

Ennor Farm, St Mary's

Flood Risk Assessment and Drainage Strategy

For

Isles of Scilly Council

Project Number:

13394

January 2021

Campbell Reith Hill LLP
Wessex House
Pixash Lane
Keynsham
BS31 1TP

T: +44 (0)117 916 1066
F: +44 (0)117 916 1069
E: bristol@campbellreith.com
W: www.campbellreith.com

Document History and Status

Revision	Date	Purpose/Status	File Ref	Author	Check	Review
P1	November 2020	Draft	13394-CRH-XX-XX-RP-C-0001-P1-FRA.docx	Nicholas Bond	Pete Tamblin	T Tucker
P2	January 2021	Final/Planning	13394-CRH-XX-XX-RP-C-0001-P2-FRA.docx	Nicholas Bond	Pete Tamblin	T Tucker

This document has been prepared in accordance with the scope of Campbell Reith Hill LLP's (CampbellReith) appointment with its client and is subject to the terms of the appointment. It is addressed to and for the sole use and reliance of CampbellReith's client. CampbellReith accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of Campbell Reith Hill LLP. Any advice, opinions, or recommendations within this document should be read and relied upon only in the context of the document as a whole. The contents of this document are not to be construed as providing legal, business or tax advice or opinion.

© Campbell Reith Hill LLP 2020

Document Details

Last saved	08/01/2021 15:33
Path	13394-CRH-XX-XX-RP-C-0001-P2-FRA.docx
Author	Nicholas Bond
Project Partner	David Smith
Project Number	13394
Project Name	Ennor Farm, Old Town, St Mary's

Contents

1.0 Introduction	1
1.1. Brief	1
1.2. Aims and Objectives	1
2.0 Planning Policy	2
2.1. National Planning Policy Framework (NPPF, February 2019)	2
2.2. Flood Risk and Coastal Change Planning Practice Guidance (PPG)	2
2.3. Roles and Responsibilities	4
2.4. Climate Change	4
3.0 Existing Site	6
3.1. Site Location	6
3.2. Site Characterisation / Land Use	7
3.3. Topography	7
3.4. Geology	7
3.5. Hydrology	7
3.6. Hydrogeology	8
3.7. Infiltration Testing	8
3.8. Public Sewers and Existing Site Drainage	8
4.0 Existing Flood Risks to the site	9
4.1. Flood Hazards	9
4.2. Fluvial Flood Risk	9
4.3. Tidal Flooding	9
4.4. Surface Water/Overland Flow	9
4.5. Groundwater Flood Risk	10
4.6. Flood Risk from Infrastructure Failure	10
4.7. Climate Change Impact	10
5.0 Development Proposals	11
5.1. Proposed Scheme	11
5.2. Vulnerability of Development	11
5.3. Proposed Levels	11
5.4. Sequential Testing	11
6.0 Flood Risk From the Development	12
6.1. Proposed Storm Water Management	12
6.2. Priority of Discharge	13
6.3. SuDS Options Considered	13
6.4. Water Quality Control	14
6.5. Biodiversity and Amenity Value	15
6.6. Proposed Strategy	15
6.7. Storm Water	15
6.8. Half Drain Times	15
6.9. Fluvial Flooding	16
6.10. Tidal Flooding	16
6.11. Surface Water/Overland Flow	16
6.12. Groundwater Flooding	16
6.13. Flood Risk from Infrastructure Failure	16
7.0 Foul Water	17
8.0 Implementation, Maintenance and SuDs Ownership	18
8.1. Implementation	18
8.2. Maintenance	18
9.0 Conclusions and Recommendations	20

Appendices

- Appendix A: Site Location Plan
- Appendix B: Site Photographs
- Appendix C: Topographical Survey
- Appendix D: Trial Pit records
- Appendix E: South West Water Asset Plans
- Appendix F: Flood Maps
- Appendix G: Development Proposals
- Appendix H: Proposed Drainage Strategy
- Appendix I: MicroDrainage Source Control Results
- Appendix J: Existing and Proposed Overland Flood Routes

