



DRAINAGE STRATEGY

ISSUE 2

August 2026

Land Adjacent to Heath Cottage

Moor Lane

Garsdon

Wiltshire

Document Control

Client	Ms S Parsons		
Report title	Drainage Strategy		
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APPENDIX	TITLE	PRODUCED BY
Appendix A – Drawings by DC	Proposed Drainage Strategy	Dixon Civils
Appendix B – Drawings by others	Combined Plans	AB Design
Appendix C – Wallingford Greenfield Runoff Tool Results		
Appendix D – Calculations		

1.0 Introduction

This drainage strategy report has been prepared on behalf of Ms S Parsons for the proposed new agricultural barn with associated hard standing and access track on land adjacent to Heath Cottage, off Moor Lane, Garsdon. This report will introduce the proposed surface water design and demonstrate how the appropriate means of sustainable drainage (SuDS) will be achieved for the development site in line with national guidance.

Access to the site is via a new field entrance off Moor Lane, which will provide an enhanced entrance suitable for the proposed building use. Refer to the Combined Plans (drawing ref 376.21i.030) prepared by AM Design within Appendix B this report.

2.0 The Existing Site

The application site covers 1150m² (0.150ha) of land occupied by open agricultural field.

The site is centred on Ordnance Survey grid reference ST 97348 88319 and co-ordinates: E 397348, N188319. The nearest post code for the site is SN16 9NW.

The site is located within flood zone 1 and is bounded to the north, east and west by open fields and to the south by residential properties and Moor Lane. Land use in the vicinity is predominantly residential and agricultural.

The site falls gently from southeast to northwest, from the site entrance toward the drainage ditch along the north and western boundaries.

2.1 Existing ground conditions

British Geological Survey (BGS) mapping indicates that the site is located over Kellaways Clay Member – Mudstone.

LandIS Soilscales data explorer describes the soils as having impeded drainage.

Defra's Multi-Agency Geographic Information for the Countryside (MAGIC) map indicates that the geology underlying the site has no classified Aquifers and is located within a Groundwater Source Protection Zone 2c.

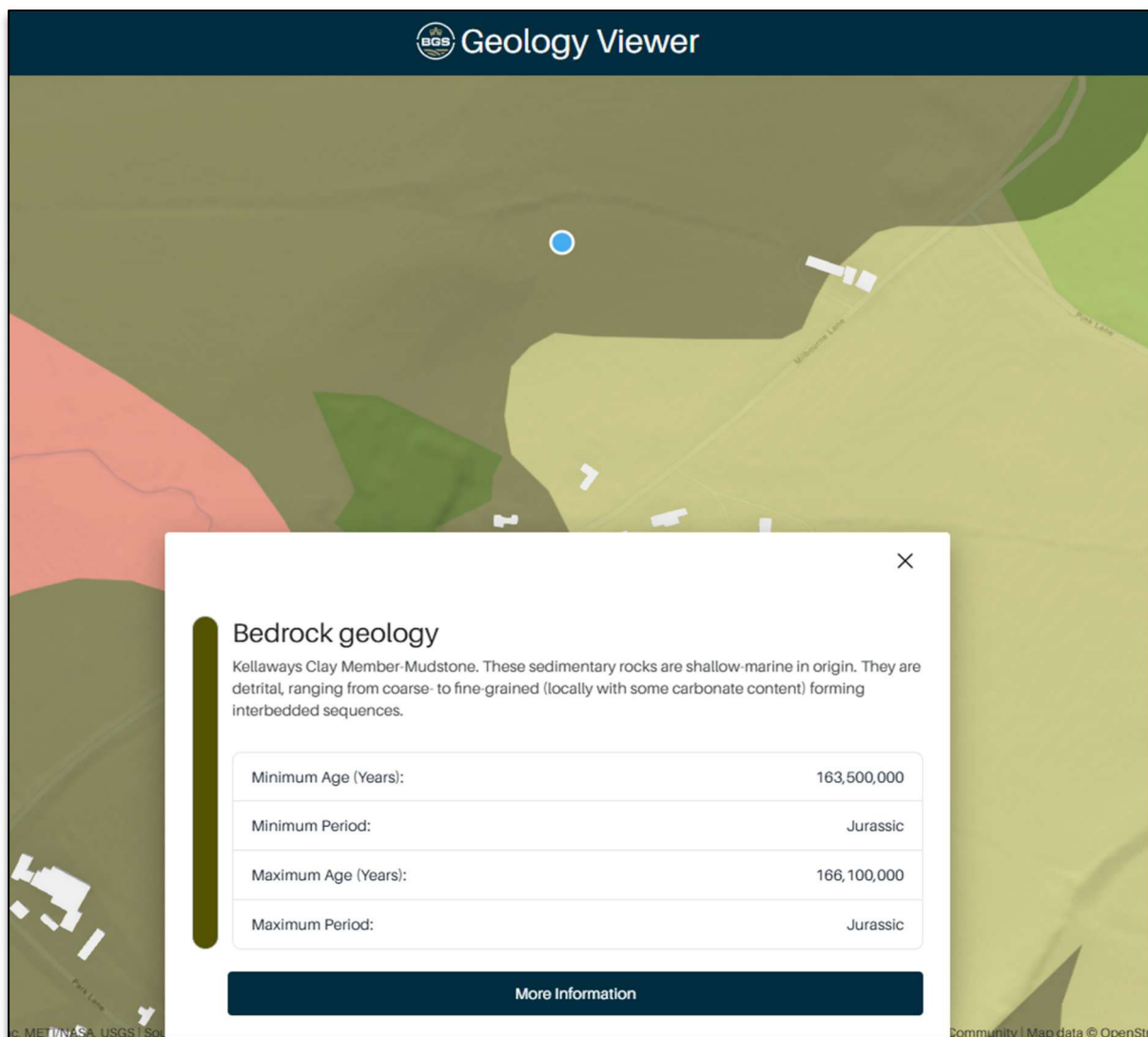


Figure 1: Bedrock Geology - Extract from British Geological Survey Geology of Britain Viewer
Source: <https://www.bgs.ac.uk/map-viewers/bgs-geology-viewer>

2.2 Intrusive Site Investigations

An intrusive site investigation, comprising a trial pit excavated to a depth of 1.6m below ground level was undertaken on site in May 2026. Infiltration testing to BRE365 standard was initiated within the test pit.

Standard practice as recommended in BRE 365 is to fill each soakaway pit and allow to drain to near empty three times. The water level should fall below 25% effective storage depth to allow the test to be analysed.

