



Surface Water Drainage Strategy

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Flood risk, water and environment

AEG0842_M24_Rochdale_05

Site Address: Borrowdale Road
Rochdale
M24 5GQ

**UK Experts in Flood Modelling, Flood Risk
Assessments, and Surface Water Drainage
Strategies**

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Flood risk, water and environment

Document Issue Record

Project: Surface Water Drainage Strategy

Prepared for: Rochdale Borough Council

Reference: AEG0842_M24_Rochdale_05

Site Location: Borrowdale Road, Rochdale, M24 5GQ

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1. Introduction

- 1.1. Aegaea were commissioned to undertake a Surface Water Drainage Strategy to accompany a planning application for the proposed development.
- 1.2. This report has been prepared in accordance with the requirements set out in the National Planning Policy Framework (NPPF) and the associated Planning Practice Guidance.
- 1.3. This report is intended to support a full planning application and as such the level of detail included is commensurate and subject to the nature of the proposals.

Site Overview

- 1.4. The site of the proposed development is Borrowdale Road, Rochdale, M24 5GQ (Figure 1).

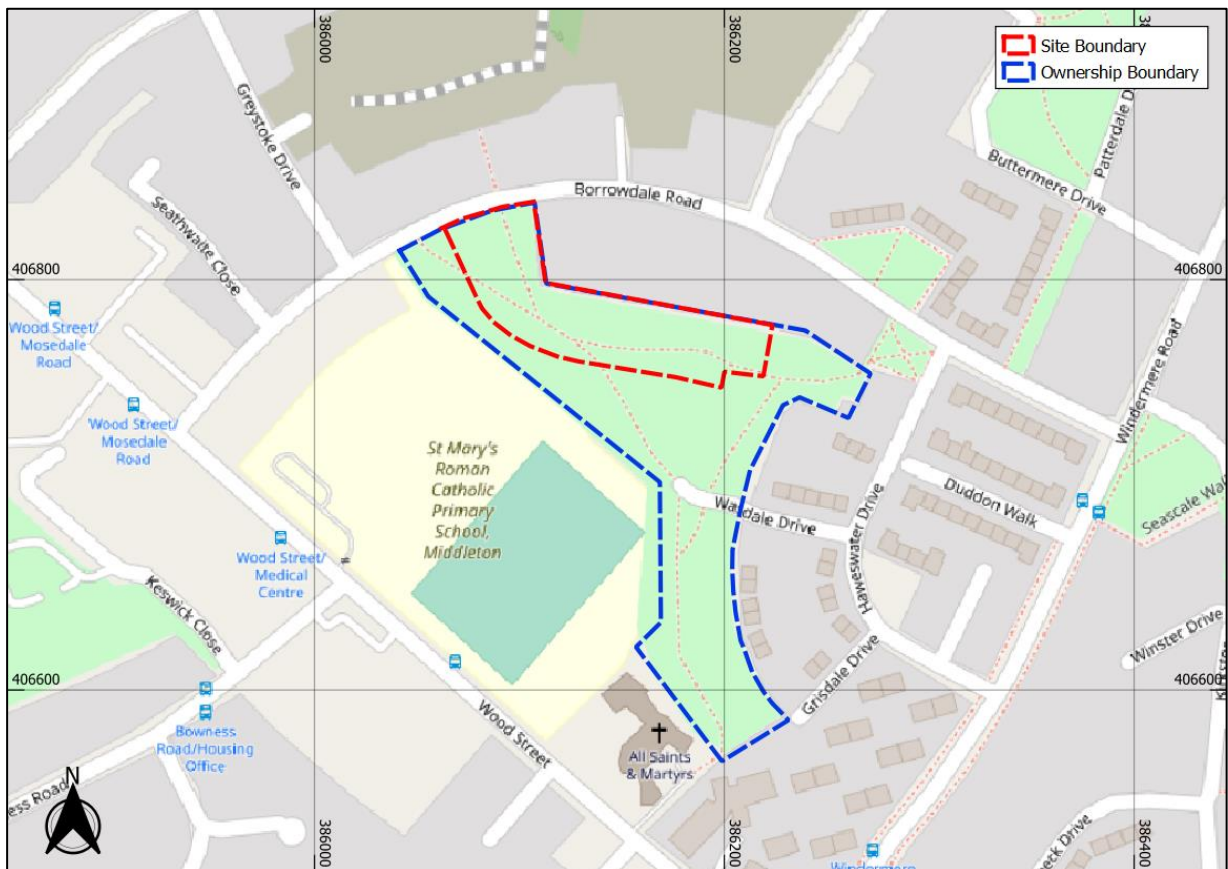


Figure 1: Site Location (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors)

- 1.5. The existing site is a greenfield site. The proposed development comprises the construction of 30 no. dwellings with the accommodation mix consisting of dwellinghouses and apartments. Development proposals are included in Appendix A.
- 1.6. A topographic survey has been undertaken for the site which is included in Appendix A. The topographic survey shows the ground elevation of the site vary between approximately 121.13 metres Above Ordnance Datum (m AOD) to 133.02mAOD. The area where the proposed units are to be located is in the northern part of the site where land levels vary from approximately 132.95m AOD to 127.76m AOD. Figure 2 provides a visual representation of the topographic levels on site using Environment Agency Light Detection and Ranging (LiDAR) data Digital Terrain Model (1m resolution) (2020).

Figure 2: Site Topography derived from 1m LiDAR (Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © <https://www.openstreetmap.org> and contributors. Contains public sector information licensed under the Open Government Licence v3.0)

- 1.7. Rochdale Borough Council is the Local Planning Authority (LPA) for the site, and also the designated Lead Local Flood Authority (LLFA). The site sits within the Environment Agency's Greater Manchester Merseyside and Cheshire region.

2. Policy Compliance

National Planning Policy

- 2.1. The potential consequences of inappropriate development in a flood risk area for occupiers, either of the development or elsewhere, pose significant risks in terms of personal safety and damage to property. The approach taken in the assessment of flood risk at the planning stage is set out in national, regional and local planning policy and associated guidance. The following section summarises the key policies and guidance relevant to the proposed development.
- 2.2. The National Planning Policy Framework¹ (NPPF) (DCLG, 2021) includes Government policy on development and flood risk stating that:

"169. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:

- a) take account of advice from the lead local flood authority;*
- b) have appropriate proposed minimum operational standards;*
- c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and*
- d) where possible, provide multifunctional benefits.*

- 2.3. Sustainable drainage systems should be considered and included where practicable, in line with Defra Technical Standards².

Local Planning Policy

- 2.4. The Rochdale Adopted Core Strategy was adopted in October 2016. The main policies relating to flood risk/drainage is 'Policy G8 - Managing water resources and flood risk' and 'Policy EM7: Development and Flood Risk', the relevant sections have been replicated below:

¹ <https://www.gov.uk/guidance/national-planning-policy-framework>, last updated July 2021

² Technical Standards Accessed Online

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf

G8 - Managing water resources and flood risk

We will ensure that new development (including flood risk mitigation measures) does not lead to any form of increased flooding locally or further downstream, does not impede natural water and flood risk management, is not detrimental to existing or potential flood storage areas, contributes where possible to alleviating existing flood risk, is itself well protected from flood risk and ensures prudent use of water resources. We will require:

- a. Compliance with a 'sequential' approach to new development and flood risk, directing development away from areas of high risk, in accordance with the National Planning Policy Framework;
- b. Full regard to and compliance with the advice of the Environment Agency (or equivalent agency) and the objectives and priorities for flood risk management set out in the Local Flood Risk Management Strategy, including any mitigation measures recommended for particular sites;
- c. Full regard to the published evidence of local flood risk and its significance as included in Strategic Flood Risk Assessments, Surface Water Management Plans and other recognised sources of flood risk data and the production of additional Flood Risk Assessments (FRAs) as appropriate;
- d. Incorporation of appropriate measures for the management of surface and flood water, including flood storage areas, Sustainable Urban Drainage Systems (SUDS) and the protection of 'overland flow paths';
- e. Compliance with any Surface Water Management Plan or drainage strategies produced, such as for the identified critical drainage areas of Littleborough and Heywood;
- f. The avoidance of culverting, and support the opening up of existing culverts wherever possible;
- g. The incorporation of measures for the conservation of water to minimise potable water consumption, including rainwater collection measures, which should be integral to the design of buildings and spaces;
- h. Development that does not directly or indirectly lead to pollution of existing water resources such as watercourses and groundwater or the derogation of the quantity of groundwater;
- i. The incorporation of measures to improve water quality; and

j. The taking of opportunities to improve the habitat value of watercourses and water bodies.

