779.0
Map
Soil
0.470
Region
Region 9
...
Additional Options
Urban
0.000
Return Period (years)
1
Growth Curve
(None)
Calculate
Results
Region
QBAR Rural (L/s)
QBAR Urban (L/s)
Q 1 (years) (L/s)
Q 1 (years) (L/s)
Q 30 (years) (L/s)
Q 100 (years) (L/s)
Region 9
39.0
39.0
34.3
34.3
68.7
85.0

Appendix B. FEH 2022 Rainfall Data

VERSION	"FEH Web Service	Version	1.0.0	exported at	14:47:04	GMT	Wed	16-Apr-25			
Parameters											
Rf model=	FEH22										
Calculation type=	Design Rf										
Calculation mode=	For a point										
Calculation location=	Point	GB	329214	362076	SJ 29214 62076						
Duration=	1	Hours									
Fixed duration=	no										
Return period=	1	yrs									
Annual maximum=	no										
A design Rf of 9.65 mm was calculated.											

Duration hours	Duration days	1yr Rf (mm)	2yr Rf (mm)	5yr Rf (mm)	10yr Rf (mm)	20yr Rf (mm)	30yr Rf (mm)	50yr Rf (mm)	75yr Rf (mm)	100yr Rf (mm)	200yr Rf (mm)
0.25	0.010416667	5.83	8.02	11.26	13.71	16.18	17.59	19.52	21.06	22.15	24.82
0.5	0.020833333	7.63	10.56	14.87	18.16	21.56	23.55	26.19	28.37	29.95	33.84
1	0.041666667	9.65	13.43	18.83	23.11	27.56	30.22	33.7	36.57	38.66	43.89
1.5	0.0625	11.88	16.14	22	26.64	31.44	34.32	38.05	41.16	43.44	49.14
2	0.083333333	14.03	18.5	24.63	29.41	34.39	37.4	41.31	44.56	46.95	52.96
3	0.125	16.88	21.71	28.32	33.54	38.93	42.22	46.56	50.14	52.75	59.42
4	0.166666667	18.99	24.07	31.08	36.66	42.45	45.98	50.7	54.57	57.41	64.64
5	0.208333333	20.64	25.94	33.3	39.17	45.36	49.15	54.15	58.32	61.39	69.13
6	0.25	21.99	27.49	35.17	41.3	47.87	51.9	57.15	61.59	64.88	73.06
7	0.291666667	23.13	28.82	36.79	43.2	50.09	54.34	59.88	64.57	68.04	76.62
8	0.333333333	24.12	29.99	38.23	44.9	52.1	56.54	62.35	67.27	70.88	79.81
9	0.375	25	31.03	39.53	46.45	53.92	58.55	64.62	69.72	73.48	82.71
10	0.416666667	25.78	31.98	40.72	47.87	55.6	60.4	66.7	71.99	75.86	85.35
12	0.5	27.15	33.65	42.85	50.43	58.62	63.73	70.45	76.03	80.09	90.02
14	0.583333333	28.3	35.1	44.74	52.69	61.31	66.69	73.73	79.53	83.73	93.96
16	0.666666667	29.33	36.39	46.43	54.72	63.71	69.32	76.62	82.61	86.92	97.37
18	0.75	30.26	37.55	47.96	56.56	65.88	71.69	79.21	85.35	89.75	100.37
20	0.833333333	31.14	38.61	49.35	58.24	67.85	73.83	81.54	87.8	92.28	103.02
24	1	32.75	40.53	51.82	61.21	71.29	77.51	85.5	91.96	96.55	107.47
28	1.166666667	34.14	42.23	53.95	63.67	74.06	80.44	88.6	95.19	99.87	110.98
32	1.333333333	35.41	43.79	55.86	65.83	76.45	82.95	91.23	97.9	102.65	113.9
36	1.5	36.59	45.24	57.61	67.77	78.56	85.15	93.52	100.25	105.04	116.4
40	1.666666667	37.71	46.6	59.24	69.55	80.48	87.13	95.55	102.32	107.14	118.59
50	2.083333333	40.3	49.71	62.87	73.44	84.56	91.29	99.77	106.57	111.41	122.94
60	2.5	42.73	52.53	66.04	76.75	87.91	94.62	103.06	109.82	114.62	126.07
70	2.916666667	45.04	55.15	68.97	79.79	90.95	97.62	106.02	112.73	117.49	128.85
80	3.333333333	47.25	57.65	71.74	82.64	93.8	100.42	108.77	115.43	120.15	131.42
90	3.75	49.38	60.06	74.4	85.37	96.52	103.1	111.4	118.01	122.69	133.87
96	4	50.64	61.46	75.95	86.96	98.11	104.66	112.93	119.52	124.18	135.3

Return Periods of 75, 150, 500, 1000 and 10000 years have been removed for clarity

The durations shown ae not a complete list of the data included within the FEH data but it is representative. The full data can be provided if needed.

