



Drainage Strategy

Rookery Farm, Monk Sherborne

Manydown Company Ltd

Prepared by:

SLR Consulting Limited

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SLR Project No.: 216445 (Vectos)

11 September 2023

Revision: 02

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
01	6 September 2023	Hamza El-Adnany Nick Bosanko	Nick Bosanko	Nick Bosanko
02	11 September 2023	Nick Bosanko	Nick Bosanko	Nick Bosanko
	Click to enter a date.			
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Basis of Report

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1.0 Introduction

1.1 Background

SLR (formerly Vectos) has been instructed by Manydown Company Ltd to prepare a Drainage Strategy to accompany the planning application for the redevelopment at Rookery Farm, Basingstoke.

The scheme consists of the demolition of several disused agricultural barn buildings and replacement with three dwellings. Proposed site layout plans are enclosed in Appendix A.

According to the Environment Agency (EA) Flood Map for Planning, the site is entirely located in Flood Zone 1. This flood zone is classified as low risk and is defined as land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding.

This Drainage Strategy has been undertaken in accordance with the guidelines set out in the National Planning Policy Framework (NPPF) and wider national and local guidance documents.

1.2 Objectives

The objectives of this Drainage Strategy are to:

- Undertake a desk-based review of the available data for the site to assess flood risk and drainage issues.
- Review the relevant planning policy documents to ensure that the redevelopment is in accordance with these and other relevant regional and local guidance.
- Identify the key sources of flood risk to the site and surrounding area, along with and flood mitigation requirements (if any).
- Assess whether the redevelopment will result in an increase of surface water runoff and how this can be mitigated through the application of Sustainable Drainage Systems (SuDS).
- Identify a conceptual foul water drainage strategy.



2.0 Site Description

The site is located to the south of Monk Sherborne. It is accessed via a private track that adjoins Ship Lane. It has an approximate National Grid Reference of SU607560. The site and surrounding area are shown in Figure 1. A site location plan is also enclosed in Appendix A.

Figure 1 – Site and Surround Area (source Google hybrid)



The site currently consists of several barn buildings, surrounding hardstanding areas and a paved vehicular access road. Rookery farmhouse is located to the east. The wider area is characterised by agricultural land and associated farm buildings.

2.1 Topography

A topographic survey is enclosed within Appendix B. It shows that ground levels fall to the east from a maximum ground level of approximately 93.5 m above Ordnance Datum (AOD) to a minimum ground level of approximately 89.0 m AOD.

2.2 Geology and Hydrogeology

The 1:50,000 scale British Geological Survey (BGS) mapping indicates that the site is underlain by a bedrock geology of Seaford Chalk Formation. No superficial deposits are recorded on site.

Soilscapes describes the soil as freely draining, which are shallow lime-rich soils over chalk or limestone.

According to MAGIC maps the site is not in a groundwater Source Protection Zone (SPZ).



A ground investigation has not been undertaken for the planning submission. However, based on the desktop information, it is likely that infiltration as a means of surface water management would be feasible. However, this will be confirmed as part of a ground investigation once planning permission has been obtained.

2.3 Hydrology

The topographic survey shows that there is a ditch adjacent to the highway and site access. The general area drains in a north direction towards Bow Brook. Ordnance Survey (OS) mapping shows a tributary of Bow Brook is located in woodland approximately 1 km northeast of the site.

2.4 Existing Drainage

Surface water runoff from roof surfaces is drained both directly onto the ground and to below ground infrastructure. It is understood that some surface water is disposed of by a soakaway on site.

It is also understood that the farmhouse septic tank was filled in in 1980 and a mains sewage connection was established.

Thames Water sewer plans are enclosed in Appendix C, which show a 150 mm diameter foul sewer immediately east of the site in Ship Lane.



3.0 Planning Policy and Guidance

3.1 National Planning Policy

The NPPF sets out the Government's national policies for flood risk management in a land use planning context within England and how these are expected to be applied. It states that developers and LPAs should try to locate development in zones with the lowest probability of flooding. This should be achieved by application of the Sequential Test, which aims to ensure that a sequential approach is followed to steer new development to areas with the lowest probability of flooding.

A sequential risk-based approach to determining the suitability of land for development in flood risk areas is central to the policy statement and should be applied at all levels in the planning process.

The site has been designated on the Flood Map for Planning as Flood Zone 1 and, according to the Planning Practice Guidance (PPG), is compatible with all development uses. Application of the Sequential Test is therefore not required for the proposed redevelopment.

3.2 Sustainable Drainage

The NPPF sets out the national planning policy in terms of development and flood risk with guidance on how this should be applied defined in the PPG. This strongly promotes the use of SuDS to manage surface water runoff from new development sites.

The "Non-Statutory Technical Standards (NTS) for Sustainable Drainage Systems" was published by Defra in March 2015 for the design, maintenance and operation of SuDS. The NTS states that for developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but should never exceed the rate of discharge from the development prior to redevelopment for that event.

