

Shadow Habitats and Regulations Assessment (SHRA)

Peak Buildings and Hardwick
Hall, Buxton

Reference: 2500278-ENV-S1-EM-TR-E-0002

Date: 26/08/2028


Enviren

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1. Introduction

- 1.1. This report has been compiled for the support of the re-development of Peak Buildings and Hardwick Hall, Buxton (Grid reference: SK 05896 73313) to contain a total of 42 residential units, in addition to commercial space. The proposals are for commercial units and 42 residential units along with associated ancillaries. The report demonstrates through the introduction of SuDS and Greywater Recycling Systems serving the dwellings, the development will achieve Nutrient Neutrality.

Table 1.1 – Site Specific Information	
Category	Site Specific Information
Site name	Peak Buildings and Hardwick Hall, Buxton
Site location	Buxton, High Peak Borough
Grid reference	SK 05896 73313
Local Authority	
Overall site area	0.238 Hectares
Nutrient(s) considered	Phosphorus
Catchment (Surface Water)	Derwent Upper Derbyshire
Catchment (Foul Water)	Derwent Upper Derbyshire
Receiving Wastewater Treatment Works (WwTW)	Buxton
Existing land use	Commercial/industrial urban land
Proposed land use	Urban Residential Land

2. Project Overview

Table 2.1: Project or Plan Details.			
Application Reference Number	TBC	Date	26/08/2026
Applicant details	Inc Architects technical@enviren.co.uk via 01275 560427	Document prepared by/ and on behalf of	By Barney Townsend BEng (Enviren Ltd) On behalf of: Inc Architects
Plan or Project Name*	Peak Buildings and Hardwick Hall, Buxton		
Plan or Project Location	Grid refence: SK 05896 73313	European Site(s) potentially affected.	Peak District Dales SAC
Component SSSI(s):	The Wye Valley		

Plan or Project site location

2.1. The exact location of the site can be found in **Figure 2.1**:

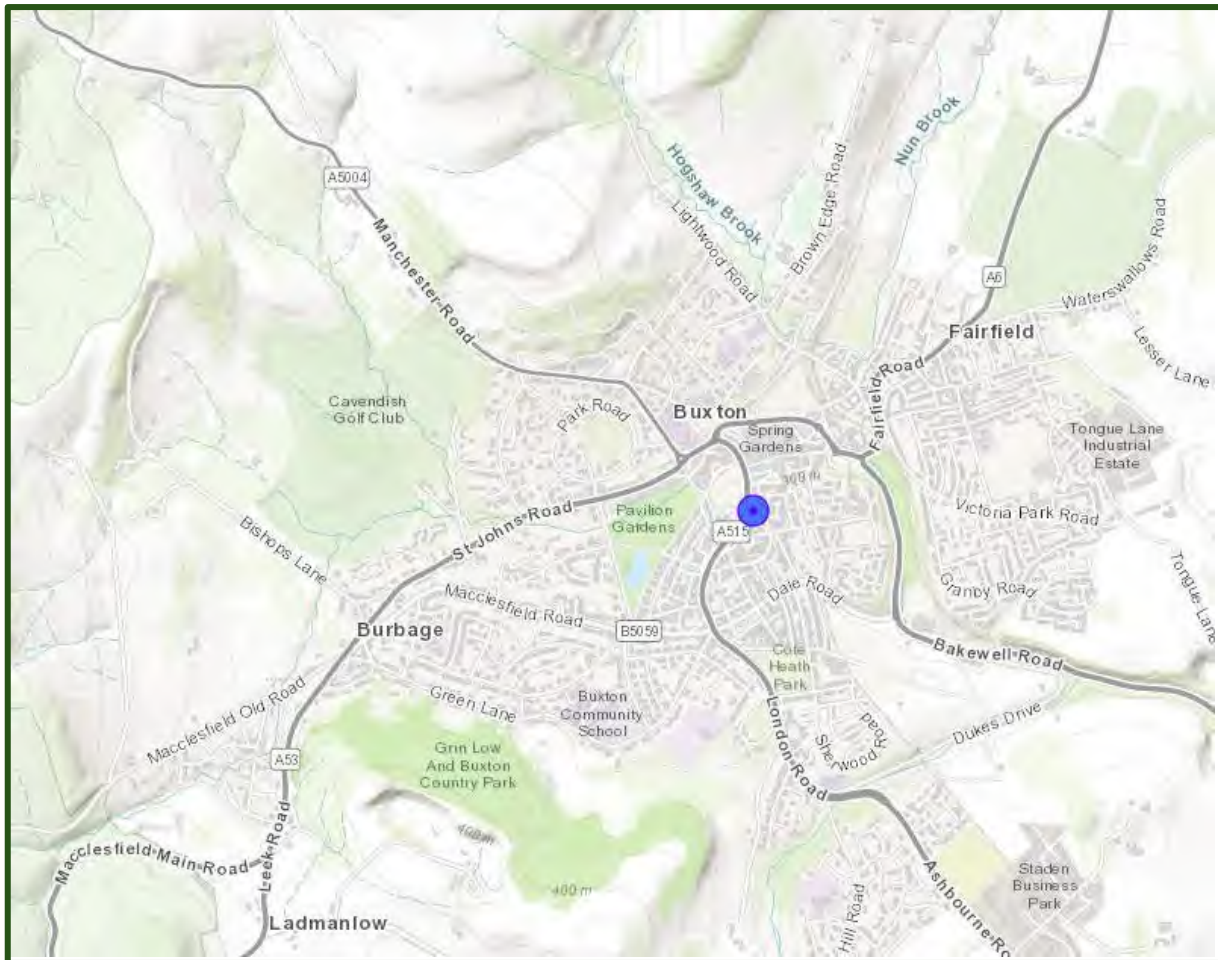


Figure 2.1: Site Location

Environmental baseline

- 2.2. The development currently consists of commercial/industrial urban land which has limited ecological potential. Interrogation of local topographical information identifies that overland flows from the site are directed to the north and flow into an unknown watercourse. The watercourse flows east, discharging into the River Wye. The Buxton WwTW similarly appears to be hydrologically connected to the River Wye to the southeast and downstream of the point at which overland flows from the site enter the river.
- 2.3. As presented in the Enviren Nutrient Neutrality Assessment and Mitigation Strategy (Report ref: 2500278-ENV-S1-EM-TR-E-0001 [see **Appendix 1**], the development will achieve nutrient neutrality through the implementation of onsite SuDS and Greywater Recycling Systems serving the dwellings.

Plan or Project description

- 2.4. The proposals are for the development of 42 residential units and additional commercial units. The mitigation strategy shall consist of implementing onsite SuDS and installing Greywater Recycling systems to serve the dwellings. The documents appropriate to this assessment are:
 - Enviren Ltd – Nutrient Neutrality Assessment and Mitigation strategy (Report ref: 2500278-ENV-S1-EM-TR-E-0001) (see **Appendix 1**)

Construction methodology and programme

- 2.5. The implementation of the proposed Sustainable Drainage treatment train shall be the first construction activity to ensure that all interim runoff, prior to occupation, is treated prior to discharge. Silt fences, straw bales and impermeable collection membranes will be required during construction to ensure that sediment generated through construction shall not negatively affect the performance of the SuDS systems or cause contamination to the wider water network.
- 2.6. The onsite laying of sewers shall be undertaken by a suitably qualified contractor. The pipes shall be either air tested or water tested to ensure that no leakages occur. The connection to the main foul sewer will be sealed and made good to prevent leakage.
- 2.7. The greywater recycling systems and rainwater harvesting unit shall be installed prior to occupation of the proposed units.

Operation

Operational phosphorus outputs

Before mitigation

- 2.8. The drainage installation works shall be the first task to be undertaken and shall certainly precede occupation, therefore there shall be no temporary increase in nutrient pollution.
- 2.9. The proposed greywater recycling system will require regular maintenance to ensure that the system continues to function as designed. This shall be replaced as necessary.
- 2.10. The existing land use is commercial/industrial urban and therefore by converting the land to urban land there will be a change in the quantity of phosphorus generated.
- 2.11. The Sustainable Drainage Systems (SuDS) will require regular maintenance to ensure that the components continue to function as designed, the management company/water authority will need to familiarise themselves with the relevant requirements of CIRIA C753.
- 2.12. As calculated in the Enviren Ltd NNAMS the proposed developments shall generate 0.00kg/year of Total Phosphorus. This is presented in **Table 2.2** below:

Table 2.2: Nutrient Arisings.	
Category	Value
Foul water phosphorus arisings	0.36 kg/year
Area of proposed development	0.238 hectares

Current site use	Commercial/Industrial Urban
Existing land use phosphorus arisings	0.45 kg/year
Proposed site use	Residential Urban Land
Proposed land use phosphorus arisings	0.09 kg/year (Through a 85.2% reduction from SuDS)
Final Nutrient Budget (including 20% buffer)	0.00 kg/year

3. Information about the Peak District Dales SAC

Identifying sites

- 3.1. The development is hydrologically linked to the Peak District Dales SAC through the River Wye to the west of the site, which flows into The Wye Valley SSSI. Further European Sites are located beyond the Peak District Dales SAC; however, this assessment only considers plans or projects which affect the Peak District Dales SAC via nutrient change.

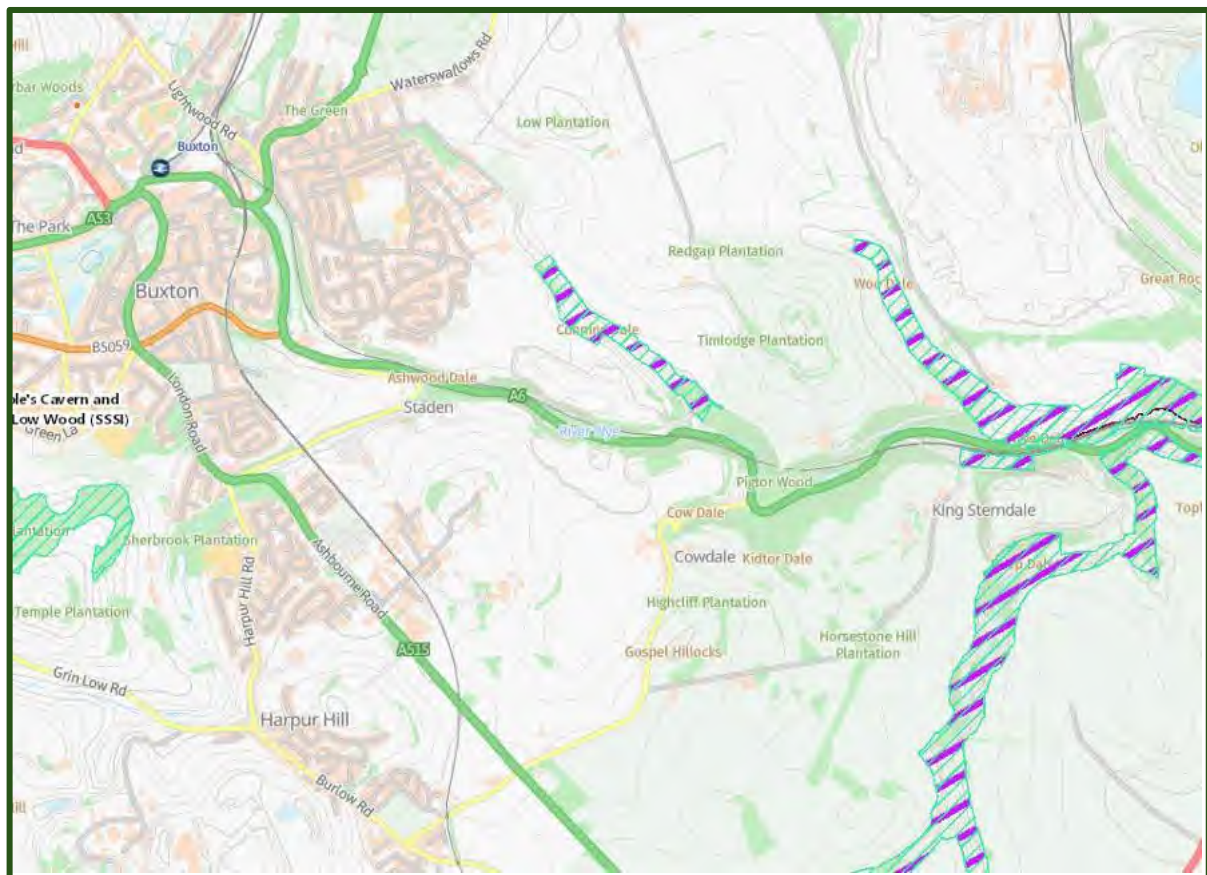


Figure 3.1: Protected Site Proximity.