Water was filled to a depth of 1.3m and an initial drop of 100mm was recorded in 30 minutes. Water did not drop any further over the next 18-hour period and showed no signs of draining any further, therefore it is not possible to calculate a soil infiltration rate.

The investigation confirmed that the site is underlain by Clay soils.

Groundwater was not encountered within the trial pit.



Picture 1 – Start of test



Picture 2 – After 18-hour duration

2.3 Existing Watercourses and Drainage Features

A drainage ditch forms the northwestern perimeter of the site and flows westwards, joining an unnamed watercourse approximately 400m from the site. This watercourse connects to the Woodbridge Brook approximately 800 m to the southwest, which in turn discharges into the River Avon approximately 1 km further west.

Asset records obtained from Wessex Water confirm there to be no foul or surface water sewers within the vicinity of the site.

2.4 Existing surface water drainage arrangement

The site is currently greenfield in nature and not formally drained. Surface water runoff is assumed to partially soak away directly ground and overflow to the adjacent ditch in storm events.

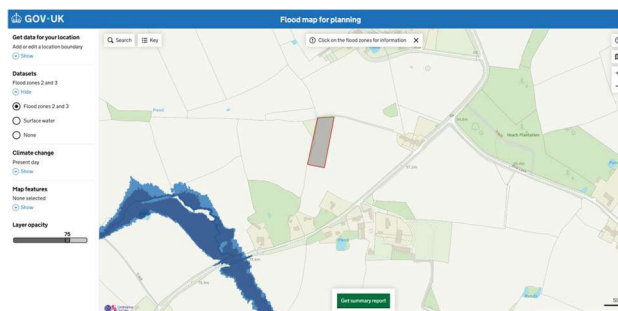
3.0 Flood Risk Summary

As the site lies within Flood Zone 1 and covers an area of less than 1 hectare, a full Flood Risk Assessment is not required. Nevertheless, potential flood risks affecting the site have been considered and are summarised in the table below.

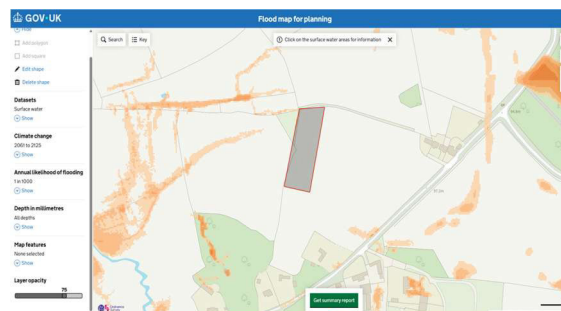
3.1 Summary of Flood Risk

Source of Potential Flooding to the Development Site	Flood Risk	Mitigation/Comments
Fluvial	Low	EA mapping indicates that the site is located within Flood Zone 1 (Low Risk).
Public Sewers / Drains	Low	Wessex Water records indicate there are no sewers in the vicinity of the site, therefore any sewer failure would not result in flooding of the building.
Overland Flow	Low	EA mapping indicates the site is at Low risk of flooding from this source.
Groundwater	Low	Wiltshire Council SFRA Data Explorer indicates that the site is in a region with negligible risk from groundwater flooding due to the nature of the local geological deposits.
Artificial Sources	Low	EA Mapping confirms that the site is not located within an area at risk of flooding from this source.

3.2 Flood Maps



Fluvial Flood Map



Surface Water Flood Map

Source: <https://flood-map-for-planning.service.gov.uk>

4.0 Surface Water Drainage Proposals

Refer to DC Drawing 1255-01-01 [Surface Water *Drainage Strategy*] in Appendix A.

This section of the report addresses how flood risk generated as a result of developing the site will be managed using sustainable control measures to ensure that flood risks are not increased on and off the site and how surface water is managed post development.

4.1 Drainage Hierarchy

The surface water drainage strategy for the site has been prepared according to the drainage discharge hierarchy from CIRIA C753 The SuDS Manual, where the first available option will be utilised as follows.

Technique		Summary
1	Infiltration to the maximum extent that is practical	Impermeable soils prevent the use of infiltration devices. Confirmed by on-site testing. Permeable surfaces and sub-bases wrapped in geotextiles will utilise any pockets of infiltration available.
2	To surface water body	Proposed solution – Attenuated flows restricted to a 30% betterment of greenfield rate, connected to adjacent ditch.
3	To a surface water sewer, highway drain or another drainage system	Not required – No surface water sewers within the vicinity of the site.
4	To a combined sewer	Not required.

4.2 Attenuation Design

Poor infiltration properties of the soils below the site, evidenced by failed BRE365 testing, precludes the use of soakaways and infiltration devices as the main source of surface water discharge. Permeable surfaces and sub-bases will however be utilised where possible to maximise any available pockets of infiltration, before discharging at a restricted rate to the adjacent ditch network, mimicking the existing arrangement.

Wiltshire Council's surface water runoff policy for greenfield developments requires a 30% betterment over existing greenfield discharge rates. Refer to the existing greenfield runoff calculations within appendix D, generated by HR Wallingford's Greenfield runoff rate estimation tool, which calculates the current peak discharge rate from the site for the 100 year storm event at 0.8l/s.

A 30% reduction of this value is 0.56 l/s, and is the target value for the proposed development.

Calculations indicate SuDS attenuation of 30.1m³ will be required to accommodate roof water flow from the barn and permeable external surfacing for all storm events up to and including the 100year +45% climate change event with a peak outflow rate of 0.5 l/s. This volume will be stored within a porous surfaced car park with a minimum 400mm deep clean stone sub-base.

Refer to the proposed drainage calculations enclosed within Appendix E of this report.

Storm Return Period	Existing Flow Rate (l/s)	30% reduction target (l/s)	Designed outflow rate (l/s)	Betterment Provided (%)
100 year	0.8	0.56	0.5 (Including 45% climate change increase)	37.5

4.3 Design Exceedance

Should the drainage system and SuDS fail under extreme events or blockages, floodwaters will follow the natural topography from the southeast to northwest toward the boundary ditch line, mirroring the existing pre-development arrangement.

4.4 Water Quality

Whilst roof water is considered fairly uncontaminated, runoff from the parking area can be susceptible to hydrocarbon contamination, which in this instance will be intercepted within permeable stone and textiles that make up the sub-base construction of the external site areas, before discharging to the ditch network.