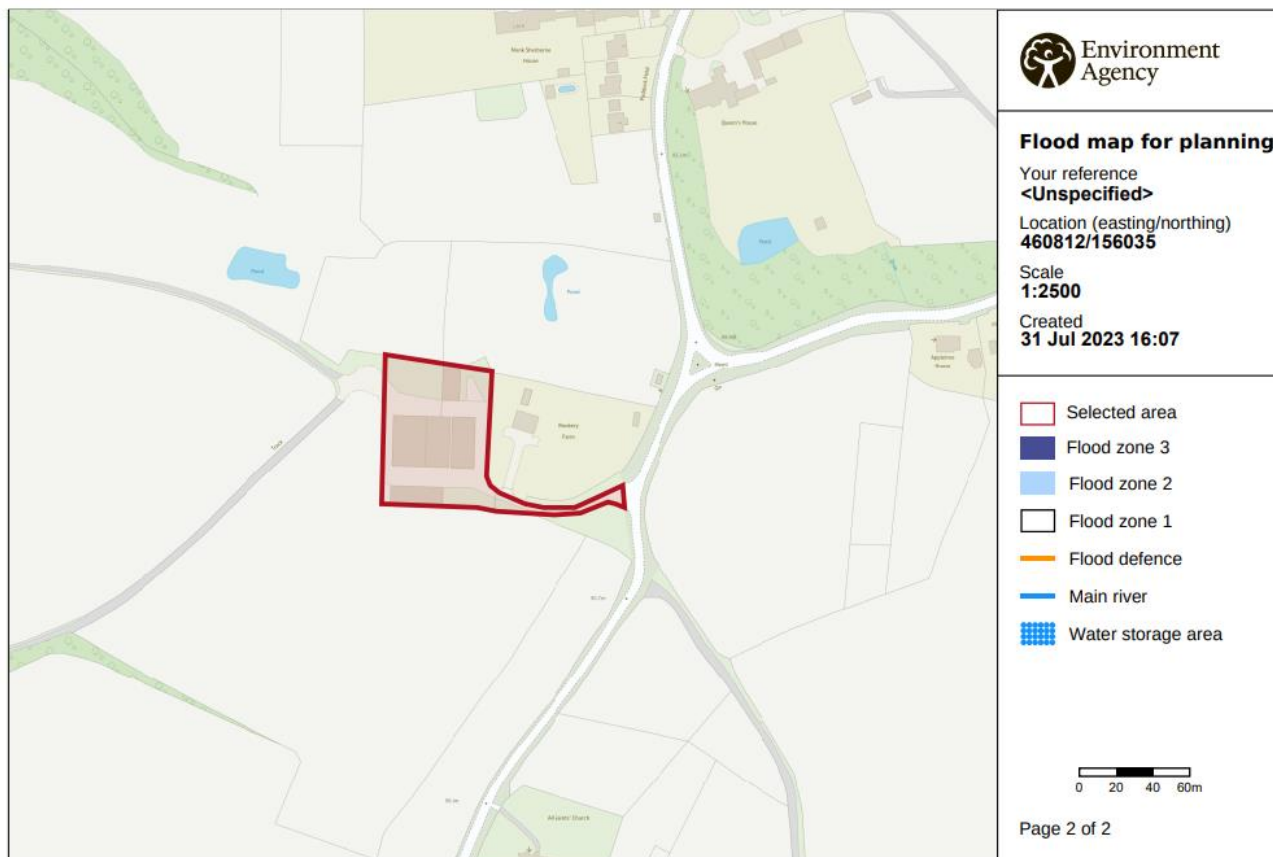


4.0 Flood Risk

4.1 Fluvial and Tidal Flood Risk

The Flood Map for Planning identifies the risk of flooding from both fluvial (i.e. river) and tidal sources, an extract of which is presented in Figure 2. The site is entirely located in Flood Zone 1. Land and property in Flood Zone 1 is assessed as having low risk of flooding from fluvial and tidal sources (i.e. less than 1 in 1,000 annual probability of flooding).

Figure 2 - Environment Agency Flood Map for Planning



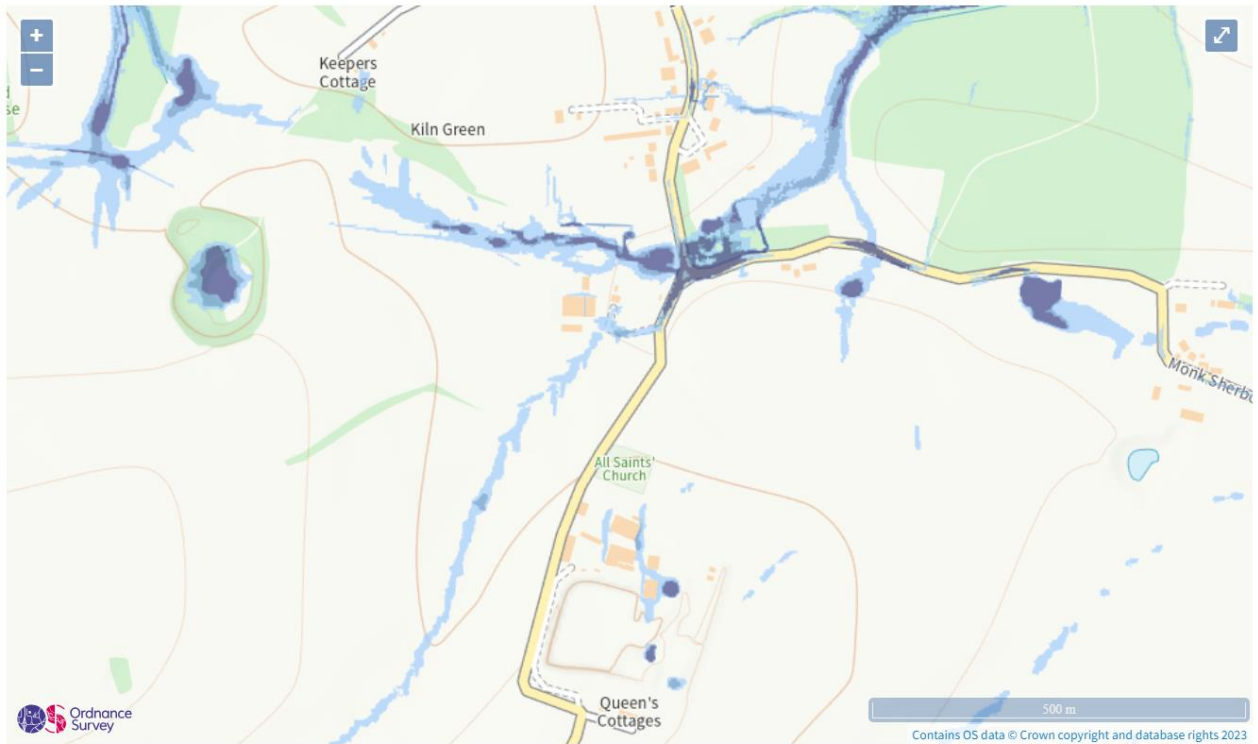
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4.2 Risk from Surface Water Flooding