European Site conservation objectives and qualifying features

- 3.2. The conservation objectives for the protected site can be found here: **Conservation objectives.**
- 3.3. The Natural England citation can be found here: **Natural England Citation**

4. Stage 1 – Screening of the Plan or Project

Likelihood of Significant Effects alone

- 4.1. Stage 1 of the HRA, the screening, is a test of Likely Significant Effect (LSE) to determine whether an Appropriate Assessment is required against all impact pathways identified. The screening is done considering the proposal in isolation and therefore not in-combination with any other plans or projects. It is also done in the absence of avoidance or other mitigation measures. Note that the assessment is made with awareness of the conservation objectives for the features of the European Site, however the actual assessment of the plan or project against the conservation objectives is not required until the Appropriate Assessment (Stage 2).

Potential Impact Pathways

- 4.2. The impact pathways relevant to the application site are as follows:
- The proposed development would result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater/slurry during operation, potentially leading to degradation of habitat or changes in water quality.

Likely Significant Effects

- 4.3. In terms of whether the project shall result in a Likely Significant Effect of the project, alone or in combination, it has been determined that:
- **There is an impact pathway and significant effects cannot be ruled out.**
- 4.4. This has been determined as the development shall result in an increase in wastewater, and as the project cannot fulfil the criteria established in the High Peak Borough Council Interim guidelines on small scale thresholds and nutrient neutrality principles for the Peak District Dales SAC catchment. This conclusion has been arrived at with due consideration to:
- The vulnerability/sensitivity of the receiving environment/features of interest;
 - When the risk of effects are likely to occur (e.g. construction and/or operation);
 - The likely geographical extent of the effects; and
 - Likelihood of significant effects (e.g. those above negligible in magnitude) occurring based on previous experience with similar elements, where available.
- 4.5. The proposals shall result in an increase in phosphorus discharging to the surrounding water network; new development must accord with the provisions of the Interim Guidelines to determine whether there is a Like Significant Effect; therefore, as the development proposes new dwellings, the requirement for an Appropriate Assessment (AA) is triggered.

Table 4.1 : Potential effects of the plan or project alone on the Peak District Dales SAC and its qualifying features

Qualifying Feature*	Relevant conservation objectives	Potential impact pathway	Likely Significant Effect alone
1	2	3	4
European Site: Peak District Dales SAC			
See here: Natural England Citation	See here: Conservation objectives	➤ The proposed development will result in an increase in phosphate loading within the hydrological catchment of the SAC, through the production of wastewater/slurry during operation, potentially leading to degradation of habitat or changes in water quality affecting the wildfowl assemblage.	There is an impact pathway and significant effects cannot be ruled out.
Screening Decision of the Plan or Project Alone			
The risk of Likely Significant Effects on the Peak District Dales SAC from the plan or project alone cannot be ruled out, and therefore an Appropriate Assessment (Stage 2) is required.			

5.Stage 2 – Appropriate Assessment

Appropriate Assessment of the plan or project alone

Assessment of potentially adverse effects without additional mitigation measures

Table 5.1 : Appropriate Assessment of the plan or project alone and in the absence of any mitigation measures.

Qualifying Feature	Impact pathway	Description of impacts and adverse effects	Assessment of adverse effects in relation to conservation objectives	Can adverse effect on Peak District Dales SAC integrity be ruled out? Yes or No
European Site: Peak District Dales SAC				
See here: Natural England Citation	See here: Conservation objectives	The wastewater produced by the project will discharge to the main sewer which would lead to the protected site. This would result in an increase in phosphorus (+0.36 kg/yr) that will be ultimately discharged into a watercourse hydrologically connected to the SAC Site. Due to the sensitivity of the SAC to any increase in phosphorus, this increase could cause	The increase in phosphorus could adversely affect all of the conservation objectives listed for the site; it will contribute to eutrophication of water bodies and changes to water chemistry within the site, thus making it unfavourable to aquatic invertebrates, affecting the structure and function of the habitats that support both them and vascular plants as per the	In the absence of mitigation, the development can demonstrate nutrient neutrality and therefore will not have an adverse effect on the protected Site integrity owing to the change of land use associated with the proposals.

		further degradation or changes to water quality to the waterbodies which support the aquatic invertebrate assemblage and vascular plants as per the qualifying criteria.	qualifying criteria.	
Total Phosphorus produced by the plan or project <u>in the absence</u> of mitigation (as calculated in the Nutrient Neutrality Assessment and Mitigation Strategy NNAMS) = -0.00 kg/yr.				

Likelihood of Adverse Effects on Site Integrity in-combination other plans and projects

Likelihood of adverse effects in-combination due to nutrients

- 5.1. Nutrient neutrality has been demonstrated for the project alone without mitigation in place and therefore there will be no adverse effect on integrity of the SAC Site due to nutrients. Therefore, no in-combination assessment is required.

Conclusions on site integrity

Concluding Statement on the Peak District Dales SAC Integrity

'It is concluded that the project will not adversely affect the integrity of the Peak District Dales SAC, either alone or in-combination with other plans or projects, without the need for mitigation'.

Appendix 1 – Enviren Nutrient Neutrality Assessment – 2500278-ENV-S1-EM-TR-E-0001

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Nutrient Neutrality Assessment and Mitigation Strategy (NNAMS)

Peak Buildings and Hardwick
Hall, Buxton

Reference: 2500278-ENV-S1-EM-TR-E-0001

Date: 26/08/2026

DOCUMENT PRODUCTION RECORD

AUTHOR:	Barney Townsend BEng
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Executive Summary

This report has been compiled for the support of the re-development of Peak Buildings and Hardwick Hall, Buxton (Grid reference: SK 05896 73313) to contain a total of 42 residential units, in addition to commercial space. The proposals are for commercial units and 42 residential units along with associated ancillaries.

This report demonstrates that the development will achieve Nutrient Neutrality through the installation of onsite Sustainable Drainage Systems (SuDS) and greywater recycling systems at the development.

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1. Introduction

- 1.1. This report has been compiled for the support of the redevelopment of two existing buildings to comprise of commercial units and 42 residential units on land in Buxton (Grid reference: SK 05896 73313). The proposals are for 42 residential units, commercial units and associated ancillaries. This report demonstrates that through the introduction of onsite SuDS and greywater recycling systems, the development will achieve Nutrient Neutrality. The site is approximately 0.238 Hectares (2380 m²) when considering the areas outlined in the site plan.
- 1.2. The existing site currently consists of commercial/industrial urban land. The creation of the residential units would result in an increase in phosphorus discharging into the surrounding water network due to foul water and surface water discharge from the proposed apartments; however, through suitable mitigation proposals and onsite controls the development will achieve nutrient neutrality (see **Appendix 1**).

Table 1.1 – Site Specific Information	
Category	Site Specific Information
Site Name	Peak Buildings and Hardwick Hall, Buxton
Site Location	Buxton, High Peak Borough
Local Authority	 High Peak Borough Council
Overall Site Area	0.238 Hectares
Nutrient(s) Considered	Phosphorus
Catchment (Surface Water)	Derwent Upper Derbyshire
Catchment (Foul Water)	Derwent Upper Derbyshire

2. Local Context to Nutrient Neutrality

- 2.1. Following the ruling on the “Dutch N” (Case C-293/17 and C-294/17)¹ in November 2018 through the Court of Justice of the European Union (CJEU), as well as several other lower profile cases in Ireland, Natural England advised High Peak Borough Council in March 2022 of unacceptable phosphate levels within the waterways of the Peak District Dales Special Area of Conservation (SAC) and requested greater scrutiny of planning applications going forward which would increase nutrient loads into the water system², resulting in the Protected Area (SAC, SPA or Ramsar Site) reaching a point where the ability to return the site to favourable conditions would be compromised or necessarily limit the conservation objectives of the area.
- 2.2. Current P Levels are two times higher than the Water Framework Directive (WFD) limit (100 micrograms (µg) per litre). Mitigation measures are to be put in place that would result in “Nutrient Neutrality”.
- 2.3. As identified the site benefits from a pathway into the River Wye, which is hydraulically connected to the Peak District Moors, this area is protected as an SPA (Special Protection Area) under the Habitat Regulations 2017.

¹ C-293/17 - Coöperatie Mobilisation for the Environment and Vereniging Leefmilieu ([Link-to-source](#))

² Reg. 63 of the Habitats Regulations 2017.