Water quality has been assessed in line with the Simple Index approach from Chapter 26 of CIRIA C753 The SuDS Manual:

1. Step 1 – Allocate suitable pollution hazard indices for the proposed land use.
2. Step 2 – Select SuDS with a total pollution mitigation index that equals or exceeds the pollution hazard index.

Pollution Hazard Indices

Below figures are obtained from Table 26.2 CIRIA C753 The SuDS Manual '*Pollution hazard indices for different land use classifications*'

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydrocarbons
Roofs	Very Low	0.2	0.2	0.05
Non-residential car parking with infrequent change (eg schools, offices) ie< 300 traffic movements/day	Low	0.5	0.4	0.4

Pollution Mitigation Indices

Below figures are taken from Table 26.3 & 26.4 CIRIA C753 The SuDS Manual '*Indicative SuDS mitigation indices for discharge to surface waters and groundwater*'

SuDS Feature	Total suspended solids (TSS)	Metals	Hydrocarbons
Permeable Pavement	0.7	0.6	0.7

The pollution mitigation indices for the proposed drainage system therefore exceed the pollution hazard indices and provide suitable pollutant removal.

4.5 Adoption

The onsite drainage components will remain private and be the maintenance responsibility of the property owners.

4.6 Maintenance

Regular inspection and maintenance are important for the effective operation of the SuDS systems as designed. The regular maintenance of SuDS should be carried out in line with C753 The SUDS Manual (CIRIA, November 2015) or as per manufacturer's specification.

Pipework and Catchpits

It is not envisaged that silt build up within the pipework systems will require rigorous maintenance. Notwithstanding this, a suitable maintenance regime for the systems will comprise of routine inspection (every six months) and silt removal as necessary.

Permeable Paving/Surfacing

Permeable surfaces need to be regularly cleaned of silt and other sediments to preserve the infiltration capability of the surface. Suggested brushing regime would be at the end of winter to collect winter debris, mid-summer to collect dust, vegetation and grass-type deposits and after autumn leaf fall.

Drainage Element	Schedule	Maintenance Requirement	Frequency
Permeable Paving	Regular	Brushing and vacuuming over whole surface	Once a year, after autumn leaf fall
	Occasional	Removal of weeds	As required
	Remedial	Remedial work to any depressions or cracked or broken blocks considered a hazard to end users or detrimental to performance. Rehabilitation of surface and upper sub-structure by remedial sweeping	As required Every 10 – 15 years, or as required
	Monitoring	Initial inspection Inspect for evidence of weed growth or poor operation Inspect silt accumulation rates Monitor inspection chambers	Monthly for 3 months after installation Three monthly, 48 hours after large storms in first six months Annually Annually
Pipework and Catchpits	Regular	Inspect for accumulation of silt Inspect for debris and litter Inspect inlets and outlets for blockages	Every six months
	Occasional	Remove debris and litter Remove silt	As required

5.0 Conclusion

The proposed agricultural barn development at land adjacent to Heath Cottage, Moor Lane, Garsdon, will introduce new impermeable areas associated with the building and external hardstanding.

Site investigations and BRE365 testing confirmed that the underlying clay soils do not provide suitable infiltration performance for soakaways to be used as the principal means of disposal. In response, the proposed surface water strategy uses permeable surfacing and clean stone sub-base storage to attenuate runoff before discharging at a controlled rate to the adjacent ditch network.

The drainage design has been sized to accommodate the 1 in 100 year storm event, including a 45% allowance for climate change, while restricting discharge to 0.5 l/s and thereby achieving a 37% betterment over the existing greenfield runoff rate in accordance with local policy.

The development is located in Flood Zone 1 and is considered to be at low risk from the principal sources of flooding identified in this report. Exceedance flows would continue to follow the natural fall of the site toward the boundary ditch, and the proposed SuDS measures also provide appropriate water quality treatment for runoff from the external areas before discharge.

The proposed SuDS and all other drainage components will be maintained by the owners of the property.

Overall, the proposed development can be served by a sustainable drainage strategy that will not increase flood risk on or off site. On this basis, the drainage proposals are considered suitable in principle to support the proposed agricultural barn development.