According to the Risk of Flooding from Surface Water map, the main part of the site is unaffected by surface water flooding (see Figure 3). The flood risk from surface water is classified as very low risk (i.e. annual chance of flooding is less than 1 in 1000). However, a surface water flow path does cross the access track. As shown in Figure 4, this flow path is not activated in a 1 in 100 year rainfall event. It is therefore not considered to be a development constraint and is of limited concern.



Figure 3 - Risk of Flooding from Surface Water Map



Extent of flooding from surface water
● High ● Medium ● Low ○ Very Low

Figure 4 - Risk of Flooding from Surface Water Map – 1 in 100 year event



Surface water flood risk: water depth in a medium risk scenario
Flood depth (millimetres)
● Over 900mm ● 300 to 900mm ● Below 300mm



4.3 Other Sources of Flooding

A desktop study has not revealed any other significant potential sources of flood risk in the proximity of the site.



5.0 Surface Water Drainage Strategy

5.1 Overview

It is well understood that one of the effects of development is typically to reduce the permeability of the site and consequently to change its response to rainfall. Therefore, a suitable surface water drainage strategy is required to ensure that the surface water runoff regime is managed appropriately so that there will be no increase flood risk to third parties.

The NPPF states that flood risk to land and property must not be increased as a result of development. The associated PPG states that flood risk should not increase for events up to and including a 1 in 100 year return period, with appropriate allowance for climate change.

A fundamental principle of sustainable development in terms of flood defence is the reduction of surface water runoff from new developments. Surface water drainage arrangements for any development site must ensure that volumes and peak discharge rates leaving the site are no greater than those for the site prior to development. Any increase in surface water run-off above the pre-development volumes must also be controlled on site.

5.2 Proposed Receptor of Site Runoff

The drainage hierarchy presented in the PPG states that the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

- into the ground (infiltration),
- to a surface water body,
- to a surface water sewer, highway drain, or another drainage system,
- to a combined sewer.

Infiltration is thought to be an acceptable means of surface water management on site due to the presence of the underlying chalk and has been adopted as part of this drainage strategy. However, site investigation, including infiltration testing, will be required to validate this prior to construction.

5.3 Existing Runoff Rates

Given that surface water from the proposed redevelopment will be managed through the use of infiltration, it will not be necessary to calculate greenfield runoff rates.

All surface water will be disposed to the ground, which therefore will ensure that volumes and peak discharge rates leaving the site are no greater than those for the site prior to redevelopment.

5.4 Proposed Surface Water Drainage Strategy

Sustainable Drainage Systems (SuDS) will be utilised to manage surface water runoff. The SuDS Manual (CIRIA, 2015) has been considered during the preparation of this surface water drainage strategy.

Whilst the existing drainage arrangements are believed to discharge to a soakaway (or similar), the condition etc is unknown and a new soakaway is proposed.

Given that only roof surfaces will drain to the soakaway, no further water quality requirements are necessary. However, a rain garden has been incorporated into the scheme to provide opportunity for biodiversity improvements.



As the site is located on a bedrock of chalk, it is assumed that the soakaway should be located at least 10 m from any foundations.

No new hardstanding areas are proposed; the driveway is currently paved and will be retained, along with its existing drainage arrangements. The courtyard will be laid using gravel and will be self-draining, which will negate the need for a formalised drainage network.

The Preliminary Surface Water Drainage Layout is enclosed in Appendix D, which show the position of the rain garden and soakaway. Surface water runoff shall first flow into a catchpit via the proposed drainage system, this will filter silt and debris from entering the soakaway thereby preventing blockages and reducing the maintenance requirements of the soakaway.

A Causeway Flow simulation has been run using Flood Estimation Handbook (FEH) data including a 40% climate change allowance to estimate the soakaway size required. The calculations are enclosed in Appendix E and the parameters used are outlined in Table 1. As previously noted, the underlying bedrock is shown to comprise of chalk and an infiltration rate of 1×10^{-5} m/s has been assumed at this planning stage, subject to infiltration testing. A 10% factor for urban creep was also applied to the roof area.

Table 1 - Source Control Parameters

Parameter	Values	Units
Proposed roof area	0.048	ha
Discharge rate	-	l/s
Infiltration rate	0.0360	m/hr
Climate change allowance	40	%
Urban creep	10	%

The results show that a soakaway with the dimension of 2.5 m wide by 13.0m length and 1.2 m deep is required.

5.5 Impact on Flood Risk

Whilst both the existing site and proposed development manage surface water runoff through infiltration, the proposed development will introduce more permeable surfaces compared to existing conditions. This is anticipated to offer an improvement in the local drainage regime.

5.6 Exceedance

Surface water flow paths in extreme events, known as exceedance events (i.e. events in excess of the design criteria i.e. the 1 in 100 year plus climate change event), should be steered away from properties and to provide better protection to people and property. Exceedance routes are shown in the Preliminary Surface Water Layout attached in Appendix D.