3. Background Information

Site Location

- 3.1. The site is located on the southeast of Buxton on the eastern side of Terrace Road. The application site is located 0.287 kilometres from Buxton centre and approximately 1.330 kilometres southwest of Fairfield. The exact location can be found in **Figure 3.1**:

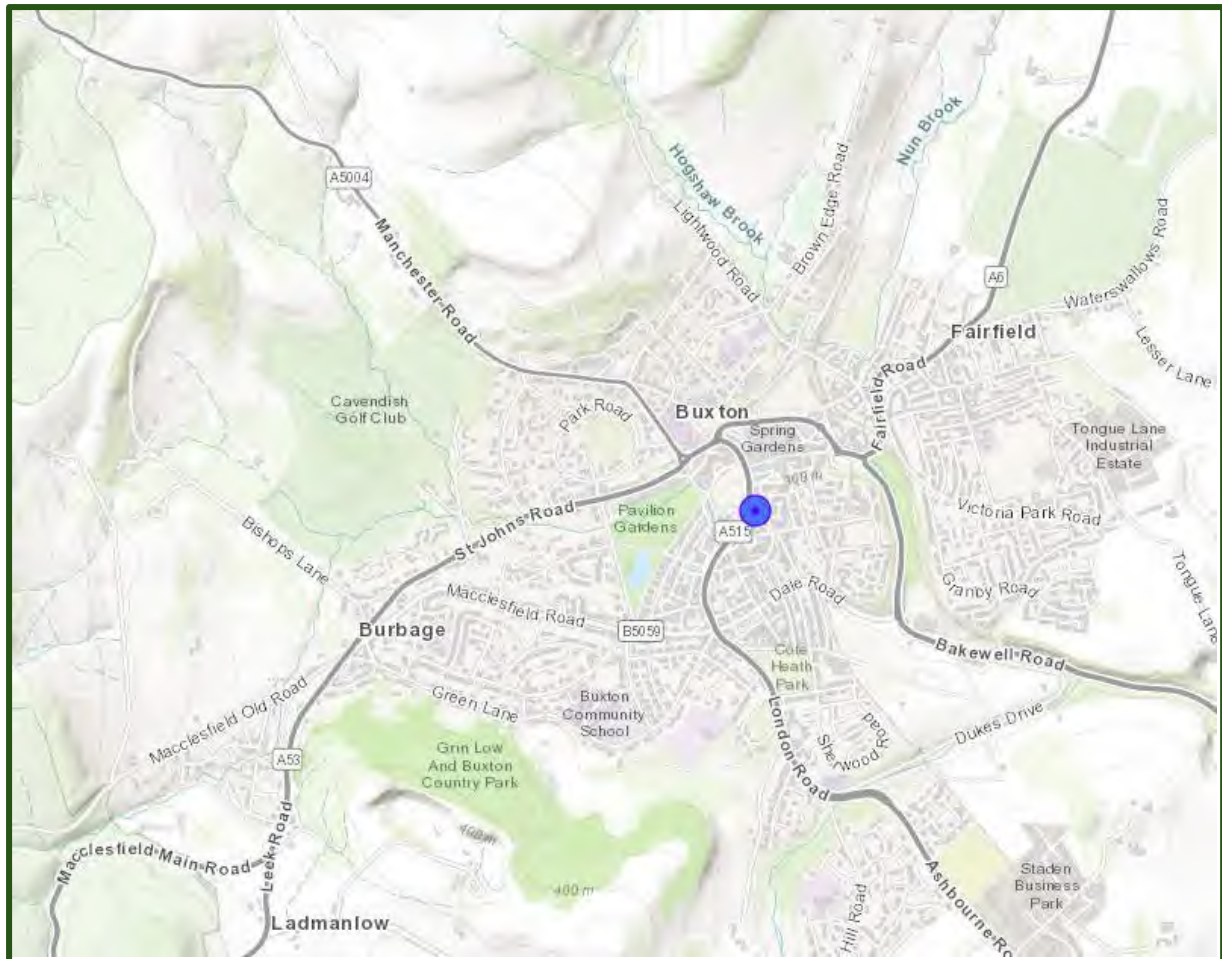


Figure 3.1 – Site Location

Outline Site Hydrology

- 3.2. Interrogation of local topographical information identifies that overland flows from the site are directed to the north and flow into an unknown watercourse. The watercourse flows east, discharging into the River Wye. The Buxton WwTW similarly appears to be hydrologically connected to the River Wye to the southeast and downstream of the point at which overland flows from the site enter the river.

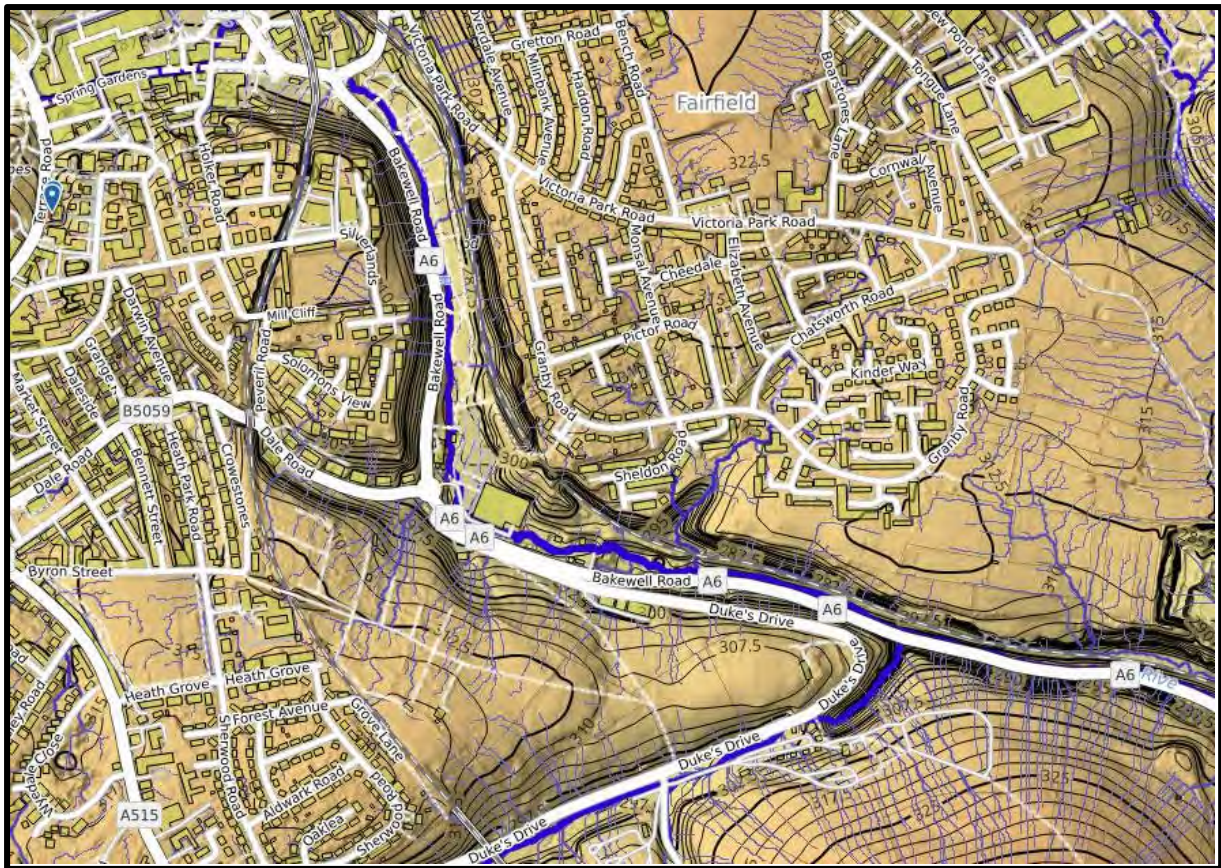


Figure 3.2 – SCALGO Topographic Data – Site Hydrology

- 3.3. The development sits within the hydrological catchment of the Peak District Dales Special Area of Conservation (SAC) as indicated in **Figure 3.3**.

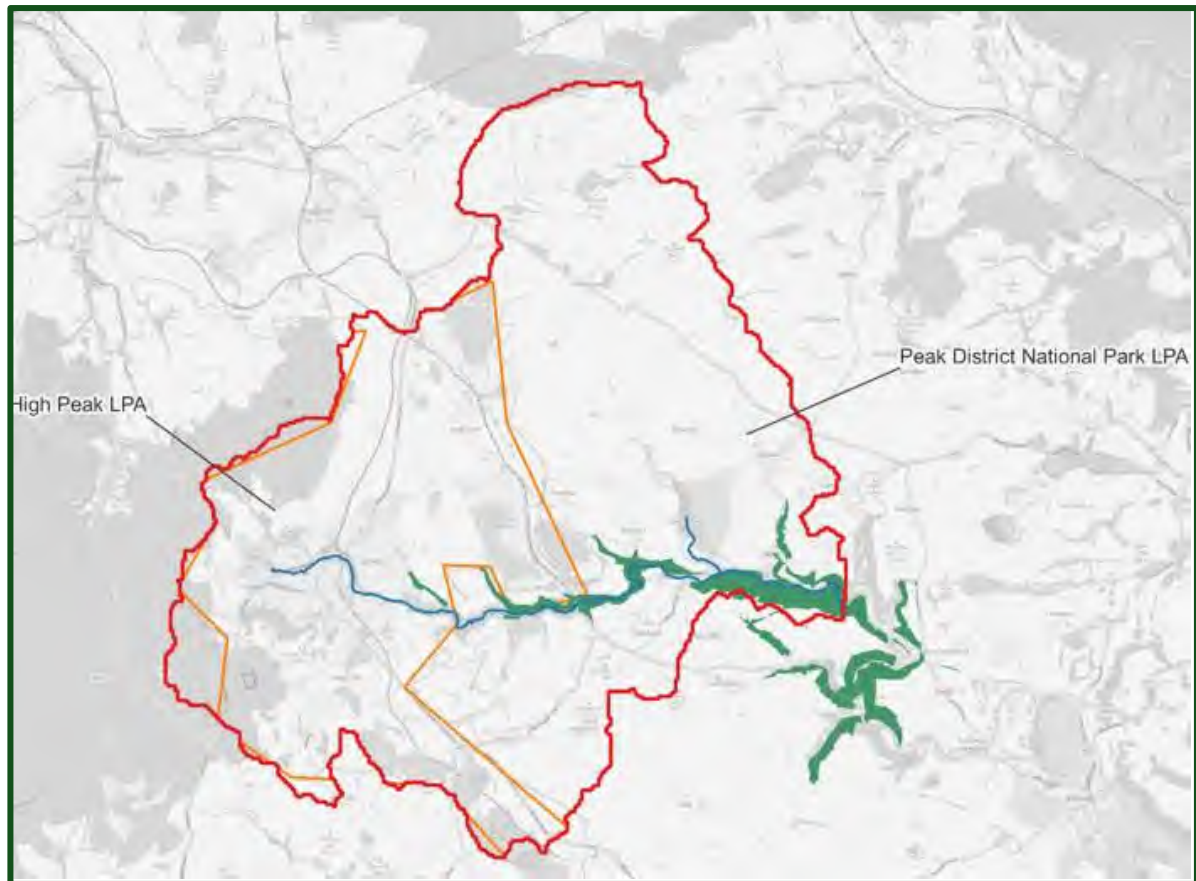


Figure 3.3 – Hydrological Catchment Plan

Existing Site Description

- 3.4. The area to be developed currently constitutes commercial/industrial urban land. The site is approximately 0.238 hectares in size when considering the areas in the site plan (see **Appendix 2**). The development site is bordered on western side by road and dwellings on all other sides.



Figure 3.4 – Aerial Reconnaissance Photography

4. Development Proposals

- 4.1. The development is to consist of commercial units and 42 residential units. The residential units shall comprise of 37 flats and 5 AirBnB flats.

Foul Water Drainage

- 4.2. The foul water drainage from the proposed complex will discharge to the main sewer network, adjacent to the complex, where it will then be treated at Buxton WwTW.

Greywater recycling system

- 4.3. Additionally, greywater recycling systems will be introduced into the proposed buildings, to reduce the foul water output. The greywater yield and demand are presented in **Appendix 5**.
- 4.4. As can be seen, the greywater yield far exceeds the greywater demand. The reduced water demand per person shall therefore be 78l/p/d (68l/p/d + 10l/p/d safety buffer*).
- 4.5. The use of greywater recycling systems is considered industry best practice, as per Approved Document G, and therefore has not been included as mitigation. This is the same methodology justifying why the 110l/p/d optional planning requirement is not considered as mitigation. The greywater recycling to be used is a Hydraloop H300 (see **Appendix 5**).