Appendix C. Carbon Capture Plant Temporary Storm Water Drainage System – Calculations

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Stormwater Controls Storm Phase: Storm	Company Address: WORLEY		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	94.000
Depth (m)	1.500
Base Level (m)	92.500
Freeboard (mm)	150
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	2.873
Total Volume (m³)	903.819

Depth (m)	Area (m²)	Volume (m³)
0.000	500.00	0.000
1.500	900.00	1035.410

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	PD West to Pond - 2 Toe Ditch - 02-4
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe to SB
Outlet Type	Pump
Invert Level (m)	93.000

Depth (m)	Outflow (L/s)
0.200	35.0
0.400	35.0
0.600	35.0
0.850	35.0
1.000	35.0
1.150	35.0
1.350	35.0

Advanced

Perimeter	Circular
Length (m)	41.055
Friction Scheme	Manning's n
n	0.02

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Network Design Criteria Storm Phase: Storm	Company Address: WORLEY		

Flow Options

Peak Flow Calculation	Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Inverts
Min. Slope (1:X)	1000.00
Max. Slope (1:X)	40.00
Use Flow Restriction	☑
Reduce Channel Depths	☑

Pipe Size Library

Add. Increment (mm)	0
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
200	0.00	0.00
250	0.00	0.00
300	0.00	0.00
350	0.00	0.00
400	0.00	0.00
450	0.00	0.00
500	0.00	0.00
550	0.00	0.00
600	0.00	0.00
750	0.00	0.00
900	0.00	0.00
1000	0.00	0.00
1250	0.00	0.00
1500	0.00	0.00

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Network Design Criteria Storm Phase: Storm	Company Address: WORLEY		

Manhole Options

Apply Offset	☐

Manhole Size Library

Diameter / Width

Connection (mm)	Diameter / Length (m)	Width (m)
0	1.200	0.000
375	1.350	0.000
500	1.500	0.000
750	1.800	0.000
900	2.100	0.000
1200	2.400	0.000
1350	2.700	0.000

Depth

Depth (m)	Diameter / Length (m)	Width (m)
0.000	1.050	0.000
1.500	1.200	0.000

Access

Depth (m)	Ladder Protrusion (mm)
0.000	130
3.000	230

Benching Requirements

Landing Width (mm)	0
Benching Width (mm)	0

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Outfall Details Storm Phase: Storm	Company Address: WORLEY		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
OUTFALL	Free Discharge		

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
CA-01	FEH: 30 years: +10 %: 60 mins: Summer	1.98	148.4	333.726
CA-04	FEH: 30 years: +10 %: 60 mins: Summer	0.78	35.0	78.656
CA-02	FEH: 30 years: +10 %: 60 mins: Summer	1.53	114.8	258.204
CA-03	FEH: 30 years: +10 %: 60 mins: Summer	0.71	53.5	120.275
CA-07	FEH: 30 years: +10 %: 60 mins: Summer	0.19	8.3	18.716
CA-06	FEH: 30 years: +10 %: 60 mins: Summer	0.20	8.8	19.811
CA-05	FEH: 30 years: +10 %: 60 mins: Summer	0.67	29.9	67.318