In addition, we will identify additional flood storage areas which will be protected from development

Policy EM7 – Development and Flood Risk

Development will not be permitted in areas identified as flood plains, or other areas where development could contribute to increased flood risk, unless an appropriate flood risk assessment has been carried out and all of the following criteria are met:

- a) It will not increase the risk of flooding within the flood plain or in adjoining areas by reducing flood storage capacity, increasing flows within a flood plain or through the additional discharge of surface water;
- b) It will not itself be at risk from flooding;
- c) Appropriate sustainable drainage systems are used;
- d) Adequate access adjacent to the water course for maintenance is provided;
- e) Existing or proposed flood defences are protected; f) It would not result in extensive culverting; and
- g) Flood defence works required as a consequence of development are provided at the developer's expense.

Flood defences and related engineering works must also ensure that recognised ecological, geomorphological, archaeological, landscape and recreational interests associated with a water course or adjacent areas are fully taken into account and appropriate mitigation provided. The sequential test approach and principles set out in PPG 25 'Development and Flood Risk' will be followed in considering development proposals.'

3. Surface Water Drainage Strategy

Nearby Watercourses

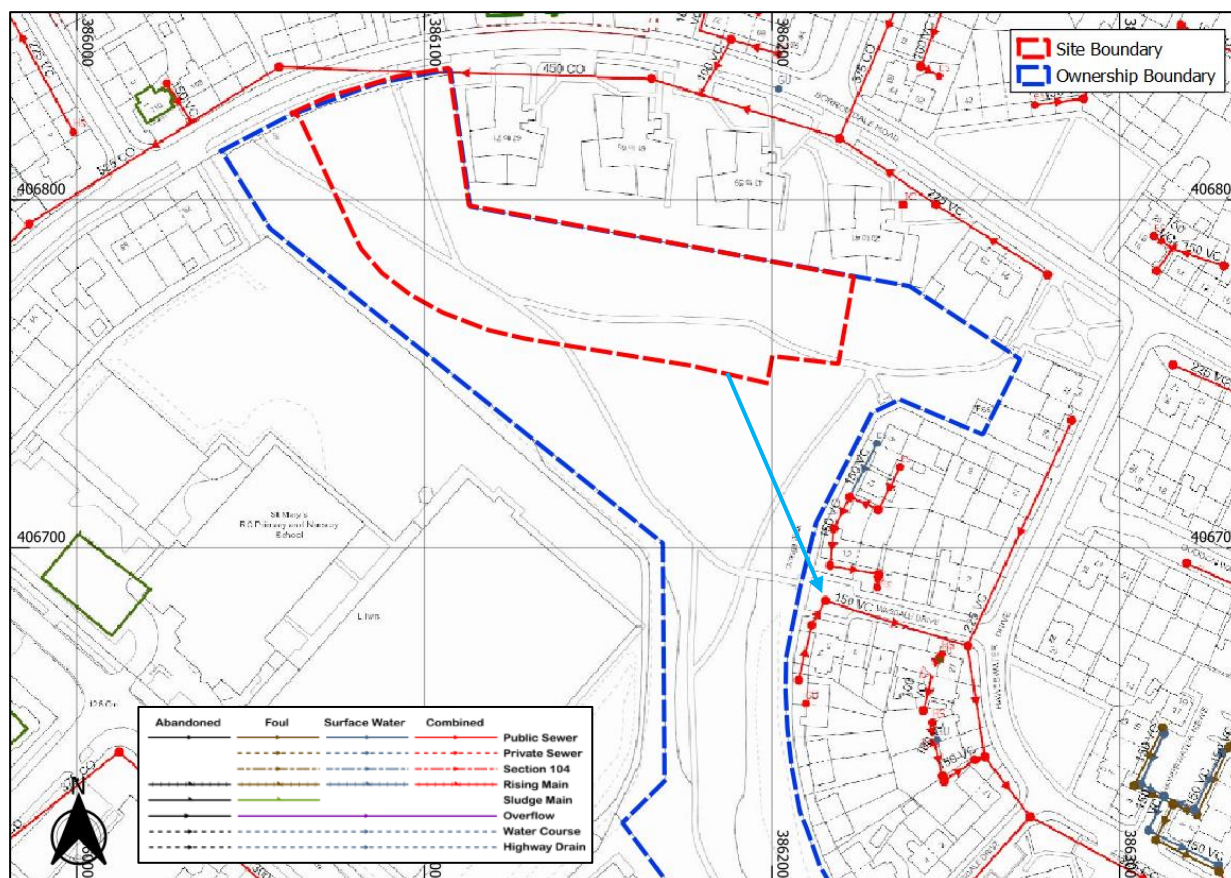
- 3.1. There are no main rivers or ordinary watercourses in the vicinity of the site. The nearest EA main river is the River Irk, which is located approximately 1.2km to the south east.

Ground Conditions

- 3.2. The British Geological Survey's (BGS) mapping shows superficial deposits of 'Hummocky (Moundy) Glacial Deposits, Devensian' (Sand And Gravel) underlying the site. The bedrock underlying the site is 'Royley Sandstone' (Sandstone), 'Pennine Lower Coal Measures Formation' (Mudstone, Siltstone And Sandstone) and 'Hummocky (Moundy) Glacial Deposits, Devensian' (Sand And Gravel).
- 3.3. Soilsmap online mapping describes the soil in the area as being slowly permeable seasonally wet loamy and clayey soils.
- 3.4. At the time of writing, no infiltration testing has been undertaken at the site. However, for the purposes of the report, based on the desktop geology, it is assumed that infiltration SuDS would not be suitable on site.

Existing Drainage Infrastructure

- 3.5. The existing site is greenfield and therefore does not have any existing drainage infrastructure associated with it.
- 3.6. A United Utilities Asset Location Plan (Appendix D) has been obtained which shows the sewers in the area are generally combined. A 450mm diameter combined public sewer runs from east to west underneath Borrowdale Road. However, given the slope and relative levels of the site it would not be possible to get a gravity connection into this combined sewer.
- 3.7. Therefore, it is proposed to connect into the 150mm diameter combined sewer which runs underneath Wasdale Road, located approximately 65m south east of the redline boundary (Figure 3).
- 3.8. A detailed CCTV and drainage connectivity survey should be undertaken prior to detailed design, and any remediation works on the existing drainage infrastructure should be carried out prior to commencement.



Surface Water Drainage Strategy

- 3.9. In accordance with the SuDS management train approach, the use of various SuDS measures to reduce and control surface water flows have been considered in detail for the development.
- 3.10. The management of surface water has been considered in respect to the SuDS hierarchy below, as detailed in the CIRIA 753 "The SuDS Manual" (section 3.2.3).

