

KIRKBY – BESS SITE DRAINAGE ADDENDUM

Coopers Lane, Kirkby

KIRK-BML-XX-XX-RP-C-0513

Date

29th September 2025

Contents Amendment Record

This report has been issued and amended as follows:

Revision	Description	Issued by	Checked by	Date
P01	Preliminary	CGM	NS	02.09.2025
P02	Final	IW	NS	29.09.2025
P03	Report title amended	IW	NS	06.10.2025
P04	Report reissued for convenience	NS	IW	14.07.2026

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1.0 Introduction

Barnsley Marshall Ltd was appointed by Pelagic Energy Ltd. to provide a SuDS Drainage Strategy for the proposed Battery Energy Storage System (BESS) site located on land adjacent to Coopers Lane, Kirkby, L33 7TT.

This report provides an addendum to the SuDS-based surface water drainage strategy outlined in the document **KIRK-BML-XX-XX-RP-C-0512**. The revisions made are based on the feedback received from the Knowsley Metropolitan Borough Council derived from Environment Agency guidance (refer to **Appendix A** for the letter received from the EA).

The report is based on currently available information and preliminary discussions and should be read in conjunction with the drainage plan layout attached in **Appendix B**.

The Addendum to the SuDS Drainage Strategy Report as per Environmental Agency (EA) feedback provides further definition of the drainage catchments within the installation (End 2) and an explanation of the SuDS treatment train components used within the drainage strategy prior to final outfall.

The Addendum also includes a detailed evaluation of the Incident Containment Capability at the BESS site. It specifically responds to the EA's observations concerning the potential for chemically aggressive fire water runoff that may result from firefighting activities in the event of a fire and their impact on any impermeable layer which is installed to protect the groundwater.

The document outlines mitigation measures and systems put in place to ensure adequate firewater containment during or following a 1 in 100-year plus 40% climate change storm event.

2.0 Drainage Catchments within the Installation (End 2)

The drainage strategy includes discharging surface water runoff from all impermeable hardstanding areas, including the access road and concrete pads underneath the battery unit areas through filter drains, gullies, channel drains and catchpits.

The drainage strategy submitted for planning approval proposes that the access road providing vehicle entry to the site is made of DOT Type 1 material, which is an impermeable surface.

DOT Type 1: The access roads within the site are made up of 300mm thick Type 1 material laid and compacted on top of Tensar InterAX Geogrids to aid in spreading the loads. Beneath the geogrid is a further 150mm of Type 1 sub-base giving a total road base depth of 450mm. These impermeable access road surfaces shall be graded to fall towards Type B filter material located on either side of the access roads.

The remainder of the site comprises porous surfacing, consisting of 300mm of 75mm Type B filter stone underlain by a permeable non-woven geotextile membrane. Stormwater infiltrates through the surface into filter drains beneath the Type B material, which are supported by perforated pipes designed to collect and convey runoff. The collected water is directed to the attenuation tank and subsequently to the Hydro-Brake Flow Control Chamber, which regulates discharge to a maximum of 5 l/s for all storm events up to and including the 1-in-100-year event plus 40% allowance for climate change, before being released into Knowsley Brook

Reinforced Concrete Pad: The drainage strategy proposes the installation of 200mm thick steel reinforced concrete pads. The pads will measure 13.2m x 8.9m and will be surrounded by standard concrete HB2 kerbs with 125mm upstand. 75mm of single sized stone is added to backfill the pad so that the kerbs are flush with the Finished Ground Level, allowing Forklift Access to the battery units.

3.0 Treatment Train Components Prior to Final Outfall

SuDS Drainage Strategy. The following figure (**Figure 1**) gives a summary of the proposed SuDS Drainage Strategy for the site

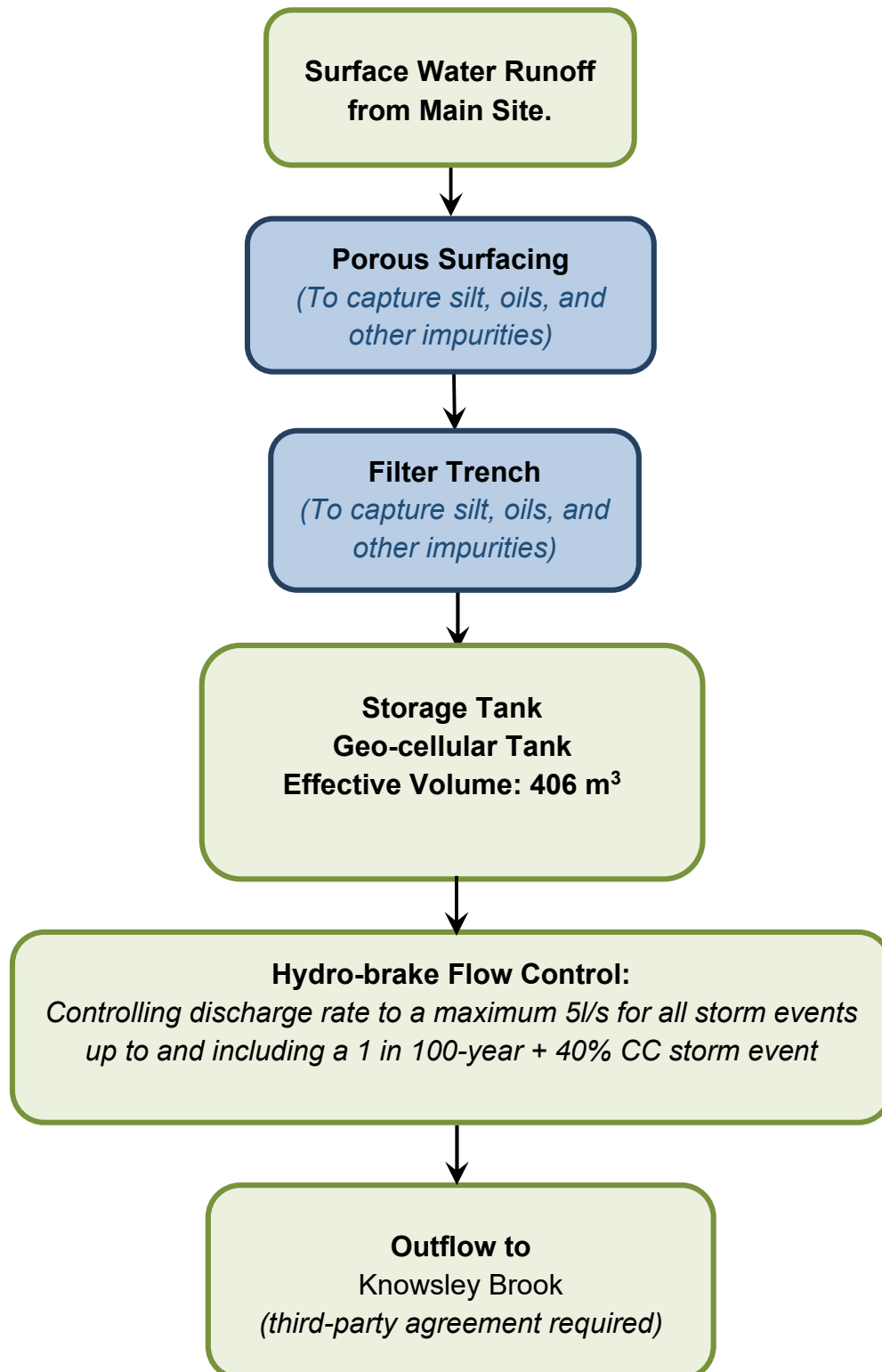


Figure 1: SuDS Drainage Strategy Summar

The drainage strategy of the site follows the SuDS Treatment Train Framework which utilises a series of sequential components with different, overlapping functions to maximise the potential to intercept and treat runoff. Component choice is determined by the characteristics the site and its layout.

The Five Principles of the SuDS management Train are:

1. **Prevention:** Components used to reduce the number of impermeable surfaces requiring positive drainage.
2. **Source Control:** Components located at the source of the runoff to provide initial rainfall interception and storage as well as capturing silt, oils, and other impurities.
3. **Conveyance:** Components that transport flows downstream towards storage systems. Ideal SuDS conveyance components are slow and porous, allowing for interception and infiltration.
4. **Site Control:** Components that provide the necessary storage not achieved by prior steps in the management train. They hold runoff before it can be discharged to a watercourse or sewer.
5. **Regional Control:** Large-scale storage systems that serve numerous sites.

The following section demonstrates how these principles have been adopted in the proposed SuDS drainage strategy.

Prevention:

Since there is no requirement for water use on site, rainwater harvesting is an infeasible method of preventing runoff. This positions soakaways as the primary method for reducing the impermeable area that requires positive drainage. However, infiltration tests have been carried out on-site during a Site Investigation (SI) by SP Associates in April 2022 and have proven that the infiltration of the soil is insufficient.

Furthermore, the construction planned for the site occupies the full extent of the area within the red-line boundary, meaning all available land is utilised. Therefore, there is no capacity to introduce soft landscaping in otherwise

impermeable parts of the site to decrease the area of impermeable land due to the site constraints. Therefore, there are no suitable SuDS components applicable for use on this site that fall under this designation.

Source Control:

There are three source control measures employed for this site. **Porous surfacing**, **Catchpits**, and **Filter Trenches**.

Porous Surfacing: The site will be made up of 300mm deep permeable gravelled area to provide initial rainfall interception. The stormwater flow will be slowed before infiltration to the filter trench. The porous surfacing has good water quality treatment, capturing silt, oils, and other impurities and preventing such pollutants from entering the drainage system.

Filter Trench: The proposed filter trench will have Specification for Highway Works (SHW) Type B filter material (20-40mm stone). The filter drain imitates the hydrological behaviour of soft landscaping by allowing the water to permeate the filter material before reaching the perforated pipe at the base of the trench. This ensures filtration of the runoff prior to conveyance to the attenuation device downstream.

Catchpits: Catchpits with a minimum of 300mm deep sumps have been strategically placed to capture debris and silt before the runoff reaches locations where it would be onerous to remove the silt.

Conveyance:

Filter Trenches are the main methods chosen to transport flows downstream to the storage system. The perforated pipes at the base of the trenches slowly conveys runoff that infiltrates through the filter media to the hydro-brake flow chamber.

Site Control:

Channel Drains: ACO MultiDrains will convey the runoff from the concrete pads directly to the attenuation tank avoiding any chance of infiltration. They are sized to accommodate a flow rate of 22l/s of fire water.

Conventional Piped Systems are used to convey runoff from channel drains directly to the attenuation chamber to prevent infiltration of potentially contaminated water.

Geocellular Attenuation Tank: A single, large geocellular attenuation tank with effective volume 406m³ is proposed on the southern side of the site. The tank is designed to accommodate runoff from a 1:100 rainfall event for the critical storm duration with an additional 40% allowance for climate change. Refer to **Appendix B** for detailed drainage calculations.

The tank will be created from Polystorm PSM 1 units with 95% void ratio, maximising the volume of stormwater able to be stored, whilst reducing the amount of excavation and thus soil that must be removed from site. The tank will also be impermeably lined with 1mm thick HDPE, which will provide a robust resilience against water that might be contaminated from a battery fire. The attenuation tank will be equipped with a Polystorm Access Turret positioned to allow sampling and testing of water in event of a fire.

Flow Control Device: The runoff shall be discharged into the Hydro-brake Flow Control Chamber with a penstock valve located downstream of the tank. This hydro-brake controls the discharge rate, limiting it to a maximum of 5 l/s for all storm events up to and including a 1 in 100-year + 40% CC storm event, before outfall to Knowsley Brook. Details are shown on the drainage plan layout in Appendix B.

Note on the Technical Feasibility and Practical Limitations of Greenfield Runoff Rates

In developing a sustainable drainage strategy for the site, it is necessary to consider both technical feasibility and compliance with industry guidance. Whilst the principle of restricting discharge to the calculated greenfield runoff rate is often cited as the preferred approach, in practice this is not always achievable or appropriate. This issue is also addressed in detail in the Flood Risk Assessment document **KIRK-BML-XX-XX-RP-C-0512**.

For this site, the greenfield runoff rate would require an impractically low discharge rate (1.2 l/s) that cannot be delivered using conventional flow control devices without creating significant operational and maintenance risks.

For example, the small orifices required to achieve greenfield rates are susceptible to blockage by debris, sediment, or silt; and may go unnoticed due to the unmanned nature of the site. This introduces unacceptable long-term maintenance and safety concerns, creating a risk of system failure and surface water flooding.

Both the **CIRIA SuDS Manual (C753)** and guidance from the **Environment Agency** acknowledge that the greenfield rate is not always achievable and recommend a practical minimum discharge of 5 l/s to mitigate these circumstances. It is generally accepted that in accordance with **Report Number SC030219 "Rainfall Runoff Management for Developments"** produced by the **Environment Agency** and **DEFRA**,

"A practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactorily low flow rate while keeping the risk of blockage to an acceptable level. It is suggested that this is 5 litres per second."

In line with established national guidance and Lead Local Flood Authority practice, the adoption of a minimum discharge rate of 5 l/s is therefore the only feasible and robust solution to ensure both effective surface water management and the long-term reliability of the system.

Regional/End of Line Control:

There are no Regional Control components suitable for this site due to the limited size of the development, as well as the absence of similar sites in the vicinity.

4.0 Incident Containment Capability

In the event of a fire, it is essential that firewater which may be contaminated with chemicals from the batteries is contained and prevented from being discharged to the environment where it could pose a pollutant risk. The need to prevent infiltration of contaminated firewater is attenuated for this site since the surrounding land is part of a Source Protection Zone (SPZ). This proposed drainage system is designed to prevent this happening, thus minimising the potential negative environmental impact.

The original proposal included the use of an impermeable membrane beneath the entire site to prevent surface water infiltration under normal rainfall conditions. However, due to the poor ground conditions at the site the use of screw piles as method for the battery unit foundations is required, this would result in several hundred penetrations of the membrane. As a result, this solution is deemed impractical at this site. The proposal is to now contain any fire water runoff from the batteries directly in the position of the battery units using concrete apron bunds.

The area underneath the battery units will be paved with an impermeable reinforced concrete pad of dimension 13.2m x 8.9m surrounded by HB2 kerbs with 125mm upstand (see **Appendix B**). In addition, the concrete slabs will be underlain with a sheet of damp proof membrane (DPM) to prevent any possible infiltration of fire water into the ground underneath in the event of cracking.

The concrete pads are designed to contain contaminated firewater within their bounds. The water is then directed via integrated ACO channel drains located at the perimeter of these concrete pads into the proposed stormwater network via standard solid pipes, which ultimately discharge directly into the attenuation tank.

In the event of a fire occurring during or immediately after a 1 in 100-year storm event when the attenuation tank is at its fullest, there is some concern that the volume of water generated may exceed the capacity of the tank. To address this and introduce redundancy into the system, the attenuation tank has been designed with an effective volume of 406 m³, sufficient to accommodate the maximum potential runoff volume expected under such combined event conditions.

Containment of the firewater on-site is achieved by the operation of penstock valve within the hydro-brake flow control chamber by fire personnel. When this valve is closed the contents of the geocellular attenuation storage are prevented from being discharged to the outfall as they are unable to enter the hydro-brake.

The attenuation tank has been sized for an effective volume of 406 m³. This is sufficient to accommodate runoff from a 1 in 100-year rainfall event, including an allowance of 40% for climate change, in addition to the estimated 180,000 litres of contaminated firewater runoff. This value of 180m³ is taken from the draft guidance provided by the National Fire Chiefs Council (NFCC) and has been used for similar BESS sites. The contaminated water will be temporarily stored in the tank until it can be safely pumped out and treated for appropriate

disposal. However, since the stormwater from the filter trenches discharges directly into the hydro-brake chamber, it will still be able to flow off-site, preventing flooding within the site.