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Junctions Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SJ11	FEH: 30 years: +10 %: 60 mins: Summer		95.019	95.310	0.291	207.1			204.0	460.189	OK
SILTBUSTER	FEH: 10 years: +10 %: 180 mins: Summer	94.000	92.900	93.026	0.126	35.0	0.892	0.000	35.0	536.933	OK
SJ12	FEH: 30 years: +10 %: 60 mins: Summer		93.975	94.178	0.203	211.8			212.6	481.294	OK
SJ13	FEH: 30 years: +10 %: 720 mins: Summer		93.234	93.909	0.675	92.0			77.3	1092.675	OK
OUTFALL	FEH: 10 years: +10 %: 180 mins: Summer		92.780	92.900	0.120	35.0			35.0	536.933	OK
SJ4	FEH: 30 years: +10 %: 30 mins: Winter		96.600	96.744	0.144	145.6			145.3	261.754	OK
SJ3	FEH: 30 years: +10 %: 60 mins: Summer		98.033	98.175	0.142	148.4			148.4	333.729	OK
SJ1	FEH: 2 years: +10 %: 15 mins: Summer		98.100	98.100	0.000	0.0			0.0	0.000	OK
SJ2	FEH: 2 years: +10 %: 15 mins: Summer		98.100	98.100	0.000	0.0			0.0	0.000	OK
SJ5	FEH: 30 years: +10 %: 60 mins: Summer		98.100	98.309	0.209	35.0			33.1	75.612	OK
SJ9	FEH: 30 years: +10 %: 60 mins: Summer		97.916	98.234	0.318	199.1			196.2	443.851	OK
SJ6	FEH: 30 years: +10 %: 60 mins: Summer		98.100	98.403	0.303	114.8			114.2	256.083	OK
SJ7	FEH: 30 years: +10 %: 60 mins: Summer		98.041	98.364	0.323	114.2			113.4	255.057	OK
SJ8	FEH: 30 years: +10 %: 60 mins: Summer		98.000	98.346	0.346	166.8			166.0	367.636	OK
SJ10	FEH: 30 years: +10 %: 60 mins: Summer		97.779	97.871	0.092	196.2			198.9	443.901	OK

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 30 years: +10 %: 720 mins: Summer	93.908	93.908	1.408	1.408	132.8	953.968	0.000	0.000	35.0	1461.372	-5.549	Flood Risk

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Connections Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Toe Ditch - 02-2	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ11	SJ12	95.600	95.310	0.205	460.189	1.1	0.16	204.0	OK
Toe Ditch - 02-3	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ12	SJ13	94.475	94.178	0.253	481.294	1.0	0.15	212.6	OK
Outfall Pipe	FEH: 10 years: +10 %: 180 mins: Summer	Pipe	SILTBUSTER	OUTFALL	94.000	93.026	0.123	536.933	1.0	0.16	35.0	OK
Pipe to SB	FEH: 2 years: +10 %: 120 mins: Summer	Pipe	Pond	SILTBUSTER	94.000	93.211	0.088	218.309	0.0	0.27	35.0	OK
PD West to Pond - 2	FEH: 30 years: +10 %: 60 mins: Summer	Pipe	SJ4	Pond	98.000	96.743	0.400	332.995	3.0	0.28	148.5	OK
PD West to Pond - 1	FEH: 30 years: +10 %: 60 mins: Summer	Pipe	SJ3	SJ4	99.900	98.175	0.142	333.729	3.7	0.24	148.4	OK
Toe Ditch - 02-4	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ13	Pond	93.734	93.640	0.500	512.879	1.1	0.22	241.3	OK
Perimeter Ditch - 01	FEH: 2 years: +10 %: 15 mins: Summer	Trapezoidal Channel	SJ1	SJ3	98.600	98.100	0.000	0.000	0.0	0	0.0	OK
Perimeter Ditch - 02	FEH: 2 years: +10 %: 15 mins: Summer	Trapezoidal Channel	SJ2	SJ3	98.600	98.100	0.000	0.000	0.0	0	0.0	OK
Perimeter Ditch - 03-1	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ6	SJ7	98.600	98.403	0.283	256.083	0.4	0.2	114.2	OK
Perimeter Ditch - 04	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ5	SJ9	98.600	98.309	0.172	75.612	0.2	0.06	33.1	OK
Perimeter Ditch - 03-2	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ7	SJ8	98.600	98.364	0.314	255.057	0.3	0.17	113.4	OK
Perimeter Ditch - 03-3	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ8	SJ9	98.600	98.346	0.290	367.636	0.6	0.22	166.0	OK
Toe Ditch - 02-1	FEH: 30 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ10	SJ11	98.357	97.871	0.191	443.901	1.2	0.02	198.9	OK

PD East to TD - 02	FEH: 30 years: +10 %: 60 mins: Summer	Pipe	SJ9	SJ10	99.900	98.234	0.205	443.851	2.8	0.86	196.2	OK

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Stormwater Controls Storm Phase: Storm	Company Address: WORLEY		