Tables

Table 1: Flood Vulnerability Classification 3

Table 2: Flood Vulnerability and Flood Zone Compatibility Table 4

Table 3: EA Peak Rainfall Intensities 5

Table 4: Potential SuDS Mechanisms14

Table 5: Pollution Hazard Indices Associated with the Proposed Site Use14

Table 6: SuDS features Pollution Mitigation Indices15

Table 7: Half Drain times.....16

Table 8: Maintenance Requirements for on-site SuDS and drainage components19

Figures

Figure 1: Site location plan 6

1.0 INTRODUCTION

1.1. Brief

- 1.1.1. Campbell Reith Hill LLP (CampbellReith) have been commissioned by the Isles of Scilly Council (the Client) to provide a formal Flood Risk Assessment (FRA) and Drainage Strategy for the proposed development of 13 properties at Ennor Farm, Plot H3.
- 1.1.2. The proposed development is located in the south of the island of St Mary's, Isles of Scilly, north of Old Town and herein referred to as 'the site'. The site location is included in Appendix A.
- 1.1.3. This report has been produced to address the requirements of the National Planning Policy Framework (NPPF), issued February 2019 in relation to flood risk.
- 1.1.4. The Flood Risk Assessment aims to identify any potential flood risk sources or surface water management issues related to the proposed development site that may warrant further consideration. This assessment has been based on readily available existing information, including the Strategic Flood Risk Assessment (SFRA), Environment Agency (EA) Flood Maps and EA Standing Advice.
- 1.1.5. Further to identification of flood risks, the FRA outlines mitigation measures, where appropriate, in order for the proposed development to be made safe in terms of flood risk and in accordance with the NPPF and its supporting Technical Guidance.
- 1.1.6. The FRA has been prepared in support of an outline Planning Application for the above proposed development.

1.2. Aims and Objectives

- 1.2.1. This report has been prepared in accordance with the National Planning Policy Framework (NPPF)¹ and the accompanying Planning Practice Guidance (PPG)².
- 1.2.1. This FRA aims to identify the sources of flooding related to the site whilst demonstrating the feasibility of the development and how residual risks, if any, could be managed.
- 1.2.2. The objectives of this FRA are to:
 - Establish whether the site is likely to be affected by current or future flooding from any source;
 - Establish whether proposed future development will increase flood risk elsewhere;
 - Establish whether the measures proposed to deal with these effects and risks are appropriate;
 - Provide evidence to satisfy the Local Planning Authority's (LPA) Sequential Test if necessary;
 - Establish whether the Lead Local Flood Authority (LLFA) has records of flood risk on the site and within the surrounding area;
 - Present the findings of the assessment through a site constraints plan, if applicable;
 - Demonstrate surface water can be managed on site by preparing an illustrative surface water drainage strategy.

¹ Ministry of Housing, Communities & Local Government (2018) National Planning Policy Framework. Ref: ISBN 978-1-5286-0745-2.

² Department for Environment, Food & Rural Affairs and Environment Agency (2014) Planning Practice Guidance: Flooding and Coastal Change

2.0 PLANNING POLICY

2.1. National Planning Policy Framework (NPPF, February 2019)

- 2.1.1. The NPPF sets out the government's national planning policies to protect people and property from flooding from either now or in the future which all Local Planning Authorities (LPAs) are expected to follow. There are three main steps which should be followed to ensure that the risk of flooding from development is minimised; assess the flood risk, avoid flood risk and manage and mitigate the flood risk.
- 2.1.2. The NPPF recommends that new development adopts a sequential, flood risk-based approach to the location of development, taking into account climate change and its impact to or by current or future flood risk. Subject to the type of development proposed and the relative flood zone (Zone 1 being the least risk and Zone 3b the greatest risk) in which the development site is located, there can be a requirement for a sequential test and an exception test. The aim of the sequential test is to steer development to areas considered to be at the lowest risk from sources of flooding. If this is not possible then the exception test would be required. This would demonstrate that the development would provide wider sustainability benefits to the community that would outweigh the flood risk and that the development would be safe for its lifetime. This would also take into account the vulnerability of the users without increasing flood risk elsewhere and where possible reducing the current risk of flooding.
- 2.1.3. The NPPF states that *"Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:*
- a) Take account of advice from the lead local flood authority;*
 - b) Have appropriate proposed minimum operational standards;*
 - c) Have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and*
 - d) Where possible, provide multifunctional benefits."*

2.2. Flood Risk and Coastal Change Planning Practice Guidance (PPG)

- 2.2.1. A FRA is required when developments are:
- Located within a Flood Zone 2 or 3 including minor development and change of use;
 - More than 1 hectare (ha) in a Flood Zone 1;
 - Less than 1 ha in a Flood Zone 1, including a change of use in development type to a more vulnerable class (for example from commercial to residential), where they could be affected by sources of flooding other than rivers and sea (for example surface water, reservoirs); or
 - In an area within a Flood Zone 1 which has critical drainage problems as notified by the Environment Agency (EA).
- 2.2.2. Table 1 below (Table 2 of PPG) defines the various flood risk vulnerability classifications and identifies the different types of development within each category. Table 2 (Table 3 of PPG) on the following page summarises the flood risk vulnerability and compatibility in relation to the above flood zones.