Table 1 SuDS Drainage Hierarchy

SUDS DRAINAGE HIERARCHY				
			Suitability	Comment
	1.	Store rainwater for later use	✓	Rainwater harvesting for the proposed development should be considered by a specialist at the detailed design stage. There are plot scale opportunities for rainwater harvesting measures such as water butts and these should be implemented where practical. The captured rainwater could be re-used throughout the landscaping on site.
	2.	Use infiltration techniques, such as porous surfaces in non-clay areas	x	Desktop geology data shows the geology in the area is described as seasonally wet loamy and clayey soils with impeded drainage. As such, infiltration SuDS would not be suitable.
	3.	Attenuate rainwater in ponds or open water features for gradual release	x	Given the site layout, it is not possible to locate any open water feature due to space constraints. Furthermore, the wider site (where there is much more open space) is a public park and there would be health and safety concerns associated with open water features. Smaller scale features such as bioretention areas could be incorporated as a source control measures prior to entering the subsurface piped network.
	4.	Attenuate rainwater by storing in tanks or sealed water features for gradual release	✓	Attenuation can be provided in the form of a below ground permeable paving, or in the subsurface piped network itself through manholes and oversized pipes.
	5.	Discharge rainwater direct to a watercourse	x	There are no nearby ordinary watercourses, ditches or rivers to connect into
	6.	Discharge rainwater to a surface water sewer/drain	x	United Utilities Asset Location Plan shows there are no public surface water sewers within the vicinity of the site.
	7.	Discharge rainwater to Combined Sewer	✓	United Utilities Asset Location Plan shows the public sewers in the area are all combined. It is proposed to provide a new gravity connection into the combined sewer which runs underneath Wasdale Road.

3.11. On review of the SuDS drainage hierarchy, ground conditions and asset location plans, and with reference to both national and local policy, it is proposed that the surface water runoff from the

development is managed via attenuation with small-scale SuDS, such permeable paving and bioretention areas, incorporated. The discharge location will be the combined public surface water sewer via a flow control device limiting runoff to as low as practicable.

Greenfield Runoff Rates

- 3.12. The Rochdale Council Sustainable Drainage (SuDS) Local Standards and Checklist states that the Greenfield runoff discharge rates should be provided for new development at all sites (both greenfield and brownfield).
- 3.13. The greenfield runoff rate (QBAR rural) was calculated in InfoDrainage (v2023.2) using the ICP SuDS methodology. For sites smaller than 50 ha, the IH124 method is applied to a 50 ha site and the results multiplied by a scale factor equal to the site area (in hectares) divided by 50. QBAR was calculated using the following formula (equation yields m³/s):

$$QBAR_{rural} = 0.00180 \times AREA^{0.89} \times SAAR^{1.17} \times SOIL^{2.17}$$

- 3.14. The greenfield runoff rate (Qbar) is considered to be the limiting discharge rate. This was calculated to be 1.5l/s for the impermeable site area. It is understood that the minimum recommended flow rate into a United Utilities sewer is 2.0l/s. Therefore, a Hydrobrake limiting flow to a minimum of 2.0l/s is considered to be a suitable option.

InfoDrainage Modelling

- 3.15. The development proposals comprise a partial demolition of the existing building. However, to be conservative, both existing and proposed hardstanding have been included within the calculations.
- 3.16. The greenfield runoff rate (Qbar) for the proposed impermeable area of 2,030m² (excluding Urban Creep) was calculated to be 1.5l/s. As per United Utilities guidelines, the minimum flow rate will be limited to 2.0l/s in order to minimise the risk of blockage.
- 3.17. Total proposed impermeable area was calculated to be 2,030m² (0.203ha) A 10% figure was added to allow for Urban Creep which meant the total area within the calculations was 2,240m² (0.224ha). Table 2 summaries the proposed site inflows.

Table 2: Inflow Summary

Inflow Label	Connected to	Area (Ha)	Urban Creep (%)	Analysed Area (Ha)
Bin and cycle store 1	Porous Paving 1	0.008	10	0.009
Car Parking	Porous Paving 2	0.008	10	0.009
Non-adoptable road 1	Porous Paving 1	0.039	10	0.043
Parking Court 1	Porous Paving 2	0.027	10	0.029
Parking Court 2	Porous Paving 3	0.022	10	0.024
Plots 1-12	Porous Paving 1	0.030	10	0.033
Plots 13-16	Porous Paving 1	0.013	10	0.014
Plots 17-20	Porous Paving 2	0.021	10	0.023
Plots 21-24	Porous Paving 2	0.020	10	0.022
Plots 25-30	Porous Paving 3	0.015	10	0.017
TOTAL		0.203		0.224

- 3.18. A simplified model has been produced in InfoDrainage software (v2023.2) whereby proposed hardstanding area is applied as inflow throughout the network, with surface water from the proposed development being attenuated and discharged via a Hydrobrake at the appropriate flow rate.
- 3.19. The Environment Agency Peak Rainfall Climate Change Allowance guidance was reviewed and subsequently the Defra Peak Rainfall Allowances Map was assessed to determine appropriate climate change allowances to inform the surface water drainage strategy. The upper end allowances for the Trent Valley Staffordshire Management Catchment have been used for both the 1% and 3.3% annual exceedance probability events for the 2070s epoch (40% and 45% respectively for the 1% and 3.3% events).

Table 3: Simulation Criteria

Catchment Area Simulation Parameters	
Rainfall Data	FSR
Total Area	0.224Ha (including a 10% allowance for urban creep)
M5-60	20.00
Ratio R	0.388
Return Periods	1, 30, 30+40%CC, 100, 100+45%CC. Summer and Winter
Storm Durations	15, 30, 60, 120, 240, 360, 480, 960, 1440, 2660 minute
Volumetric Runoff Coefficient	0.9 (summer and winter storms)
Percentage Impervious	100%
Time of Concentration	5 minutes

InfoDrainage Modelling Results

- 3.20. The full calculation outputs can be found in Appendix B of this report although the 1 in 100 year +45% climate change results have been summarised below:

- The total required attenuation to discharge surface water runoff at the greenfield runoff rate (Q_{bar}) is 231.13m³. The critical storm duration is the 1440 minute summer event for porous paving 1 and 3 and the 360 minute summer event for porous paving 2. No flooding is observed in this event based on the InfoDrainage model.

3.21. As such, these results indicate that the runoff from the proposed development could be accommodated within a drainage system of the approximate size modelled, with surface water runoff being discharged at a maximum of 2.0l/s for all return periods.

Surface Water Drainage Arrangement

3.22. The principles of the surface water drainage arrangements are outlined below. The surface water drainage arrangement is included as Appendix C.

- All surface water generated by the proposed development will be captured via a combination of rainwater downpipes, source control SuDS features (e.g permeable paving, bioretention areas, water butts etc.) and gullies/slot drains. All rainwater downpipes should drain onto the adjacent bioretention areas (where possible), which will be fitted with overflows to the downstream permeable paving.
- Surface water will be conveyed via gravity through a subsurface piped network towards the south eastern side of the site.
- A combination of 3 areas of permeable paving (Type C) will provide the majority of attenuation. The paving areas will be connected via 100mm surface water pipes which will provide a degree of flow control between each.
 - Porous paving area 1 totals 470m² and has a subbase depth of 250mm with 95% void ratio to provide approximately 111.63m³ of attenuation.
 - Porous paving area 2 totals 267m² and has a subbase depth of 300mm with 95% void ratio to provide approximately 75.96m³ of attenuation.
 - Porous paving area 3 totals 300m² and has a subbase depth of 450mm with 95% void ratio to provide approximately 128.25m³ of attenuation.
- A Hydrobrake limiting flows to 2.0l/s is the primary flow control. The proposed downstream connection is the combined public sewer which runs underneath Wasdale Road.