Pond

Type : Pond

Dimensions

Exceedance Level (m)	94.000
Depth (m)	1.500
Base Level (m)	92.500
Freeboard (mm)	150
Initial Depth (m)	0.000
Porosity (%)	100
Average Slope (1:X)	2.873
Total Volume (m³)	903.819

Depth (m)	Area (m²)	Volume (m³)
0.000	500.00	0.000
1.500	900.00	1035.410

Inlets

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	PD West to Pond - 2 Toe Ditch - 02-4
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe to SB
Outlet Type	Pump
Invert Level (m)	93.000

Depth (m)	Outflow (L/s)
0.200	35.0
0.400	35.0
0.600	35.0
0.850	35.0
1.000	35.0
1.150	35.0
1.350	35.0

Advanced

Perimeter	Circular
Length (m)	41.055
Friction Scheme	Manning's n
n	0.02

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Network Design Criteria Storm Phase: Storm	Company Address: WORLEY		

Flow Options

Peak Flow Calculation	Rational Method
Min. Time of Entry (mins)	5
Max. Travel Time (mins)	30

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Inverts
Min. Slope (1:X)	1000.00
Max. Slope (1:X)	40.00
Use Flow Restriction	☑
Reduce Channel Depths	☑

Pipe Size Library

Add. Increment (mm)	0
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
200	0.00	0.00
250	0.00	0.00
300	0.00	0.00
350	0.00	0.00
400	0.00	0.00
450	0.00	0.00
500	0.00	0.00
550	0.00	0.00
600	0.00	0.00
750	0.00	0.00
900	0.00	0.00
1000	0.00	0.00
1250	0.00	0.00
1500	0.00	0.00

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Network Design Criteria Storm Phase: Storm	Company Address: WORLEY		

Manhole Options

Apply Offset	☐

Manhole Size Library

Diameter / Width

Connection (mm)	Diameter / Length (m)	Width (m)
0	1.200	0.000
375	1.350	0.000
500	1.500	0.000
750	1.800	0.000
900	2.100	0.000
1200	2.400	0.000
1350	2.700	0.000

Depth

Depth (m)	Diameter / Length (m)	Width (m)
0.000	1.050	0.000
1.500	1.200	0.000

Access

Depth (m)	Ladder Protrusion (mm)
0.000	130
3.000	230

Benching Requirements

Landing Width (mm)	0
Benching Width (mm)	0

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026 Designed by: AD	Checked by:	Approved By:
Report Details: Type: Outfall Details Storm Phase: Storm	Company Address: WORLEY		

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
OUTFALL	Free Discharge		

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026 Designed by: AD	Checked by:	Approved By:
Report Details: Type: Inflows Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
CA-01	FEH: 100 years: +10 %: 60 mins: Summer	1.98	190.6	428.581
CA-04	FEH: 100 years: +10 %: 60 mins: Summer	0.78	44.9	101.015
CA-02	FEH: 100 years: +10 %: 60 mins: Summer	1.53	147.5	331.609
CA-03	FEH: 100 years: +10 %: 60 mins: Summer	0.71	68.7	154.472
CA-07	FEH: 100 years: +10 %: 60 mins: Summer	0.19	10.7	24.019
CA-06	FEH: 100 years: +10 %: 60 mins: Summer	0.20	11.3	25.446
CA-05	FEH: 100 years: +10 %: 60 mins: Summer	0.67	38.5	86.459