Dixon Civils Ltd

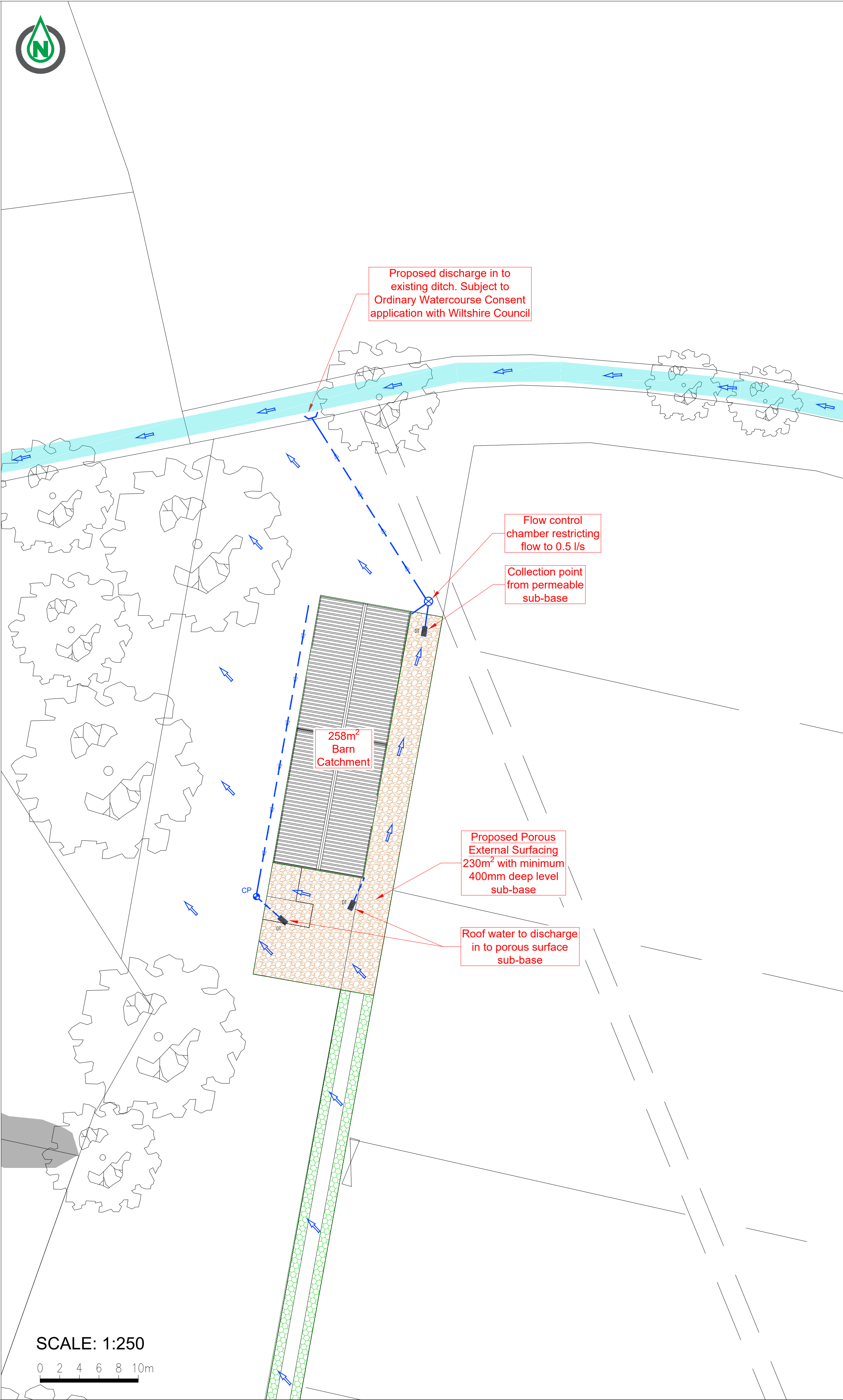
Issue 2 - August 2026

APPENDIX A

Drawings by Dixon Civils

Drawing ref. 1255-01-01

Surface Water Drainage Strategy



KEY:

- Proposed Private Surface Water Drain
- DT Proposed Permeable Paving Distribution Tank
- Flood Flow Route (Over 1:100yr+45% storm event)
- Proposed Surface Water Headwall
- Proposed Flow Control Chamber
- Proposed Surface Water Catchpit Chamber
- Permeable Surfacing with Clean Stone Sub-Base
- Reinforced Grass Access to drain as existing
- Existing Ditch

NOTES:

- Drawing issued for planning purposes only, not for construction.
- Do not scale from this drawing. Work only from stated dimensions or setting out details.
- This drawing shall be read in conjunction with all relevant scheme drawings and specifications.

Rev	Description	Dm	Date
-	FIRST ISSUE	AD	12.06.26

REVISIONS

Dixon Civils
Drainage & Infrastructure Design
www.DixonCivils.com 01249 490813 Enquiries@DixonCivils.com

CLIENT
Ms S Parsons

JOB TITLE
**Land Adjacent to Heath Cottage
Moor Lane
Garsdon**

DRAWING TITLE
Surface Water Drainage Strategy

DATE: June 2026 DRAWN: AD
DRAWING No: 1255-01-01 REV: - SCALE: 1:250 @ A1

ISSUED FOR
FOR APPROVAL

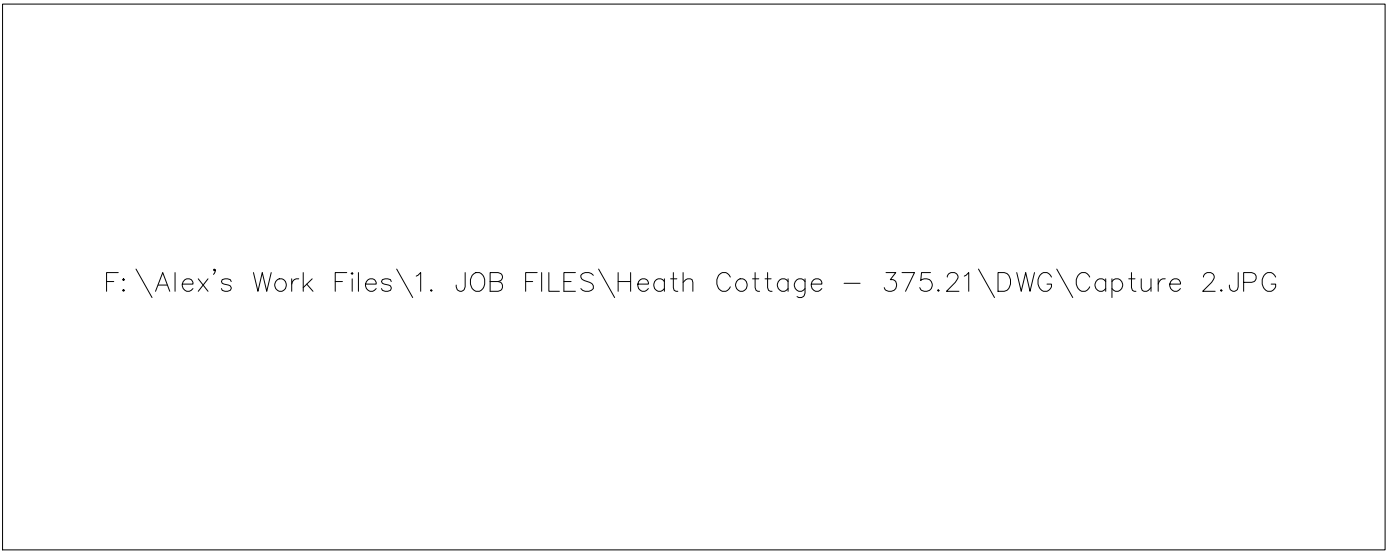
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APPENDIX B

Drawings by others

Drawing ref. 376.21i.030

Combined Plan (AM Design)



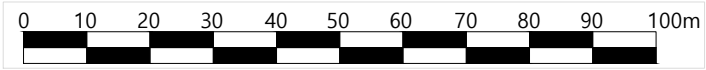
Indicative Field Gate
(NTS)

Indicative Fencing
(NTS)

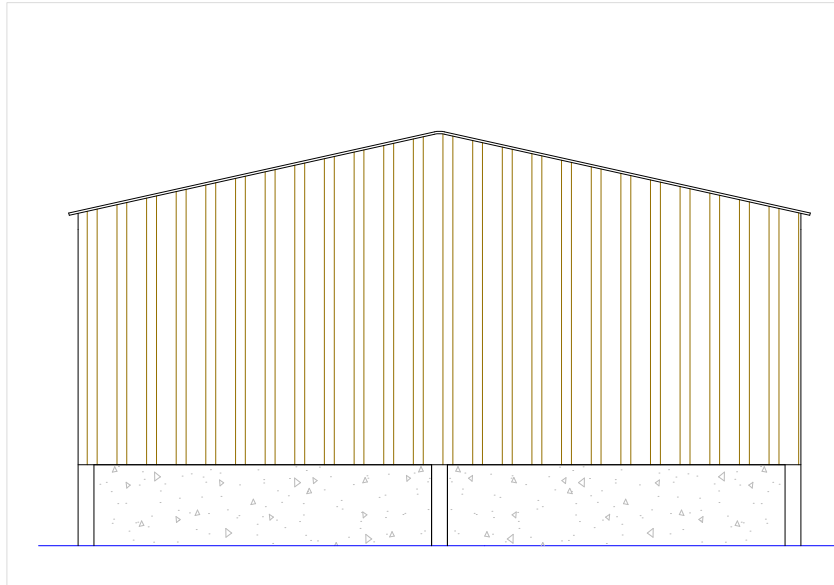
Indicative Fencing
(NTS)