This configuration ensures that, in the event of a fire occurring simultaneously with rainfall, runoff from the permeable pavements does not reduce the capacity of the geocellular attenuation tank. Instead, this runoff is conveyed directly to the adjacent brook via the Hydro-Brake and the overflow pipe located within the chamber.

Under normal conditions (i.e. in the absence of a fire event), any stormwater runoff would discharge directly into the tank and therefore would not receive the same level of filtration as the rest of the site, where water passes through the permeable surface and filter trench. To address this, the concrete pad will include a 150 mm upstand around its perimeter, with the bund area filled with stone infill. In addition, a hydrocarbon removal system—such as Naylor Smart Sponges or an equivalent—will be installed, this system by itself is able to remove 95% of pollutants. The combination of the stone-filled bund and the hydrocarbon removal system will provide a level of filtration comparable to that of a filter trench.

5.0 Summary

The drainage strategy for the site adheres to the Surface Water Discharge Hierarchy outlined in the Building Regulations 2000, CIRIA SuDS Manual 2015, and National Planning Policy Framework. The SuDS components selected for the site are proposed as per treatment train principles and specifically suited to the characteristics and needs of this particular site.

The strategy utilises filter drains, porous surfacing and catchpits as methods of source control to manage runoff at the source— reducing the potential amount of contamination and the size of SuDS components further downstream. The runoff from these areas is discharged directly to the hydro-brake chamber in the event of a fire for outfall to the brook.

In the areas underneath the battery units, 200mm thick impermeable concrete pads with 125mm HB2 kerb upstands around the edges are installed to prevent infiltration of contaminated firewater to the ground. This replaces the proposed geotextile layer spanning the extent of the site, as it proves a more robust and cost-effective option. The runoff incident on these pads is directed by ACO

channel drains to the attenuation tank that has been oversized to include fire water and a 1 in 100 plus 40% Climate Change event. These SuDS structures are part of site control measures to prevent contamination of the soil and nearby groundwater source by contaminated firewater.

The geocellular attenuation tank is selected as it allows the water contained in it to be isolated. Its capacity of 406 m³ is designed for a 1 in 100-year storm plus 40% climate change allowance as well as the potential 180,000L of firewater from fire suppression methods.

The contaminated fire water isolated in the attenuation tank by the penstock valve will be disposed of by being pumped out of the tank and treated prior to release.

Appendix A

Environmental Agency Letter

Knowsley Metropolitan Borough Council
Development Control
PO Box 26
Huyton
Liverpool
L36 9FB

Our ref: SO/2025/125051/01
Your ref: 25/00285/FUL
Date: 16 June 2025

Dear Andrew Hunt,

VARIATION OF CONDITIONS 2 (APPROVED PLANS), 3 (DRAINAGE ASSESSMENT), 4 (FIRE STATEMENT), 7 (CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN), 8 (BUILD OVER AGREEMENT), AND 13 (BATTERY SAFETY MANAGEMENT PLAN) OF PLANNING PERMISSION 23/02008/FUL (PROPOSED DEVELOPMENT OF A BATTERY STORAGE FACILITY AND ASSOCIATED INFRASTRUCTURE)

Coopers Lane Knowsley Industrial Park Kirkby Knowsley L33 7TT

Thank you for consulting the Environment Agency with the above variation of condition on 6 April 2025. We are only commenting on the condition we recommended for inclusion, Condition 3 to application 23/02008/FUL.

Environment Agency Position

We have reviewed the submitted information included in this Variation of Conditions application and there does not seem to have been new information provided, since our last response, SO/2025/124898 (dated 22 April 2025). Consequently, the same issues are still present for this latest application, which we have reiterated below.

We are still uncertain on the quantity of containment or storage for firewater that has been provided, and further clarification is needed on its management, if this storage is exceeded.

We would require further definition of the drainage catchments within the installation End 2 and then list out the treatment train components before the final outfall. These could then be compared to the [SUDS Manual C753](#) to indicate that sufficient measures are in place. Sustainable Drainage System (SuDS) components and their benefits are not new concepts, however the ability of them to provide containment during a site incident can be unclear.

Secondly, it is noted that the site will be underlain by a geotextile which will prevent surface water infiltrating to the ground under normal rainfall events. However, in the event of a fire, there may be runoff created from any firefighting activities which could be chemically aggressive. Therefore information should be provided on the robustness of this geotextile layer during a fire in order to prevent surface water runoff into the ground.

Environment Agency
Richard Fairclough House Knutsford Road, Warrington, WA4 1HT.
Customer services line: 03708 506 506
www.gov.uk/environment-agency

Cont/d..

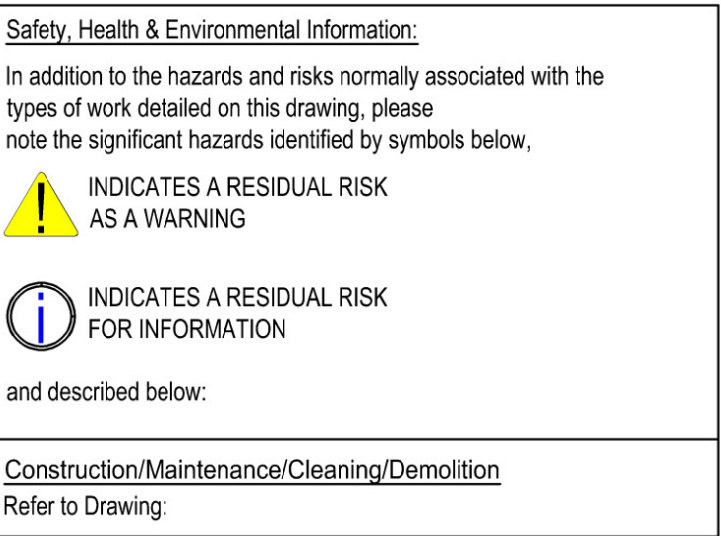
Based on the information submitted, the current application the proposed amendments such as layout and elevations are not considered relevant to these points, and we would not recommend the variation of condition 3 until these points listed above are addressed.

Should you require any additional information or wish to discuss these matters further, please do not hesitate to contact me.

Yours faithfully,

Appendix B

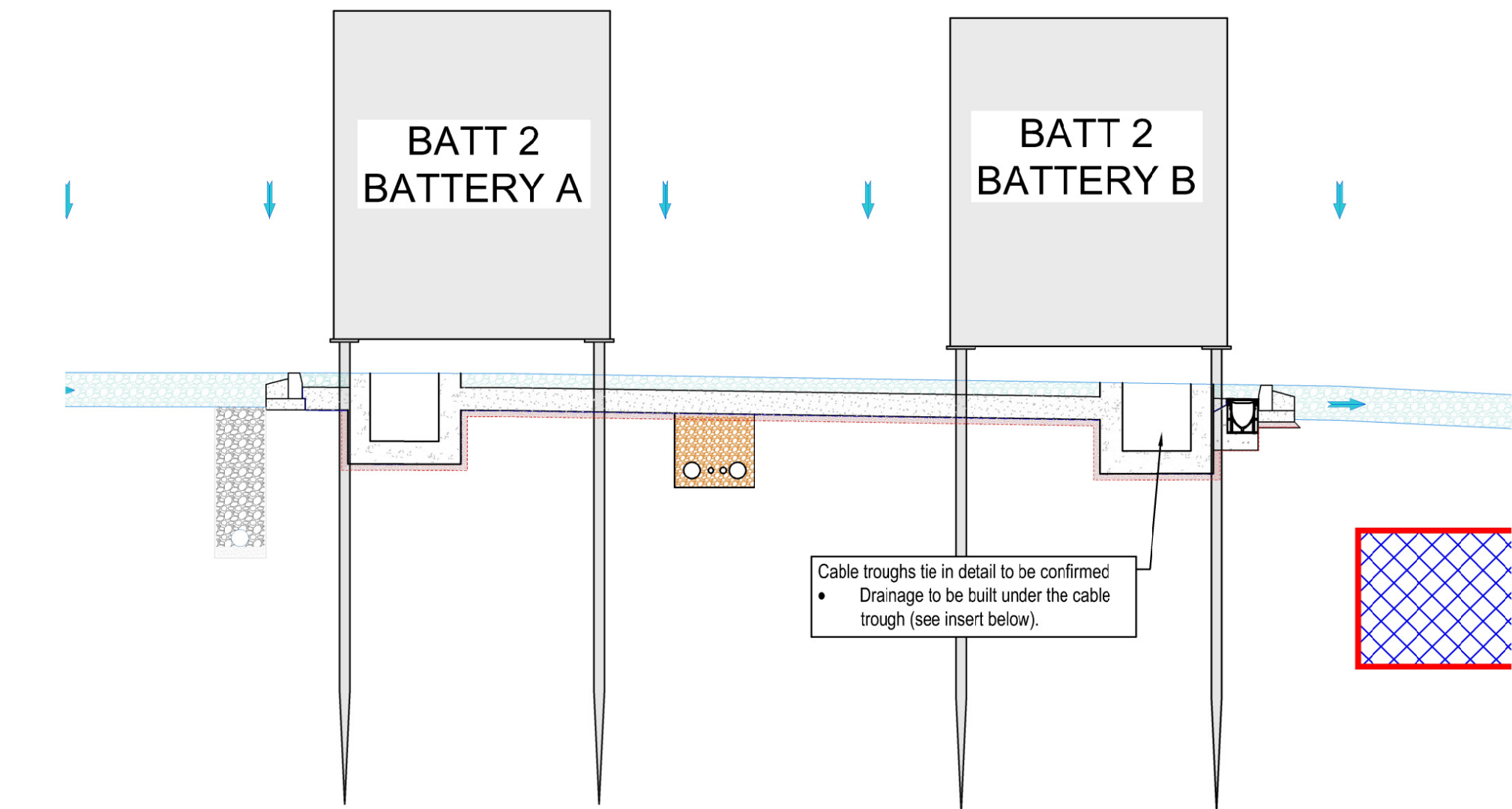
Drainage Plan Layout



- ### General Notes:
- Do not scale from this drawing.
 - Discrepancies or omissions are to be reported to the Engineer prior to work commencing.
 - Materials and workmanship are to comply in all respects with current British Standard Specifications, Codes of Practice, and Building Regulations Approved Documents.
 - This drawing is to be read in conjunction with all relevant specifications and drawings issued by the Engineer, Architect and other Specialists.
 - The contractor is to check all information provided, including all proposed external levels, prior to commencing the works and seek clarification from the engineer in respect to any ambiguities found.
 - The copyright of this drawing is vested in the Engineer and must not be copied or reproduced without written consent.
 - Design principles by others.

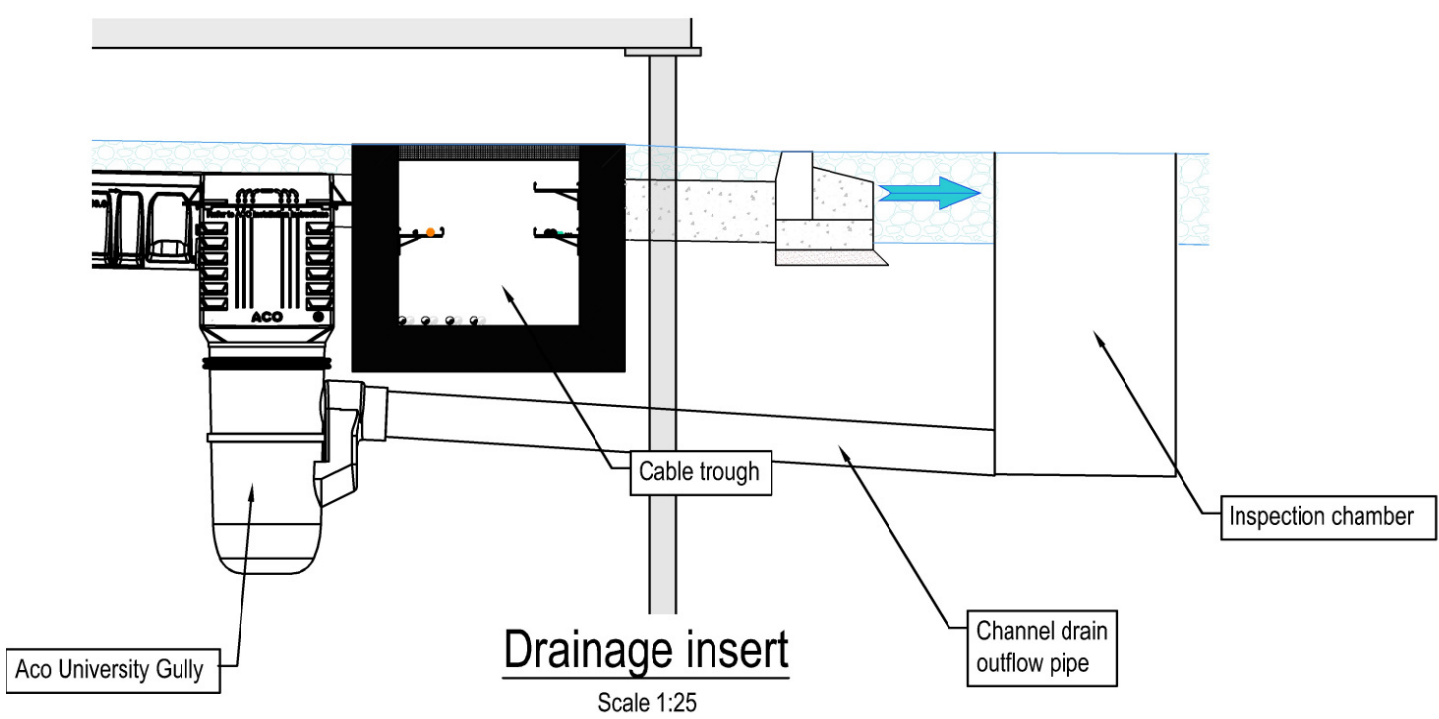
Cross Section Sketch A-A

Scale 1:50



Cross Section Sketch B-B

Scale 1:50



Drainage insert

Scale 1:25

P03	NS	02/09/2025	Drainage insert added.
P02	NS	33/07/2025	Amended to client comments.
P01	NS/NJ	18/07/2025	First issue for comment.
Rev	By / Chk'd	Date	Description

FOR COMMENT
This drawing is not to be used for construction

Client

BarnsleyMarshall Limited
4&5 Prior Whard
Harris Business Park, Hanbury Rd
Stoke Prior, Bromsgrove
B604FG
Tel: 01905 330550
Email: design@barnsleymarshall.co.uk
Web: www.barnsleymarshall.co.uk