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Junctions Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SJ11	FEH: 100 years: +10 %: 60 mins: Summer		95.019	95.338	0.319	265.0			263.2	594.393	OK
SILTBUSTER	FEH (1): 10 years: +10 %: 180 mins: Summer	94.000	92.900	93.026	0.126	35.0	0.892	0.000	35.0	536.933	OK
SJ12	FEH: 100 years: +10 %: 60 mins: Summer		93.975	94.206	0.231	274.3			273.7	623.396	OK
SJ13	FEH: 100 years: +10 %: 720 mins: Summer		93.234	94.204	0.970	117.8			91.4	1390.663	OK
OUTFALL	FEH (1): 10 years: +10 %: 180 mins: Summer		92.780	92.900	0.120	35.0			35.0	536.933	OK
SJ4	FEH: 100 years: +10 %: 60 mins: Summer		96.600	96.765	0.165	190.6			190.5	427.623	OK
SJ3	FEH: 100 years: +10 %: 60 mins: Summer		98.033	98.197	0.164	190.6			190.6	428.584	OK
SJ1	FEH: 100 years: +10 %: 15 mins: Summer		98.100	98.100	0.000	0.0			0.0	0.000	OK
SJ2	FEH: 100 years: +10 %: 15 mins: Summer		98.100	98.100	0.000	0.0			0.0	0.000	OK
SJ5	FEH: 100 years: +10 %: 60 mins: Summer		98.100	98.336	0.236	44.9			42.8	97.905	OK
SJ9	FEH: 100 years: +10 %: 60 mins: Summer		97.916	98.274	0.358	256.1			254.5	572.807	OK
SJ6	FEH: 100 years: +10 %: 60 mins: Summer		98.100	98.440	0.340	147.5			146.5	329.434	OK
SJ7	FEH: 100 years: +10 %: 60 mins: Summer		98.041	98.403	0.362	146.5			145.4	328.310	OK
SJ8	FEH: 100 years: +10 %: 60 mins: Summer		98.000	98.384	0.384	213.7			213.2	474.449	OK
SJ10	FEH: 100 years: +10 %: 60 mins: Summer		97.779	97.884	0.105	254.5			254.5	572.881	OK

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026 Designed by: AD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Pond	FEH: 100 years: +10 %: 720 mins: Summer	94.204	94.205	1.704	1.705	162.0	1219.214	183.804	0.000	35.0	1935.261	-34.896	Flood

Project:	Date:		
HM PADESWOOD CARBON CAPTURE PLANT TEMPORARY DRAINAGE - CCU EXCEEDANCE	15/02/2026		
	Designed by:	Checked by:	Approved By:
	AD		
Report Details: Type: Connections Summary Storm Phase: Storm	Company Address: WORLEY		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
Toe Ditch - 02-2	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ11	SJ12	95.600	95.338	0.234	594.393	1.2	0.2	263.2	OK
Toe Ditch - 02-3	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ12	SJ13	94.475	94.206	0.380	623.396	1.1	0.19	273.7	OK
Outfall Pipe	FEH (1): 10 years: +10 %: 180 mins: Summer	Pipe	SILTBUSTER	OUTFALL	94.000	93.026	0.123	536.933	1.0	0.16	35.0	OK
Pipe to SB	FEH: 100 years: +10 %: 30 mins: Summer	Pipe	Pond	SILTBUSTER	94.000	93.656	0.075	57.275	0.0	0.27	35.0	Surcharged
PD West to Pond - 2	FEH: 100 years: +10 %: 60 mins: Summer	Pipe	SJ4	Pond	98.000	96.765	0.400	427.623	3.0	0.36	190.5	OK
PD West to Pond - 1	FEH: 100 years: +10 %: 60 mins: Summer	Pipe	SJ3	SJ4	99.900	98.197	0.165	428.584	3.9	0.3	190.6	OK
Toe Ditch - 02-4	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ13	Pond	93.734	93.883	0.500	632.192	1.1	0.28	313.1	Surcharged
Perimeter Ditch - 01	FEH: 100 years: +10 %: 15 mins: Summer	Trapezoidal Channel	SJ1	SJ3	98.600	98.100	0.000	0.000	0.0	0	0.0	OK
Perimeter Ditch - 02	FEH: 100 years: +10 %: 15 mins: Summer	Trapezoidal Channel	SJ2	SJ3	98.600	98.100	0.000	0.000	0.0	0	0.0	OK
Perimeter Ditch - 03-1	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ6	SJ7	98.600	98.440	0.322	329.434	0.4	0.26	146.5	OK
Perimeter Ditch - 04	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ5	SJ9	98.600	98.336	0.205	97.905	0.2	0.08	42.8	OK
Perimeter Ditch - 03-2	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ7	SJ8	98.600	98.403	0.353	328.310	0.3	0.21	145.4	OK
Perimeter Ditch - 03-3	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ8	SJ9	98.600	98.384	0.329	474.449	0.6	0.28	213.2	OK
Toe Ditch - 02-1	FEH: 100 years: +10 %: 60 mins: Summer	Trapezoidal Channel	SJ10	SJ11	98.357	97.884	0.212	572.881	1.3	0.03	254.5	OK

PD East to TD - 02	FEH: 100 years: +10 %: 60 mins: Summer	Pipe	SJ9	SJ10	99.900	98.274	0.231	572.807	3.1	1.12	254.5	OK

Appendix D. Siltbuster Information

Lamella Clarifiers

Gravity Settlement for Suspended Solids

The Unit

Siltbuster is the UK's leading provider of mobile settlement units, specifically lamella clarifiers. Each unit in the extensive range is designed to remove suspended solids and settleable matter from suspension.