Occupancy

- 4.6. In accordance with the *Alliance Norse Septic Tank Upgrade Strategic Specification*, an occupancy rate of 1.65 persons per unit has been utilised has been utilised within the nutrient calculator, reflecting the recognised industry standard for typical double-occupancy frequency in short-stay accommodation.

Surface Water Drainage

- 4.7. Surface water from the majority of roofed areas will be discharged to rainwater harvesting units, where the captured water will be stored, reused and diverted from the adjacent sewer.
- 4.8. An overflow pipe will be installed to discharge overflows to permeable paving through diffuser units, in order to infiltrate water to ground, thus ensuring no stormwater enters into the sewer system.
- 4.9. As confirmed within the Enviren Drainage Strategy (Report Ref: 2500278-ENV-S1-EM-TR-C-0001 |), rainwater pipes (where feasible) are collected and will discharge to a rainwater harvesting unit in the central courtyard, where water will be stored and reused until the level exceeds the high-level overflow. Once the water exceeds the high-water level, the water will be discharged to the network proposed.
- 4.10. All remaining rainwater pipes, Type-C permeable paving and high-level overflow from the rainwater harvesting unit will discharge to the Type-A permeable paving and be infiltrated to ground. 85.2% of the total site, including

overflows from the Rainwater Harvesting Units and other areas of permeable paving, will discharge to ground.

- 4.11. As such, a SuDS removal rate of 85.2% has been progressed within the calculator.
- 4.12. Any overflow from the rainwater harvesting system shall discharge to ground via a diffuser unit to permeable paving. The discharge of the surface water to ground through infiltration features ensures that no phosphorus shall be discharged from the development owing to surface water runoff, as outlined in CIRIA C808.

*"Where stormwater runoff from residential developments can be infiltrated to ground, and where soil conditions allow that infiltration to occur without risk of groundwater pollution, then it should be maximised across the development and used as the first step in phosphorus pollution control. **For all flows that are effectively infiltrated, and where groundwater protection is provided by the soil, the phosphorus in that runoff is considered to be captured and removed from the water environment**"*

- 4.13. Maintenance requirements of the SuDS features can be found in **Appendix 3** with measures based on the associated schedules contained in CIRIA C753 and CIRIA 808. SuDS considerations outlined in CIRIA C808 are reviewed in **Appendix 4** including infiltration risk scoring as outlined in Table 2.1.4 of CIRIA C808. The Highways England (2020)/Woods Ballard et al, 2015 (Table 26.6 of CIRIA C753) Risk Scoring can be found in **Appendix 5**. The design life for the SuDS measures are 100 years and will all remain in perpetuity.

Table 4.1 – Phosphorus Removal Efficiency of Various SuDS Components (as per CIRIA C808)

SuDS Component	Swale	Detention basin	Retention basin	Pond	Floating wetland	Bioretention zone	Tree pit	Filter strip	Filter drain	Willow bed	Permeable pavement	Vortex grit separator	Oil water separator	Stormwater filter	Granular media	Rainwater capture
Particulate Phosphorus Removal (%)	28	28	28	39	39	44	44	22	22	55	39	28	28	44	44	55

Dissolved Phosphorus Removal (%)	0*	5	23	23	TBC	0*	0*	0*	0*	45	0*	0*	0*	41		45
Total Phosphorus Removal [average] (%)	28	33	51	62	≥39	44	44	22	22	100	39	28	28	≤85	≤85	100

*Can be increased providing specific, referenced media is used.

5. Development Nutrient Calculator Calculations

5.1. The direct output of the Natural England Budget Calculator can be found in **Appendix 1**. This section shall outline the observations made on the site and shall discuss the results generated by the Natural England Budget Calculator. The figures for the inputs utilised in this section can be found in the **Figures** section to the rear of the report.

Table 5.1 – Development Nutrient Budget Calculations		
Stage 1 – Foul Water Arisings from dwellings		
Number of dwellings	42	
Average occupancy rate	1.65	
Water usage	78.34	
Wastewater treatment works	Buxton	
Wastewater treatment works TP permit (mg/litre)	0.20	
Annual wastewater TP load	+0.36kg/year	
Stage 2 – Existing Land Use		
Catchment	Derwent Upper Derbyshire	
Soil drainage type	Impeded Drainage	
Annual average rainfall (mm)	1,200.1-1,400	
Within Nitrate Vulnerable Zone	No	
Former Land Use	Land Use	Area (hectares)
	Commercial/Industrial Urban	0.238
Annual nutrient export (kg TP)	-0.45kg/year	
Stage 3 – Proposed Land Use		
Proposed Land Use	Land Use	Area (hectares)
	Residential Urban Land	0.238
SuDS removal efficiency	85.2%	
Annual nutrient export (kg TP)	+0.09kg/year	
Stage 4 – Final Nutrient Budget		
The total annual nutrient load generated	-0.00kg/year	

6. Conclusion

- 6.1. As can be seen in this report, the nutrient arisings associated with the development have been extensively considered, along with off-site and on-site mitigation methods. The applicant will achieve nutrient neutrality through installation of SuDS and greywater recycling systems. The applicant shall achieve Nutrient Neutrality through the proposals and therefore nutrient arisings should not prevent planning permission being granted.

Figures

For convenience – press “Alt + Left Arrow” to return to the section of the report



Figure 1 – Underlying Soil



Figure 2 – Annual Rainfall



Appendix 1 – Development Nutrient Budget Calculations

For convenience – press “Alt + Left Arrow” to return to the section of the report



Nutrients from wastewater		
This sheet contains 2 tables. The tables are separated by a heading, which describes the following table. Note: You will need to fill in cells B5 to B9 in the first table 'Water infrastructure information'. Cells B10 is automatically calculated and will state '0.00' unless the user inputs have been entered. Cells A11 to A12 and B11 to B12 are automatically generated and will state 'Not applicable' depending on the inputs to cells B5 and B9. You may need to fill in cell C10 depending on the information you entered in cell B9. Cells C5 to C9 and cells C11 to C12 are intentionally blank cells. You do not need to fill in any cells in the second table 'Final calculation of nutrient load from wastewater'. Cells B16 to B18 are automatically calculated and will state '0.00' unless the user inputs have been entered to the first table 'Water infrastructure information'. Cells A19 to A22, cells B20 and B22 are automatically generated and will state 'Not applicable' depending on the user inputs to the first table 'Water infrastructure information'. Cell B15, cell B19 and cell B21 are intentionally blank cells. How to fill in the table 'Water infrastructure information' Cell B5: Enter the date of first occupancy. Cell B6: Enter the average occupancy rate of the development. The default rate is 2.4, this should not be edited without sufficient evidence. Cell B7: Enter the water usage. This value should be kept at 120 unless other efficiency measures are used. Cell B8: Enter the total number of dwellings or units that will be within the development site as of the project completion date. Cell B9: Choose the receiving wastewater treatment works (WwTW) from the dropdown list. If you select 'Package Treatment Plant user defined' or 'Septic Tank user defined', you must enter their certified value of total phosphorus (TP) in cell C10. Otherwise the default values will be used in the calculation of the nutrient load associated with wastewater. Nutrient permits may be changing for the WwTW you select, from 01/01/2025, or 01/04/2030. If the date of first occupancy is in-between changing permit dates, multiple permit limits may be automatically generated in cells B10 to B12. If applicable, up to 3 values for the nutrient loading associated with wastewater will be presented in cell B18, B20 or B22.		
Water infrastructure information		
Description of required information	Data entry column - user inputs required	Additional data entry column - user inputs may be required
Date of first occupancy (dd/mm/yyyy):		
Average occupancy rate (people/dwelling or people/unit):	1.65	
Water usage (litres/person/day):	78.34	
Development proposal (dwellings/units):	42	
Wastewater treatment works:	Buxton WwTW	
Current wastewater treatment works P permit (mg TP/litre):	0.20	
Not applicable	Not applicable	
Not applicable	Not applicable	
Final calculation of nutrient load from wastewater		
Description of values generated	Values generated	
Wastewater nutrient loading		
Additional population (people):	69.30	
Wastewater by development (litres/day):	5428.96	
Annual wastewater TP load (kg TP/yr):	0.36	
Not applicable		
Not applicable	Not applicable	
Not applicable		
Not applicable	Not applicable	

Nutrients from current land use

This sheet contains 2 tables. The tables are separated by a heading, which describes the following table.

Note: You will need to enter in cells B5 to B8 in the first table 'Current land use information'. You will need to fill in cells A11 to A27, and B11 to B27 in the second table 'Current land uses'. Cells B28, C11 to C28 are automatically calculated and will state '0.00' unless the user inputs have been entered. Cells D11 to D27 are automatically generated and will state 'Not applicable' depending on automatically generated data in cells C11 to C27. Row 28 is a Total Row. The Total Row states 'Totals' in cell A28 and automatically calculates the total sum of cells B11 to B27 in cell B28 and B11 to C27 in cell C28. Cell D28 is intentionally blank.

How to fill in the table 'Current land use information'

Cell B5: Choose the operational catchment the site is located within from the dropdown list.

Cell B6: Choose the soil drainage type associated with the predominant soil type within the development site from the dropdown list.

Cell B7: Choose the annual average rainfall the development will receive from the dropdown list. If the rainfall volume is not on the list, select the nearest value.

Cell B8: Choose whether the development is in a nitrate vulnerable zone (NVZ) from the dropdown list.

How to fill in the table 'Current land uses'

Cell A11-A27: Choose the existing (pre-development) land use type(s) from the dropdown list.

Cells B11-B27: Enter the area in hectares of each land use type.

The nutrient load from current land uses is shown in cells C11-C27 for total phosphorus (TP).

The total nutrient load from current land uses is shown in cell C28 for TP.

Current land use information

Description of required information	Data entry column - user inputs required
Operational catchment:	Derwent Upper Derbyshire
Soil drainage type:	Impeded drainage
Annual average rainfall (mm):	1,200.1 - 1,400
Within nitrate vulnerable zone (NVZ):	No

Current land uses

Existing land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)	Notes on data
Commercial/Industrial urban land	0.24	0.45	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
		0.00	Not applicable
Totals:	0.24	0.45	

Nutrients from future land use

This sheet contains one table.

Note: You will need to fill in cells A5 to A21 and B5 to B21. Cells B22 and C5 to C22 are automatically generated calculations and will state '0.00' unless the user inputs have been entered. Row 22 is a Total Row. The Total Row states 'Totals:' in cell A22 and automatically calculates the total sum of cells B5 to B21 in cell B22 and C5 to C21 in cell C22.

How to fill in the table 'Future land uses'

Cells A5-A21: Choose the future (post-development) land use type(s) of landcover present on the new site from the dropdown list
Cells B5-B21: Enter the area in hectares of each land use type.

The nutrient load from future land uses is shown in cells C5 to C21 for total phosphorus (TP).

The total nutrient load from future land uses is shown in cell C22 for TP.

Future land uses

New land use type(s) - user inputs required	Area (ha) - user inputs required	Annual phosphorus export (kg TP/yr)
Residential urban land	0.24	0.62
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
		0.00
Totals:	0.24	0.62

Nutrients from future land use after sustainable urban drainage system (SuDS) treatment

This sheet contains some table instructions.