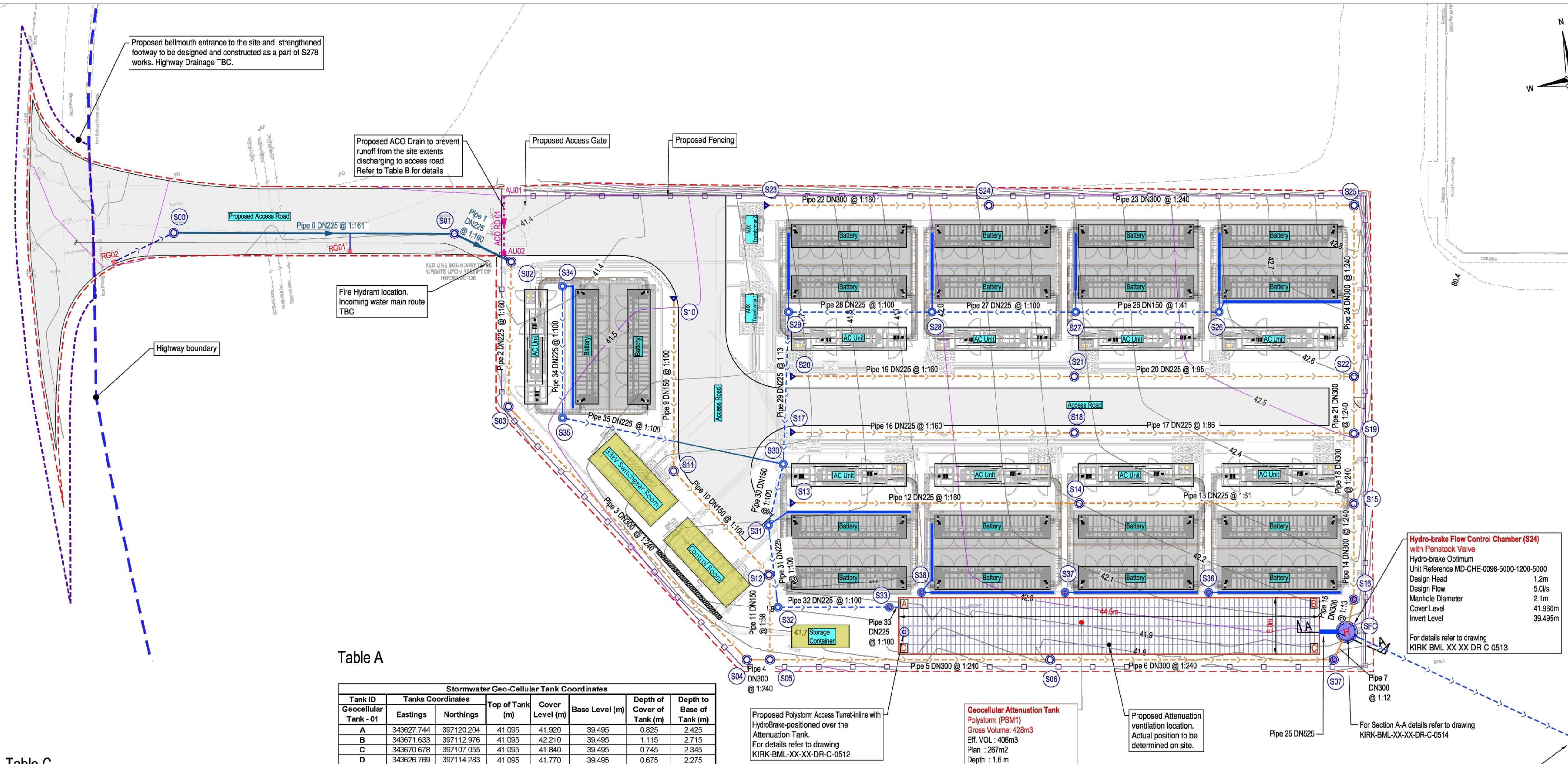
Project

275kV Substation,
Coopers Lane, Kirkby
L337TT

Drawi

Impermeable Liner Section
Alternative concrete pad option

By	NS	Date	17/07/2025
Drawing No.			Revision
KIRK-BML-XX-XX-SK-C-0003			P03
BML Job No.			Status
1126-01			-
Drawing Scale at A1: As Shown			
CAD Filename: <u>Y:\Projects\1126-01\Onvix Projects\Kirk\YK\Working Information\02\Sketches & Scheme Design\KIRK-BML-XX-XX-SK-C-001 Impermeable Inner Section.dwg</u>			



Safety, Health & Environmental Information:
In addition to the hazards and risks normally associated with the types of work detailed on this drawing, please note the significant hazards identified by symbols below,
 INDICATES A RESIDUAL RISK AS A WARNING
 INDICATES A RESIDUAL RISK FOR INFORMATION
and described below:
Construction/Maintenance/Cleaning/Demolition
Refer to Drawing:

General Notes:

- Do not scale from this drawing.
- All dimensions are in meters (m), all levels in metres (m) unless noted otherwise.
- Discrepancies or omissions are to be reported to the Engineer prior to work commencing.
- Materials and workmanship are to comply in all respects with current British Standard Specifications, Codes of Practice, and Building Regulations Approved Documents.
- The copyright of this drawing is vested in the Engineer and must not be copied or reproduced without written consent.
- The Contractor is to check and verify all building and site dimensions, levels and sewer invert levels at connection points before work commences.
- This drawing is to be read in conjunction with all relevant specifications and drawings issued by the Engineer, Architect and other Specialists.
- Details and locations of existing services are based on the Topographical Survey and Utility Records received from Third Parties and Service Providers respectively, and should be considered indicative and approximate only. The existing services shown on Series 2700 drawings may not be exhaustive. The Contractor shall use Trial Pits and other approved methods to accurately locate and verify the positions and depths of all existing services before commencement of works on site.

NOTES:

- The contractor is to check all information provided prior to commencing the works and seek clarification from the engineer in respect to any ambiguities found.
- For Pipe materials refer drawing KIRK-BML-XX-XX-DR-C-0506.
- All chamber covers and gully tops shall be kite marked and comply with the strength / group requirements of BS EN 124.
- All connections to highway drains must be made with factory made junctions. All gullies and gully connectors shall be in accordance with Standard on drawing KIRK-BML-XX-XX-DR-C-0512
- All trench reinstatement to be as per drawing KIRK-BML-XX-XX-DR-C-0511
- For Stormwater & Other Water Chamber Schedules refer to drawing KIRK-BML-XX-XX-DR-C-0505
- For Stormwater & Other Water Pipe Schedules refer to drawing KIRK-BML-XX-XX-DR-C-0506
- For Draining Details refer to drawings KIRK-BML-XX-XX-DR-C-0510 to 0514.

Hydro-brake Flow Control Chamber (S24) with Penstock Valve
Hydro-brake Optimum
Unit Reference MD-CHE-0098-5000-1200-5000
Design Head : 1.2m
Design Flow : 5.0l/s
Manhole Diameter : 2.1m
Cover Level : 41.960m
Invert Level : 39.495m
For details refer to drawing KIRK-BML-XX-XX-DR-C-0513

Geocellular Attenuation Tank (PSM1)
Gross Volume: 428m³
Eff. VOL : 406m³
Plan : 267m²
Depth : 1.6 m
Void Ratio : 0.95
Cover Level: 41.700m
Top of Tank: 41.095m
Cover Depth: 0.675m
Bottom of Tank: 39.495m
For details refer to Table A & drawing KIRK-BML-XX-XX-DR-C-0513.

Table A

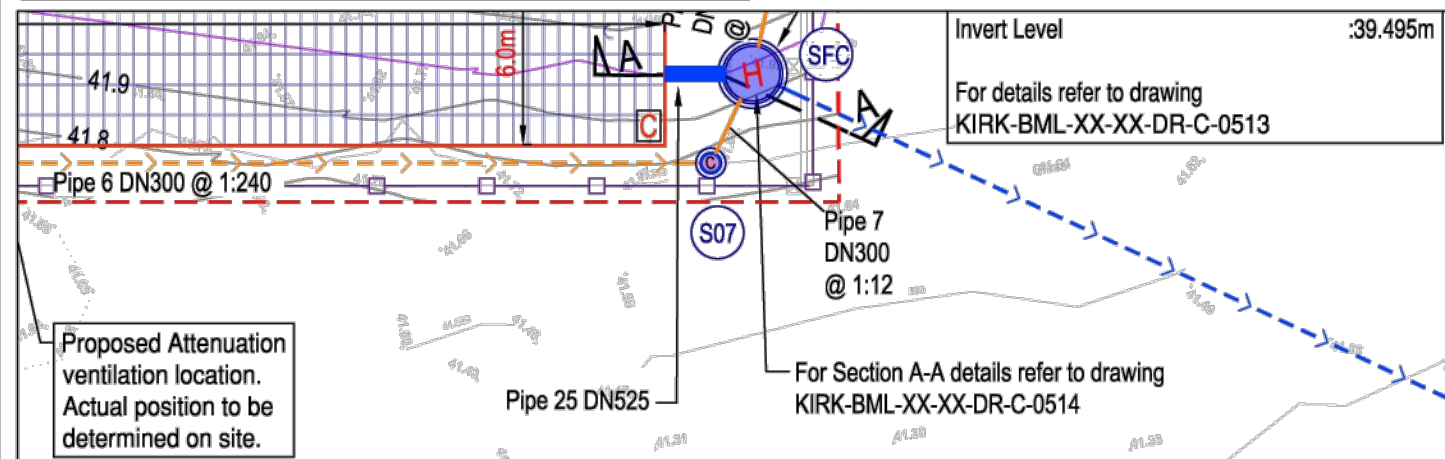
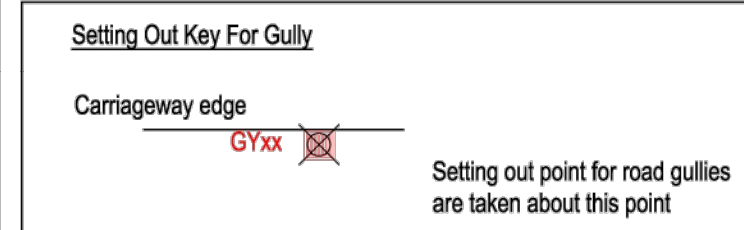
Stormwater Geo-Cellular Tank Coordinates						
Tank ID	Tanks Coordinates		Top of Tank (m)	Cover Level (m)	Base Level (m)	Depth to Base of Tank (m)
Geocellular Tank - 01	Eastings	Northings				
A	343627.744	397120.204	41.095	41.920	39.495	0.825
B	343671.633	397112.976	41.095	42.210	39.495	1.115
C	343670.678	397107.055	41.095	41.840	39.495	0.745
D	343626.769	397114.283	41.095	41.770	39.495	0.675

Table B

ACO RoadDrain Setting Out Coordinates			
Chamber ID	Chamber Coordinates		Description
	X (Eastings)	Y (Northings)	
AU01	343593.415	397168.843	ACO RoadDrain (PD200F 30.1 Schedule) , or similar approved
AU02	343592.405	397162.706	ACO RoadDrain (PD200F 30.1 Schedule) , or similar approved

Table C

Road Gully Schedule		
Gully ID	X (Eastings)	Y (Northings)
GY01	343576.366	397165.758
GY02	343551.560	397168.722



Important Notes:
All drainage discharged to the Brook to be agreed with the Local Land Drainage Authority (Knowsley Council) and Environmental Agency prior to discharge.

Proposed DN225 Althorn outlet headwall to Knowsley Brook, refer to drawing KIRK-BML-XX-XX-DR-C-0511
Discharge to existing Knowsley Brook, Discharge consent to be provided by the Land Drainage Board.

Existing watercourse to be cleared of any debris to ensure uninterrupted flow.
Discharge into existing watercourse, IL: 39.050m
Maximum Peak Flow 5.0l/s
- 1-year - 4.9l/s
- 30-year + 40% CC - 4.8l/s
- 100-year + 40% CC - 4.9l/s
Connect via a Discharge Consent

Insert A : Outfall to Knowsley Brook

Key:

	Site Boundary
	Highway Boundary
	Proposed fencing surrounding the site
	Proposed Stormwater Drainage (non perforated)
	Proposed Stormwater pipe (To be encased in concrete, refer to drawing KIRK-BML-XX-XX-DR-C-0511)
	Proposed Stormwater Chamber
	Proposed Ridgiform Separate Catchpit
	Proposed Stormwater Hydro-brake Flow Control Chamber with Penstock Valve
	ACO RoadDrain PD200F 30.1 Schedule or similar approved, refer to Table B for details
	Proposed Road Gully (refer to Table C for details)
	ACO Multidrain MD-M200D-10.0 with ACO Universal gully and sump unit at end.
	Proposed Rodding Eye
	Proposed Perforated pipes laid underneath permeable paving
	Proposed Althorn 225mm Headwall Outlet to existing watercourse
	Designed Contour Level Major
	Designed Contour Level Minor

PRELIMINARY DRAWING
This drawing is not to be used for construction

Client: **High Voltage Grid Services**
Unit C Hambrook Business Park | The Stream | Hambrook | Bristol | BS16 1RQ
www.hvgs.co.uk

BarnsleyMarshall Limited
465 Prior Wharf
Harris Business Park, Hanbury Rd
Stoke Prior, Bromsgrove
B604FG
Tel: 01905 330550
Email: design@barnsleymarshall.co.uk
Web: www.barnsleymarshall.co.uk



Project: **275kV Substation, Coopers Lane, Kirkby L33 7TT**

Drawing

Drainage Plan Layout

By	SHNJ	Date	29/08/2024
Drawing No.	KIRK-BML-XX-XX-DR-C-0501	Revision	P06
BML Job No.	1126-01	Status	-
Drawing Scale at A1:	1:250		
CAD Filename:	Y:\p\275kV\275kV\Drawings\BML-XX-XX-DR-C-0501\BML-XX-XX-DR-C-0501.dwg		

Appendix C

Drainage Calculations

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS		Checked by:	Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Catchment Area

Type : Catchment Area

Area (ha)	0.012
-----------	-------

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (1)

Type : Catchment Area

Area (ha)	0.012
-----------	-------

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (2)

Type : Catchment Area

Area (ha)	0.012
-----------	-------

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:		Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Catchment Area (3)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (4)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (5)

Type : Catchment Area

Area (ha)	0.012
-----------	-------

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:		Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Catchment Area (6)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (7)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (8)

Type : Catchment Area

Area (ha)	0.012
-----------	-------

Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:	Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG	



Catchment Area (9)

Type : Catchment Area

Area (ha)	0.034
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (10)

Type : Catchment Area

Area (ha)	0.009
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (11)

Type : Catchment Area

Area (ha)	0.014
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:		Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Catchment Area (12)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (13)

Type : Catchment Area

Area (ha)	0.04
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (14)

Type : Catchment Area

Area (ha)	0.015
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:		Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Catchment Area (15)

Type : Catchment Area

Area (ha)	0.011
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (16)

Type : Catchment Area

Area (ha)	0.012
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (17)

Type : Catchment Area

Area (ha)	0.035
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:	Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



Catchment Area (18)

Type : Catchment Area

Area (ha)	0.03
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (19)

Type : Catchment Area

Area (ha)	0.015
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (20)

Type : Catchment Area

Area (ha)	0.015
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
Report Details: Type: Inflows Storm Phase: Phase	Designed by: NS	Checked by:	Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



Catchment Area (21)

Type : Catchment Area

Area (ha)	0.028
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (22)

Type : Catchment Area

Area (ha)	0.025
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Catchment Area (23)

Type : Catchment Area

Area (ha)	0.022
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
	Designed by: NS	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Catchment Area (24)

Type : Catchment Area

Area (ha)	0.03
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Preliminary Sizing

Volumetric Runoff Coefficient	0.750
Percentage Impervious (%)	100
Time of Concentration (mins)	5