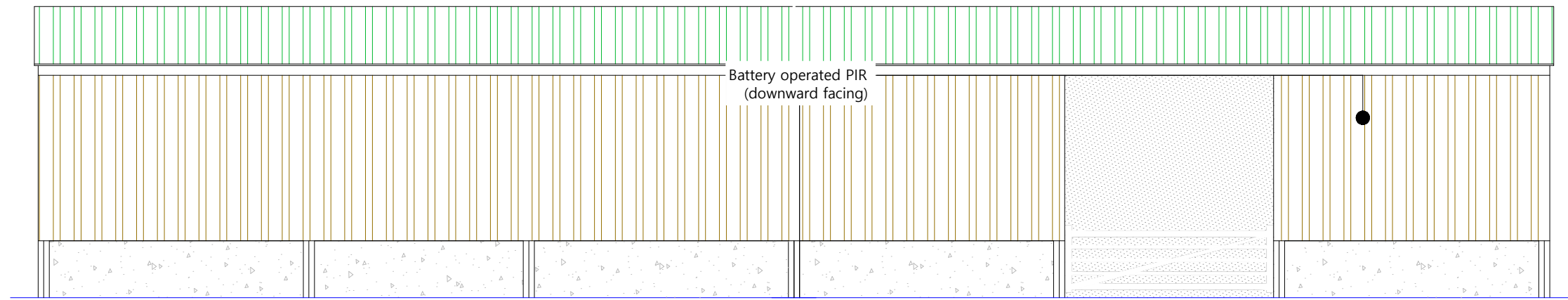
Combined Location Plan
(Scale 1:1250)



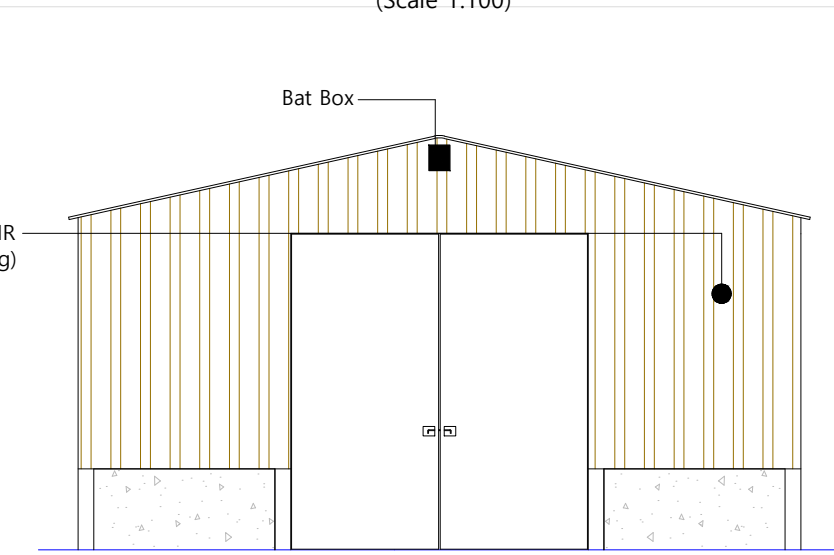
Walls to be finished in Yorkshire boarding - timber with gaps, natural/ tanalised finish to weather to silver/ grey
Roof to be finished in dark green 'Juniper Green' corrugated fibre cement roof sheets.



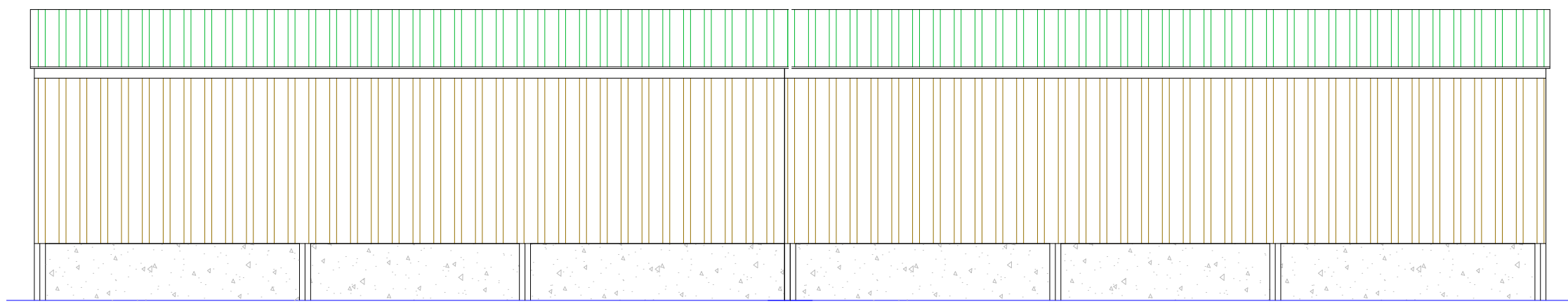
Proposed North Elevation
(Scale 1:100)