Flood Risk Vulnerability Classification				
Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.	• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.	• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non-residential uses for health services, nurseries and educational establishment. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or shortlet caravans and camping, subject to a specific warning and evacuation plan.	• Police, ambulance and fire stations which are not required to be operational during flooding. • Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment works which do not need to remain operational during times of flood. • Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.	• Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel working. • Docks, marinas and wharves. • Navigation facilities. • Ministry of Defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

Table 1: Flood Vulnerability Classification

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test Required	✓	✓	✓
Zone 3a†	Exception Test required†	✗	Exception Test Required	✓	✓
Zone 3b*	Exception Test required*	✗	✗	✗	✓*

Table 2: Flood Vulnerability and Flood Zone Compatibility Table

Key ✓ Development is appropriate.

✗ Development should not be permitted.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

2.3. Roles and Responsibilities

2.3.1. The EA are a statutory consultee for planning applications. The EA are responsible for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea.

2.3.2. The roles of the LLFAs were established following the Flood Risk Regulations (2009) and the Flood and Water Management Act (2010). They are responsible for developing, maintaining and applying a strategy for local flood risk management in their areas and maintaining a register of flood risk assets. They also have lead responsibility for managing the risk of flooding from surface water, groundwater and ordinary watercourses.

2.4. Climate Change³

2.4.1. The NPPF sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change. The EA provide guidance on the climate change allowances which should be considered when assessing the future risk of flooding.

2.4.2. The EA has produced a range of climate change allowances to be applied to the peak river flow based upon the river basin district catchment. However, Due to no main rivers being present on the islands, no climate change has been accounted for in fluvial flood levels.

2.4.3. Climate change allowances should be applied to the peak rainfall intensities. Table 3 shows the anticipated change in extreme rainfall intensity in small and urban catchments. The central and upper allowances should be applied to assess the range of impact.

³ EA Climate Change Allowances: <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Applies Across All Of England	Total Potential Change Anticipated For The '2020s' (2015 to 2039)	Total Potential Change Anticipated For The '2050s' (2040 to 2069)	Total Potential Change Anticipated For The "2080s" (2070 to 2115)
Upper End	10%	20%	40%
Central	5%	10%	20%

Table 3: EA Peak Rainfall Intensities

- 2.4.4. For this development of a residential development with a design life of 100 years, an upper end figure of 40% is to be used in line with table 4.

3.0 EXISTING SITE

3.1. Site Location

- 3.1.1. The application site is located to the north of Old Town, at the southern end of the island of St Mary's. The site is centred on approximate National Grid Reference 91442 E, 10457 N. The nearest postcode reference to the site is TR21 ONL.
- 3.1.2. The site location plan is indicated in Figure 1 below and also in Appendix A.



Site Location JPG copyright: Contains Ordnance Survey data © Crown copyright and database right 2019.
© Crown copyright. All rights reserved. Ordnance Survey Licence number 100020027.

Figure 1: Site Location Plan

3.2. **Site Characterisation / Land Use**

- 3.2.1. A visit and inspection of the site was undertaken by a representative of CampbellReith on 19th December 2019. Photos from the site walk over are set out in Appendix B.
- 3.2.2. The site is broadly rectangular with an area of around 0.5ha. The site is a grass field that is currently used for grazing. An access to the field from Old Town Road is located in the south-eastern corner of the site and the access track continues along the southern boundary of the site providing access to a residential property in a converted barn. Low stone hedges (drystone) mark the boundaries of the site. The northern and western boundaries have semi-mature trees growing on them.
- 3.2.3. The eastern edge is bounded by Old Town Road, and the southern edge borders the car park and garden areas of the Old Town Inn. The western edge adjoins agricultural land, whilst the northern edge adjoins agricultural land and existing woodland. The north-west corner of the site is within 20m of the Lower Moors SSSI, a wetland area featuring reed beds, streams and ponds.