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.750
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Junctions Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Junction Type	Easting (m)	Northing (m)	Cover Level (m)	Depth (m)	Invert Level (m)	Chamber Shape	Diameter (m)
Manhole	Manhole	343558.306	397170.741	41.490	0.925	40.565	Circular	0.600
Manhole (1)	Manhole	343587.674	397165.802	41.400	1.020	40.380	Circular	0.600
Manhole (2)	Manhole	343593.040	397161.913	41.350	1.012	40.338	Circular	0.600
Manhole (3)	Manhole	343590.254	397146.840	41.390	1.222	40.168	Circular	0.600
Manhole (4)	Manhole	343610.802	397116.324	41.570	1.556	40.014	Circular	0.600
Manhole (5)	Manhole	343613.223	397115.926	41.550	1.546	40.004	Circular	0.600
Manhole (6)	Manhole	343642.490	397111.108	41.790	1.909	39.881	Circular	0.600
Manhole (7)	Manhole	343673.437	397106.014	41.750	2.000	39.750	Circular	0.600
Flow control manhole	Manhole	343673.914	397108.914	41.960	2.465	39.495	Circular	2.100
Manhole (8)	Manhole	343720.064	397077.370	41.960	2.776	39.184	Circular	1.200
Manhole (10)	Manhole	343609.335	397155.046	41.490	0.850	40.640	Circular	0.600
Manhole (11)	Manhole	343606.410	397137.275	41.720	1.260	40.460	Circular	0.600
Manhole (12)	Manhole	343614.686	397124.813	41.880	1.570	40.310	Circular	0.600
Manhole (13)	Manhole	343618.487	397131.872	41.790	1.259	40.531	Circular	0.600
Manhole (14)	Manhole	343648.219	397126.931	42.190	1.848	40.342	Circular	0.600
Manhole (15)	Manhole	343676.880	397122.174	42.390	2.596	39.794	Circular	0.600
Manhole (16)	Manhole	343674.475	397112.319	42.230	2.478	39.752	Circular	0.600
Manhole (17)	Manhole	343619.711	397139.245	41.690	1.259	40.431	Circular	0.600
Manhole (18)	Manhole	343648.904	397134.376	42.250	2.004	40.246	Circular	0.600
Manhole (19)	Manhole	343678.097	397129.507	42.500	2.675	39.825	Circular	0.600
Manhole (20)	Manhole	343620.675	397145.092	41.680	1.259	40.421	Circular	0.600
Manhole (21)	Manhole	343649.876	397140.276	42.260	2.024	40.236	Circular	0.600
Manhole (22)	Manhole	343679.090	397135.469	42.600	2.750	39.850	Circular	0.600
Manhole (23)	Manhole	343617.250	397163.984	41.590	1.259	40.331	Circular	0.600
Manhole (24)	Manhole	343643.900	397159.597	42.120	2.033	40.087	Circular	0.600
Manhole (25)	Manhole	343682.030	397153.321	42.870	2.944	39.926	Circular	0.600
Manhole (26)	Manhole	343666.110	397144.514	42.580	1.000	41.580	Circular	0.450
Manhole (27)	Manhole	343651.120	397146.981	42.280	1.052	41.228	Circular	0.450
Manhole (28)	Manhole	343636.129	397149.449	41.980	0.904	41.076	Circular	0.450
Manhole (29)	Manhole	343620.036	397152.098	41.660	0.747	40.913	Circular	0.450
Manhole (30)	Manhole	343617.776	397138.370	41.700	1.880	39.820	Circular	0.450
Manhole (31)	Manhole	343616.597	397131.203	41.790	2.042	39.748	Circular	0.450

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025				
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Manhole (32)	Manhole	343614.96 5	397121.29 4	41.810	2.163	39.647	Circular	0.450
Manhole (33)	Manhole	343624.23 4	397119.768	41.860	2.104	39.756	Circular	0.450
Manhole (34)	Manhole	343597.97 3	397158.47 7	41.390	1.200	40.190	Circular	0.600
Manhole (35)	Manhole	343595.70 6	397144.70 7	41.510	1.460	40.050	Circular	0.600
Manhole (36)	Manhole	343660.27 2	397115.837	42.140	1.000	41.140	Circular	0.450
Manhole (37)	Manhole	343645.35 4	397118.298	42.040	1.000	41.040	Circular	0.450
Manhole (38)	Manhole	343630.29 2	397120.77 2	41.930	1.780	40.150	Circular	0.450
Manhole (9)	Manhole	343735.05 0	397062.60 0	40.000	0.950	39.050	Circular	1.200

Name	Lock
Manhole	None
Manhole (1)	None
Manhole (2)	None
Manhole (3)	None
Manhole (4)	None
Manhole (5)	None
Manhole (6)	None
Manhole (7)	None
Flow control manhole	None
Manhole (8)	None
Manhole (10)	None
Manhole (11)	None
Manhole (12)	None
Manhole (13)	None
Manhole (14)	None
Manhole (15)	None
Manhole (16)	None
Manhole (17)	None
Manhole (18)	None
Manhole (19)	None
Manhole (20)	None
Manhole (21)	None
Manhole (22)	None
Manhole (23)	None
Manhole (24)	None
Manhole (25)	None
Manhole (26)	None
Manhole (27)	None
Manhole (28)	None
Manhole (29)	None
Manhole (30)	None
Manhole (31)	None
Manhole (32)	None
Manhole (33)	None
Manhole (34)	None
Manhole (35)	None
Manhole (36)	None
Manhole (37)	None
Manhole (38)	None
Manhole (9)	None

Inlets

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Junctions Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

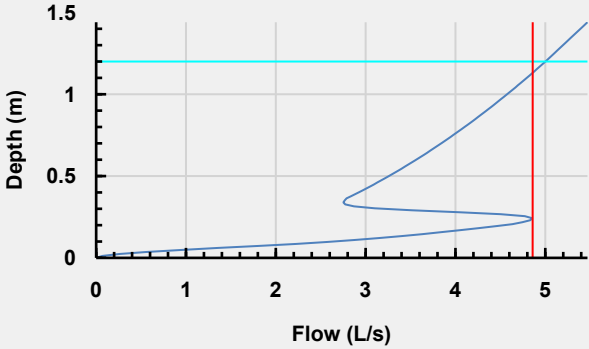
Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
Manhole	Inlet	Catchment Area (9)	(None)	No Restriction
Manhole (1)	Inlet	Pipe	(None)	No Restriction
Manhole (2)	Inlet	Pipe (1)	(None)	No Restriction
	Inlet (1)	Catchment Area (11)	(None)	No Restriction
	Inlet (2)	Catchment Area (12)	(None)	No Restriction
	Inlet (3)	Catchment Area (10)	(None)	No Restriction
Manhole (3)	Inlet	Pipe (2)	(None)	No Restriction
Manhole (4)	Inlet	Pipe (3)	(None)	No Restriction
Manhole (5)	Inlet	Pipe (4)	(None)	No Restriction
	Inlet (1)	Pipe (11)	(None)	No Restriction
	Inlet (2)	Catchment Area (23)	(None)	No Restriction
Manhole (6)	Inlet	Pipe (5)	(None)	No Restriction
	Inlet (1)	Catchment Area (24)	(None)	No Restriction
Manhole (7)	Inlet	Pipe (6)	(None)	No Restriction
Flow control manhole	Inlet	Pipe (7)	(None)	No Restriction
	Inlet (1)	Pipe (15)	(None)	No Restriction
	Inlet (2)	Pipe (25)	(None)	No Restriction
Manhole (8)	Inlet	Pipe (8)	(None)	No Restriction
Manhole (10)	Inlet (1)	Catchment Area (13)	(None)	No Restriction
Manhole (11)	Inlet	Pipe (9)	(None)	No Restriction
Manhole (12)	Inlet	Pipe (10)	(None)	No Restriction
	Inlet (1)	Catchment Area (14)	(None)	No Restriction
Manhole (13)	Inlet (1)	Catchment Area (21)	(None)	No Restriction
Manhole (14)	Inlet	Pipe (12)	(None)	No Restriction
	Inlet (2)	Catchment Area (22)	(None)	No Restriction
Manhole (15)	Inlet	Pipe (13)	(None)	No Restriction
	Inlet (1)	Pipe (18)	(None)	No Restriction
Manhole (16)	Inlet	Pipe (14)	(None)	No Restriction
Manhole (17)	Inlet	Catchment Area (19)	(None)	No Restriction
Manhole (18)	Inlet	Pipe (16)	(None)	No Restriction
	Inlet (1)	Catchment Area (20)	(None)	No Restriction
Manhole (19)	Inlet	Pipe (17)	(None)	No Restriction
	Inlet (1)	Pipe (21)	(None)	No Restriction
Manhole (20)	Inlet (1)	Catchment Area (17)	(None)	No Restriction
Manhole (21)	Inlet	Pipe (19)	(None)	No Restriction
	Inlet (1)	Catchment Area (18)	(None)	No Restriction
Manhole (22)	Inlet	Pipe (20)	(None)	No Restriction
	Inlet (1)	Pipe (24)	(None)	No Restriction
Manhole (23)	Inlet	Catchment Area (15)	(None)	No Restriction
Manhole (24)	Inlet	Pipe (22)	(None)	No Restriction
	Inlet (1)	Catchment Area (16)	(None)	No Restriction
Manhole (25)	Inlet	Pipe (23)	(None)	No Restriction
Manhole (26)	Inlet	Catchment Area	(None)	No Restriction
Manhole (27)	Inlet	Pipe (26)	(None)	No Restriction
	Inlet (1)	Catchment Area (1)	(None)	No Restriction
Manhole (28)	Inlet	Pipe (27)	(None)	No Restriction
	Inlet (1)	Catchment Area (2)	(None)	No Restriction
Manhole (29)	Inlet	Pipe (28)	(None)	No Restriction
	Inlet (1)	Catchment Area (3)	(None)	No Restriction
Manhole (30)	Inlet	Pipe (29)	(None)	No Restriction
	Inlet (1)	Pipe (35)	(None)	No Restriction
Manhole (31)	Inlet	Pipe (30)	(None)	No Restriction
	Inlet (1)	Catchment Area (8)	(None)	No Restriction
Manhole (32)	Inlet	Pipe (31)	(None)	No Restriction
Manhole (33)	Inlet	Pipe (32)	(None)	No Restriction
Manhole (34)	Inlet	Catchment Area (4)	(None)	No Restriction

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
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Junction	Inlet Name	Incoming Item(s)	Bypass Destination	Capacity Type
Manhole (35)	Inlet	Pipe (34)	(None)	No Restriction
Manhole (36)	Inlet	Catchment Area (5)	(None)	No Restriction
Manhole (37)	Inlet	Catchment Area (6)	(None)	No Restriction
Manhole (38)	Inlet	Catchment Area (7)	(None)	No Restriction
Manhole (9)	Inlet	Pipe (39)	(None)	No Restriction

Outlets

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Junctions Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Junction	Outlet Name	Outgoing Connection	Outlet Type
Manhole	Outlet	Pipe	Free Discharge
Manhole (1)	Outlet	Pipe (1)	Free Discharge
Manhole (2)	Outlet	Pipe (2)	Free Discharge
Manhole (3)	Outlet	Pipe (3)	Free Discharge
Manhole (4)	Outlet	Pipe (4)	Free Discharge
Manhole (5)	Outlet	Pipe (5)	Free Discharge
Manhole (6)	Outlet	Pipe (6)	Free Discharge
Manhole (7)	Outlet	Pipe (7)	Free Discharge
Flow control manhole	Outlet	Pipe (8)	Hydro-Brake®
	Invert Level (m)	39.495	
	Design Depth (m)	1.200	
	Design Flow (L/s)	5.0	
	Objective	Minimise Upstream Storage Requirements	
	Application	Surface Water Only	
	Sump Available	☐	
	Unit Reference	CHE-0098-5000-1200-5000	
			
Manhole (8)	Outlet	Pipe (39)	Free Discharge
Manhole (10)	Outlet	Pipe (9)	Free Discharge
Manhole (11)	Outlet	Pipe (10)	Free Discharge
Manhole (12)	Outlet	Pipe (11)	Free Discharge
Manhole (13)	Outlet	Pipe (12)	Free Discharge
Manhole (14)	Outlet	Pipe (13)	Free Discharge
Manhole (15)	Outlet	Pipe (14)	Free Discharge
Manhole (16)	Outlet	Pipe (15)	Free Discharge
Manhole (17)	Outlet	Pipe (16)	Free Discharge
Manhole (18)	Outlet	Pipe (17)	Free Discharge
Manhole (19)	Outlet	Pipe (18)	Free Discharge
Manhole (20)	Outlet	Pipe (19)	Free Discharge
Manhole (21)	Outlet	Pipe (20)	Free Discharge
Manhole (22)	Outlet	Pipe (21)	Free Discharge
Manhole (23)	Outlet	Pipe (22)	Free Discharge
Manhole (24)	Outlet	Pipe (23)	Free Discharge
Manhole (25)	Outlet	Pipe (24)	Free Discharge
Manhole (26)	Outlet	Pipe (26)	Free Discharge
Manhole (27)	Outlet	Pipe (27)	Free Discharge
Manhole (28)	Outlet	Pipe (28)	Free Discharge
Manhole (29)	Outlet	Pipe (29)	Free Discharge
Manhole (30)	Outlet	Pipe (30)	Free Discharge
Manhole (31)	Outlet	Pipe (31)	Free Discharge
Manhole (32)	Outlet	Pipe (32)	Free Discharge
Manhole (33)	Outlet	Pipe (33)	Free Discharge
Manhole (34)	Outlet	Pipe (34)	Free Discharge
Manhole (35)	Outlet	Pipe (35)	Free Discharge
Manhole (36)	Outlet	Pipe (36)	Free Discharge
Manhole (37)	Outlet	Pipe (37)	Free Discharge
Manhole (38)	Outlet	Pipe (38)	Free Discharge

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Stormwater Controls Storm Phase: Phase	Designed by: NS	Checked by:		Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				



Cellular Storage

Type : Cellular Storage

Dimensions

Exceedance Level (m)	41.700
Depth (m)	1.600
Base Level (m)	39.495
Number of Crates Long	6
Number of Crates Wide	89
Number of Crates High	4
Porosity (%)	95
Crate Length (m)	1
Crate Width (m)	0.5
Crate Height (m)	0.4
Total Volume (m³)	406.445

Inlets

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (36)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (37)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (38)
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet

Inlet Type	Point Inflow
Incoming Item(s)	Pipe (33)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (25)
Outlet Type	Free Discharge

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Connections Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Length (m)	Connection Type	Slope (1:X)	Manning's n	Colebrook-White Roughness (mm)	Diameter / Base Width (mm)	Upstream Cover Level (m)	Upstream Invert Level (m)
Pipe	29.780	Pipe	160.892		0.6	225	41.490	40.565
Pipe (1)	6.627	Pipe	160.000		0.6	225	41.400	40.380
Pipe (2)	15.329	Pipe	160.000		0.6	225	41.350	40.338
Pipe (3)	36.789	Pipe	240.000		0.6	300	41.390	40.168
Pipe (4)	2.454	Pipe	240.000		0.6	300	41.570	40.014
Pipe (5)	29.660	Pipe	240.000		0.6	300	41.550	40.004
Pipe (6)	31.364	Pipe	240.000		0.6	300	41.790	39.881
Pipe (7)	2.939	Pipe	11.530		0.6	300	41.750	39.750
Pipe (8)	55.900	Pipe	180.000		0.6	225	41.960	39.495
Pipe (9)	18.010	Pipe	100.000		0.6	150	41.490	40.640
Pipe (10)	14.960	Pipe	100.000		0.6	150	41.720	40.460
Pipe (11)	9.006	Pipe	57.688		0.6	150	41.880	40.310
Pipe (12)	30.140	Pipe	160.000		0.6	225	41.790	40.531
Pipe (13)	29.054	Pipe	61.427		0.6	225	42.190	40.342
Pipe (14)	10.144	Pipe	240.000		0.6	300	42.390	39.794
Pipe (15)	3.450	Pipe	13.423		0.6	300	42.230	39.752
Pipe (16)	29.596	Pipe	160.000		0.6	225	41.690	40.431
Pipe (17)	29.596	Pipe	85.684		0.6	225	42.250	40.246
Pipe (18)	7.433	Pipe	240.000		0.6	300	42.500	39.825
Pipe (19)	29.596	Pipe	160.000		0.6	225	41.680	40.421
Pipe (20)	29.607	Pipe	95.438		0.6	225	42.260	40.236
Pipe (21)	6.045	Pipe	240.000		0.6	300	42.600	39.850
Pipe (22)	27.008	Pipe	160.000		0.6	225	41.590	40.331
Pipe (23)	38.643	Pipe	240.000		0.6	300	42.120	40.087
Pipe (24)	18.092	Pipe	240.000		0.6	300	42.870	39.926
Pipe (25)	3.230	Pipe	0.000		0.6	525	41.700	39.495
Pipe (26)	15.192	Pipe	43.159		0.6	150	42.580	41.580
Pipe (27)	15.192	Pipe	99.947		0.6	225	42.280	41.228
Pipe (28)	16.310	Pipe	100.000		0.6	225	41.980	41.076
Pipe (29)	13.912	Pipe	12.734		0.6	225	41.660	40.913
Pipe (30)	7.264	Pipe	100.000		0.6	225	41.700	39.820
Pipe (31)	10.043	Pipe	100.000		0.6	225	41.790	39.748
Pipe (32)	9.394	Pipe	100.000		0.6	225	41.810	39.850
Pipe (34)	13.954	Pipe	99.675		0.6	225	41.390	40.190
Pipe (35)	22.962	Pipe	100.000		0.6	225	41.510	40.050
Pipe (36)	1.146	Pipe	100.000		0.6	225	42.140	41.140
Pipe (37)	1.104	Pipe	100.000		0.6	225	42.040	41.040
Pipe (38)	1.142	Pipe	100.000		0.6	225	41.930	40.150
Pipe (39)	21.041	Pipe	157.024		0.6	225	41.960	39.184
Pipe (33)	3.556	Pipe	100.000		0.6	225	41.860	39.756