5.7 Operation and Maintenance

The surface water drainage network will be privately operated and maintained. Maintenance will be undertaken in according with the recommendations outlined in The SuDS Manual (CIRIA C753, 2015), as replicated in Figures 5 and 6.



Various other smaller assets of the surface water drainage strategy consist of gutters, down water pipes, manholes, pipes and drainage channels. These assets should be checked annually and after large storm events, in order to remove debris and inspect the condition.

Jet washing may be required on occasion to remove any blockages within the pipe network. If the condition is found to be poor, replacement or repairs may be required.

Figure 5 – Operation and Maintenance Requirements for Bioretention / Rain Gardens

TABLE 18.3 Operation and maintenance requirements for bioretention systems		
Maintenance schedule	Required action	Typical frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary	Quarterly
	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 more frequently for tidiness or aesthetic reasons)
	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

Figure 6 – Operation and Maintenance Requirements for Soakaways



TABLE 13.1 Operation and maintenance requirements for soakaways		
Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect for sediment and debris in pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	Annually
	Cleaning of gutters and any filters on downpipes	Annually (or as required based on inspections)
	Trimming any roots that may be causing blockages	Annually (or as required)
Occasional maintenance	Remove sediment and debris from pre-treatment components and floor of inspection tube or chamber and inside of concrete manhole rings	As required, based on inspections
Remedial actions	Reconstruct soakaway and/or replace or clean void fill, if performance deteriorates or failure occurs	As required
	Replacement of clogged geotextile (will require reconstruction of soakaway)	As required
Monitoring	Inspect silt traps and note rate of sediment accumulation	Monthly in the first year and then annually
	Check soakaway to ensure emptying is occurring	Annually

5.8 Summary

The surface water drainage strategy has been prepared to demonstrate that the proposed redevelopment of the site can meet national and local requirements for the management of surface water runoff. This will be achieved through some principles of SuDS but is subject to more detailed design considerations once planning permission has been approved.



6.0 Foul Drainage

In April 2018 Ofwat changed the rules with respect to new sewer connections. Developers may now connect to the nearest public sewer on a size for size basis at their cost and, in this case, Thames Water will provide capacity in the network to accommodate domestic type flows from granted development which is funded by their infrastructure charging arrangements.

There is a 150 mm diameter foul sewer in Ship Lane, to the east of the site. This is anticipated to be suitable for connection purposes, which would be subject to a Section 106 application to Thames Water prior to connection.



7.0 Closure

SLR (formerly Vectos) has been instructed by Manydown Company Ltd to prepare a Drainage Strategy to accompany the planning application for the redevelopment at Rookery Farm, Basingstoke.

This report has been prepared in accordance with the guidelines set out in National Planning Policy Framework and local guidance.

A desktop study has concluded that the site is not susceptible to any significant sources of flood risk.

An infiltration-based surface water drainage strategy has been proposed to manage surface water generated from the proposed roof surface, which will subsequently discharge to a soakaway.

Foul water will be treated via a packed treatment plant on site and treated effluent shall be discharged into the ground using a drainage field (or similar).

The drainage strategy is subject to detailed drainage design, once planning permission has been obtained.