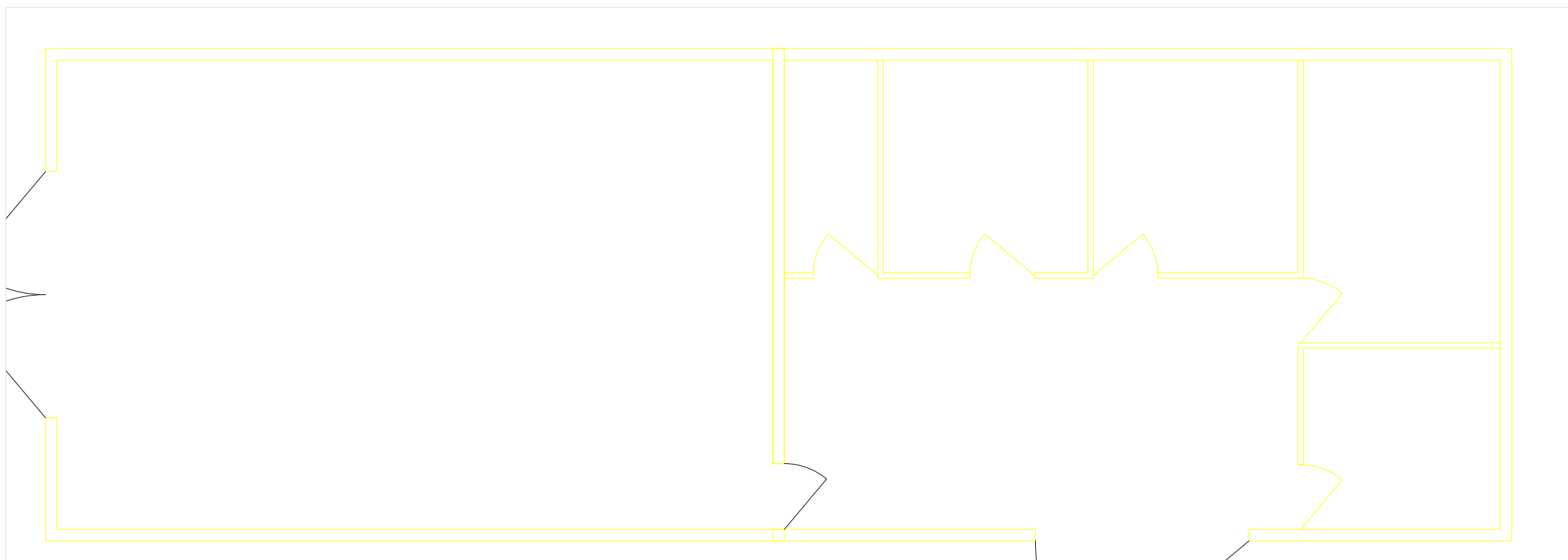
Proposed East Elevation
(Scale 1:100)



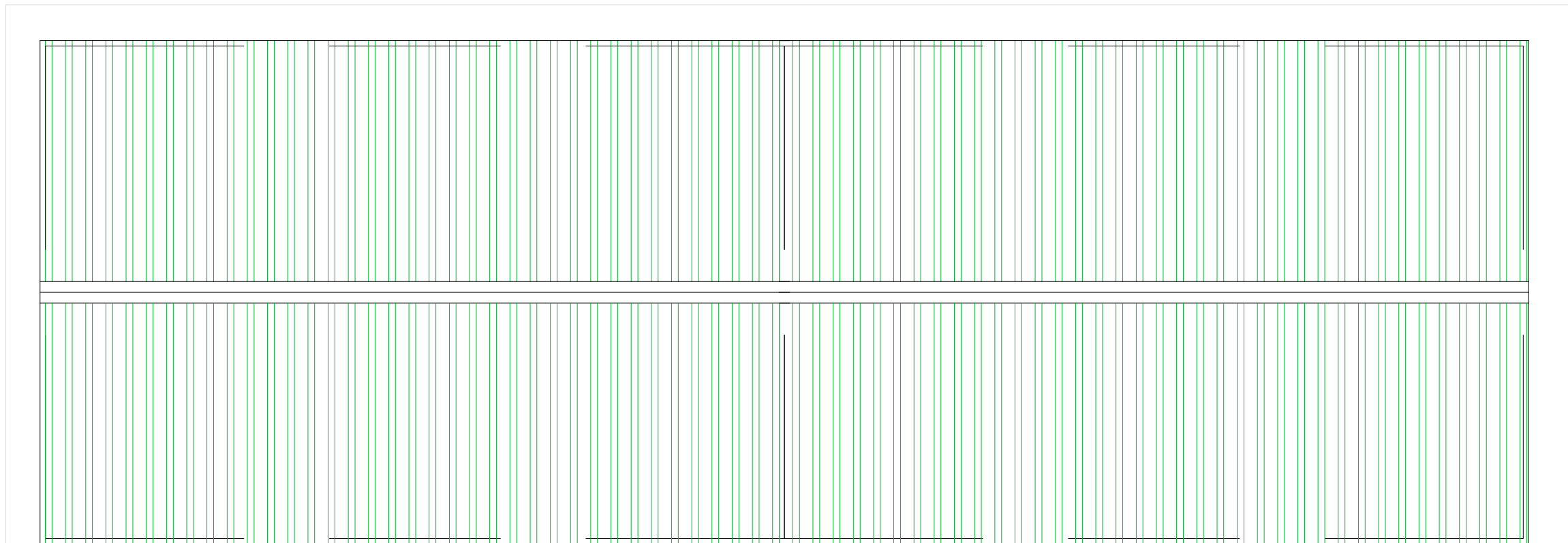
Proposed South Elevation
(Scale 1:100)



Proposed West Elevation
(Scale 1:100)