Water Quality

3.23. A key element of SuDS is that they have the potential to improve the quality of surface water discharged from a site. In order to assess this, the "Pollution hazard indices for different land use classifications", provided in the CIRIA SuDS Manual (C753) as table 26.2, has been reviewed. The

indices use four different methods of assessing pollution potential based on the hazard level, total suspended solids (TSS), Metals, and Hydrocarbons.

- 3.24. The Pollution Hazard Indices are summarised in Table 4 below (with reference to table 26.3 in the CIRIA SuDS manual).

Table 4: Pollutant Hazard Indices

Land Use	Pollution Hazard Level	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential roofs	Very Low	0.2	0.2	0.05
Residential car parks and low traffic roads	Low	0.5	0.4	0.4

Table 5: Mitigation Hazard Indices for discharges to surface waters

SuDS	Total Suspended Solids (TSS)	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Bioretention System	0.8	0.8	0.8

- 3.25. Runoff from residential roofs is generally considered low contamination risk and does not usually warrant any significant treatment. However, to prevent potential sediment from impacting the SuDS system, sediment traps should be provided on the bioretention outlet to the storage structure to prevent sedimentation in the below ground network, with rodding access provided either side for cleaning and maintenance.
- 3.26. Gulleys within the trafficked access road (not draining through permeable paving) should be fitted with oil interceptors to minimise the risk of contamination.
- 3.27. The mitigation indices in Table 5 demonstrate that the permeable paving on the driveway will provide sufficient mitigation for surface water prior to discharging.

Maintenance

- 3.28. Table 6, overleaf, presents details regarding the maintenance requirements for the proposed SuDS included as part of the development, taken from the CIRIA C753 The SuDS manual. Each manufacturer will have bespoke requirements however the below should be used as a guide. All SuDS will be privately maintained.

Table 6: Specific SuDS Maintenance Requirements (Source: CIRIA SuDS Manual)

Maintenance Schedule	Required Action	Typical Frequency
Permeable Paving		
Regular Maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations
Occasional Maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than a sprayer	As required
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper structure by remedial sweeping	Every 10 to 15 years as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48hr after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually
Bioretention System		
	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess	Quarterly

Regular Inspections	standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc. and replace as necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular Maintenance	Remove litter and surface debris and weeds	Quarterly (or as required)
	Replace any plants, to maintain planting density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly to biannually
Occasional Maintenance	Infill any holes or scour in the filter medium, improve erosion protection if required	As required
	Repair minor accumulations of silt by raking away surface mulch, scarifying surface of medium and replacing mulch	As required
Remedial Actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years
Geocellular Storage		
Regular Maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial Actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlet, overflows, and vents	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

Designing for Exceedance

- 3.29. Periods of exceedance occur when the rate of surface water runoff exceeds the drainage system capacity. Conveyance beneath ground cannot, generally, be economically or sustainably constructed to the scale required for the most extreme rainfall events. This may result, on occasion, in the surface water runoff exceeding the capacity of the drainage network, with excess water (exceedance flow) being conveyed above ground.
- 3.30. For situations where extreme rainfall intensity exceeds inlet capacities, or for extreme storm events exceeding the design flood event considered for drainage design, surface water would flow overland towards the south of the site, towards the existing watercourse.