Note: You will need to fill in cells A5 to A25, cells B5 to B20, cells C5 to C25, cells D5 to E29 and cells F5 to F29. If you are including SuDS to your landscape then you will need to enter values for cells B30 to B32, cells C30 to C32 and automatically calculated values will state '0.00' unless the user inputs have been entered. Cells H5 to H20 are automatically generated and will state 'Not applicable' unless the total area of the landscape entered is larger than the total area of the landscaped entered into the worksheet. Nutrients, from_furde_land_use, row 30 is a Total Row. The area of the landscaped entered into cells B5 to B20, cells C5 to B29 in cell B30, cells D5 to D29 in cell C30 and cells E5 to E29 in cell C30. Cell C30, cell E30, cell F30 and cell H30 are intentionally blank.

How to fill in the table 'SuDS information'

Cells A5 to A29: Enter the name of the SuDS feature and use type(s) of the landscape present on the new site within the SuDS catchment area from the dropdown list. Only landscapers entered into the worksheet titled 'Nutrients, from_furde_land_use' can be entered.

Cells B5 to B29: Enter the area in hectares of each new land use type within the SuDS catchment area.

Cells C5 to C29: Enter the percentage of the low entering the SuDS feature. If all flow is being diverted to the SuDS feature then this value should be set to 100%.

The annual total phosphorus (TP) loads associated with the landscapers in the SuDS catchment area are automatically calculated in cells D5 to D29.

Cells E5 to E29: Enter the name of the SuDS features used to intercept surface flows can be entered in. Any text can be entered into these cells. Cells F5 to F29: Enter the nutrient removal rates associated with the SuDS features for TP.

Values for column F must be identified by the user and must be specific to the SuDS features being implemented.

The annual TP load removed by the SuDS features are automatically calculated in cells G5 to G29. These values are subtracted from the nutrient budget.

You do not need to fill in column H. Notes on input: i) will state 'Not applicable' unless the total area of each landscape within the SuDS catchment area exceeds the total landscaped entered into the worksheet. ii) from_furde_land_use

The total nutrient load removed through the SuDS features is shown in cell H30 for TP.

SuDS information

[illegible]

Final nutrient budgets

This worksheet contains one table. This table is automatically populated using the outputs from the previous worksheets.

Note: You do not need to fill in any cells in the table.

Cells B5 to B8 and cells B10 are automatically calculated and will state '0.00' unless the user inputs have been entered to all of the required worksheets.

Cells A11 to A14, cell B12 and cell B14 are automatically generated and will state 'Not applicable' depending on the user inputs to the worksheet 'Nutrients_from_wastewater'.

Cell B9, B11 and B13 are intentionally blank.

This table presents calculations that underpin the final annual nutrient budget for the development site. Up to 3 values for the nutrient budget may be presented in cells B10, B12 and B24 for total phosphorus (TP).

Total nutrient budget calculations

Description of values generated	Values generated
Wastewater TP load (kg TP/year):	0.36
Net land use TP change (kg TP/year):	-0.36
TP budget:	0.00
TP budget + 20% buffer:	0.00
Annual nutrient budget	
The total annual phosphorus load to mitigate is (kg TP/yr):	0.00
Not applicable	
Not applicable	Not applicable
Not applicable	
Not applicable	Not applicable

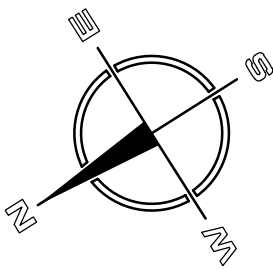
Appendix 2 – Site Plan

For convenience – press “Alt + Left Arrow” to return to the section of the report



General Notes

SCALE 1:100 0m 2m 4m
SCALE 1:1 0m 10mm 20mm 30mm 40mm



Legend:

- 1 Bed Flat
- 2 Bed Flat
- 3 Bed Flat
- Commercial
- Communal
- Plant

Rev Date By Detail



59 Piccadilly, Piccadilly, Hanley, Stoke-on-Trent, ST1 1HR
www.incarchitects.co.uk Tel: 01782 479644

Client

Vanguard Group

Project

Change of Use from Museum to Flats
at Hardwick Hall / Buxton Museum,
Buxton, Derbyshire, SK17 6DY

Drawing status

RIBA Stage 03

Drawing title

Proposed Level 05

Drawing number

25 012 - INC - DR
3040 Revision

Scale(s)

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Date

August 2026

Drawn

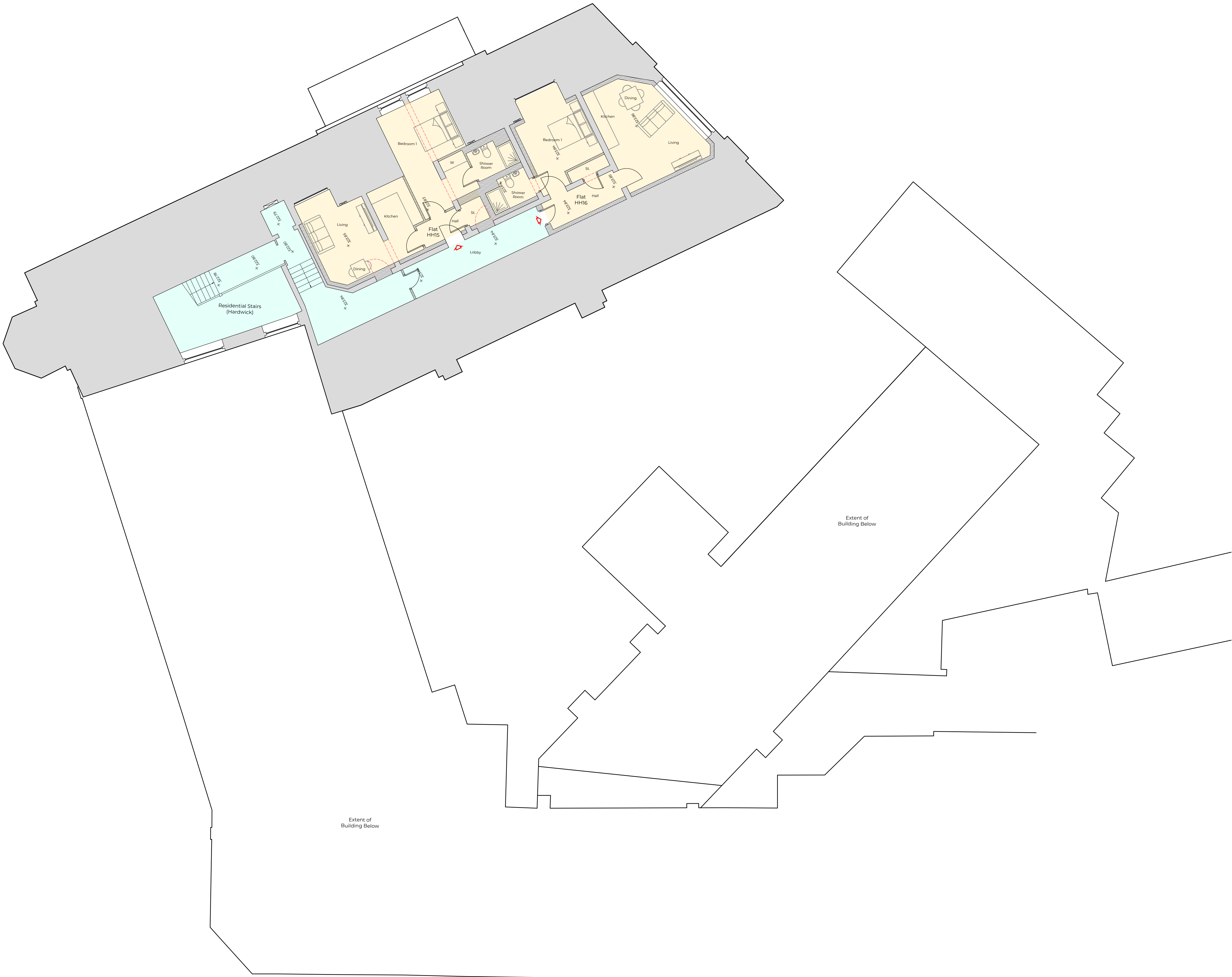
DPB

Checked

KM

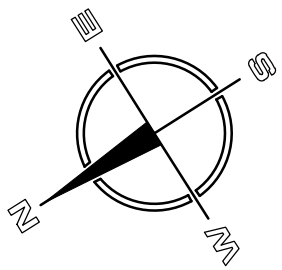
PROPOSED LEVEL 05

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General Notes

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Legend:

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- Commercial
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Rev Date By Detail



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Client

Vanguard Group

Project

Change of Use from Museum to Flats
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Buxton, Derbyshire, SK17 6DY

Drawing status

RIBA Stage 03

Drawing title

Proposed Level 04

Drawing number

25 012 - INC - DR
3039 Revision

Scale(s)

1:100@A1

Date

August 2026

Drawn

DPB

Checked

KM

PROPOSED LEVEL 04

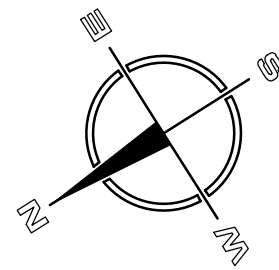
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General Notes

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SCALE 1:1 0m 10mm 20mm 30mm 40mm



Legend:

- 1 Bed Flat
- 2 Bed Flat
- 3 Bed Flat
- Commercial
- Communal
- Plant

A 04/09/26 DPB Updated to Heritage comments
Rev Date By Detail



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Client

Vanguard Group

Project
Change of Use from Museum to Flats
at Hardwick Hall / Buxton Museum,
Buxton, Derbyshire, SK17 6D

Drawing status

RIBA Stage 03

Drawing title
Proposed Level 01

Drawing number

25 012 - INC - DR
3036 Revision
A

Scale(s) Date
1:100@A1 18/05/26

Drawn Checked
DPB KM

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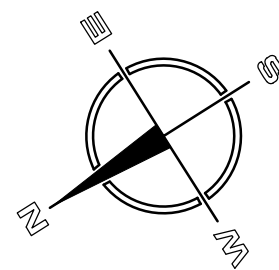
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TERRACE ROAD



General Notes

SCALE 1:100 0m 2m 4m
SCALE 1:1 0m 10mm 20mm 30mm 40mm



Legend:

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- Commercial
- Communal
- Plant

Rev Date By Detail



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Client

Vanguard Group

Project

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Buxton, Derbyshire, SK17 6DY

Drawing status

RIBA Stage 03

Drawing title

Proposed Level 03

Drawing number

25 012 - INC - DR
3038 Revision

Scale(s)