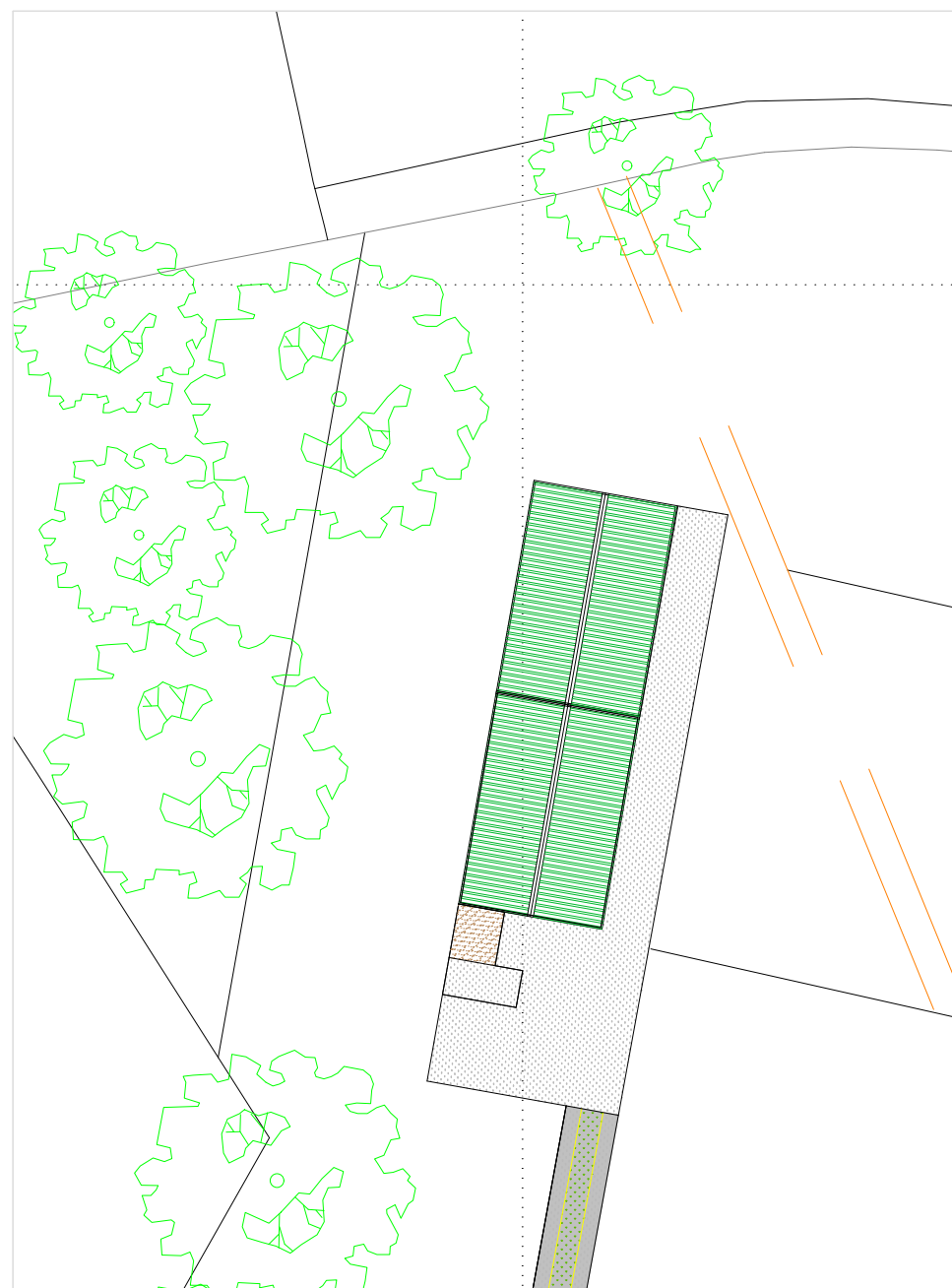


Proposed Floor Plan
(Scale 1:100)

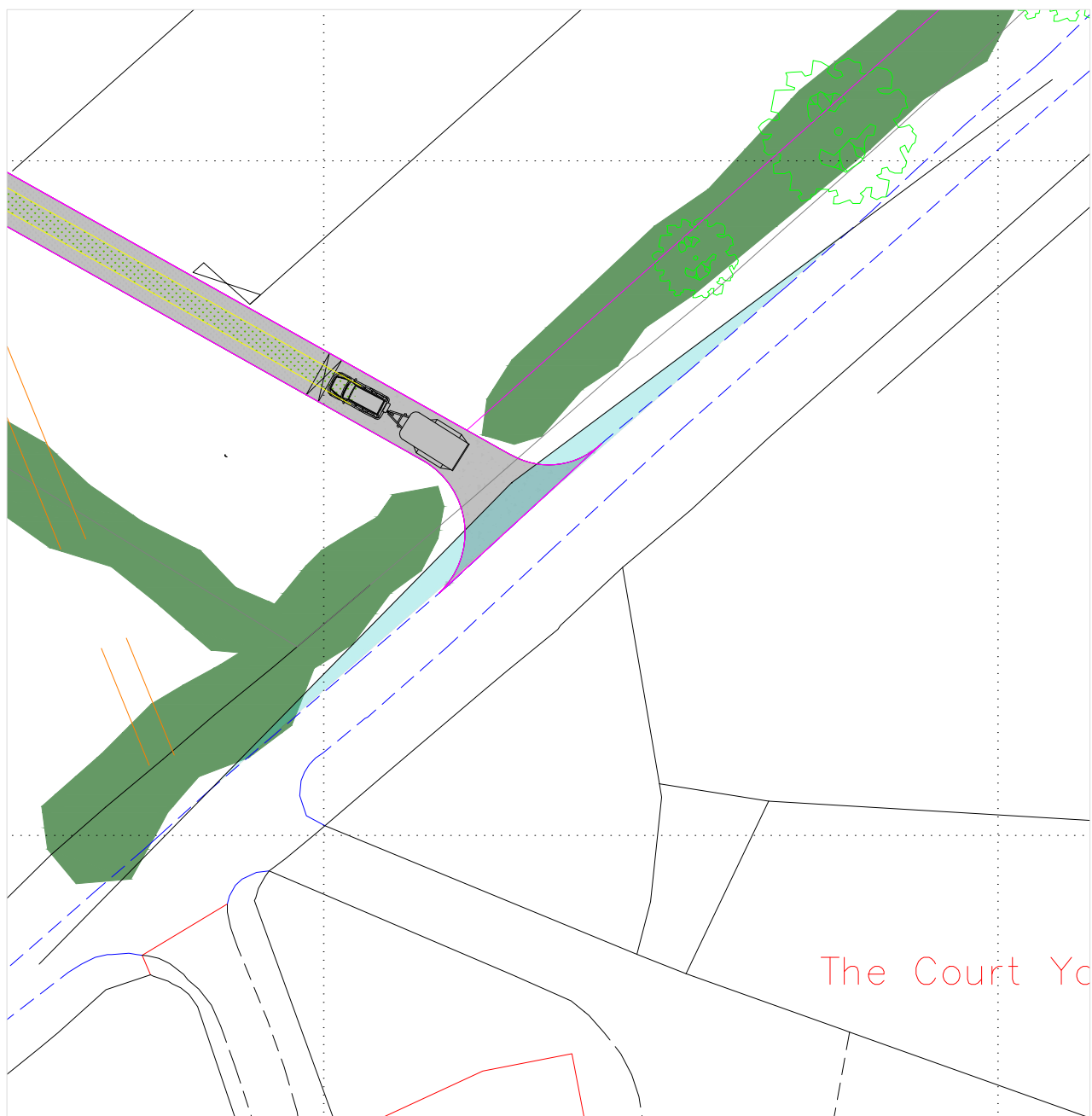
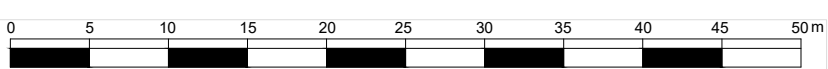


Proposed Roof Plan
(Scale 1:100)

DRAWINGS FOR ILLUSTRATIVE PURPOSE ONLY



Proposed Combined Plan
(Scale 1:500)



Proposed Combined Plan
(Scale 1:500)

NOTES:-

Drawings
These are planning drawings only and should not be used for construction purposes.
Drawings based on client provided information

CDM 2017
The project may be subject to the requirements of the CDM ACT 2017. AM Design does not accept any liability as principle designer or contractor and appropriate measures and notifications must be in place prior to commencement of the works

Dimensions
Measurements and dimensions are to be confirmed by contractor on site prior to the ordering of any dimensionally critical components.