3.3. **Topography**

- 3.3.1. A topographical survey for the site was undertaken by Nationwide Surveys in April 2017. Refer to Appendix C for a copy of the topographical survey.
- 3.3.2. The survey indicates that the site falls gently towards the nature reserve in the north-west. Levels are indicated as 8.5m AOD in the south-west, 7.5m AOD in the south-east and 7.1m AOD in the north-east, with just 3.7m AOD in the north-west. This gives an average fall across the site of 1:27, with up to 1:17 along the western edge.

3.4. **Geology**

- 3.4.1. British Geological Survey records (BGS)⁴ show the site is underlain by Isles of Scilly Intrusion Granite bedrock formations. Superficial deposits in the area are likely to consist of head (clay, silt, sand and gravel), with alluvium potentially present at the north-western edge of the site associated with the marshland area.
- 3.4.2. Surface cover across the site is grassland, and therefore a thickness of topsoil is expected. Made Ground is not expected, except where associated with farming practices.
- 3.4.3. Five trial pits were dug as part of the ground investigation conducted by Wheal Jane Consultancy in January 2020. The results indicate the ground conditions to be as follows:
- Topsoil up to 0.5m-1.1m BGL
 - Loose orangeish brown clayey sand up to 1.5-2.0 m BGL
 - Dense orangeish grey clayey gravel up to 2.1-4.1m BGL
 - Bedrock struck below 2.1-4.1m BGL, trial pit terminated.
- 3.4.4. Refer to Appendix D for the trial pit records.

3.5. **Hydrology**

- 3.5.1. There are no ordinary watercourses or main rivers on the Isles of Scilly.

⁴ British Geological Survey - Geology of Britain Viewer. British Geological Survey. [Online] 1 June 2019. <http://mapapps.bgs.ac.uk/geologyofbritain/home.html>.

- 3.5.2. The nearest water feature to the site is the Lower Moors SSSI to the north-west, a marshland area consisting of low-lying land with springs, streams and reed-beds.

3.6. **Hydrogeology**

- 3.6.1. The superficial deposits and bedrock found beneath the site are both classed as a Highly Vulnerable Secondary Aquifer A. The superficial deposits are likely to have low permeability to the bedrock below, which itself will be dominated by low flows through fractures and weathered joints. It is likely groundwater storage is low and there is a possibility for saline intrusion, given the proximity to the sea.
- 3.6.2. The site is within a Zone II Source Protection Zone (outer zone), and approximately 200m from Zone I.
- 3.6.3. A number of groundwater abstractions are indicated on mapping as present along the northern and western edges of the site, including Castle Rocks Well and pumping station approximately 30m north-west of the site. Further historic wells are indicated to the north-east of the site.
- 3.6.4. The overall site hydrogeology is considered to have high sensitivity, given that underlying aquifers are both classified as secondary aquifer A, the site is within an outer source protection zone (Zone II), and there is likely to be very good hydraulic connectivity via shallow groundwater to the adjacent sensitive SSSI watercourse.

3.7. **Infiltration Testing**

- 3.7.1. Infiltration testing was undertaken in August 2020 by Wheal Jane Consultancy. 2 no trial pits were dug and infiltration tests in line with BRE365 were undertaken over a 24 hour period.
- 3.7.2. The results from the 2 no. locations show mixed results with zero infiltration witnessed in TP02 and fairly low results from TP01 with a value of 3.44×10^{-6} .
- 3.7.3. The results of the infiltration testing and a plan showing the locations of the excavations are shown in Appendix D.

3.8. **Public Sewers and Existing Site Drainage**

- 3.8.1. Public sewers on the island are owned by South West Water since the recent transfer from the Isles of Scilly Council. There are no existing foul or surface water sewers located within the site boundary.
- 3.8.2. A 150mm foul sewer runs along the eastern boundary, located within the middle of Old Town Road and flowing south towards Old town before discharging to the sewage treatment works to the west of the site.
- 3.8.3. The nearest public surface water sewers are located within Ennor Close and the gardens of Castle Cottages, the main properties in Old Town served by the system. Ennor Farm House directly opposite the site to the east is shown to utilise a soakaway.
- 3.8.4. An extract of South West Water's asset plans can be found in Appendix E.

4.0 EXISTING FLOOD RISKS TO THE SITE

4.1. Flood Hazards

- 4.1.1. In preparing the Flood Risk Assessment (FRA), different types of flooding mechanisms which may affect the site have been identified and assessed to determine whether the application site is located within an area which is at risk of flooding from one or more of the applicable mechanisms.
- 4.1.2. In assessing the flood hazards, the following documents were reviewed:
- i. The online Environment Agency (EA) Flood Maps
 - ii. EA Product 4 coastal modelling data
 - iii. Council of the Isles of Scilly Local Flood Risk Management Strategy 2017.
- 4.1.3. Refer to Appendix F for extracts of flood mapping data obtained from the online EA website and strategic flood risk assessment.