1:100@A1

Date

18/05/26

Drawn

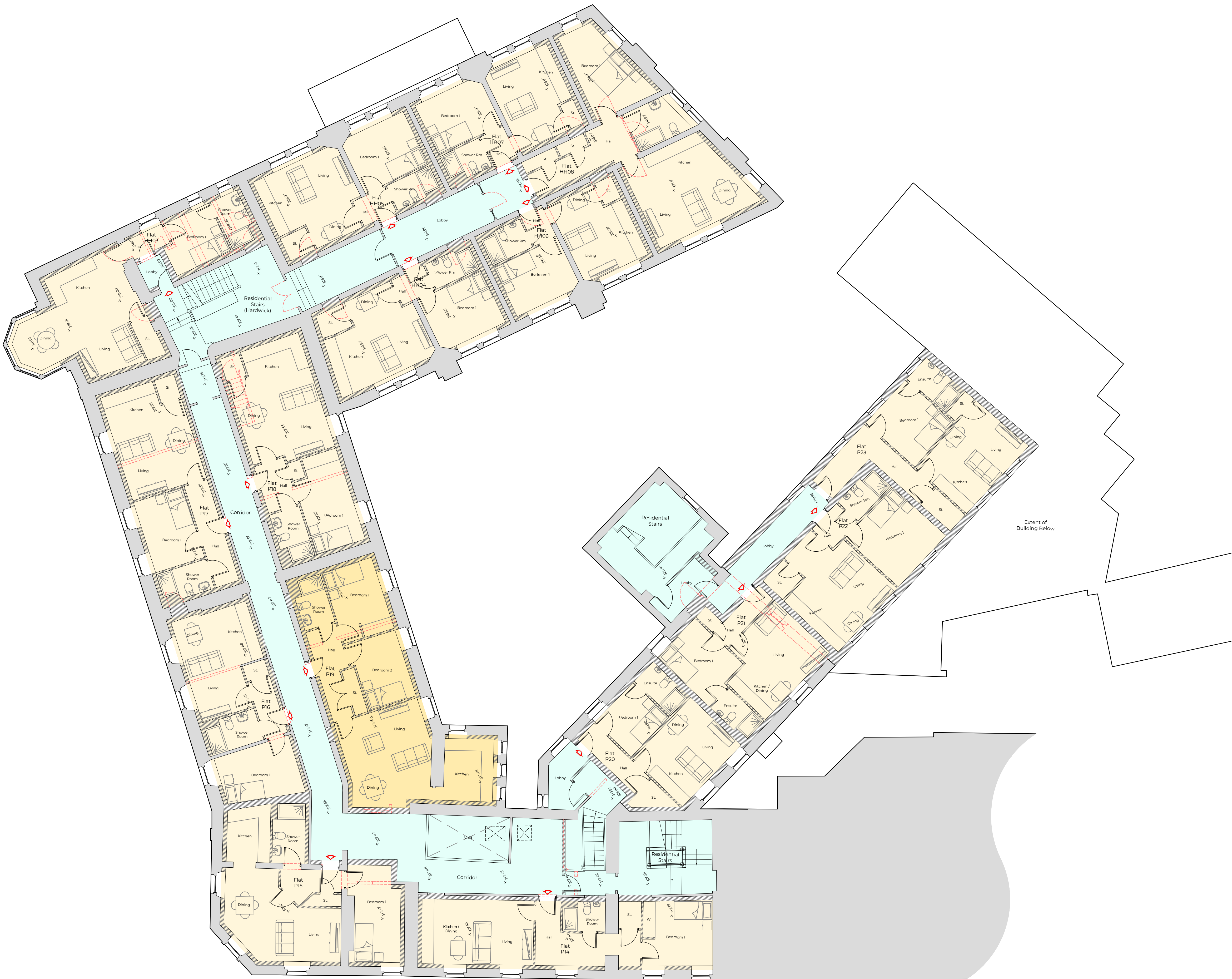
DPB

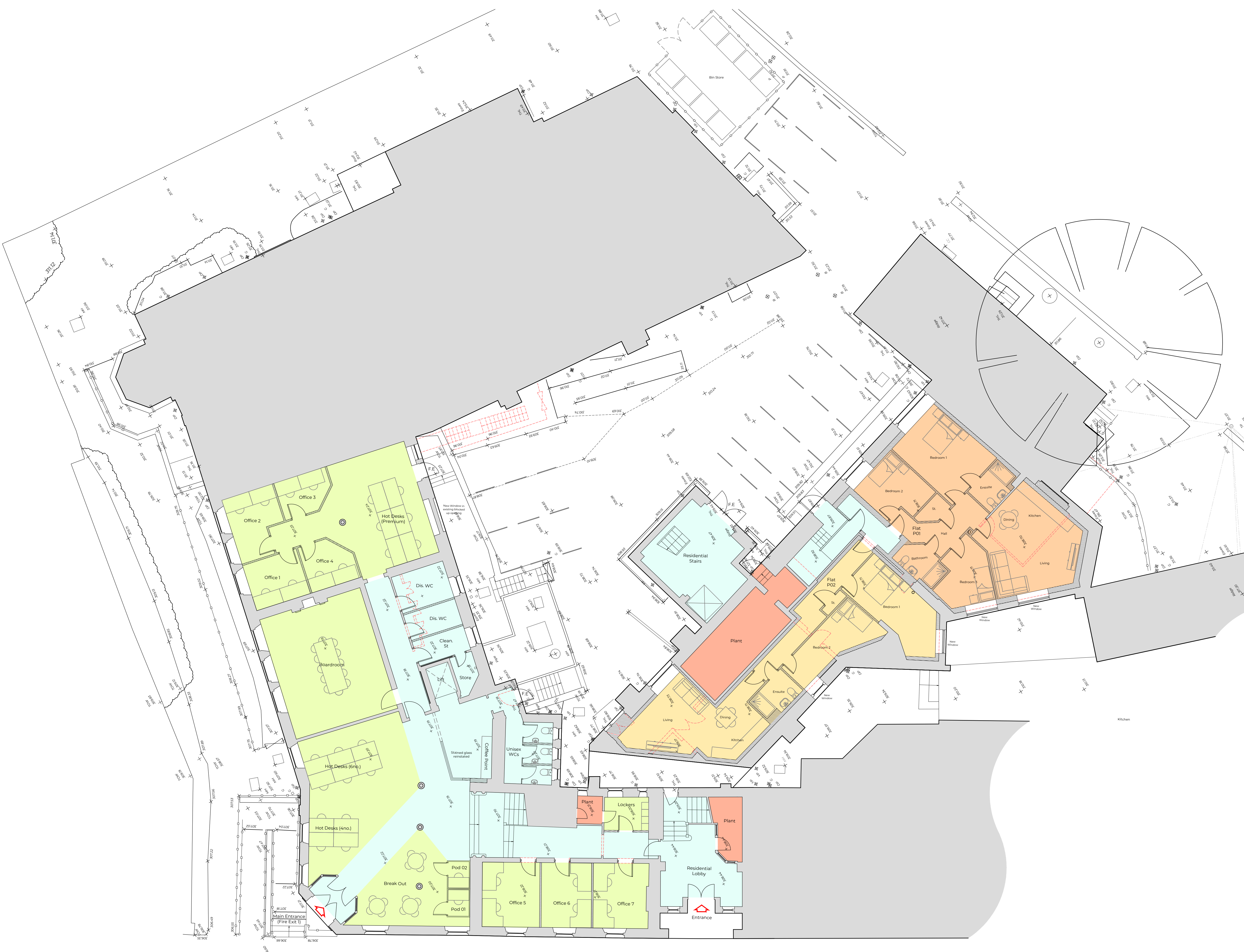
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KM

PROPOSED LEVEL 03

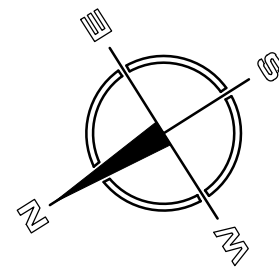
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General Notes

SCALE 1:100 0m 2m 4m
SCALE 1:1 0m 10mm 20mm 30mm 40mm



Legend:

- 1 Bed Flat
- 2 Bed Flat
- 3 Bed Flat
- Commercial
- Communal
- Plant

A 04.09.26 DPB Updated to Heritage comments

Rev Date By Detail



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Client

Vanguard Group

Project
Change of Use from Museum to Flats
at Hardwick Hall / Buxton Museum,
Buxton, Derbyshire, SK17 6D

Drawing status

RIBA Stage 03

Drawing title
Proposed Level 00

Drawing number

25 012 - INC - DR
3035 Revision
A

Scale(s) Date
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Drawn Checked
DPB KM

PROPOSED LEVEL 00

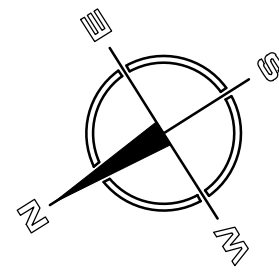
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TERRACE ROAD



General Notes

SCALE 1:100
SCALE 1:1
0m 2m 4m
0m 10mm 20mm 30mm 40mm



Legend:

- 1 Bed Flat
- 2 Bed Flat
- 3 Bed Flat
- Commercial
- Communal
- Plant

A 04.09.26 DPB Updated to Heritage comments
Rev Date By Detail



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Client

Vanguard Group

Project
Change of Use from Museum to Flats
at Hardwick Hall / Buxton Museum,
Buxton, Derbyshire, SK17 6D

Drawing status

RIBA Stage 03

Drawing title
Proposed Level 02

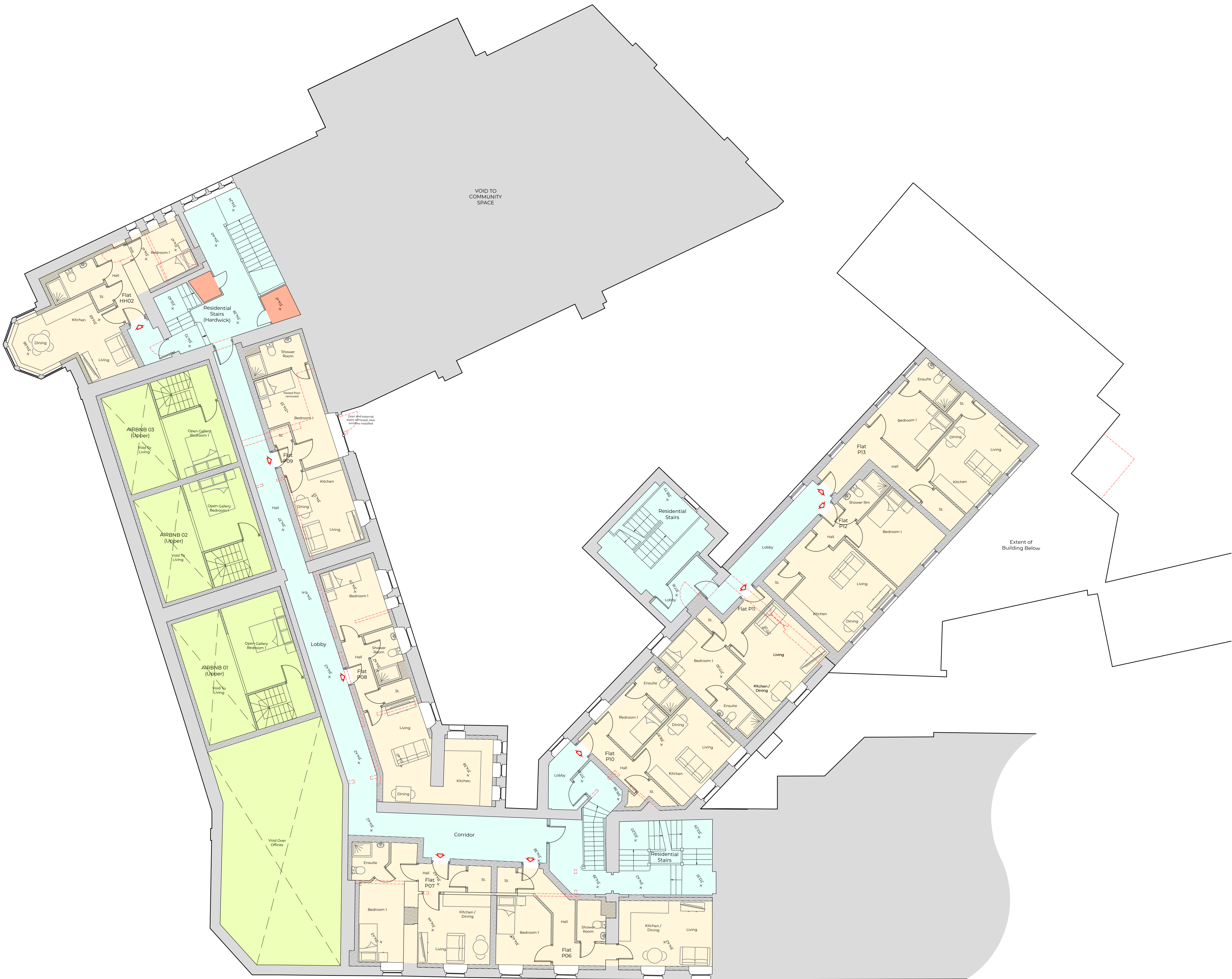
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3037 Revision
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Scale(s) Date
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Drawn Checked
DPB KM