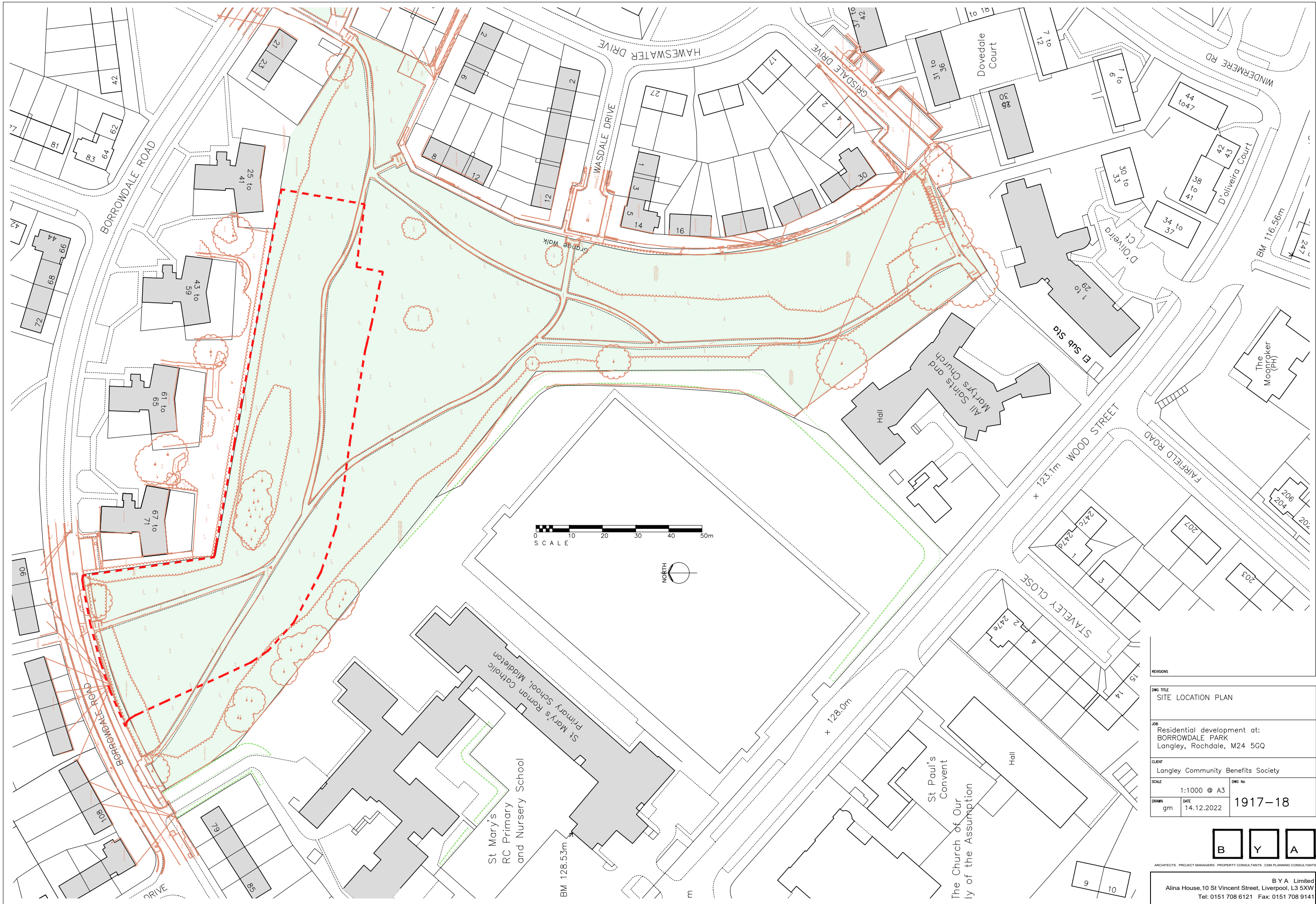
4. Conclusions

- 4.1. This Surface Water Drainage Strategy has been undertaken with reference to the requirements of NPPF and Planning Practice Guidance with respect to the development at Borrowdale Road, Rochdale, M24 5GQ. It has been written to support a full planning application and has been prepared with due consideration to the nature of the proposed development to provide the appropriate level of detail.
- 4.2. The existing site is a greenfield site. The proposed development comprises the construction of 30no. dwellings with the accommodation mix consisting of dwellinghouses and apartments.
- 4.3. The British Geological Survey's (BGS) mapping shows superficial deposits of 'Hummocky (Moundy) Glacial Deposits, Devensian' (Sand And Gravel) underlying the site. The bedrock underlying the site is 'Royley Sandstone' (Sandstone), 'Pennine Lower Coal Measures Formation' (Mudstone, Siltstone And Sandstone) and 'Hummocky (Moundy) Glacial Deposits, Devensian' (Sand And Gravel).
- 4.4. Soilscales online mapping describes the soil in the area as being slowly permeable seasonally wet loamy and clayey soils. At the time of writing, no infiltration testing has been undertaken at the site. However, for the purposes of the report, based on the desktop geology, it is assumed that infiltration SuDS would not be suitable on site.
- 4.5. The existing site is greenfield and therefore does not have any existing drainage infrastructure associated with it. A United Utilities Asset Location Plan has been obtained which shows the sewers in the area are generally combined. A 450mm diameter combined public sewer runs from east to west underneath Borrowdale Road. However, given the slope of the site it would not be possible to get a gravity connection into this combined sewer. Therefore, it is proposed to connect into the 150mm diameter combined sewer which runs underneath Wasdale Road, located approximately 65m south east of the redline boundary.
- 4.6. A detailed CCTV and drainage connectivity survey should be undertaken prior to detailed design, and any remediation works on the existing drainage infrastructure should be carried out prior to commencement.
- 4.7. The greenfield runoff rate (Q_{bar}) for the proposed impermeable area of 2,030m² (excluding Urban Creep) was calculated to be 1.5l/s. As per United Utilities guidelines, the minimum flow rate will be limited to 2.0l/s in order to minimise the risk of blockage.
- 4.8. The total required attenuation to discharge surface water runoff at the greenfield runoff rate (Q_{bar}) is 231.13m³. The critical storm duration is the 1440 minute summer event for porous paving 1 and 3

and the 360 minute summer event for porous paving 2. No flooding is observed in this event based on the InfoDrainage model.

- 4.9. The Infodrainage model results indicate that the runoff from the proposed development could be accommodated within a drainage system of the approximate size modelled for all events up to the 1 in 100 year + 45% climate change event.
- 4.10. SuDS features such as permeable paving and raised planter bioretention systems could be incorporated into the development proposals to offer water quality benefits. Furthermore, silt traps should be fitted downstream of the proposed bioretention systems to reduce the pollution from the roofs entering the downstream private network. The mitigation indices offered by the proposed SuDS features are well in excess of the hazard indices from residential roofs. It is therefore considered that the proposed SuDS features are appropriate and acceptable in terms of water quality.

Appendix A – Development Proposals



REVISIONS

DWG TITLE
SITE LOCATION PLAN

JOB
Residential development at:
BORROWDALE PARK
Langley, Rochdale, M24 5GQ

CLIENT
Langley Community Benefits Society

SCALE
1:1000 @ A3

DWG No
1917-18

DRAWN
gm

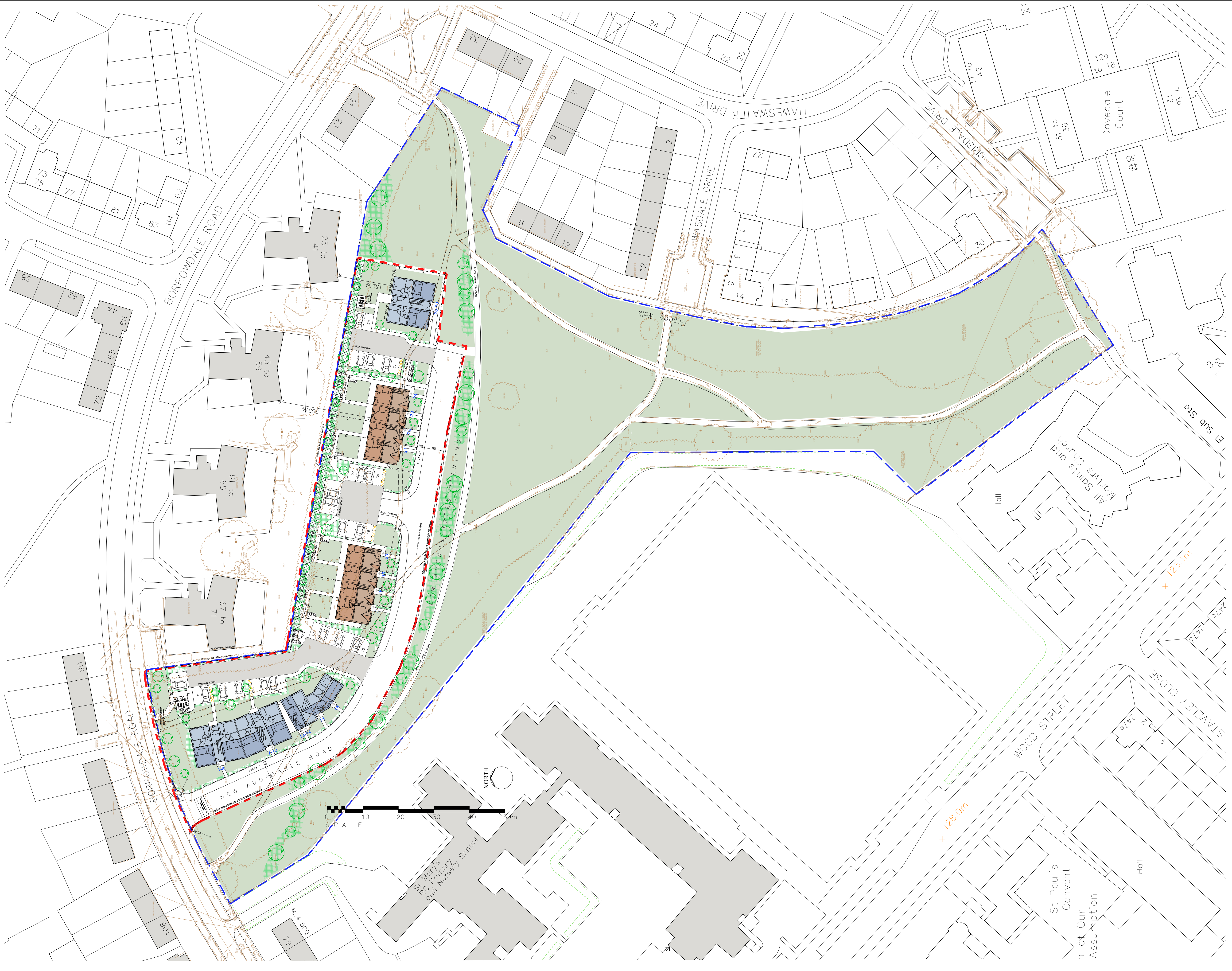
DATE
14.12.2022

ARCHITECTS: PROJECT MANAGERS: PROPERTY CONSULTANTS: CDM PLANNING CONSULTANTS:

Alina House, 10 St Vincent Street, Liverpool, L3 5XW
Tel: 0151 708 6121 Fax: 0151 708 9141