Regards,

SLR Consulting Limited

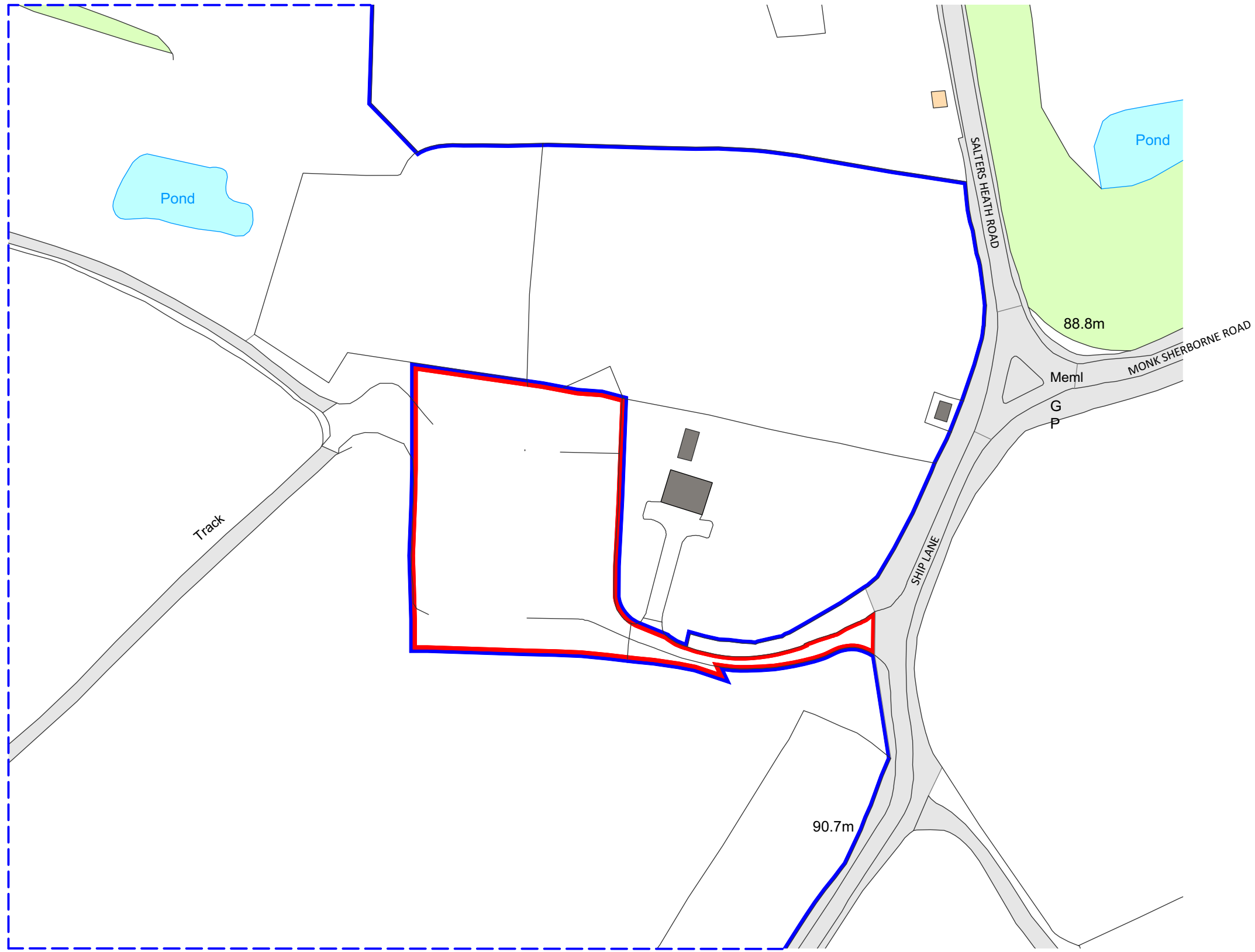
Nick Bosanko


Nick Bosanko BSc MSc MCIWEM C.WEM
Technical Director




Appendix A Site Plans





 Site Application Boundary: 0.49ha

 Other land in applicant's ownership
(Extends off page)



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The plan shown here is for the purpose of supporting a planning application only. Only scale from this drawing for the purposes of determining a planning application. Do not scale from this drawing for construction purposes.

Any discrepancies between this and any other consultant's drawings should be reported to Pro Vision immediately.

Whilst reasonable endeavours have been made to ensure the accuracy of the application boundary, in the production of this plan, there may be some discrepancy between the OS data, Topographical Data and Land Title data.

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ISSUE	DATE	DESCRIPTION	DRAWN	CHECKED
v1	21.07.23	...	RD	
v2	24.07.23	PLANNING ISSUE	MH	RD
v3	08.09.23	PLANNING ISSUE - Blue Line added	MH	RD

CLIENT:	Manydown Co. Ltd	
PROJECT:	Rookery Farm, Monk Sherbourne	
DRAWING:	Site Location Plan	1:1250
NUMBER:	50997-XX-P1-01	A3
ISSUE:	v3	08.09.23

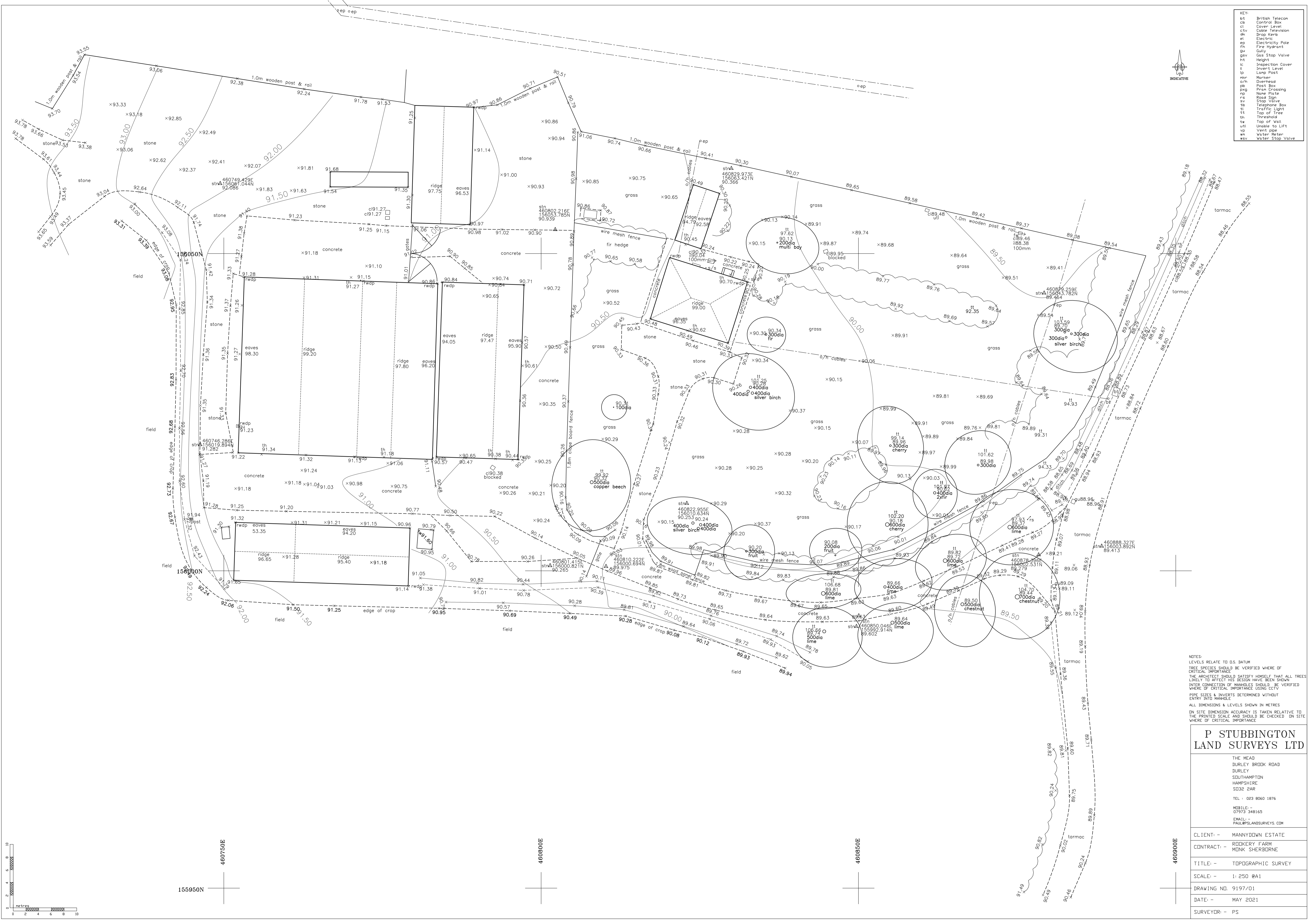


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Appendix B Topographic Survey