4.2. Fluvial Flood Risk

- 4.2.1. The EA classify fluvial flood risk as follows:
- VERY LOW – the area has a chance of fluvial flooding of less than 0.1%
 - LOW – the area has a chance of fluvial flooding of between 0.1% and 1%
 - MEDIUM – the area has a chance of fluvial flooding of between 1% and 3.3%
 - HIGH - the area has a chance of fluvial flooding of greater than 3.3%
- 4.2.2. The EA flood zone mapping data does not cover the Isles of Scilly; however, given there are no watercourses or main rivers on the islands, the site is at very low risk from fluvial flooding.

4.3. Tidal Flooding

- 4.3.1. The EA provide a Coastal Model for the Isles of Scilly, which indicates that at the current 1:200 and 1:1000 year events the site is not at risk from coastal flooding. Localised flooding 0.0-3.0m deep is present in the channels and wetlands of the Lower Moors and covers Old Town Road adjacent to Old Town Bay, but remains distant from the site boundary. The site can therefore be said to lie within Flood Zone 1.
- 4.3.2. With the effects of climate change considered flooding in the area is much more extensive, with much of the wetlands and surrounding area between Old Town Bay and Porth Mellor under 0.0-0.3m of water during the 1:200-year event. The site lies on the edge of this flooded area, with the north-west corner at levels below 4.6m AOD potentially at medium risk from flooding.

4.4. Surface Water/Overland Flow

- 4.4.1. The EA classify surface water flood risk as follows:
- VERY LOW – the area has a chance of surface water flooding of less than 0.1%
 - LOW – the area has a chance of surface water flooding of between 0.1% and 1%
 - MEDIUM – the area has a chance of surface water flooding of between 1% and 3.3%
 - HIGH - the area has a chance of surface water flooding of greater than 3.3%
- 4.4.2. EA surface water flood mapping data shows that the entirety of the site is at very low risk of flooding from surface water, although an area of low risk covers much of the Lower Moors SSSI.

- 4.4.3. The Local Flood Risk Management Strategy for the islands notes that during periods of heavy rain, runoff is fed into and held within the heathland areas, such as the Lower Moors SSSI near the site.
- 4.4.4. Previous storm events are noted as having flooded the perimeter of the Lower Moors when 'Tide Locking' occurs, a scenario where the high tide prevents the moors from draining normally. In these situations, surface water is likely to build up over the low-lying areas surrounding the moors, potentially covering parts of the site.
- 4.4.5. Other potential sources of surface water include the Castle Outcrop and the fields behind Old Town. Surface water is likely to drain through the site from these higher areas, to reach the low channels and pools of the moors.
- 4.5. **Groundwater Flood Risk**
- 4.5.1. Previous Envirocheck reports covering the Isles of Scilly indicate that part of the site is within an area with potential for groundwater flooding to occur at the surface, whilst a significant portion of the remainder has potential for groundwater flooding of property below ground level.
- 4.5.2. These observations are reinforced by the trial pit excavations undertaken by Wheal Jane Consultancy in January 2020, where groundwater was struck at depths between 3.2m and 0.7m BGL.
- 4.5.3. The high groundwater levels across the site are likely due to the site's proximity to the Lower Moors SSSI, and may constrain any development proposals.
- 4.6. **Flood Risk from Infrastructure Failure**
- 4.6.1. Since there are no reservoirs of sufficient size to pose a significant risk on the Isles of Scilly, the site is at very low risk of inundation following major reservoir failures.
- 4.6.2. Old Town has one of two formal piped foul drainage systems on the islands. However, there is no historical record of sewer flooding within Old Town.
- 4.7. **Climate Change Impact**
- 4.7.1. Climate change must be considered as an integral part of any site specific FRA in order to minimise the impact of future flooding and allow adequate consideration for resilience to alleviate the burden on potential future users of the proposed development.
- 4.7.2. Based on the information provided above, the effect of climate change will have a noticeable impact to some of the flood risk sources indicated, especially tidal flooding. Climate change will also increase the potential of flooding from surface water to occur. Refer to section 6 which identifies how this risk will be mitigated.