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NOTES

REVISIONS

DWG TITLE
SITE PLAN – as proposed
showing whole of Borrowdale Park

JOB
Residential development at:
BORROWDALE PARK
Langley, Rochdale, M24 5GQ

CLIENT
Langley Community Benefits Society

SCALE 1:500 @ A1 1:1000 @ A3	DWG No 1917-19
DRAWN gm	DATE 14.12.2022

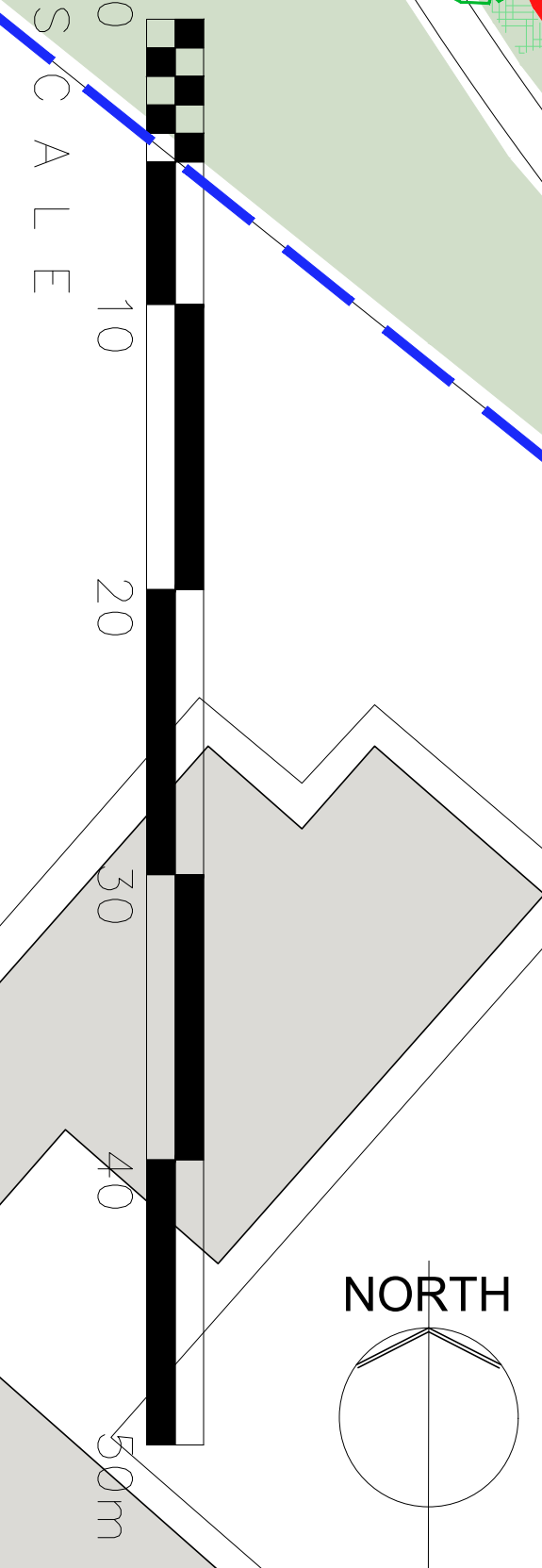
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NOTES

ACCOMMODATION

2BAP houses plots 18 19 22 23	2 storey	79 sqm	04
3B5P houses plots 20 24	2 storey	93 sqm	02
4B5P houses plots 17 21	2 storey	97 sqm	02
1B2P apartments plots 1-12 25-30	3 storey	50 sqm	18
1B2P wglk ups plots 13 14 15 16	2 storey	50 sqm	04
TOTAL			30

--- Area of Development Site 0.587 Ha
 --- Open Space as UDP map 1.857 Ha
 --- Draft allocations boundary 0.34 Ha

Topographical survey of site as existing

Unadapted private parking for apartments

Planting, indicative subject to detailed proposals under condition

New trees, indicative subject to detailed proposals under condition

A----- 900mm high steel railings to front boundaries galv m/s painted black
 B----- 2100mm high steel railings or mesh fence to rear boundary with existing apartments, colour-coated
 C----- 1800mm high concrete post and timber panel fence
 D----- 2100mm high concrete post and timber panel fence

Recycling/refuse storage facilities
 Cycle storage facilities, covered and secure
 16 Plot reference numbers

REVISIONS

DWG TITLE
SITE PLAN - as proposed
showing residential development area

JOB
Residential development at:
BORROWDALE PARK
Langley, Rochdale, M24 5GQ

CLIENT
Langley Community Benefits Society

SCALE
1:250 @ A1
1:500 @ A3

DWG No
1917-20

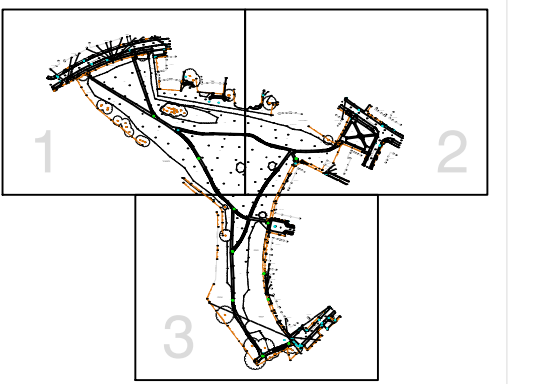
DRAWN
gm

DATE
14.12.2022

ARCHITECTS PROJECT MANAGERS PROPERTY CONSULTANTS GDM PLANNING CONSULTANTS

B Y A
 Alina House, 10 St Vincent Street, Liverpool, L3 5XW
 Tel: 0151 708 6121 Fax: 0151 708 9141

SURVEY STATIONS			
Name	Easting	Northing	Height
S01	386232.08	406744.55	128.84
S02	386109.26	406781.21	129.89
S03	386147.85	406744.67	127.86
S04	386178.69	406700.95	125.35
S05	386177.18	406664.25	124.19
S06	386177.17	406621.92	122.82
S07	386203.32	406573.69	121.50
S08	386226.05	406538.89	124.70
S09	386227.98	406622.78	125.90
S010	386204.29	406645.12	126.31
S011	386208.06	406688.74	127.23



Client	BYA Limited
--------	-------------

Scale(s)	1:200	Surveyor	PE
Date	JUN 18	Drawn	AS
Job Number	18C200	Checked	TP

Sheet Size & Drg Number & Revision
A0 18C200/001

Appendix B – Infodrainage Calculations

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: OH		Checked by:	Approved By:
Company Address: Aegaea				



Plots 1-12

Type : Catchment Area

Area (ha)	0.03
-----------	------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Plots 13-16

Type : Catchment Area

Area (ha)	0.013
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Non-adoptable road 1

Type : Catchment Area

Area (ha)	0.039
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	300
Percentage Impervious (%)	100



Bin and cycle store 1

Type : Catchment Area

Area (ha)	0.008
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: OH	Checked by:	Approved By:	
Company Address: Aegaea				



Car Parking

Type : Catchment Area

Area (ha)	0.008
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Plots 17-20

Type : Catchment Area

Area (ha)	0.021
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Parking Court 1

Type : Catchment Area

Area (ha)	0.027
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Plots 21-24

Type : Catchment Area

Area (ha)	0.02
-----------	------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Details: Type: Inflows Storm Phase: Phase	Designed by: OH	Checked by:	Approved By:	
Company Address: Aegaea				



Parking Court 2

Type : Catchment Area

Area (ha)	0.022
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Plots 25-30

Type : Catchment Area

Area (ha)	0.015
-----------	-------

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.900
Winter Volumetric Runoff	0.900
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Details: Type: Stormwater Controls Storm Phase: Phase	Designed by: OH		Checked by:	Approved By:
Company Address: Aegaea				



Porous Paving 1

Type : Porous Paving

Dimensions

Exceedance Level (m)	130.000
Depth (m)	0.350
Base Level (m)	129.650
Paving Layer Depth (mm)	100
Membrane Percolation (m/hr)	9000.0
Porosity (%)	95
Length (m)	47.000
Long. Slope (1:X)	1000.00
Width (m)	10.000
Total Volume (m³)	111.625

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Non-adoptable road 1
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Bin and cycle store 1
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

Inlet Type	Lateral Inflow
Incoming Item(s)	Plots 13-16
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (3)

Inlet Type	Point Inflow
Incoming Item(s)	Plots 1-12
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	650.0
---------------------	-------

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Details: Type: Stormwater Controls Storm Phase: Phase	Designed by: OH		Checked by:	Approved By:
Company Address: Aegaea				