Demolition
Demolition works should be undertaken by a competent experience contractor in accordance with Health And Safety Requirements, risk assessments and method statements. A full risk assessment must be undertaken by the principle contractor before operations begin

Nine Acres, Burrington, Umberleigh, EX37 9JW
Tel: 0716897975 | Email: alexandramock@am-design.co.uk
Web: www.am-design.co.uk

Site Address: Land adjacent Heath Cottage - Combined Plans
Drawing No: 376.21.030
Scale: As Noted @A1
Client: Ms S Parsons
Date: March 2026

Revisions:

APPENDIX C

Wallingford Greenfield Runoff Estimation Tool Results

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance “Rainfall runoff management for developments”, SC030219 (2013), the SuDS Manual C753 (CIRIA, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Project details

Date	19/05/2026
Calculated by	ALAN DIXON
Reference	DC1255
Model version	2.2.3

Location

Site name	Moor Lane
Site location	Garsdon



Site easting (British National Grid)	397430
Site northing (British National Grid)	188317

Site details

Total site area (ha)	.049	ha
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Greenfield runoff

Method

Method	IH124
--------	-------

IH124

	<u>My value</u>		<u>Map value</u>
SAAR (mm)	751	mm	751
How should SPR be derived?	WRAP soil type		
WRAP soil type	4		4
SPR	0.47		
QBar (IH124) (l/s)	0.3	l/s	

Growth curve factors

	<u>My value</u>		<u>Map value</u>
Hydrological region	6		6
1 year growth factor	0.85		
2 year growth factor	0.88		
10 year growth factor	1.62		
30 year growth factor	2.3		
100 year growth factor	3.19		
200 year growth factor	3.74		

Results

Method	IH124	
Flow rate 1 year (l/s)	0.2	l/s
Flow rate 2 year (l/s)	0.2	l/s
Flow rate 10 years (l/s)	0.4	l/s
Flow rate 30 years (l/s)	0.6	l/s
Flow rate 100 years (l/s)	0.8	l/s
Flow rate 200 years (l/s)	1.0	l/s

Please note runoff estimation is subject to significant uncertainty. Results are therefore normally reported to only 1 decimal place. Where 2 decimal places are provided, this does not indicate accuracy to this level, it has been adopted to prevent ‘zero’ figures from being reported. Outputs less than 0.01 l/s are reported as 0.01 l/s.

Disclaimer

This report was produced using the Greenfield runoff rate estimation tool (2.2.3) developed by HR Wallingford and available at uksuds.com (<https://www.uksuds.com/>). The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at uksuds.com/terms-conditions (<https://www.uksuds.com/terms-conditions>). The outputs from this tool have been used to estimate Greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

APPENDIX D

Calculations

Infodrainage Calculations

Project: Moor Lane Garsdon	Date: 12/06/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Inflows Storm Phase: Phase	Design: Attenuation Design		



External Catchment

Type : Catchment Area

Area (ha) 0.023

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100



Building Catchment

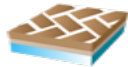
Type : Catchment Area

Area (ha) 0.026

Dynamic Sizing

Runoff Method	Time of Concentration
Summer Volumetric Runoff	0.750
Winter Volumetric Runoff	0.840
Time of Concentration (mins)	5
Percentage Impervious (%)	100

Project: Moor Lane Garsdon	Date: 12/06/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Storm Phase: Phase	Design: Attenuation Design		



Porous Paving

Type : Porous Paving

Dimensions

Exceedance Level (m)	80.000
Depth (m)	0.500
Base Level (m)	79.500
Paving Layer Depth (mm)	50
Membrane Percolation (m/hr)	1000.0
Porosity (%)	33
Length (m)	10.000
Long. Slope (1:X)	1000.00
Width (m)	23.000
Total Volume (m³)	34.155

Inlets

Inlet 1

Inlet Type	Lateral Inflow
Incoming Item(s)	External Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Inlet 2

Inlet Type	Point Inflow
Incoming Item(s)	Building Catchment
Bypass Destination	(None)
Capacity Type	No Restriction

Project: Moor Lane Garsdon	Date: 12/06/2026			 Dixon Civils Drainage & Infrastructure Design
	Designed by: AD	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Storm Phase: Phase	Design: Attenuation Design			

Outlets

Outlet	
Outgoing Connection	(None)
Outlet Type	Orifice
Diameter (m)	0.020
Coefficient of Discharge	0.600
Invert Level (m)	79.500

Advanced

Conductivity (m/hr)	1000.0
---------------------	--------

Project: Moor Lane Garsdon	Date: 12/06/2026		
	Designed by: AD	Checked by:	Approved By:
Report Title: Rainfall Analysis Criteria	Design: Attenuation Design		



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

Rainfall

Project: Moor Lane Garsdon	Date: 12/06/2026		 Dixon Civils Drainage & Infrastructure Design
Report Title: Rainfall Analysis Criteria	Designed by: AD	Checked by:	
	Design: Attenuation Design		

FSR

Type: FSR

Region	England And Wales
M5-60 (mm)	19.6
Ratio R	0.400
Summer	☒
Winter	☒

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

Project: Moor Lane Garsdon	Date: 12/06/2026		
	Designed by: AD	Checked by:	Approved By:
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Design: Attenuation Design		



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

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Half Drain Down Time (mins)	Percentage Available (%)
Porous Paving	FSR: 100 years: +45 %: 480 mins: Winter	79.905	79.900	0.395	0.400	3.4	30.183	0.000	0.000	0.5	22.307	490	11.628

Project: Moor Lane Garsdon	Date: 12/06/2026			 Dixon Civils Drainage & Infrastructure Design
	Designed by: AD	Checked by:	Approved By:	
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Design: Attenuation Design			

Status

OK



FOR MORE INFORMATION CONTACT US AT:

Enquiries@DixonCivils.com

01249 490813

www.DixonCivils.com