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025	
Report Details: Type: Connections Storm Phase: Phase		Designed by: NS	Checked by: Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG	



Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Part Family	Lock	Flow Restriction (L/s)	Culvert Type	Culvert Entrance
Pipe	41.400	40.380		All		(None)	(None)
Pipe (1)	41.350	40.338		All		(None)	(None)
Pipe (2)	41.390	40.243		All		(None)	(None)
Pipe (3)	41.570	40.014		All		(None)	(None)
Pipe (4)	41.550	40.004		All		(None)	(None)
Pipe (5)	41.790	39.881		All		(None)	(None)
Pipe (6)	41.750	39.750		All		(None)	(None)
Pipe (7)	41.960	39.495		All		(None)	(None)
Pipe (8)	41.960	39.184		All	5.5	(None)	(None)
Pipe (9)	41.720	40.460		All		(None)	(None)
Pipe (10)	41.880	40.310		All		(None)	(None)
Pipe (11)	41.550	40.154		All		(None)	(None)
Pipe (12)	42.190	40.342		All		(None)	(None)
Pipe (13)	42.390	39.869		All		(None)	(None)
Pipe (14)	42.230	39.752		All		(None)	(None)
Pipe (15)	41.960	39.495		All		(None)	(None)
Pipe (16)	42.250	40.246		All		(None)	(None)
Pipe (17)	42.500	39.900		All		(None)	(None)
Pipe (18)	42.390	39.794		All		(None)	(None)
Pipe (19)	42.260	40.236		All		(None)	(None)
Pipe (20)	42.600	39.925		All		(None)	(None)
Pipe (21)	42.500	39.825		All		(None)	(None)
Pipe (22)	42.120	40.162		All		(None)	(None)
Pipe (23)	42.870	39.926		All		(None)	(None)
Pipe (24)	42.600	39.850		All		(None)	(None)
Pipe (25)	41.960	39.495		All		(None)	(None)
Pipe (26)	42.280	41.228		All		(None)	(None)
Pipe (27)	41.980	41.076		All		(None)	(None)
Pipe (28)	41.660	40.913		All		(None)	(None)
Pipe (29)	41.700	39.820		All		(None)	(None)
Pipe (30)	41.790	39.748		All		(None)	(None)
Pipe (31)	41.810	39.647		All		(None)	(None)
Pipe (32)	41.860	39.756		All		(None)	(None)
Pipe (34)	41.510	40.050		All		(None)	(None)
Pipe (35)	41.700	39.820		All		(None)	(None)
Pipe (36)	41.700	41.129		All		(None)	(None)
Pipe (37)	41.700	41.029		All		(None)	(None)
Pipe (38)	41.700	40.139		All		(None)	(None)
Pipe (39)	40.000	39.050		None		(None)	(None)
Pipe (33)	41.700	39.721		All		(None)	(None)

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole	41.490 40.565	Diameter / Length: 0.600					Manhole
E:343558.306	0.925						
N:397170.741			{a} Pipe	Pipe	40.565	Diam/Width:225	Not Applicable
Manhole (1)	41.400 40.380	Diameter / Length: 0.600	{1} Pipe	Pipe	40.380	Diam/Width:225	Manhole
E:343587.674	1.020						
N:397165.802			{a} Pipe (1)	Pipe	40.380	Diam/Width:225	Not Applicable
Manhole (2)	41.350 40.338	Diameter / Length: 0.600	{1} Pipe (1)	Pipe	40.338	Diam/Width:225	Manhole
E:343593.040	1.012						
N:397161.913			{a} Pipe (2)	Pipe	40.338	Diam/Width:225	Not Applicable
Manhole (3)	41.390 40.168	Diameter / Length: 0.600	{1} Pipe (2)	Pipe	40.243	Diam/Width:225	Manhole
E:343590.254	1.222						
N:397146.840			{a} Pipe (3)	Pipe	40.168	Diam/Width:300	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (4)	41.570 40.014	Diameter / Length: 0.600	{1} Pipe (3)	Pipe	40.014	Diam/Width:300	Manhole
E:343610.802 N:397116.324	1.556						
			{a} Pipe (4)	Pipe	40.014	Diam/Width:300	Not Applicable
Manhole (5)	41.550 40.004	Diameter / Length: 0.600	{1} Pipe (4)	Pipe	40.004	Diam/Width:300	Manhole
E:343613.223 N:397115.926	1.546		{2} Pipe (11)	Pipe	40.154	Diam/Width:150	
			{a} Pipe (5)	Pipe	40.004	Diam/Width:300	Not Applicable
Manhole (6)	41.790 39.881	Diameter / Length: 0.600	{1} Pipe (5)	Pipe	39.881	Diam/Width:300	Manhole
E:343642.490 N:397111.108	1.909						
			{a} Pipe (6)	Pipe	39.881	Diam/Width:300	Not Applicable
Manhole (7)	41.750 39.750	Diameter / Length: 0.600	{1} Pipe (6)	Pipe	39.750	Diam/Width:300	Manhole
E:343673.437 N:397106.014	2.000						
			{a} Pipe (7)	Pipe	39.750	Diam/Width:300	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Flow control manhole	41.960 39.495	Diameter / Length: 2.100	{1} Pipe (7)	Pipe	39.495	Diam/Width:300	Manhole
E:343673.914	2.465		{2} Pipe (15)	Pipe	39.495	Diam/Width:300	
N:397108.914			{3} Pipe (25)	Pipe	39.495	Diam/Width:525	
			{a} Pipe (8)	Pipe	39.495	Diam/Width:225	Not Applicable
Manhole (8)	41.960 39.184	Diameter / Length: 1.200	{1} Pipe (8)	Pipe	39.184	Diam/Width:225	Manhole
E:343720.064	2.776						
N:397077.370			{a} Pipe (39)	Pipe	39.184	Diam/Width:225	Not Applicable
Manhole (10)	41.490 40.640	Diameter / Length: 0.600					Manhole
E:343609.335	0.850						
N:397155.046			{a} Pipe (9)	Pipe	40.640	Diam/Width:150	Not Applicable
Manhole (11)	41.720 40.460	Diameter / Length: 0.600	{1} Pipe (9)	Pipe	40.460	Diam/Width:150	Manhole
E:343606.410	1.260						
N:397137.275			{a} Pipe (10)	Pipe	40.460	Diam/Width:150	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (12)	41.880 40.310	Diameter / Length: 0.600	{1} Pipe (10)	Pipe	40.310	Diam/Width:150	Manhole
E:343614.686 N:397124.813	1.570						
			{a} Pipe (11)	Pipe	40.310	Diam/Width:150	Not Applicable
Manhole (13)	41.790 40.531	Diameter / Length: 0.600					Manhole
E:343618.487 N:397131.872	1.259						
			{a} Pipe (12)	Pipe	40.531	Diam/Width:225	Not Applicable
Manhole (14)	42.190 40.342	Diameter / Length: 0.600	{1} Pipe (12)	Pipe	40.342	Diam/Width:225	Manhole
E:343648.219 N:397126.931	1.848						
			{a} Pipe (13)	Pipe	40.342	Diam/Width:225	Not Applicable
Manhole (15)	42.390 39.794	Diameter / Length: 0.600	{1} Pipe (13)	Pipe	39.869	Diam/Width:225	Manhole
E:343676.880 N:397122.174	2.596		{2} Pipe (18)	Pipe	39.794	Diam/Width:300	
			{a} Pipe (14)	Pipe	39.794	Diam/Width:300	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (16)	42.230 39.752	Diameter / Length: 0.600	{1} Pipe (14)	Pipe	39.752	Diam/Width:300	Manhole
E:343674.475 N:397112.319	2.478						
			{a} Pipe (15)	Pipe	39.752	Diam/Width:300	Not Applicable
Manhole (17)	41.690 40.431	Diameter / Length: 0.600					Manhole
E:343619.711 N:397139.245	1.259						
			{a} Pipe (16)	Pipe	40.431	Diam/Width:225	Not Applicable
Manhole (18)	42.250 40.246	Diameter / Length: 0.600	{1} Pipe (16)	Pipe	40.246	Diam/Width:225	Manhole
E:343648.904 N:397134.376	2.004						
			{a} Pipe (17)	Pipe	40.246	Diam/Width:225	Not Applicable
Manhole (19)	42.500 39.825	Diameter / Length: 0.600	{1} Pipe (17)	Pipe	39.900	Diam/Width:225	Manhole
E:343678.097 N:397129.507	2.675		{2} Pipe (21)	Pipe	39.825	Diam/Width:300	
			{a} Pipe (18)	Pipe	39.825	Diam/Width:300	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (20)	41.680 40.421	Diameter / Length: 0.600					Manhole
E:343620.675	1.259						
N:397145.092			{a} Pipe (19)	Pipe	40.421	Diam/Width:225	Not Applicable
Manhole (21)	42.260 40.236	Diameter / Length: 0.600	{1} Pipe (19)	Pipe	40.236	Diam/Width:225	Manhole
E:343649.876	2.024						
N:397140.276			{a} Pipe (20)	Pipe	40.236	Diam/Width:225	Not Applicable
Manhole (22)	42.600 39.850	Diameter / Length: 0.600	{1} Pipe (20)	Pipe	39.925	Diam/Width:225	Manhole
E:343679.090	2.750		{2} Pipe (24)	Pipe	39.850	Diam/Width:300	
N:397135.469			{a} Pipe (21)	Pipe	39.850	Diam/Width:300	Not Applicable
Manhole (23)	41.590 40.331	Diameter / Length: 0.600					Manhole
E:343617.250	1.259						
N:397163.984			{a} Pipe (22)	Pipe	40.331	Diam/Width:225	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (24)	42.120 40.087	Diameter / Length: 0.600	{1} Pipe (22)	Pipe	40.162	Diam/Width:225	Manhole
E:343643.900 N:397159.597	2.033						
			{a} Pipe (23)	Pipe	40.087	Diam/Width:300	Not Applicable
Manhole (25)	42.870 39.926	Diameter / Length: 0.600	{1} Pipe (23)	Pipe	39.926	Diam/Width:300	Manhole
E:343682.030 N:397153.321	2.944						
			{a} Pipe (24)	Pipe	39.926	Diam/Width:300	Not Applicable
Manhole (26)	42.580 41.580	Diameter / Length: 0.450					Manhole
E:343666.110 N:397144.514	1.000						
			{a} Pipe (26)	Pipe	41.580	Diam/Width:150	Not Applicable
Manhole (27)	42.280 41.228	Diameter / Length: 0.450	{1} Pipe (26)	Pipe	41.228	Diam/Width:150	Manhole
E:343651.120 N:397146.981	1.052						
			{a} Pipe (27)	Pipe	41.228	Diam/Width:225	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (28)	41.980 41.076	Diameter / Length: 0.450	{1} Pipe (27)	Pipe	41.076	Diam/Width:225	Manhole
E:343636.129 N:397149.449	0.904						
			{a} Pipe (28)	Pipe	41.076	Diam/Width:225	Not Applicable
Manhole (29)	41.660 40.913	Diameter / Length: 0.450	{1} Pipe (28)	Pipe	40.913	Diam/Width:225	Manhole
E:343620.036 N:397152.098	0.747						
			{a} Pipe (29)	Pipe	40.913	Diam/Width:225	Not Applicable
Manhole (30)	41.700 39.820	Diameter / Length: 0.450	{1} Pipe (29)	Pipe	39.820	Diam/Width:225	Manhole
E:343617.776 N:397138.370	1.880		{2} Pipe (35)	Pipe	39.820	Diam/Width:225	
			{a} Pipe (30)	Pipe	39.820	Diam/Width:225	Not Applicable
Manhole (31)	41.790 39.748	Diameter / Length: 0.450	{1} Pipe (30)	Pipe	39.748	Diam/Width:225	Manhole
E:343616.597 N:397131.203	2.042						
			{a} Pipe (31)	Pipe	39.748	Diam/Width:225	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (32)	41.810 39.647	Diameter / Length: 0.450	{1} Pipe (31)	Pipe	39.647	Diam/Width:225	Manhole
E:343614.965 N:397121.294	2.163						
			{a} Pipe (32)	Pipe	39.850	Diam/Width:225	Not Applicable
Manhole (33)	41.860 39.756	Diameter / Length: 0.450	{1} Pipe (32)	Pipe	39.756	Diam/Width:225	Manhole
E:343624.234 N:397119.768	2.104						
			{a} Pipe (33)	Pipe	39.756	Diam/Width:225	Not Applicable
Manhole (34)	41.390 40.190	Diameter / Length: 0.600					Manhole
E:343597.973 N:397158.477	1.200						
			{a} Pipe (34)	Pipe	40.190	Diam/Width:225	Not Applicable
Manhole (35)	41.510 40.050	Diameter / Length: 0.600	{1} Pipe (34)	Pipe	40.050	Diam/Width:225	Manhole
E:343595.706 N:397144.707	1.460						
			{a} Pipe (35)	Pipe	40.050	Diam/Width:225	Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Manhole Schedule Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Name	Cover Level (m) Invert Level (m)		Connection Details				Type
Coordinates (m)	Depth (m)	Manhole Size (m)	Incoming Connections	Connection Type	Connection Invert (m)	Connection Size (mm)	Junction Type
			Outgoing Connections				Cover
Manhole (36)	42.140 41.140	Diameter / Length: 0.450					Manhole
E:343660.272	1.000						
N:397115.837							
			{a} Pipe (36)	Pipe	41.140	Diam/Width:225	Not Applicable
Manhole (37)	42.040 41.040	Diameter / Length: 0.450					Manhole
E:343645.354	1.000						
N:397118.298							
			{a} Pipe (37)	Pipe	41.040	Diam/Width:225	Not Applicable
Manhole (38)	41.930 40.150	Diameter / Length: 0.450					Manhole
E:343630.292	1.780						
N:397120.772							
			{a} Pipe (38)	Pipe	40.150	Diam/Width:225	Not Applicable
Manhole (9)	40.000 39.050	Diameter / Length: 1.200	{1} Pipe (39)	Pipe	39.050	Diam/Width:225	Manhole
E:343735.050	0.950						
N:397062.600							
							Not Applicable

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Inflow Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Manhole (26)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (1)	Manhole (27)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (2)	Manhole (28)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (3)	Manhole (29)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (4)	Manhole (34)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (5)	Manhole (36)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (6)	Manhole (37)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (7)	Manhole (38)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (8)	Manhole (31)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (9)	Manhole		Time of Concentration	0.034	100	0	100	0.034
Catchment Area (10)	Manhole (2)		Time of Concentration	0.009	100	0	100	0.009
Catchment Area (11)	Manhole (2)		Time of Concentration	0.014	100	0	100	0.014
Catchment Area (12)	Manhole (2)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (13)	Manhole (10)		Time of Concentration	0.040	100	0	100	0.040
Catchment Area (14)	Manhole (12)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (15)	Manhole (23)		Time of Concentration	0.011	100	0	100	0.011
Catchment Area (16)	Manhole (24)		Time of Concentration	0.012	100	0	100	0.012
Catchment Area (17)	Manhole (20)		Time of Concentration	0.035	100	0	100	0.035
Catchment Area (18)	Manhole (21)		Time of Concentration	0.030	100	0	100	0.030
Catchment Area (19)	Manhole (17)		Time of Concentration	0.015	100	0	100	0.015
Catchment Area (20)	Manhole (18)		Time of Concentration	0.015	100	0	100	0.015