Porous Paving 2

Type : Porous Paving

Dimensions

Exceedance Level (m)	129.000
Depth (m)	0.400
Base Level (m)	128.600
Paving Layer Depth (mm)	100
Membrane Percolation (m/hr)	9000.0
Porosity (%)	95
Length (m)	21.141
Long. Slope (1:X)	1000.00
Width (m)	12.608
Total Volume (m³)	75.963

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Pipe Parking Court 1
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Plots 17-20 Plots 21-24 Car Parking
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	Pipe (1)
Outlet Type	Free Discharge

Advanced

Conductivity (m/hr)	650.0
---------------------	-------



Porous Paving 3

Type : Porous Paving

Dimensions

Exceedance Level (m)	128.000
Depth (m)	0.550
Base Level (m)	127.450
Paving Layer Depth (mm)	100
Membrane Percolation (m/hr)	9000.0
Porosity (%)	95
Length (m)	25.000
Long. Slope (1:X)	1000.00
Width (m)	12.000
Total Volume (m³)	128.250

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Stormwater Controls Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			

Inlets

Inlet

Inlet Type	Lateral Inflow
Incoming Item(s)	Parking Court 2
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (1)

Inlet Type	Point Inflow
Incoming Item(s)	Plots 25-30
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet (2)

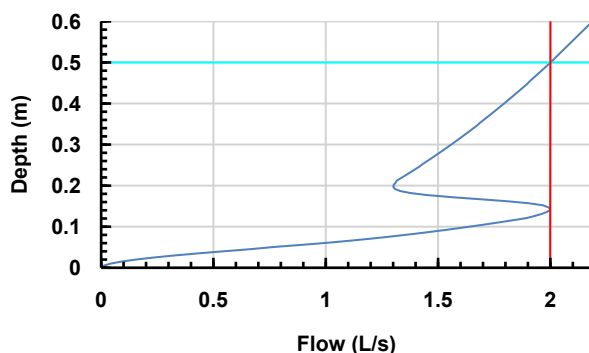
Inlet Type	Point Inflow
Incoming Item(s)	Pipe (1)
Bypass Destination	(None)
Capacity Type	No Restriction

Outlets

Outlet

Outgoing Connection	(None)
Outlet Type	Hydro-Brake®
Invert Level (m)	127.450
Design Depth (m)	0.500
Design Flow (L/s)	2.0
Objective	Minimise Upstream Storage Requirements
Application	Surface Water Only
Sump Available	☐

Unit Reference	CHE-0073-2000-0500-2000
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Advanced

Conductivity (m/hr)	700.0
---------------------	-------

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Connections Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			

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	50.989	Pipe	48.561		0.6	100	130.047	129.650
Pipe (1)	44.572	Pipe	38.758		0.6	100	129.021	128.600

Name	Downstream Cover Level (m)	Downstream Invert Level (m)	Lock
Pipe	129.021	128.600	None
Pipe (1)	128.025	127.450	None

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Inflow Summary Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Bin and cycle store 1	Porous Paving 1		Time of Concentration	0.008	100	10	110	0.009
Car Parking	Porous Paving 2		Time of Concentration	0.008	100	10	110	0.009
Non-adoptable road 1	Porous Paving 1		Time of Concentration	0.039	100	10	110	0.043
Parking Court 1	Porous Paving 2		Time of Concentration	0.027	100	10	110	0.029
Parking Court 2	Porous Paving 3		Time of Concentration	0.022	100	10	110	0.024
Plots 1-12	Porous Paving 1		Time of Concentration	0.030	100	10	110	0.033
Plots 13-16	Porous Paving 1		Time of Concentration	0.013	100	10	110	0.014
Plots 17-20	Porous Paving 2		Time of Concentration	0.021	100	10	110	0.023
Plots 21-24	Porous Paving 2		Time of Concentration	0.020	100	10	110	0.022
Plots 25-30	Porous Paving 3		Time of Concentration	0.015	100	10	110	0.017
TOTAL		0.0		0.203				0.224

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
		Designed by: OH	Checked by:		Approved By:
Report Details: Type: Outfall Details Storm Phase: Phase		Company Address: Aegaea			

Outfalls

Outfall	Outfall Type	Fixed Surcharged Level (m)	Level Curve
Porous Paving 3	Free Discharge		

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Title: Rainfall Analysis Criteria	Designed by: OH	Checked by:	Approved By:	
Company Address: Aegaea				

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	10
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network	Date: 26/04/2023			
Report Title: UK and Ireland Rural Runoff Calculator	Designed by: OH		Checked by:	Approved By:
Company Address: Aegaea				

ICP SUDS / IH 124

Details

Method	ICP SUDS
Area (ha)	0.203
SAAR (mm)	1026.0
Soil	0.47
Region	Region 10
Urban	0
Return Period (years)	0

Results

Region	QBAR Rural (L/s)	QBAR Urban (L/s)	Q 1 (years) (L/s)	Q 30 (years) (L/s)	Q 100 (years) (L/s)
Region 10	1.5	1.5	1.3	2.6	3.2

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023		
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: OH	Checked by:	Approved By:
		Company Address: Aegaea		





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

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Porous Paving 1	FSR: 1 years: +0 %: 1440 mins: Summer	129.779	129.661	0.082	0.011	1.2	24.118	0.000	0.000	0.2	22.545	78.393	OK
Porous Paving 2	FSR: 1 years: +0 %: 1440 mins: Summer	128.715	128.618	0.094	0.018	1.4	16.015	0.000	0.000	0.7	45.677	78.917	OK
Porous Paving 3	FSR: 1 years: +0 %: 1440 mins: Winter	127.581	127.493	0.106	0.043	0.9	22.202	0.000	0.000	0.6	48.979	82.689	OK

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			



FSR: 30 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Porous Paving 1	FSR: 30 years: +0 %: 1440 mins: Summer	129.840	129.669	0.143	0.019	2.3	43.490	0.000	0.000	0.7	51.316	61.039	OK
Porous Paving 2	FSR: 30 years: +0 %: 480 mins: Summer	128.794	128.629	0.173	0.029	5.7	28.160	0.000	0.000	1.9	48.702	62.930	OK
Porous Paving 3	FSR: 30 years: +0 %: 1440 mins: Summer	127.666	127.543	0.191	0.093	2.5	41.535	0.000	0.000	1.6	114.127	67.614	OK

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			



FSR: 30 years: Increase Rainfall (%): +35: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Porous Paving 1	FSR: 30 years: +35 %: 1440 mins: Summer	129.878	129.674	0.181	0.024	3.2	55.636	0.000	0.000	1.1	72.683	50.158	OK
Porous Paving 2	FSR: 30 years: +35 %: 480 mins: Summer	128.838	128.638	0.217	0.038	7.8	35.812	0.000	0.000	3.0	71.802	52.856	OK
Porous Paving 3	FSR: 30 years: +35 %: 1440 mins: Summer	127.724	127.655	0.249	0.205	3.7	64.326	0.000	0.000	2.0	161.825	49.843	OK

Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			



FSR: 100 years: Increase Rainfall (%): +0: Critical Storm Per Item: Rank By: Max. Resident Volume

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
Porous Paving 1	FSR: 100 years: +0 %: 1440 mins: Summer	129.868	129.673	0.171	0.023	2.9	52.504	0.000	0.000	1.0	66.957	52.964	OK
Porous Paving 2	FSR: 100 years: +0 %: 480 mins: Summer	128.830	128.637	0.209	0.037	7.4	34.470	0.000	0.000	2.8	67.488	54.622	OK
Porous Paving 3	FSR: 100 years: +0 %: 1440 mins: Summer	127.708	127.585	0.233	0.135	3.4	52.935	0.000	0.000	2.0	149.306	58.725	OK