PROPOSED LEVEL 02
Scale 1:100@A1



Appendix 3 – SuDS Maintenance Requirements

For convenience – press “Alt + Left Arrow” to return to the section of the report



Table A3.1 – SuDS Maintenance Requirements – Permeable Paving		
CIRIA C753 Maintenance Requirement		
Maintenance schedule	Required action	Typical Frequency
Regular Maintenance	Annually	Brushing and vacuuming (standard cosmetic sweep over whole surface)
Occasional Maintenance	As necessary	Stabilise and mow contributing and adjacent areas
	As necessary	Removal of weeds
Remedial Actions	As necessary	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving
	As necessary	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
	Every 10-15 years	Rehabilitation of surface and upper substructure by remedial sweeping
CIRIA C808 Maintenance Requirement		
It is unlikely that the permeable paving will be lifted to replace the subsurface layers. The only maintenance activity that is required is sweeping the surface when needed.		

Table A3.2 – SuDS Maintenance Requirements – Rainwater Harvesting

CIRIA C753 Maintenance Requirement

Maintenance schedule	Typical Frequency	Required action
Regular Maintenance	Quarterly	Brushing and vacuuming (standard cosmetic sweep over whole surface)
Occasional Maintenance	As necessary	Light sweeping / litter picking (remove leaf litter, twigs, general debris) and visual inspection of surface
	As necessary	Removal of weeds
Remedial Actions	As necessary	Repair cracks, leaks, or damage to tanks, pipes, screens, and fittings
	As necessary	Remediate vegetation or root intrusion that threatens tank integrity or inflow/outflow pipes is a bit strange
	Every 3-5 years	Desilt or de-sludge tanks if sediment accumulation compromises storage capacity or water quality

CIRIA C808 Maintenance Requirement

Routine maintenance for rainwater harvesting systems primarily involves regular inspection and cleaning of inlet filters, debris screens, and sediment traps to ensure unobstructed water flow and prevent sediment accumulation in storage tanks. It is unlikely that major structural interventions will be necessary unless damage or significant sediment build-up occurs.

Appendix 4 – SuDS Considerations

For convenience – press “Alt + Left Arrow” to return to the section of the report



Table A4.1 – SuDS Considerations

Consideration	Site Relevance
Previous land use	N/A
The influent to the system or device must contain phosphorus in adequate levels to achieve the anticipated treatment. If the TP level in the influent is too low, then the anticipated level of treatment may not be met.	The influent to the system will have adequate levels of phosphorus.
Treatment flow rate or volume to be treated by the nutrient removal devices	To be covered within Civil Engineers Drainage Design.
TP removal by infiltration to the ground	SuDS devices will not be within an area subject to flooding. Groundwater is over 2m below the ground surface. SuDS Risk score is less than 180 (see Appendix 6). SuDS devices are more than 5m away from any surface water feature.
The SuDS management train should be designed to manage both particulate phosphorus and dissolved phosphorus. The design should demonstrate which of the devices capture particulate P, DP, or both and the quantity of TP captured.	The SuDS management train has been designed to manage particulate and dissolved phosphorus.
The nature of treatment media and growth media in devices will have significant consequences for the level of phosphorus removal that the device can achieve.	Treatment media will be selected to specifically capture phosphorus.
DP is bioavailable and represents a significant concern for receiving water quality.	Components have been selected to reduce both DP and PP.
Maintenance requirements of new, innovative treatment devices cannot always be defined so regular inspection and monitoring may be needed until adequate data and experience is gathered.	SuDS measures deployed on-site are well studied, however they will need to be monitored and regularly inspected to ensure performance.
Routine maintenance of SuDS devices to remove sequestered forms of phosphorus before they become bioavailable again is a	SuDS will be maintained in accordance with CIRIA C753 and CIRIA C808.

critical factor in effective phosphorus removal (Clary et al, 2020)	
If maintenance requires removal of vegetation, it must be removed from site and has the potential to be used as commercial or municipal compost feed.	SuDS will be maintained in accordance with CIRIA C753 and CIRIA C808.
Runoff from surrounding land	Drainage from surrounding land will not enter SuDS treatment train.
Capture or by-pass large rainfall events for sedimentation devices.	Civil Engineering Drainage Plan will include exceedance paths for large storm events, in order to not 'flush' and resuspend particulate phosphorus.
Sustainability of materials.	The treatment media is quarried stone and selected treatment media, which would have otherwise been/could have been installed if the development were not affected by nutrient neutrality.
Effectiveness of 2 nd and 3 rd devices needs to be considered carefully.	SuDS treatment trains have been factored accordingly.
Despite this process being for the reduction of phosphorus pollution, the SuDS management train should still satisfy the requirement of CIRIA C753 and deliver all four 'Pillars of SuDS'	The proposed SuDS are designed to enhance water quality and reduce flood risks by minimising surface water runoff.
Sediment capture upstream of ponds, basins and wetlands.	There will be silt traps prior to the SuDS features to capture sediment.

Appendix 5 – Hydraloop H300 Literature

For convenience – press “Alt + Left Arrow” to return to the section of the report



BUILDING REGULATIONS PART G**WATER EFFICIENCY CALCULATOR - 68 litres/person/day**

Installation Type	Unit of Measure	w Rate	Use Factor	(l/p/d)	/day
WC (single flush)	Flush volume (l)	0.00	4.42	0.00	0.00
WC (dual flush)	Full flush volume (l)	6.00	1.46	0.00	8.76
	Part flush volume (l)	3.00	2.96	0.00	8.88
WCs (multiple fittings)	Ave. effective flush volume	0.00	4.42	0.00	0.00
Taps (excluding kitchen/utility room taps)	Flow Rate (l/min)	5.00	1.58	1.58	9.48
Bath (where shower also present)	Capacity to Overflow (l)	200.00	0.11	0.00	22.00
Shower (where bath also present)	Flow Rate (l/min)	5.00	4.37	0.00	21.85
Bath Only	Capacity to Overflow (l)	0.00	0.50	0.00	0.00
Shower Only	Flow Rate (l/min)	0.00	5.60	0.00	0.00
Kitchen/Utility Room Sink Taps	Flow Rate (l/min)	5.00	0.44	10.36	12.56
Washing Machine	Litres/kg Dry Load	7.00	2.10	0.00	14.70
Dishwasher	Litres/ Place Setting	1.00	3.60	0.00	3.60
Waste Disposal Unit	Litres/Use	0.00	3.08	0.00	0.00
Water Softner	Litres/pers/day	0.00	1.00	0.00	0.00
		Total Internal Calculated Use			101.83
		Contribution from Greywater			32.34
		Contribution from Rainwater			0.00
		Normalisation Factor			0.91
		Total Internal Water Consumption			63.24
		External Water Use			5.00
		Effective Daily Water Demand l/p/d			68.24

H300 PRODUCT DATA SHEET

With a Hydraloop device, you can recycle up to 95% of shower & bath water and optionally 50% of washing machine water – which enables you to reuse up to 45% of the total in-house domestic water. Due to its innovative and breakthrough technology, Hydraloop reusable water is clean, clear, safe and certified and for toilet flushing, washing machine, garden irrigation and/or swimming pool top-up.

HYDRALOOP H300

H300	Input: Greywater from shower and bath Output: Two (2) valves for reusable water to the toilets and the washing machine Colour: Stone Front Plate: Stainless-steel front plate with white coloured logo and small status light
H300 Premium	Input: Greywater from shower and bath Output: Two (2) valves for reusable water to the toilets and the washing machine Choose from three colours: Dew, Chili and Stone Front Plate: Premium stainless-steel front plate with Hydraloop LED logo lights

ADD-ONS

Output Garden (auxiliary outlet)	One (1) extra valve for reusable water in the garden
Output Pool (auxiliary outlet)	One (1) extra valve for reusable water for the pool
Washing Machine Option (diverter valve)	Option to recycle 50% of greywater from washing machine, including sanitary lift pump
Lift pumps *	DAB Novabox 30/300. This lift pump is submerged underneath the floor DAB Genix VT 030. This lift pump is on the floor

*A lift pump is only necessary if Hydraloop device is positioned on same floor or a story higher as shower/bathtub

*Please note that the DAB pump listed is not certified to be sold into NA

HYDRALOOP H300 SPECIFICATIONS

Volume	300 liters / 80 gallons
Cleaning capacity	530 liters / 140 gallons per day
Dimensions	80 cm wide, 34 cm deep, 187 cm high 31.5" wide, 13.4" deep, 74" high
Voltage	100 / 240V, 24V internal
Usage	20 W during treatment. Average power consumption: 200kWh/year
WiFi	The Hydraloop device needs to be connected with an internal WiFi-network
Average reusable water quality	Non-potable water: CBOD5: 6ppm TSS: 3 ppm Turbidity: 2 NTU E. coli: <1 MPN/100mL pH: 7.1
Noise Level	± 44 dB.

LED LIGHT INDICATIONS

White	Hydraloop device provides reusable water.
Blue	Hydraloop device provides backup water (until reusable water becomes available).
Purple	The washing machine mode is active.
Green	In self-cleaning mode.
Orange + two (2) short sound signals per minute	The UV disinfection lamp is not functioning properly.
Red + three (3) short sound signals/minute	The water distribution pump has switched itself off. Which might happen when water is leaking somewhere in-house.



CONNECTION OVERVIEW

Input connections

Main greywater inlet into the top of the Hydraloop device: 40 mm| 1 ½" OD

- Bring all greywater sources into one dedicated line.
- Please ensure all greywater lines are separated from black water.
- If the greywater input is on a higher floor than the Hydraloop device, gravity will direct the flow.
- In other circumstances, install a lift pump.