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Inflow Summary Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Catchment Area (21)	Manhole (13)		Time of Concentration	0.028	100	0	100	0.028
Catchment Area (22)	Manhole (14)		Time of Concentration	0.025	100	0	100	0.025
Catchment Area (23)	Manhole (5)		Time of Concentration	0.022	100	0	100	0.022
Catchment Area (24)	Manhole (6)		Time of Concentration	0.030	100	0	100	0.030
TOTAL		0.0		0.454				0.454

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
Report Details: Type: Network Design Criteria Storm Phase: Phase	Designed by: NS		Checked by:	Approved By:
Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG				

Flow Options

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

FSR

Type: FSR

Return Period (years)	1.0
Region	England And Wales
M5-60 (mm)	20.0
Ratio R	0.395

Pipe Options

Lock Slope Options	None
Design Options	Minimise Excavation
Design Level	Level Soffits
Min. Cover Depth (m)	0.900
Min. Slope (1:X)	500.00
Max. Slope (1:X)	10.00
Min. Velocity (m/s)	1.0
Max. Velocity (m/s)	3.0
Use Flow Restriction	☐
Reduce Channel Depths	☐

Pipe Size Library

Default

Add. Increment (mm)	75
Max. Diameter (mm)	0

Diameter (mm)	Min. Slope (1:X)	Max. Slope (1:X)
100	0.00	0.00
150	0.00	0.00

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
	Designed by: NS	Checked by:	Approved By:
Report Details: Type: Network Design Criteria Storm Phase: Phase	Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Manhole Options

Apply Offset ☐

Manhole Size Library

Default

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

Additional Sizing

Connection (mm)	900
Diameter / Length (m)	0.900
Width (m)	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)	500
Benching Width (mm)	225

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025			
	Designed by: NS	Checked by:	Approved By:	
Report Details: Type: Outfall Details Storm Phase: Phase	Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Outfalls

Outfall	Outfall Type	Gated	Fixed Surcharged Level (m)	Level Curve
Manhole (9)	Free Discharge			

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT	Date: 20/08/2025		
	Designed by: NS	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	20.0
Ratio R	0.395
Summer	☒
Winter	☒

Return Period

Return Period (years)	Increase Rainfall (%)
1.0	0.000
30.0	40.000
100.0	40.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
240	480
360	720
480	960
960	1920
1440	2880

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (1)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (2)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (3)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (4)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (5)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (6)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (7)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (8)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (9)	FSR: 1 years: +0 %: 15 mins: Summer	0.03	4.5	1.937
Catchment Area (10)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.2	0.513
Catchment Area (11)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.8	0.785
Catchment Area (12)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.683
Catchment Area (13)	FSR: 1 years: +0 %: 15 mins: Summer	0.04	5.4	2.338

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025	
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by:
		Approved By:	
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG	



Catchment Area (14)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	2.0	0.863
Catchment Area (15)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.5	0.660
Catchment Area (16)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	1.6	0.707
Catchment Area (17)	FSR: 1 years: +0 %: 15 mins: Summer	0.04	4.7	2.029
Catchment Area (18)	FSR: 1 years: +0 %: 15 mins: Summer	0.03	4.1	1.760
Catchment Area (19)	FSR: 1 years: +0 %: 15 mins: Summer	0.02	2.0	0.881
Catchment Area (20)	FSR: 1 years: +0 %: 15 mins: Summer	0.01	2.0	0.845
Catchment Area (21)	FSR: 1 years: +0 %: 15 mins: Summer	0.03	3.7	1.607
Catchment Area (22)	FSR: 1 years: +0 %: 15 mins: Summer	0.03	3.4	1.466
Catchment Area (23)	FSR: 1 years: +0 %: 15 mins: Summer	0.02	3.0	1.283
Catchment Area (24)	FSR: 1 years: +0 %: 15 mins: Summer	0.03	4.0	1.718

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (1)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (2)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (3)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (4)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.348
Catchment Area (5)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (6)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (7)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (8)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.345
Catchment Area (9)	FSR: 30 years: +40 %: 15 mins: Summer	0.03	15.3	6.656
Catchment Area (10)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	4.1	1.770
Catchment Area (11)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	6.2	2.708
Catchment Area (12)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.4	2.354
Catchment Area (13)	FSR: 30 years: +40 %: 15 mins: Summer	0.04	18.5	8.035

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025	
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by: Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG	



Catchment Area (14)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	6.9	2.972
Catchment Area (15)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.2	2.259
Catchment Area (16)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	5.6	2.444
Catchment Area (17)	FSR: 30 years: +40 %: 15 mins: Summer	0.04	16.1	6.979
Catchment Area (18)	FSR: 30 years: +40 %: 15 mins: Summer	0.03	13.9	6.050
Catchment Area (19)	FSR: 30 years: +40 %: 15 mins: Summer	0.02	7.0	3.041
Catchment Area (20)	FSR: 30 years: +40 %: 15 mins: Summer	0.01	6.7	2.912
Catchment Area (21)	FSR: 30 years: +40 %: 15 mins: Summer	0.03	12.7	5.525
Catchment Area (22)	FSR: 30 years: +40 %: 15 mins: Summer	0.03	11.6	5.051
Catchment Area (23)	FSR: 30 years: +40 %: 15 mins: Summer	0.02	10.1	4.394
Catchment Area (24)	FSR: 30 years: +40 %: 15 mins: Summer	0.03	13.6	5.912

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
Catchment Area	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (1)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (2)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (3)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (4)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (5)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (6)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (7)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (8)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.047
Catchment Area (9)	FSR: 100 years: +40 %: 15 mins: Summer	0.03	19.9	8.640
Catchment Area (10)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	5.3	2.288
Catchment Area (11)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	8.1	3.512
Catchment Area (12)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.0	3.050
Catchment Area (13)	FSR: 100 years: +40 %: 15 mins: Summer	0.04	24.0	10.421

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Inflows Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			

Catchment Area (14)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	8.9	3.860
Catchment Area (15)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	6.8	2.927
Catchment Area (16)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	7.3	3.176
Catchment Area (17)	FSR: 100 years: +40 %: 15 mins: Summer	0.04	20.9	9.054
Catchment Area (18)	FSR: 100 years: +40 %: 15 mins: Summer	0.03	18.1	7.848
Catchment Area (19)	FSR: 100 years: +40 %: 15 mins: Summer	0.02	9.1	3.944
Catchment Area (20)	FSR: 100 years: +40 %: 15 mins: Summer	0.01	8.7	3.782
Catchment Area (21)	FSR: 100 years: +40 %: 15 mins: Summer	0.03	16.5	7.174
Catchment Area (22)	FSR: 100 years: +40 %: 15 mins: Summer	0.03	15.1	6.553
Catchment Area (23)	FSR: 100 years: +40 %: 15 mins: Summer	0.02	13.2	5.701
Catchment Area (24)	FSR: 100 years: +40 %: 15 mins: Summer	0.03	17.7	7.668

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 1 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Manhole	FSR: 1 years: +0 %: 15 mins: Summer	41.49 0	40.56 5	40.615	0.050	4.5	0.014	0.000	4.3	1.938	OK
Manhole (1)	FSR: 1 years: +0 %: 15 mins: Summer	41.40 0	40.38 0	40.429	0.049	4.3	0.014	0.000	3.9	1.930	OK
Manhole (2)	FSR: 1 years: +0 %: 15 mins: Summer	41.35 0	40.33 8	40.410	0.071	8.5	0.020	0.000	8.0	3.909	OK
Manhole (3)	FSR: 1 years: +0 %: 15 mins: Summer	41.39 0	40.16 8	40.233	0.065	8.0	0.018	0.000	7.5	3.912	OK
Manhole (4)	FSR: 1 years: +0 %: 15 mins: Summer	41.57 0	40.01 4	40.106	0.091	7.5	0.026	0.000	6.4	3.903	OK
Manhole (5)	FSR: 1 years: +0 %: 15 mins: Summer	41.55 0	40.00 4	40.102	0.098	16.1	0.028	0.000	15.2	8.372	OK
Manhole (6)	FSR: 1 years: +0 %: 15 mins: Summer	41.79 0	39.88 1	39.987	0.107	19.1	0.030	0.000	17.4	10.052	OK
Manhole (7)	FSR: 1 years: +0 %: 30 mins: Summer	41.75 0	39.75 0	39.799	0.049	15.3	0.014	0.000	15.3	13.228	OK
Flow control manhole	FSR: 1 years: +0 %: 15 mins: Summer	41.96 0	39.49 5	39.792	0.297	35.6	1.028	0.000	4.9	19.815	Surcharged
Manhole (8)	FSR: 1 years: +0 %: 15 mins: Winter	41.96 0	39.18 4	39.235	0.051	4.8	0.058	0.000	4.5	3.034	OK
Manhole (10)	FSR: 1 years: +0 %: 15 mins: Summer	41.49 0	40.64 0	40.698	0.058	5.4	0.016	0.000	5.3	2.336	OK
Manhole (11)	FSR: 1 years: +0 %: 15 mins: Summer	41.72 0	40.46 0	40.517	0.057	5.3	0.016	0.000	5.0	2.332	OK
Manhole (12)	FSR: 1 years: +0 %: 15 mins: Summer	41.88 0	40.31 0	40.369	0.059	7.0	0.017	0.000	6.7	3.193	OK
Manhole (13)	FSR: 1 years: +0 %: 15 mins: Summer	41.79 0	40.53 1	40.576	0.045	3.7	0.013	0.000	3.5	1.606	OK
Manhole (14)	FSR: 1 years: +0 %: 15 mins: Summer	42.19 0	40.34 2	40.390	0.048	6.9	0.014	0.000	6.3	3.066	OK
Manhole (15)	FSR: 1 years: +0 %: 15 mins: Summer	42.39 0	39.79 4	39.897	0.102	18.6	0.029	0.000	18.1	9.892	OK
Manhole (16)	FSR: 1 years: +0 %: 30 mins: Summer	42.23 0	39.75 2	39.802	0.050	15.1	0.014	0.000	15.1	13.011	OK
Manhole (17)	FSR: 1 years: +0 %: 15 mins: Summer	41.69 0	40.43 1	40.464	0.033	2.0	0.009	0.000	1.9	0.881	OK
Manhole (18)	FSR: 1 years: +0 %: 15 mins: Summer	42.25 0	40.24 6	40.284	0.038	3.9	0.011	0.000	3.4	1.721	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025					
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:			
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG					

Manhole (19)	FSR: 1 years: +0 %: 15 mins: Summer	42.50 0	39.82 5	39.922	0.097	12.7	0.027	0.000	12.3	6.840	OK
Manhole (20)	FSR: 1 years: +0 %: 15 mins: Summer	41.68 0	40.42 1	40.471	0.050	4.7	0.014	0.000	4.5	2.030	OK
Manhole (21)	FSR: 1 years: +0 %: 15 mins: Summer	42.26 0	40.23 6	40.295	0.059	8.5	0.017	0.000	7.7	3.780	OK
Manhole (22)	FSR: 1 years: +0 %: 15 mins: Summer	42.60 0	39.85 0	39.937	0.087	10.0	0.025	0.000	9.3	5.129	OK
Manhole (23)	FSR: 1 years: +0 %: 15 mins: Summer	41.59 0	40.33 1	40.359	0.028	1.5	0.008	0.000	1.3	0.657	OK
Manhole (24)	FSR: 1 years: +0 %: 15 mins: Summer	42.12 0	40.08 7	40.128	0.041	3.0	0.012	0.000	2.7	1.369	OK
Manhole (25)	FSR: 1 years: +0 %: 15 mins: Summer	42.87 0	39.92 6	39.962	0.036	2.7	0.010	0.000	2.3	1.353	OK
Manhole (26)	FSR: 1 years: +0 %: 15 mins: Summer	42.58 0	41.58 0	41.604	0.024	1.6	0.004	0.000	1.5	0.682	OK
Manhole (27)	FSR: 1 years: +0 %: 15 mins: Summer	42.28 0	41.22 8	41.265	0.037	3.1	0.006	0.000	3.0	1.364	OK
Manhole (28)	FSR: 1 years: +0 %: 15 mins: Summer	41.98 0	41.07 6	41.123	0.047	4.6	0.007	0.000	4.4	2.044	OK
Manhole (29)	FSR: 1 years: +0 %: 15 mins: Summer	41.66 0	40.91 3	40.943	0.030	6.0	0.005	0.000	5.8	2.730	OK
Manhole (30)	FSR: 1 years: +0 %: 15 mins: Summer	41.70 0	39.82 0	39.922	0.102	7.3	0.016	0.000	6.4	3.314	OK
Manhole (31)	FSR: 1 years: +0 %: 15 mins: Summer	41.79 0	39.74 8	39.916	0.168	8.0	0.027	0.000	7.8	3.808	OK
Manhole (32)	FSR: 1 years: +0 %: 15 mins: Summer	41.81 0	39.64 7	39.912	0.265	7.8	0.042	0.000	7.6	3.559	OK
Manhole (33)	FSR: 1 years: +0 %: 15 mins: Summer	41.86 0	39.75 6	39.820	0.064	7.6	0.010	0.000	7.3	3.550	OK
Manhole (34)	FSR: 1 years: +0 %: 15 mins: Summer	41.39 0	40.19 0	40.217	0.027	1.6	0.008	0.000	1.5	0.682	OK
Manhole (35)	FSR: 1 years: +0 %: 15 mins: Summer	41.51 0	40.05 0	40.074	0.024	1.5	0.007	0.000	1.4	0.683	OK
Manhole (36)	FSR: 1 years: +0 %: 15 mins: Summer	42.14 0	41.14 0	41.170	0.030	1.6	0.005	0.000	1.5	0.682	OK
Manhole (37)	FSR: 1 years: +0 %: 15 mins: Summer	42.04 0	41.04 0	41.069	0.029	1.6	0.005	0.000	1.5	0.682	OK
Manhole (38)	FSR: 1 years: +0 %: 15 mins: Summer	41.93 0	40.15 0	40.180	0.030	1.6	0.005	0.000	1.5	0.682	OK
Manhole (9)	FSR: 1 years: +0 %: 15 mins: Summer	40.00 0	39.05 0	39.099	0.049	4.4	0.000	0.000	4.4	2.994	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 30 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Manhole	FSR: 30 years: +40 %: 15 mins: Summer	41.490	40.565	40.661	0.096	15.3	0.027	0.000	14.9	6.660	OK
Manhole (1)	FSR: 30 years: +40 %: 15 mins: Summer	41.400	40.380	40.499	0.119	14.9	0.034	0.000	13.6	6.648	OK
Manhole (2)	FSR: 30 years: +40 %: 15 mins: Summer	41.350	40.338	40.489	0.150	29.3	0.042	0.000	28.0	13.477	OK
Manhole (3)	FSR: 30 years: +40 %: 15 mins: Summer	41.390	40.168	40.294	0.126	28.0	0.036	0.000	26.8	13.484	OK
Manhole (4)	FSR: 30 years: +40 %: 15 mins: Summer	41.570	40.014	40.228	0.214	26.8	0.061	0.000	23.8	13.489	OK
Manhole (5)	FSR: 30 years: +40 %: 15 mins: Summer	41.550	40.004	40.222	0.218	56.7	0.062	0.000	54.5	28.874	OK
Manhole (6)	FSR: 30 years: +40 %: 360 mins: Winter	41.790	39.881	40.155	0.275	10.4	0.078	0.000	12.9	105.079	OK
Manhole (7)	FSR: 30 years: +40 %: 360 mins: Winter	41.750	39.750	40.342	0.592	415.1	0.168	0.000	51.2	129.283	Surcharged
Flow control manhole	FSR: 30 years: +40 %: 360 mins: Winter	41.960	39.495	40.143	0.648	82.6	2.244	0.000	4.8	386.785	Surcharged
Manhole (8)	FSR: 30 years: +40 %: 1440 mins: Winter	41.960	39.184	39.237	0.053	4.9	0.060	0.000	4.9	308.655	OK
Manhole (10)	FSR: 30 years: +40 %: 15 mins: Summer	41.490	40.640	40.782	0.142	18.5	0.040	0.000	17.8	8.030	OK
Manhole (11)	FSR: 30 years: +40 %: 15 mins: Summer	41.720	40.460	40.595	0.135	17.8	0.038	0.000	17.0	8.030	OK
Manhole (12)	FSR: 30 years: +40 %: 15 mins: Summer	41.880	40.310	40.456	0.145	23.8	0.041	0.000	22.7	10.999	OK
Manhole (13)	FSR: 30 years: +40 %: 15 mins: Summer	41.790	40.531	40.618	0.088	12.7	0.025	0.000	12.3	5.526	OK
Manhole (14)	FSR: 30 years: +40 %: 15 mins: Summer	42.190	40.342	40.434	0.092	23.9	0.026	0.000	22.9	10.501	OK
Manhole (15)	FSR: 30 years: +40 %: 360 mins: Winter	42.390	39.794	40.145	0.351	10.2	0.099	0.000	43.6	112.588	Surcharged
Manhole (16)	FSR: 30 years: +40 %: 360 mins: Winter	42.230	39.752	40.748	0.996	385.5	0.282	0.000	27.0	132.781	Surcharged
Manhole (17)	FSR: 30 years: +40 %: 15 mins: Summer	41.690	40.431	40.493	0.062	7.0	0.018	0.000	6.7	3.042	OK
Manhole (18)	FSR: 30 years: +40 %: 15 mins: Summer	42.250	40.246	40.318	0.073	13.4	0.021	0.000	12.7	5.912	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025						
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS						Checked by:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG						