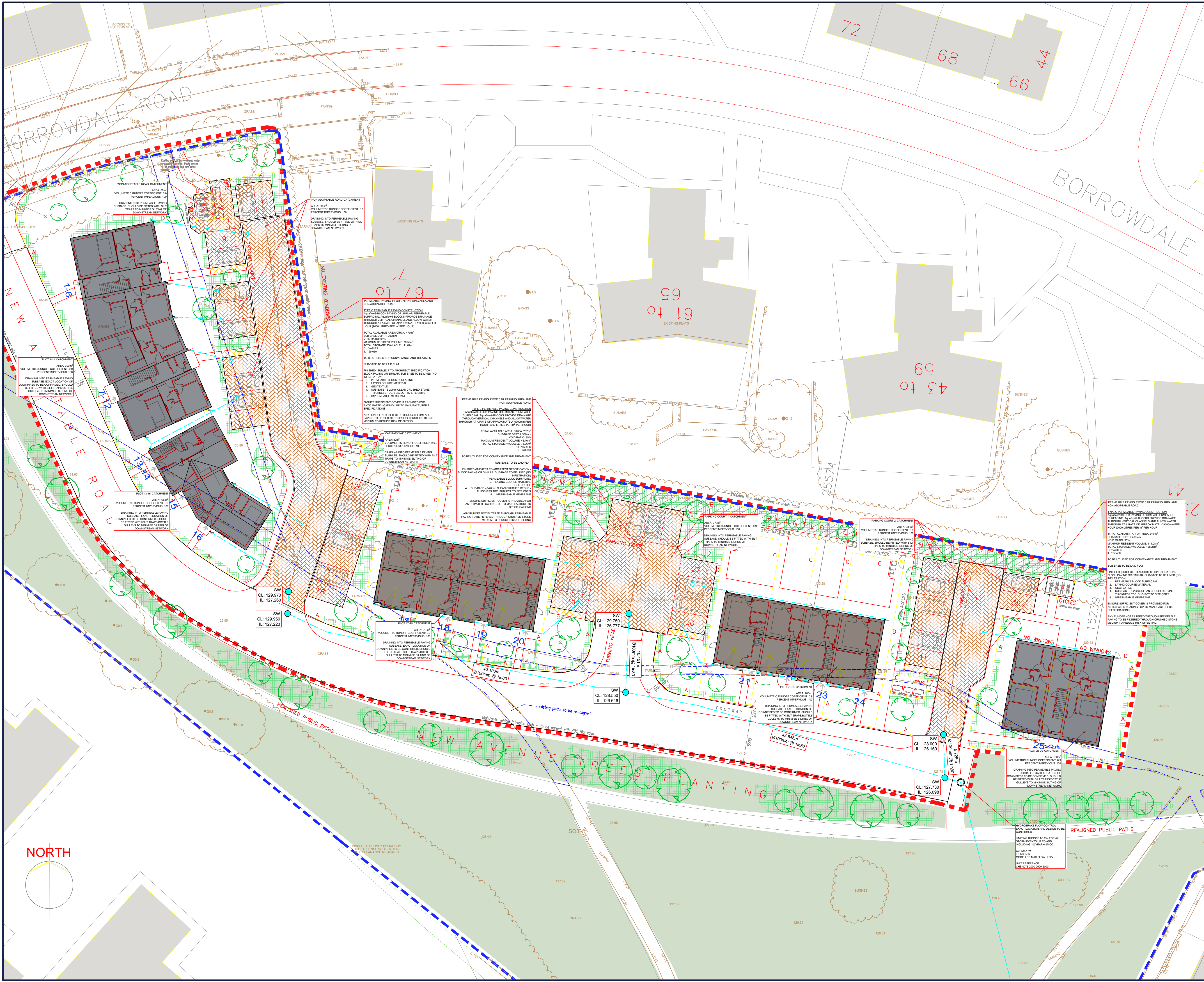
Project: AEG0842 Borrowdale Road, Rochdale, M24 5GQ Proposed Network		Date: 26/04/2023			
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase		Designed by: OH	Checked by:		Approved By:
		Company Address: Aegaea			



FSR: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Resident Volume

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Porous Paving 1	FSR: 100 years: +45 %: 1440 mins: Summer	129.926	129.680	0.229	0.030	4.3	70.589	0.000	0.000	1.8	102.252	36.762	OK
Porous Paving 2	FSR: 100 years: +45 %: 360 mins: Summer	128.904	128.651	0.283	0.051	12.9	46.463	0.000	0.000	4.9	87.556	38.835	OK
Porous Paving 3	FSR: 100 years: +45 %: 1440 mins: Summer	127.888	127.838	0.413	0.388	5.4	114.076	0.000	0.000	2.0	213.833	11.052	OK

Appendix C – Surface Water Drainage Layout



- NOTES:**
1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT REPORTS, PLANS AND ARCHITECTURAL DRAWINGS.
 2. THIS DRAWING SHOULD NOT BE SCALED. THERE SHOULD BE NO RELIANCE ON THIS DRAWING WITH REGARDS TO DIMENSIONS. ALL DIMENSIONS SHOULD BE CONFIRMED ON SITE.
 3. ANY DISCREPANCY ON THIS DRAWING SHOULD BE REPORTED TO AEGAEA IMMEDIATELY FOR CLARIFICATION.
 4. THE CONTRACTOR IS RESPONSIBLE FOR ALL WORKS AND FOR THE STABILITY, INSTALLATION AND HEALTH AND SAFETY OF THE WORKS.
 5. AEGAEA HAVE PRODUCED THIS DRAWING BASED ON THE DRAWINGS AND INFORMATION PROVIDED BY THE CLIENT AVAILABLE AT THE TIME OF PRODUCTION. WE CANNOT ACCEPT RESPONSIBILITY FOR DISCREPANCIES RESULTING FROM NEW PLANS/ INFORMATION BEING ISSUED POST-ISSUE OF THIS DRAWING. THE CONTRACTOR SHOULD REVIEW THIS DRAWING IN LIGHT OF WIDER SITE INFORMATION SUCH AS CONTAMINATION, UTILITIES SURVEYS AND SITE INVESTIGATIONS
 6. IT IS THE RESPONSIBILITY OF THE PRINCIPLE CONTRACTOR TO MAKE THE DESIGNER AND CLIENT AWARE OF SITE-SPECIFIC RISKS AND HAZARDS THAT MAY AFFECT THE DRAWING AND SPECIFICATION

LEGEND

- PROPOSED SURFACE WATER DRAIN
- EXISTING SURFACE WATER DRAIN
- SURFACE WATER INSPECTION CHAMBER
- FLOW CONTROL MANHOLE
- TYPE C PERMEABLE PAVING
- RAINWATER PIPE

CLIENT:

ROCHDALE BOROUGH COUNCIL

SITE:

BORROWDALE ROAD, ROCHDALE, M24 5GQ

DRAWING:

SURFACE WATER DRAINAGE LAYOUT

DRAWING NUMBER:

AEG0842-DR01 SHEET 1 OF 2

DATE:	REV:
26/04/2023	-

DRAWN BY:

OH

DRAWING SCALE:

NTS

**PRELIMINARY DRAWING
FOR PLANNING ONLY - NOT FOR
CONSTRUCTION**

aegaea

Flood risk, water and environment

Appendix D – Supplementary Information



Water for the North West

SEWER RECORDS

Address or Site Reference

89 BORROWDALE ROAD,
MIDDLETON,
MANCHESTER,
M24 5GQ

Scale: 1:1250
Date: 20/03/2023

Printed by: Property Searches

The position of the underground apparatus shown on this plan is approximate only and is given in accordance with the best information currently available. United Utilities Water will not accept liability for any loss or damage caused by the actual position being different from those shown.

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