bt	British Telecom
cb	Control Box
cl	Cover Level
ctv	Cable Television
ek	Electric
ep	Electricity Pole
fh	Fire Hydrant
gu	Gully
ht	Height
ic	Inspection Cover
il	Invert Level
lp	Lamp Post
mkr	Marker
o/h	Overhead
pb	Post Box
pcg	Prop Crossing
np	Name Plate
rs	Road Sign
sv	Stop Valve
tb	Telephone Box
tl	Traffic Light
tt	Top of Tree
th	Threshold
tw	Top of Wall
urt	Unable to Lift
vp	Vent Pipe
wn	Water Meter
wsv	Water Stop Valve



NOTES:
 LEVELS RELATE TO O.S. DATUM
 TREE SPECIES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE
 THE ARCHITECT SHOULD SATISFY HIMSELF THAT ALL TREES LIKELY TO AFFECT HIS DESIGN HAVE BEEN SHOWN
 INTER CONNECTION OF MANHOLES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE USING CCTV
 PIPE SIZES & INVERTS DETERMINED WITHOUT ENTRY INTO MANHOLE
 ALL DIMENSIONS & LEVELS SHOWN IN METRES
 ON SITE DIMENSION ACCURACY IS TAKEN RELATIVE TO THE PRINTED SCALE AND SHOULD BE CHECKED IN SITE WHERE OF CRITICAL IMPORTANCE

P STUBBINGTON LAND SURVEYS LTD	
THE MEAD DURLEY BROOK ROAD DURLEY SOUTHAMPTON HAMPSHIRE SO32 2AR TEL : 023 8060 1876 MOBILE : 07973 248165 EMAIL : PAUL@SLANDSURVEYS.COM	
CLIENT -	MANNYDOWN ESTATE
CONTRACT -	ROOKERY FARM MONK SHERBORNE
TITLE -	TOPOGRAPHIC SURVEY
SCALE -	1:250 @ A1
DRAWING NO.	9197/01
DATE -	MAY 2021
SURVEYOR -	PS

Appendix C Sewer Plans



Asset location search



Property Searches

Nick Bosanko
15 jesmond road
CLEVEDON
BS21 7RZ

Search address supplied Rookery Farm House
Monk Sherborne
Tadley
RG26 5HW

Your reference Rookery Farm

Our reference ALS/ALS Standard/2023_4872767

Search date 16 August 2023

Notification of Price Changes

From 1st April 2023 Thames water Property Searches will be increasing the prices of its CON29DW, CommercialDW Drainage & Water Enquiries and Asset Location Searches. Historically costs would rise in line with RPI but as this currently sits at 14.2%, we are capping it at 10%.

Customers will be emailed with the new prices by January 1st 2023.

Any orders received with a higher payment prior to the 1st April 2023 will be non-refundable. For further details on the price increase please visit our website at www.thameswater-propertysearches.co.uk



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0800 009 4540

Search address supplied: Rookery Farm House, Monk Sherborne, Tadley, RG26 5HW

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0800 009 4540, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

With regard to the fresh water supply, this site falls within the boundary of another water company. For more information, please redirect your enquiry to the following address:

South East Water
Rocfort Road
Snodland
Kent
ME6 5AH



Tel: 0845 301 0845

www.southeastwater.co.uk.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.



Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2023 4872767



The width of the displayed area is 500 m and the centre of the map is located at OS coordinates 460799,156036

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

Based on the Ordnance Survey Map (2020) with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available
















Manhole Reference	Manhole Cover Level	Manhole Invert Level
8101	91.38	89.61
8202	93.72	90.97
8201	95.27	91.3
9002	88.53	87.02
9003	88.56	86.88
9001	88.76	87.2
9004	88.67	86.6
9101	89.31	87.88

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.









Asset Location Search - Sewer Key

Public Sewer Types (Operated and maintained by Thames Water)

-  **Foul Sewer:** A sewer designed to convey waste water from domestic and industrial sources to a treatment works.
-  **Surface Water Sewer:** A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.
-  **Combined Sewer:** A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.
-  Storm Sewer
-  Sludge Sewer
-  Foul Trunk Sewer
-  Surface Trunk Sewer
-  Combined Trunk Sewer
-  Foul Rising Main
-  Surface Water Rising Main
-  Combined Rising Main
-  Vacuum
-  Thames Water Proposed
-  Vent Pipe
-  Gallery

Other Sewer Types (Not operated and maintained by Thames Water)

-  Sewer
-  Culverted Watercourse
-  Proposed
-  Decommissioned Sewer
-  Content of this drainage network is currently unknown
-  Ownership of this drainage network is currently unknown

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plan are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate the direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Meter
-  Dam Chase
-  Vent
-  Fitting

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Ancillary
-  Drop Pipe
-  Control Valve
-  Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol. Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Inlet
-  Outfall
-  Undefined End




Other Symbols

Symbols used on maps which do not fall under other general categories.