Manhole (19)	FSR: 30 years: +40 %: 360 mins: Winter	42.50 0	39.82 5	40.145	0.320	13.7	0.091	0.000	7.7	81.806	Surcharge d
Manhole (20)	FSR: 30 years: +40 %: 15 mins: Summer	41.68 0	40.42 1	40.519	0.098	16.1	0.028	0.000	15.6	6.981	OK
Manhole (21)	FSR: 30 years: +40 %: 15 mins: Summer	42.26 0	40.23 6	40.359	0.123	29.5	0.035	0.000	27.9	12.855	OK
Manhole (22)	FSR: 30 years: +40 %: 360 mins: Winter	42.60 0	39.85 0	40.146	0.295	8.0	0.084	0.000	5.3	63.340	OK
Manhole (23)	FSR: 30 years: +40 %: 15 mins: Summer	41.59 0	40.33 1	40.384	0.053	5.2	0.015	0.000	4.8	2.256	OK
Manhole (24)	FSR: 30 years: +40 %: 15 mins: Summer	42.12 0	40.08 7	40.161	0.074	10.4	0.021	0.000	9.8	4.716	OK
Manhole (25)	FSR: 30 years: +40 %: 360 mins: Winter	42.87 0	39.92 6	40.146	0.221	7.9	0.062	0.000	6.1	21.277	OK
Manhole (26)	FSR: 30 years: +40 %: 15 mins: Summer	42.58 0	41.58 0	41.625	0.045	5.4	0.007	0.000	5.3	2.344	OK
Manhole (27)	FSR: 30 years: +40 %: 15 mins: Summer	42.28 0	41.22 8	41.300	0.072	10.7	0.011	0.000	10.4	4.687	OK
Manhole (28)	FSR: 30 years: +40 %: 15 mins: Summer	41.98 0	41.07 6	41.166	0.090	15.8	0.014	0.000	15.4	7.029	OK
Manhole (29)	FSR: 30 years: +40 %: 15 mins: Summer	41.66 0	40.91 3	40.968	0.055	20.8	0.009	0.000	20.6	9.377	OK
Manhole (30)	FSR: 30 years: +40 %: 360 mins: Winter	41.70 0	39.82 0	40.140	0.320	3.5	0.051	0.000	3.5	33.062	Surcharge d
Manhole (31)	FSR: 30 years: +40 %: 360 mins: Winter	41.79 0	39.74 8	40.140	0.393	4.2	0.062	0.000	4.2	40.345	Surcharge d
Manhole (32)	FSR: 30 years: +40 %: 360 mins: Winter	41.81 0	39.64 7	40.142	0.495	4.2	0.079	0.000	4.2	40.617	Surcharge d
Manhole (33)	FSR: 30 years: +40 %: 360 mins: Winter	41.86 0	39.75 6	40.143	0.386	4.2	0.061	0.000	4.1	40.620	Surcharge d
Manhole (34)	FSR: 30 years: +40 %: 15 mins: Summer	41.39 0	40.19 0	40.241	0.051	5.4	0.014	0.000	5.3	2.347	OK
Manhole (35)	FSR: 30 years: +40 %: 360 mins: Winter	41.51 0	40.05 0	40.137	0.087	0.7	0.025	0.000	1.4	7.093	OK
Manhole (36)	FSR: 30 years: +40 %: 15 mins: Summer	42.14 0	41.14 0	41.197	0.057	5.4	0.009	0.000	5.3	2.344	OK
Manhole (37)	FSR: 30 years: +40 %: 15 mins: Summer	42.04 0	41.04 0	41.096	0.056	5.4	0.009	0.000	5.3	2.344	OK
Manhole (38)	FSR: 30 years: +40 %: 15 mins: Summer	41.93 0	40.15 0	40.207	0.057	5.4	0.009	0.000	5.3	2.344	OK
Manhole (9)	FSR: 30 years: +40 %: 15 mins: Summer	40.00 0	39.05 0	39.102	0.052	4.8	0.000	0.000	4.8	6.377	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 100 years: Increase Rainfall (%): +40: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Manhole	FSR: 100 years: +40 %: 15 mins: Summer	41.490	40.565	40.674	0.109	19.9	0.031	0.000	19.4	8.645	OK
Manhole (1)	FSR: 100 years: +40 %: 15 mins: Summer	41.400	40.380	40.534	0.154	19.4	0.043	0.000	17.4	8.633	OK
Manhole (2)	FSR: 100 years: +40 %: 15 mins: Summer	41.350	40.338	40.522	0.184	37.9	0.052	0.000	36.2	17.478	OK
Manhole (3)	FSR: 100 years: +40 %: 360 mins: Winter	41.390	40.168	40.352	0.184	5.2	0.052	0.000	5.2	50.829	OK
Manhole (4)	FSR: 100 years: +40 %: 240 mins: Winter	41.570	40.014	40.364	0.350	7.2	0.099	0.000	7.4	57.336	Surcharged
Manhole (5)	FSR: 100 years: +40 %: 240 mins: Winter	41.550	40.004	40.358	0.354	15.4	0.100	0.000	15.5	109.453	Surcharged
Manhole (6)	FSR: 100 years: +40 %: 240 mins: Winter	41.790	39.881	40.425	0.544	18.7	0.154	0.000	18.3	128.225	Surcharged
Manhole (7)	FSR: 100 years: +40 %: 360 mins: Winter	41.750	39.750	40.786	1.036	208.3	1.442	0.876	12.5	173.026	Surcharged
Flow control manhole	FSR: 100 years: +40 %: 480 mins: Winter	41.960	39.495	40.709	1.214	707.8	4.206	0.000	4.9	508.429	Surcharged
Manhole (8)	FSR: 100 years: +40 %: 960 mins: Summer	41.960	39.184	39.237	0.053	4.9	0.060	0.000	4.9	342.265	OK
Manhole (10)	FSR: 100 years: +40 %: 15 mins: Summer	41.490	40.640	40.982	0.342	24.0	0.097	0.000	20.2	10.412	Surcharged
Manhole (11)	FSR: 100 years: +40 %: 15 mins: Summer	41.720	40.460	40.714	0.254	20.2	0.072	0.000	18.0	10.414	Surcharged
Manhole (12)	FSR: 100 years: +40 %: 15 mins: Summer	41.880	40.310	40.537	0.227	26.9	0.064	0.000	25.8	14.271	Surcharged
Manhole (13)	FSR: 100 years: +40 %: 15 mins: Summer	41.790	40.531	40.633	0.102	16.5	0.029	0.000	16.0	7.174	OK
Manhole (14)	FSR: 100 years: +40 %: 15 mins: Summer	42.190	40.342	40.450	0.107	31.1	0.030	0.000	29.9	13.594	OK
Manhole (15)	FSR: 100 years: +40 %: 240 mins: Winter	42.390	39.794	40.438	0.644	29.1	0.182	0.000	17.0	144.529	Surcharged
Manhole (16)	FSR: 100 years: +40 %: 360 mins: Winter	42.230	39.752	40.872	1.120	244.8	0.317	0.000	12.0	182.853	Surcharged
Manhole (17)	FSR: 100 years: +40 %: 15 mins: Summer	41.690	40.431	40.503	0.072	9.1	0.020	0.000	8.7	3.944	OK
Manhole (18)	FSR: 100 years: +40 %: 240 mins: Winter	42.250	40.246	40.337	0.091	3.2	0.026	0.000	3.2	20.479	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025					
Report Details: Type: Junctions Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:			
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG					