Effective gravity based solid/liquid separation requires the largest possible settlement area and optimum hydraulic flow. Siltbuster lamella clarifiers utilise lamella plate technology to maintain ideal settlement conditions within each unit, thereby ensuring maximum particle settlement and minimum unit footprint.

Siltbuster mobile clarifiers are robust, skid-mounted, compact and modular making them simple to transport, install and operate.

They are ideal for sites with limited access, restricted spaces and temporary projects. Hopper bottomed units can be fitted (on request) with an automatic sludge removal system making their operation virtually maintenance-free.

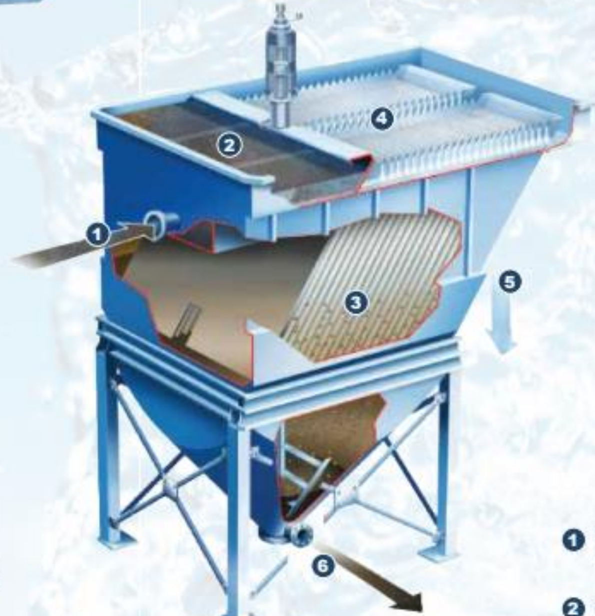
The range of lamella clarifiers can be supplied as single or multiple units in parallel. They can also be supplied as a complete, tailored, packaged treatment solution, including ancilliary equipment such as lids, covers, walkways, flow meters, chemical dosing, sludge pumps, sludge storage etc.

How it Works

The diagram on the right shows the inlet flow through a feed channel to the base of the plates. The flow is then distributed with each flow diagonally upwards in parallel to the lamella plates. The particles settle on the plates and are retained in the sludge storage area of the unit with treated water discharging by gravity. Care should be taken to ensure the treated water doesn't scour the ground at the point of exit. The sludge hopper can be emptied via drain ports & valves by a range of methods, e.g. vacuum tanker or by manual or mechanical means.

Did you know...

Siltbuster's Lamella Clarifiers are up to 20 times more efficient than conventional settlement tanks and lagoons resulting in less space required on site!



KEY ADVANTAGES

- Readily transportable, fast and simple to deploy, easy to operate
- More efficient than conventional settlement tanks
- Easy to clean lamella plates, no blockages, no backwashing required