-  Change of Characteristic Indicator
-  Public / Private Pumping Station
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Chamber
-  Operational Site

Ducts or Crossings

-  Casement
 -  Conduit Bridge
 -  Subway
 -  Tunnel
- Ducts may contain high voltage cables. Please check with Thames Water.

5) 'na' or 'of' on a manhole indicates that data is unavailable.

6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimeters. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology, please contact Property Searches on 0800 009 4540.

Payment Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment within 14 days of the date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service or will be held to be invalid.
4. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
5. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
6. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800.

If you are unhappy with our service, you can speak to your original goods or customer service provider. If you are still not satisfied with the outcome provided, we will refer the matter to a Senior Manager for resolution who will provide you with a response.

If you are still dissatisfied with our final response, and in certain circumstances such as you are buying a residential property or commercial property within certain parameters, The Property Ombudsman will investigate your case and give an independent view. The Ombudsman can award compensation of up to £25,000 to you if he finds that you have suffered actual financial loss and/or aggravation, distress, or inconvenience because of your search not keeping to the Code. Further information can be obtained by visiting www.tpos.co.uk or by sending an email to admin@tpos.co.uk.

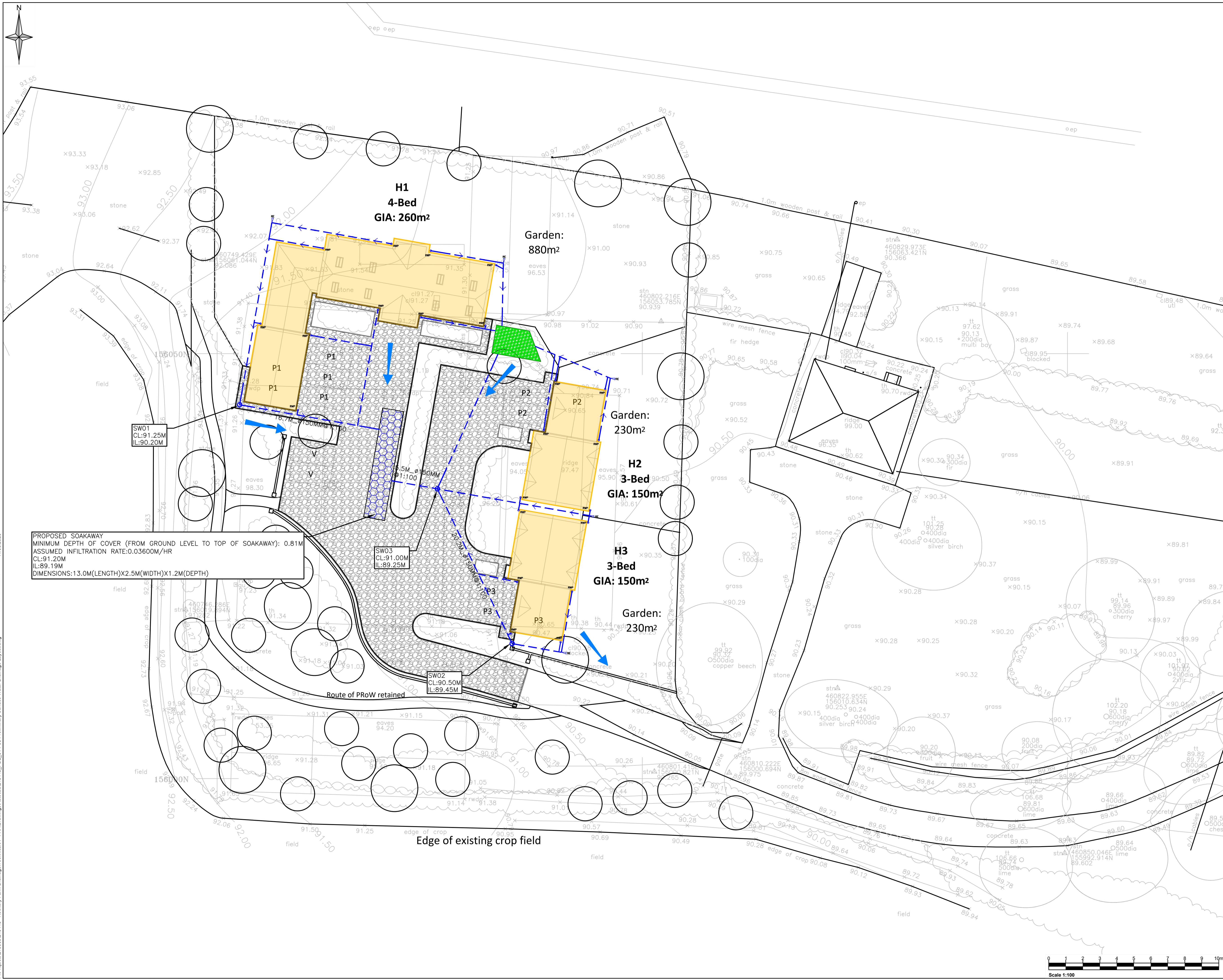
If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0300 034 2222 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking
Please Call 0800 009 4540 quoting your invoice number starting CBA or ADS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Appendix D Preliminary Surface Water Drainage Layout



- Notes:**
- DRAWINGS TO BE READ IN CONJUNCTION WITH ALL RELEVANT DOCUMENTS AND SLR DRAINAGE STRATEGY.
 - DRAINAGE STRATEGY IS SUBJECT TO LEVELS AND DETAILED DESIGN.
 - ALL LEVELS ARE INDICATIVE AND SHOWN IN METRES ABOVE ORDINANCE DATUM.
 - DISPLAYED ACRONYMS:
 - CL - COVER LEVEL
 - IL - INVERT LEVEL
 - DRAINAGE STRATEGY DESIGN STORES SURFACE WATER RUNOFF FOR THE 1 IN 100 YEAR EVENT PLUS 40% CLIMATE CHANGE.