Manhole (19)	FSR: 100 years: +40 %: 240 mins: Summer	42.50 0	39.82 5	40.384	0.559	35.5	0.158	0.000	17.4	111.831	Surcharge d
Manhole (20)	FSR: 100 years: +40 %: 15 mins: Summer	41.68 0	40.42 1	40.535	0.114	20.9	0.032	0.000	20.2	9.056	OK
Manhole (21)	FSR: 100 years: +40 %: 15 mins: Summer	42.26 0	40.23 6	40.382	0.147	38.3	0.042	0.000	36.3	16.697	OK
Manhole (22)	FSR: 100 years: +40 %: 240 mins: Winter	42.60 0	39.85 0	40.374	0.523	37.4	0.148	0.000	40.4	82.466	Surcharge d
Manhole (23)	FSR: 100 years: +40 %: 15 mins: Summer	41.59 0	40.33 1	40.392	0.061	6.8	0.017	0.000	6.2	2.925	OK
Manhole (24)	FSR: 100 years: +40 %: 480 mins: Summer	42.12 0	40.08 7	40.358	0.271	7.6	0.077	0.000	3.0	25.374	OK
Manhole (25)	FSR: 100 years: +40 %: 240 mins: Winter	42.87 0	39.92 6	40.360	0.434	39.6	0.123	0.000	14.2	31.841	Surcharge d
Manhole (26)	FSR: 100 years: +40 %: 15 mins: Summer	42.58 0	41.58 0	41.632	0.052	7.0	0.008	0.000	6.9	3.046	OK
Manhole (27)	FSR: 100 years: +40 %: 15 mins: Summer	42.28 0	41.22 8	41.312	0.084	14.0	0.013	0.000	13.6	6.090	OK
Manhole (28)	FSR: 100 years: +40 %: 15 mins: Summer	41.98 0	41.07 6	41.180	0.104	20.6	0.017	0.000	20.0	9.133	OK
Manhole (29)	FSR: 100 years: +40 %: 15 mins: Summer	41.66 0	40.91 3	40.976	0.063	27.0	0.010	0.000	26.8	12.184	OK
Manhole (30)	FSR: 100 years: +40 %: 360 mins: Winter	41.70 0	39.82 0	40.345	0.525	4.6	0.083	0.000	4.3	43.012	Surcharge d
Manhole (31)	FSR: 100 years: +40 %: 360 mins: Winter	41.79 0	39.74 8	40.351	0.603	5.1	0.096	0.000	5.1	51.098	Surcharge d
Manhole (32)	FSR: 100 years: +40 %: 360 mins: Winter	41.81 0	39.64 7	40.345	0.697	5.1	0.111	0.000	5.1	51.088	Surcharge d
Manhole (33)	FSR: 100 years: +40 %: 240 mins: Winter	41.86 0	39.75 6	40.341	0.585	15.0	0.093	0.000	6.8	45.919	Surcharge d
Manhole (34)	FSR: 100 years: +40 %: 360 mins: Winter	41.39 0	40.19 0	40.336	0.146	2.2	0.041	0.000	0.9	8.754	OK
Manhole (35)	FSR: 100 years: +40 %: 360 mins: Winter	41.51 0	40.05 0	40.353	0.303	1.7	0.086	0.000	1.0	10.977	Surcharge d
Manhole (36)	FSR: 100 years: +40 %: 15 mins: Summer	42.14 0	41.14 0	41.205	0.065	7.0	0.010	0.000	6.9	3.045	OK
Manhole (37)	FSR: 100 years: +40 %: 15 mins: Summer	42.04 0	41.04 0	41.105	0.065	7.0	0.010	0.000	6.9	3.045	OK
Manhole (38)	FSR: 100 years: +40 %: 240 mins: Winter	41.93 0	40.15 0	40.337	0.187	1.3	0.030	0.000	3.9	8.406	OK
Manhole (9)	FSR: 100 years: +40 %: 15 mins: Summer	40.00 0	39.05 0	39.095	0.045	3.7	0.000	0.000	3.7	4.738	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 1 years: Increase Rainfall (%): +0: 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. Residual Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FSR: 1 years: +0 %: 480 mins: Summer	39.675	39.675	0.180	0.180	8.5	45.536	0.000	0.000	1.9	40.539	88.797	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 30 years: Increase Rainfall (%): +40: 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. Residual Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FSR: 30 years: +40 %: 360 mins: Winter	40.143	40.143	0.648	0.648	667.9	164.291	0.000	0.000	14.2	114.862	59.579	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
		Designed by: NS	Checked by:		Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 100 years: Increase Rainfall (%): +40: 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. Residual Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Cellular Storage	FSR: 100 years: +40 %: 240 mins: Winter	40.337	40.337	0.842	0.842	116.7	213.463	0.000	0.000	70.4	108.948	47.480	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 1 years: Increase Rainfall (%): +0: 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
Pipe	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	41.490	40.615	0.050	1.938	0.7	0.1	4.3	OK
Pipe (1)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (1)	Manhole (2)	41.400	40.429	0.060	1.930	0.5	0.1	3.9	OK
Pipe (2)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	41.350	40.410	0.069	3.909	0.8	0.2	8.0	OK
Pipe (3)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (3)	Manhole (4)	41.390	40.233	0.078	3.912	0.5	0.11	7.5	OK
Pipe (4)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (5)	41.570	40.106	0.094	3.894	0.4	0.09	6.4	OK
Pipe (5)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (5)	Manhole (6)	41.550	40.102	0.102	8.363	0.7	0.21	15.2	OK
Pipe (6)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (6)	Manhole (7)	41.790	39.987	0.076	10.052	1.2	0.24	17.4	OK
Pipe (7)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (7)	Flow control manhole	41.750	39.795	0.171	10.043	0.8	0.05	17.7	OK
Pipe (8)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Flow control manhole	Manhole (8)	41.960	39.792	0.053	3.148	0.7	0.13	4.9	Surcharged
Pipe (9)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (10)	Manhole (11)	41.490	40.698	0.057	2.336	0.8	0.3	5.3	OK
Pipe (10)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (11)	Manhole (12)	41.720	40.517	0.058	2.332	0.8	0.28	5.0	OK
Pipe (11)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (12)	Manhole (5)	41.880	40.369	0.057	3.193	1.1	0.29	6.7	OK
Pipe (12)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (13)	Manhole (14)	41.790	40.576	0.046	1.606	0.6	0.09	3.5	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025		
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Pipe (13)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (14)	Manhole (15)	42.190	40.390	0.047	3.066	1.0	0.09	6.3	OK
Pipe (14)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (15)	Manhole (16)	42.390	39.897	0.074	9.892	1.3	0.25	18.1	OK
Pipe (15)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (16)	Flow control manhole	42.230	39.798	0.171	9.890	0.8	0.06	17.9	OK
Pipe (16)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (17)	Manhole (18)	41.690	40.464	0.036	0.881	0.5	0.05	1.9	OK
Pipe (17)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (18)	Manhole (19)	42.250	40.284	0.038	1.721	0.8	0.06	3.4	OK
Pipe (18)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (19)	Manhole (15)	42.500	39.922	0.099	6.840	0.6	0.17	12.3	OK
Pipe (19)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (20)	Manhole (21)	41.680	40.471	0.055	2.030	0.6	0.11	4.5	OK
Pipe (20)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (21)	Manhole (22)	42.260	40.295	0.058	3.780	0.9	0.14	7.7	OK
Pipe (21)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (22)	Manhole (19)	42.600	39.937	0.092	5.129	0.5	0.13	9.3	OK
Pipe (22)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (23)	Manhole (24)	41.590	40.359	0.028	0.657	0.5	0.03	1.3	OK
Pipe (23)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (24)	Manhole (25)	42.120	40.128	0.038	1.369	0.5	0.04	2.7	OK
Pipe (24)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (25)	Manhole (22)	42.870	39.962	0.061	1.353	0.2	0.03	2.3	OK
Pipe (25)	FSR: 1 years: +0 %: 120 mins: Winter	Pipe	Cellular Storage	Flow control manhole	41.700	39.653	0.158	0.000	0.1	0.02	2.7	OK
Pipe (26)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (26)	Manhole (27)	42.580	41.604	0.031	0.682	0.6	0.06	1.5	OK
Pipe (27)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (27)	Manhole (28)	42.280	41.265	0.042	1.364	0.6	0.06	3.0	OK
Pipe (28)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (28)	Manhole (29)	41.980	41.123	0.039	2.044	1.0	0.08	4.4	OK
Pipe (29)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (29)	Manhole (30)	41.660	40.943	0.066	2.730	0.7	0.04	5.8	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025		
		Designed by: NS	Checked by:	Approved By:
Report Details: Type: Connections Summary Storm Phase: Phase		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Pipe (30)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (30)	Manhole (31)	41.700	39.922	0.135	3.314	0.5	0.12	6.4	OK
Pipe (31)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (31)	Manhole (32)	41.790	39.916	0.217	3.808	0.2	0.15	7.8	OK
Pipe (32)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (32)	Manhole (33)	41.810	39.912	0.063	3.559	0.8	0.15	7.6	OK
Pipe (34)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (34)	Manhole (35)	41.390	40.217	0.026	0.682	0.6	0.03	1.5	OK
Pipe (35)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (35)	Manhole (30)	41.510	40.074	0.063	0.683	0.2	0.03	1.4	OK
Pipe (36)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (36)	Cellular Storage	42.140	41.170	0.028	0.682	0.5	0.03	1.5	OK
Pipe (37)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (37)	Cellular Storage	42.040	41.069	0.028	0.682	0.5	0.03	1.5	OK
Pipe (38)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (38)	Cellular Storage	41.930	40.180	0.028	0.682	0.5	0.03	1.5	OK
Pipe (39)	FSR: 1 years: +0 %: 15 mins: Winter	Pipe	Manhole (8)	Manhole (9)	41.960	39.235	0.050	3.034	0.7	0.11	4.5	OK
Pipe (33)	FSR: 1 years: +0 %: 15 mins: Summer	Pipe	Manhole (33)	Cellular Storage	41.860	39.820	0.060	3.550	0.9	0.14	7.3	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 30 years: Increase Rainfall (%): +40: 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
Pipe	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	41.490	40.661	0.107	6.660	0.8	0.36	14.9	OK
Pipe (1)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (1)	Manhole (2)	41.400	40.499	0.135	6.648	0.5	0.33	13.6	OK
Pipe (2)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	41.350	40.489	0.143	13.477	1.1	0.68	28.0	OK
Pipe (3)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (3)	Manhole (4)	41.390	40.294	0.170	13.484	0.6	0.38	26.8	OK
Pipe (4)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (5)	41.570	40.228	0.216	13.458	0.5	0.33	23.8	OK
Pipe (5)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (5)	Manhole (6)	41.550	40.222	0.218	28.843	1.0	0.76	54.5	OK
Pipe (6)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (6)	Manhole (7)	41.790	40.099	0.171	34.751	1.6	0.89	63.9	OK
Pipe (7)	FSR: 30 years: +40 %: 960 mins: Summer	Pipe	Manhole (7)	Flow control manhole	41.750	40.095	0.300	109.253	2.4	0.5	164.5	Surcharged
Pipe (8)	FSR: 30 years: +40 %: 1440 mins: Winter	Pipe	Flow control manhole	Manhole (8)	41.960	40.012	0.054	308.676	0.7	0.13	4.9	Surcharged
Pipe (9)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (10)	Manhole (11)	41.490	40.782	0.139	8.030	1.0	1	17.8	OK
Pipe (10)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (11)	Manhole (12)	41.720	40.595	0.140	8.030	1.0	0.96	17.0	OK
Pipe (11)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (12)	Manhole (5)	41.880	40.456	0.132	10.999	1.4	0.97	22.7	OK
Pipe (12)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (13)	Manhole (14)	41.790	40.618	0.090	5.526	0.8	0.3	12.3	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025		
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Pipe (13)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (14)	Manhole (15)	42.190	40.434	0.107	10.501	1.2	0.34	22.9	OK
Pipe (14)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (15)	Manhole (16)	42.390	39.992	0.161	34.199	1.6	0.88	62.6	OK
Pipe (15)	FSR: 30 years: +40 %: 240 mins: Winter	Pipe	Manhole (16)	Flow control manhole	42.230	40.302	0.300	83.557	2.2	0.52	158.8	Surcharged
Pipe (16)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (17)	Manhole (18)	41.690	40.493	0.067	3.042	0.7	0.16	6.7	OK
Pipe (17)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (18)	Manhole (19)	42.250	40.318	0.101	5.912	0.7	0.23	12.7	OK
Pipe (18)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (19)	Manhole (15)	42.500	40.029	0.201	23.597	0.8	0.59	41.8	OK
Pipe (19)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (20)	Manhole (21)	41.680	40.519	0.111	6.981	0.8	0.38	15.6	OK
Pipe (20)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (21)	Manhole (22)	42.260	40.359	0.122	12.855	1.3	0.52	27.9	OK
Pipe (21)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (22)	Manhole (19)	42.600	40.046	0.200	17.643	0.6	0.43	30.7	OK
Pipe (22)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (23)	Manhole (24)	41.590	40.384	0.052	2.256	0.7	0.12	4.8	OK
Pipe (23)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (24)	Manhole (25)	42.120	40.161	0.099	4.716	0.5	0.14	9.8	OK
Pipe (24)	FSR: 30 years: +40 %: 240 mins: Winter	Pipe	Manhole (25)	Manhole (22)	42.870	40.117	0.233	10.859	0.2	0.15	10.8	OK
Pipe (25)	FSR: 30 years: +40 %: 960 mins: Summer	Pipe	Cellular Storage	Flow control manhole	41.700	40.095	0.525	53.876	1.9	2.06	333.9	Surcharged
Pipe (26)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (26)	Manhole (27)	42.580	41.625	0.059	2.344	0.8	0.2	5.3	OK
Pipe (27)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (27)	Manhole (28)	42.280	41.300	0.081	4.687	0.8	0.2	10.4	OK
Pipe (28)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (28)	Manhole (29)	41.980	41.166	0.073	7.029	1.4	0.3	15.4	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025					
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:			
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG					

Pipe (29)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (29)	Manhole (30)	41.660	40.968	0.144	9.377	0.8	0.14	20.6	OK
Pipe (30)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (30)	Manhole (31)	41.700	40.054	0.225	11.626	0.6	0.45	23.5	Surcharged
Pipe (31)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (31)	Manhole (32)	41.790	40.028	0.225	13.783	0.7	0.54	28.1	Surcharged
Pipe (32)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (32)	Manhole (33)	41.810	39.986	0.136	13.538	1.1	0.53	27.7	OK
Pipe (34)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (34)	Manhole (35)	41.390	40.241	0.048	2.347	0.9	0.1	5.3	OK
Pipe (35)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (35)	Manhole (30)	41.510	40.095	0.139	2.348	0.2	0.1	5.1	OK
Pipe (36)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (36)	Cellular Storage	42.140	41.197	0.053	2.344	0.7	0.1	5.3	OK
Pipe (37)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (37)	Cellular Storage	42.040	41.096	0.052	2.344	0.8	0.1	5.3	OK
Pipe (38)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (38)	Cellular Storage	41.930	40.207	0.053	2.344	0.7	0.1	5.3	OK
Pipe (39)	FSR: 30 years: +40 %: 1440 mins: Winter	Pipe	Manhole (8)	Manhole (9)	41.960	39.237	0.052	308.655	0.7	0.12	4.9	OK
Pipe (33)	FSR: 30 years: +40 %: 15 mins: Summer	Pipe	Manhole (33)	Cellular Storage	41.860	39.891	0.125	13.452	1.2	0.52	27.1	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025			
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:		Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG			



FSR: 100 years: Increase Rainfall (%): +40: 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
Pipe	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole	Manhole (1)	41.490	40.674	0.131	8.645	0.8	0.47	19.4	OK
Pipe (1)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (1)	Manhole (2)	41.400	40.534	0.169	8.633	0.5	0.43	17.4	OK
Pipe (2)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (2)	Manhole (3)	41.350	40.522	0.172	17.478	1.1	0.88	36.2	OK
Pipe (3)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (3)	Manhole (4)	41.390	40.314	0.204	17.487	0.7	0.48	34.4	OK
Pipe (4)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (4)	Manhole (5)	41.570	40.275	0.262	17.459	0.5	0.43	30.5	OK
Pipe (5)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (5)	Manhole (6)	41.550	40.267	0.262	37.432	1.0	0.93	66.7	OK
Pipe (6)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (6)	Manhole (7)	41.790	40.141	0.206	44.996	1.5	1.12	79.9	OK
Pipe (7)	FSR: 100 years: +40 %: 480 mins: Winter	Pipe	Manhole (7)	Flow control manhole	41.750	40.328	0.300	141.393	2.9	0.62	202.9	Surcharged
Pipe (8)	FSR: 100 years: +40 %: 960 mins: Winter	Pipe	Flow control manhole	Manhole (8)	41.960	40.569	0.054	352.396	0.7	0.13	4.9	Surcharged
Pipe (9)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (10)	Manhole (11)	41.490	40.982	0.150	10.412	1.1	1.14	20.2	Surcharged
Pipe (10)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (11)	Manhole (12)	41.720	40.714	0.150	10.414	1.0	1.01	18.0	Surcharged
Pipe (11)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (12)	Manhole (5)	41.880	40.537	0.150	14.271	1.5	1.1	25.8	Surcharged
Pipe (12)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (13)	Manhole (14)	41.790	40.633	0.105	7.174	0.9	0.39	16.0	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025		
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Pipe (13)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (14)	Manhole (15)	42.190	40.450	0.134	13.594	1.2	0.45	29.9	OK
Pipe (14)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (15)	Manhole (16)	42.390	40.030	0.196	43.862	1.6	1.13	80.5	OK
Pipe (15)	FSR: 100 years: +40 %: 480 mins: Winter	Pipe	Manhole (16)	Flow control manhole	42.230	40.328	0.300	142.159	2.8	0.65	199.3	Surcharged
Pipe (16)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (17)	Manhole (18)	41.690	40.503	0.078	3.944	0.7	0.21	8.7	OK
Pipe (17)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (18)	Manhole (19)	42.250	40.329	0.127	7.666	0.8	0.3	16.6	OK
Pipe (18)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (19)	Manhole (15)	42.500	40.071	0.241	30.394	0.9	0.75	53.6	OK
Pipe (19)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (20)	Manhole (21)	41.680	40.535	0.131	9.056	0.8	0.49	20.2	OK
Pipe (20)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (21)	Manhole (22)	42.260	40.382	0.154	16.697	1.2	0.68	36.3	OK
Pipe (21)	FSR: 100 years: +40 %: 240 mins: Winter	Pipe	Manhole (22)	Manhole (19)	42.600	40.374	0.300	51.506	0.6	0.57	40.4	Surcharged
Pipe (22)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (23)	Manhole (24)	41.590	40.392	0.060	2.925	0.7	0.15	6.2	OK
Pipe (23)	FSR: 100 years: +40 %: 240 mins: Winter	Pipe	Manhole (24)	Manhole (25)	42.120	40.333	0.300	13.979	0.5	0.21	14.9	OK
Pipe (24)	FSR: 100 years: +40 %: 240 mins: Summer	Pipe	Manhole (25)	Manhole (22)	42.870	40.340	0.300	11.930	0.4	0.44	31.2	Surcharged
Pipe (25)	FSR: 100 years: +40 %: 480 mins: Winter	Pipe	Cellular Storage	Flow control manhole	41.700	40.328	0.525	0.000	1.4	1.88	305.6	Surcharged
Pipe (26)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (26)	Manhole (27)	42.580	41.632	0.068	3.046	0.9	0.26	6.9	OK
Pipe (27)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (27)	Manhole (28)	42.280	41.312	0.094	6.090	0.9	0.26	13.6	OK
Pipe (28)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (28)	Manhole (29)	41.980	41.180	0.084	9.133	1.5	0.38	20.0	OK

Project: Kirkby BESS Site Coopers Lane, Kirkby L33 7TT		Date: 20/08/2025		
Report Details: Type: Connections Summary Storm Phase: Phase		Designed by: NS	Checked by:	Approved By:
		Company Address: Barnsley Marshall Limited 4&5 Prior Wharf, Harris Business Park Stoke Prior, B60 4FG		



Pipe (29)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (29)	Manhole (30)	41.660	40.976	0.179	12.184	0.8	0.18	26.8	OK
Pipe (30)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (30)	Manhole (31)	41.700	40.117	0.225	14.867	0.7	0.56	29.3	Surcharged
Pipe (31)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (31)	Manhole (32)	41.790	40.080	0.225	17.610	0.9	0.69	35.8	Surcharged
Pipe (32)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (32)	Manhole (33)	41.810	40.013	0.161	17.275	1.2	0.69	35.6	OK
Pipe (34)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (34)	Manhole (35)	41.390	40.247	0.063	3.046	0.8	0.13	6.9	OK
Pipe (35)	FSR: 100 years: +40 %: 30 mins: Summer	Pipe	Manhole (35)	Manhole (30)	41.510	40.093	0.135	4.019	0.2	0.09	4.6	OK
Pipe (36)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (36)	Cellular Storage	42.140	41.205	0.060	3.045	0.8	0.13	6.9	OK
Pipe (37)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (37)	Cellular Storage	42.040	41.105	0.060	3.045	0.8	0.13	6.9	OK
Pipe (38)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (38)	Cellular Storage	41.930	40.215	0.060	3.045	0.8	0.13	6.9	OK
Pipe (39)	FSR: 100 years: +40 %: 960 mins: Summer	Pipe	Manhole (8)	Manhole (9)	41.960	39.237	0.052	342.265	0.7	0.12	4.9	OK
Pipe (33)	FSR: 100 years: +40 %: 15 mins: Summer	Pipe	Manhole (33)	Cellular Storage	41.860	39.919	0.180	17.009	1.3	0.68	35.3	OK