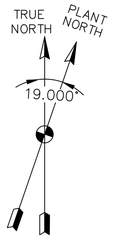
TYPICAL APPLICATIONS

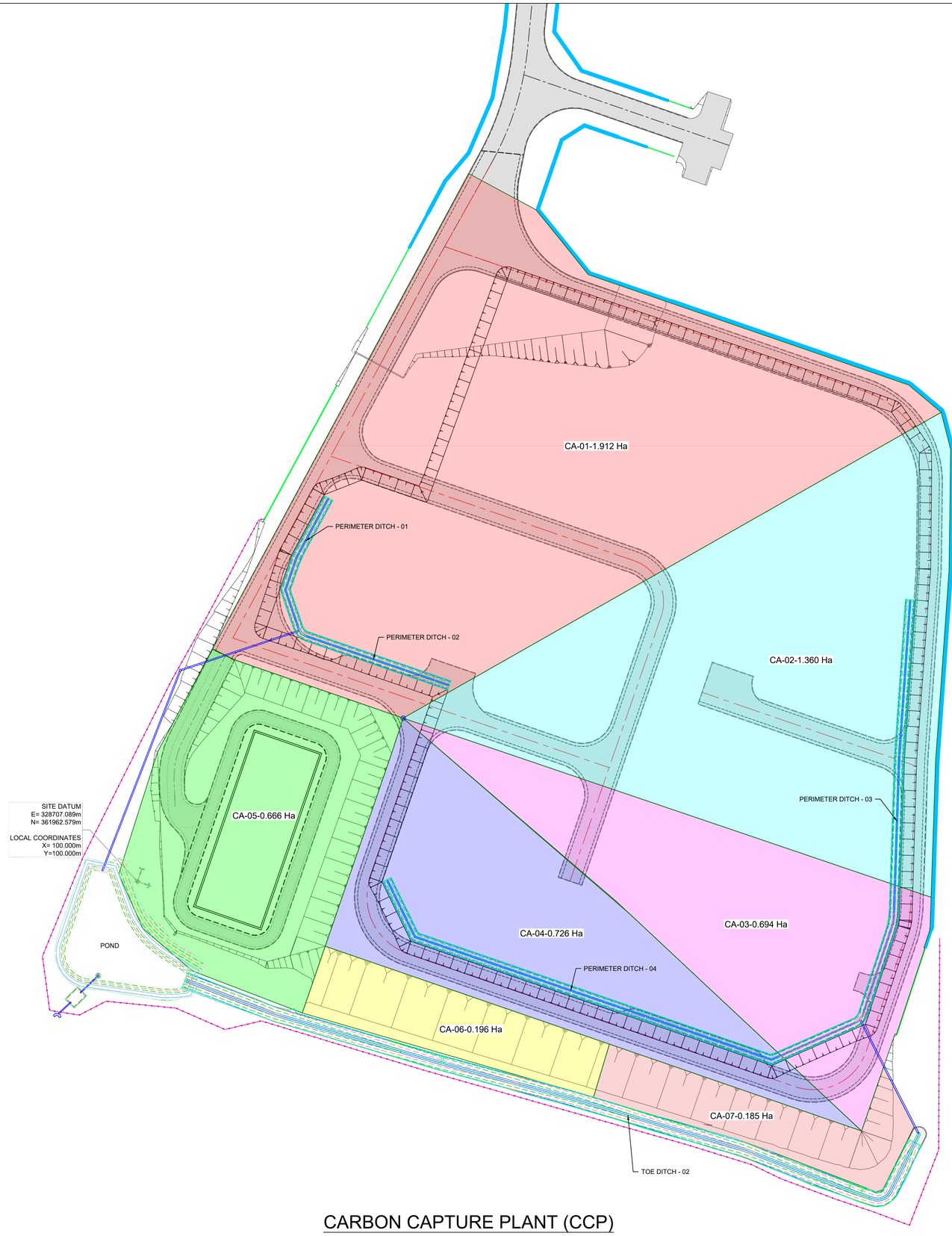
- Surface water runoff
- Groundwater treatment
- Excavation dewatering
- Drilling and mining

1. WATER PUMPED INTO CLARIFIER
2. STILLING CHAMBER DIRECTS FLOW DOWNWARDS
3. FLOW DISTRIBUTED BETWEEN PLATES
4. SOLIDS TRAVEL DOWN PLATES AS WATER MOVES UPWARDS
5. OUTLET DESIGN MAINTAINS FLOW EVEN IF UNIT NOT LEVEL
6. SLUDGE STORED IN HOPPER

For Hire, Sales & Technical Support call Siltbuster® on 01600 772256

Appendix E. Contributing Areas





CARBON CAPTURE PLANT (CCP)

ABBRIVIATION:

1. CA - CONTRIBUTING AREA

LEGEND:

- CONTRIBUTING AREA 01
- CONTRIBUTING AREA 02
- CONTRIBUTING AREA 03
- CONTRIBUTING AREA 04
- CONTRIBUTING AREA 05
- CONTRIBUTING AREA 06
- CONTRIBUTING AREA 07

NOTES:

1. THIS SKETCH IS PREPARED FOR INFORMATION PURPOSES ONLY.
2. UNLESS NOTED OTHERWISE, ALL COORDINATES AND ELEVATION ARE IN METRES.
3. TO BE READ IN CONJUCTION WITH THE INFODRAINAGE INFLOW SUMMARY TABLES.

REVISION HISTORY:

1. REV A - 18-Feb-2026 - First Issue

TITLE:	STORM WATER CONTRIBUTING AREA PLAN
SCALE:	1:700
SHEET:	A1
DOC. NO.	CSA-SK77-A - Sheet 01