- Legend:**
- PROPOSED SURFACE WATER DRAIN
 - INDICATIVE RAIN WATER PIPE LOCATION
 - PROPOSED RODDING EYE
 - PROPOSED RAIN GARDEN
 - PROPOSED PERMEABLE GRAVEL SURFACING
 - PROPOSED FLOOD EXCEEDANCE ROUTE
 - PROPOSED SOAKAWAY
 - PROPOSED IMPERMEABLE ROOF SURFACE AREA (0.048HA)

PROPOSED SOAKAWAY
 MINIMUM DEPTH OF COVER (FROM GROUND LEVEL TO TOP OF SOAKAWAY): 0.81M
 ASSUMED INFILTRATION RATE: 0.03600M/HR
 CL: 91.20M
 IL: 89.19M
 DIMENSIONS: 13.0M (LENGTH) X 2.5M (WIDTH) X 1.2M (DEPTH)

SW03
 CL: 91.00M
 IL: 89.25M

SW02
 CL: 90.50M
 IL: 89.45M

P03	ARCHITECT LAYOUT UPDATED.	11.09.23	HE	NB	NB
P02	DRAINAGE LEVELS UPDATED.	08.09.23	HE	NB	NB
Rev	Amendments	Date	By	Chk	Auth

SLR
 www.slrconsulting.com

FOR INFORMATION

Client: MANYDOWN COMPANY LTD

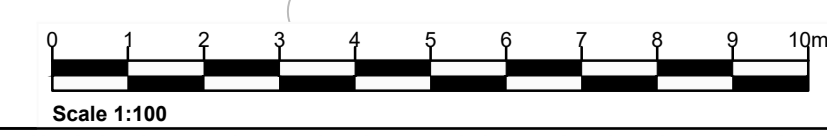
Project: ROOKERY FARM BASINGSTOKE

Drawing Title: PRELIMINARY SURFACE WATER DRAINAGE LAYOUT

Scale: 1:100	@ A1	SLR Project No: 216445
Designed: HE	Drawn: HE	Checked: NB
Date: SEPT 2023	Date: SEPT 2023	Date: SEPT 2023
Authorised: NB	Authorised: NB	Authorised: NB
Date: SEPT 2023	Date: SEPT 2023	Date: SEPT 2023

Drawing Number: 216445_PDL_01

Rev: P03



Appendix E Surface Water Calculations





Design Settings

Rainfall Methodology	FEH-22	Minimum Velocity (m/s)	1.00
Return Period (years)	100	Connection Type	Level Soffits
Additional Flow (%)	0	Minimum Backdrop Height (m)	0.200
CV	0.750	Preferred Cover Depth (m)	1.200
Time of Entry (mins)	5.00	Include Intermediate Ground	✓
Maximum Time of Concentration (mins)	30.00	Enforce best practice design rules	✓
Maximum Rainfall (mm/hr)	50.0		

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Depth (m)
Soakaway	0.053	5.00	91.200	1.800

Simulation Settings

Rainfall Methodology	FEH-22	Analysis Speed	Normal	Additional Storage (m ³ /ha)	20.0
Summer CV	0.750	Skip Steady State	x	Check Discharge Rate(s)	x
Winter CV	0.840	Drain Down Time (mins)	240	Check Discharge Volume	x

Storm Durations

15	30	60	120	180	240	360	480	600	720	960	1440
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Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
100	40	0	0

Node Soakaway Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.03600	Safety Factor	2.0	Invert Level (m)	89.400
Side Inf Coefficient (m/hr)	0.03600	Porosity	0.95	Time to half empty (mins)	1400

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	32.5	32.5	1.200	32.5	69.7	1.201	0.0	69.7

Rainfall

Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)	Event	Peak Intensity (mm/hr)	Average Intensity (mm/hr)
100 year +40% CC 15 minute summer	558.310	157.983	100 year +40% CC 360 minute summer	64.112	16.498
100 year +40% CC 15 minute winter	391.797	157.983	100 year +40% CC 360 minute winter	41.674	16.498
100 year +40% CC 30 minute summer	370.959	104.969	100 year +40% CC 480 minute summer	49.273	13.021
100 year +40% CC 30 minute winter	260.322	104.969	100 year +40% CC 480 minute winter	32.736	13.021
100 year +40% CC 60 minute summer	252.881	66.829	100 year +40% CC 600 minute summer	39.542	10.816
100 year +40% CC 60 minute winter	168.008	66.829	100 year +40% CC 600 minute winter	27.018	10.816
100 year +40% CC 120 minute summer	149.174	39.422	100 year +40% CC 720 minute summer	34.637	9.283
100 year +40% CC 120 minute winter	99.107	39.422	100 year +40% CC 720 minute winter	23.278	9.283
100 year +40% CC 180 minute summer	111.719	28.749	100 year +40% CC 960 minute summer	27.647	7.280
100 year +40% CC 180 minute winter	72.620	28.749	100 year +40% CC 960 minute winter	18.314	7.280
100 year +40% CC 240 minute summer	86.624	22.892	100 year +40% CC 1440 minute summer	19.222	5.152
100 year +40% CC 240 minute winter	57.551	22.892	100 year +40% CC 1440 minute winter	12.918	5.152



Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 100.00%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m ³)	Flood (m ³)	Status
600 minute winter	Soakaway	585	90.648	1.248	3.3	39.5872	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	Outflow (l/s)
600 minute winter	Soakaway	Infiltration	0.3