Greywater inlet to the Hydraloop device from

-   Shower
Bath
-   Tumble dryer
Air conditioning
Heat pump
-   Optional: Washing machine (only with inlet diverter)
You can connect only one (1) washing machine per Hydraloop device

Power/Network connections

-  **Permanent WiFi internet connection:**
Bandwidth of 2.4GHz or 5 GHz
Ethernet & Bluetooth (v 2.0)
-  **Power supply:** 100-120V (60Hz) or 200-240V
Outlet to be within 1.2 m of device
-  **Backup water inlet**
Tap water or other: 15 mm | ½" MNPT – flow of 12 LPM| 3.2 USGPM
If the flow rate is higher than 12LPM| 3.2 USGPM, floater cap and flow regulator.
If you use a rainwater pump, install an expansion vessel and 50-micron mesh pre-filter.

Output connections

7

Wastewater outlet

Connection to sewer: 40 mm | 1 ½" OD (min. of 50 mm | 2") with rubber sleeve

Wastewater from the HydraLoop device to sewer (gravity) operates on a timer for wastewater release every 7 days

8

Toilet flushing (pressurized):

15 mm | ½" MNPT

9

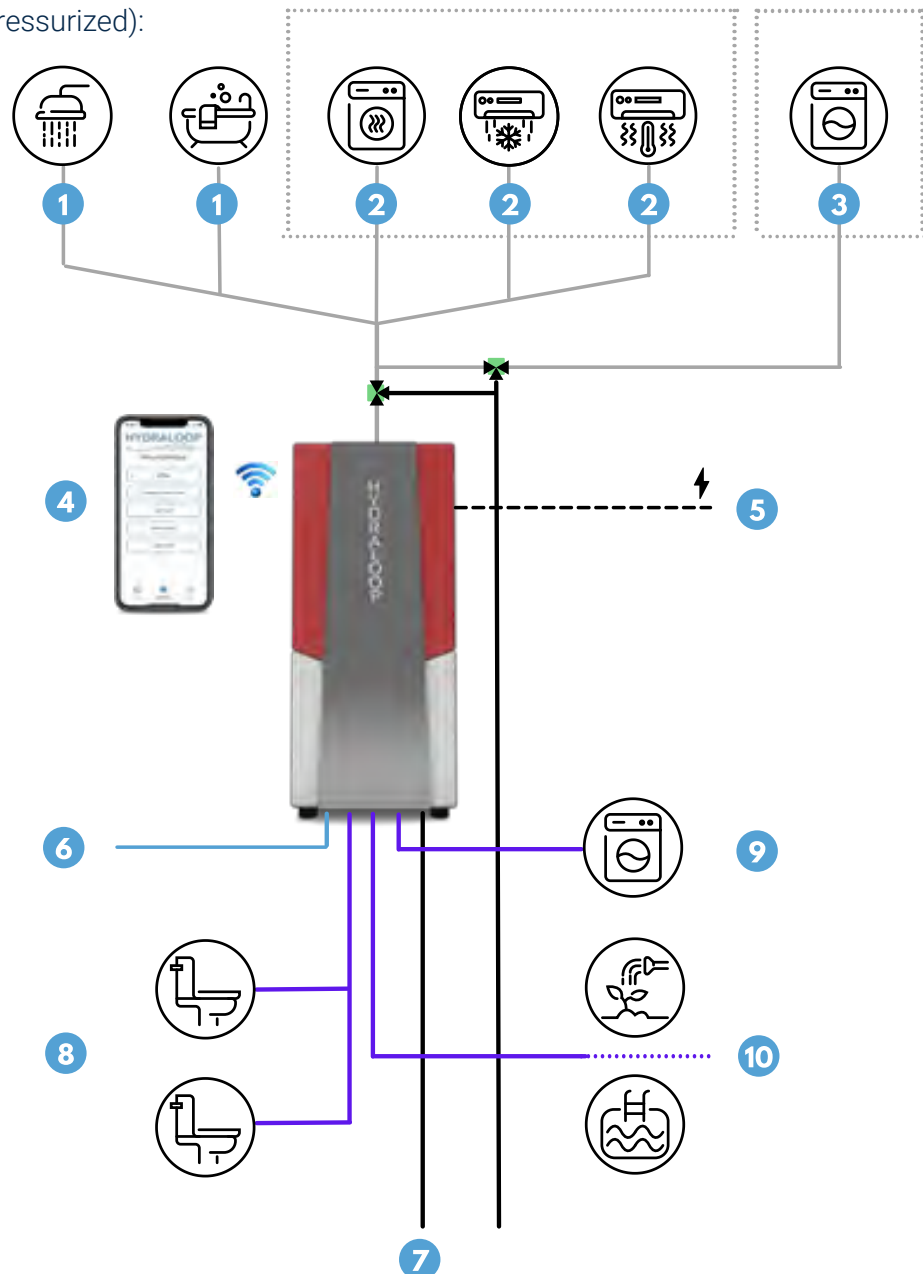
Washing machine (pressurized):

15 mm | ½" MNPT

10

Auxiliary outlet (non-pressurized):

15 mm | ½" MNPT



Appendix 6 – SuDS Risk Scoring

For convenience – press “Alt + Left Arrow” to return to the section of the report



Pollutant Risk Score



Is the development site located outside of flood zone 2 or 3?

Yes

Is the depth to the maximum ground water level greater than one metre below the base of the SuDS component?

Yes

Is the total pollution score less than or equal to 180? (See below)		Risk Score (RS)	Weighting Factor (WF)
Polution hazard traffic density	☒ Urban ☐ Other	1	15
Standard Average Annual Rainfall depth (SAAR depth)	☐ < 740 mm ☐ 740 - 1060 mm ☒ > 1060 mm	3	45
Type of SuDS	☐ Continuous unlined linear collection and conveyance components ☒ Shallow soakway (eg infiltration basin/trench, permeable pavement)	2	30
Unsaturated zone depth	☐ > 15 m ☒ 5 - 15 m ☐ 1 - 5 m	2	40
Predominant flow type through soils between infiltration surface and groundwater	☒ Intergranular flow ☐ Mixed fracture and intergranular flow ☐ Fractured flow	1	20
Unsaturated zone material : Clay content	☐ > 15 % Clay ☒ 1 - 15 % Clay ☐ < 1% Clay	2	10
Unsaturated zone organic carbon content : Soil Organic Matter (SOM) content	☐ > 15 % SOM ☒ 1 - 15 % SOM ☐ < 1 % SOM	2	10
Unsturated zone material: soil pH	☐ > 8 ☒ 5 - 8 ☐ < 5	2	10
Total		180	

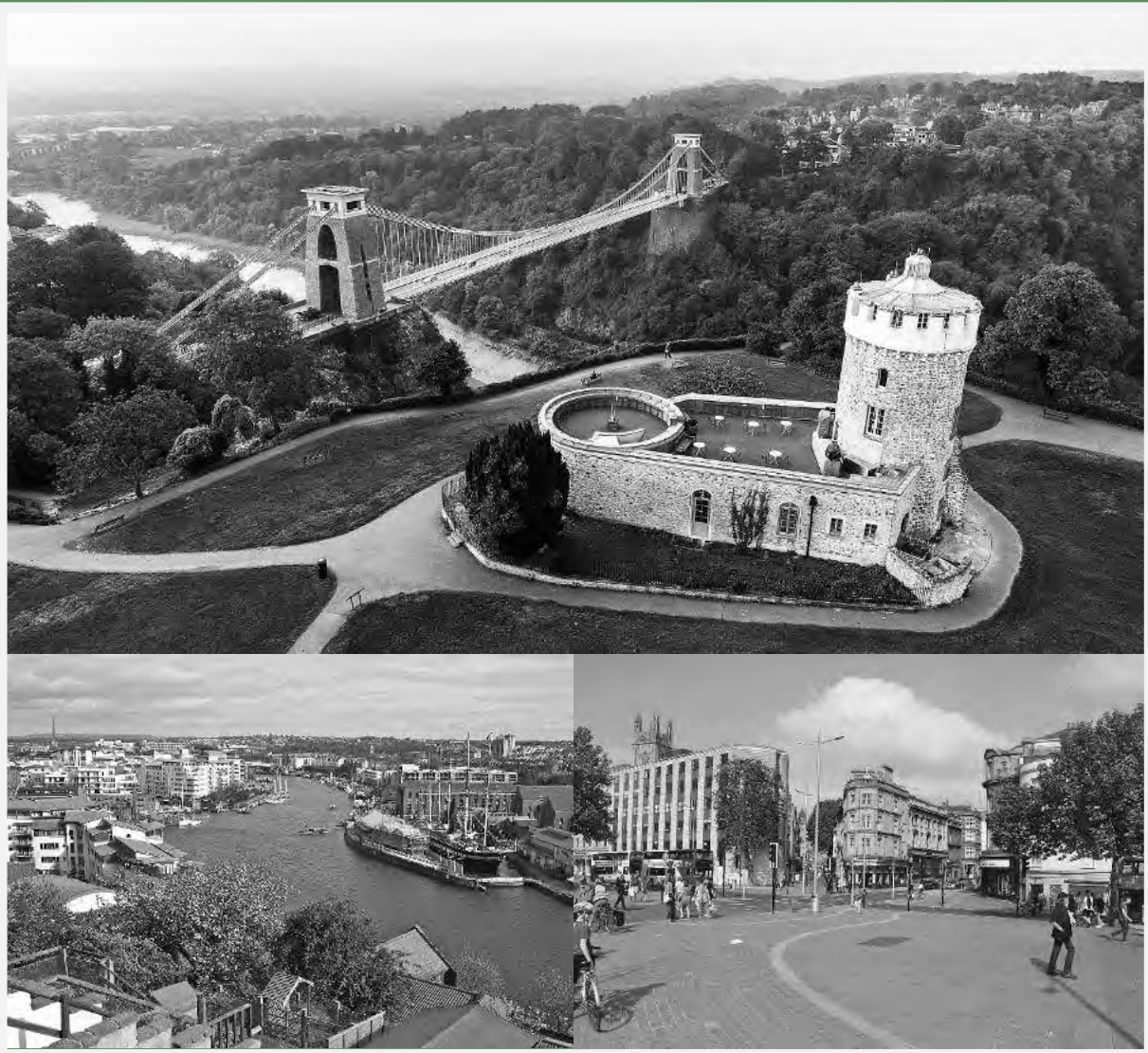
Is the SuDS device further than 5 metres away from a surface water feature?

Yes

Infiltration possible

ISO 19650 Filing Notation

Project	
0XXX	Project Number
Originator	
ENV	Enviren
Functional Breakdown	
S1	Planning submission
S2	Technical submission
S3	Construction Information
S4	As built details
Spatial Breakdown	
SW	Southwest
EE	East of England
SE	South East
WM	West Midlands
EM	East Midlands
YO	Yorkshire
NW	North West
NE	North East
LO	London
OT	Other
Form	
DR	Drawing
GR	Diagram
TR	Textual Report
Discipline (relevant)	
C	Civil Engineering
E	Environmental Engineering
G	Ground Engineering
O	Other Discipline
T	Town and Country Planning and Building Control
W	Water Engineering
Z	Multiple Discipline
Number	
000X	Report number



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