5.0 DEVELOPMENT PROPOSALS

5.1. **Proposed Scheme**

- 5.1.1. The proposed development comprises of 13 properties or 'self-build' serviced plots of 2, 3 or 4 beds, each with courtyard access and private gardens. Also included are areas of allotments and green space. Site proposals can be found in Appendix G.

5.2. **Vulnerability of Development**

- 5.2.1. Paragraph 66 of the PPG defines the different categories of development in terms of flood risk vulnerability. Residential development is classified as 'more vulnerable' in terms of flood risk.
- 5.2.2. This type of development is therefore suitable for Flood Zones 1 & 2 in line with table 1.

5.3. **Proposed Levels**

- 5.3.1. The overall proposed ground and finished floor levels will be maintained at or raised above the existing levels shown on the topographical survey in Appendix C, in order to minimise conflict with groundwater and reduce the impact of tidal flooding with a minimum finished floor level of 5.00m AOD which also allows for a suitable sustainable drainage system as further discussed in section 7.0.

5.4. **Sequential Testing**

- 5.4.1. As the site is currently considered to be in Flood Zone 1, there will be no requirement for a sequential test.

6.0 FLOOD RISK FROM THE DEVELOPMENT

6.1. Proposed Storm Water Management

- 6.1.1. Through development of the site, there is potential to alter the flood risks on and off the site. This section of the report will address how flood risk generated as a result of developing the site will be managed to ensure that flood risks are not increased on and off the site. This section will also address how surface water and the impacts of fluvial flood risks are to be managed.
- 6.1.2. The strategy for managing surface water drainage from the proposed scheme is a material consideration within the assessment of flood risk. The effect of development is generally to reduce the permeability of the site and change the site's ability to respond to rainfall events. The volume of water and peak runoff rate will increase, leading to an increase in the risk of flooding downstream of the site unless measures and management of surface water can be put in place.
- 6.1.3. The proposed drainage philosophy will, subject to detailed design, be based upon the following recommendations for the proposed development, in accordance with best practice documents described below:
- BS EN 752 Drain & Sewer systems outside buildings
 - BS EN 12056 Gravity drainage systems inside buildings
 - Building Regulations Part H Drainage and Waste disposal
 - Design and Construction Guidance.
- 6.1.4. In addition to the above the following Best Management Practices (BMPs) shall at detailed design stage have also been considered as part of the proposed surface water management strategy:
- CIRIA C753 the SuDS Manual
 - DEFRA/ EA Preliminary Rainfall Run Off Management for Developments (2004)
 - CIRIA Interim Code of Practice for Sustainable Drainage (2004)
 - Environment Agency Rainfall Run Off Management for Development Interim Procedure
 - CIRIA C539 Guidance on the Design of Rainwater Reuse Systems (2004)
 - CIRIA C635 Designing for Exceedance in Urban Drainage Good Practice (2006); and
 - CIRIA C737 Structural and Geotechnical design of Modular Geocellular Drainage Tanks (2016)
 - Isles of Scilly Local Flood Risk Management Strategy (2017)
- 6.1.5. In line with present legislation and best management drainage practices (BMPs) listed above, all new surface water drainage design shall aim to promote, where feasible, Sustainable Drainage Systems (SuDS). The SuDS features will be used to reduce discharge rates to meet the regulatory requirements.
- 6.1.6. The proposed design will also consider storm exceedance where overland flow is managed and directed away from buildings to soft landscaped areas providing a safe means of access and egress for the development.

6.2. Priority of Discharge

6.2.1. In line with the Surface water disposals hierarchy under paragraph 80 of the PPG, surface water should be managed by:

- 1.) Infiltration to the maximum extent that is practical – where it is safe and acceptable to do so
- 2.) Discharge to watercourses
- 3.) Discharge to surface water sewer, highway drain or another drainage system
- 4.) Discharge to combined sewers (last resort)

6.2.2. Infiltration tests have been undertaken on the site and the results have been inconsistent with mixed results, also given the high groundwater levels recorded, It is felt that infiltration is not a suitable method of discharge.

6.2.3. No notable watercourses or surface water sewers are located within close vicinity of the site as noted in section 2. The nearest adopted sewer is a foul sewer located within the adjacent highway, however is at a higher level than the site and thus will need to be pumped which is seen as non-viable for surface water discharge. This option has not been discussed with South West Water.

6.2.4. Initial discussions have been undertaken with the LLFA regarding the route of discharge, however no conclusions or confirmation was received.

6.3. SuDS Options Considered

The proposed drainage scheme will incorporate Sustainable Drainage Systems in order to reduce the risk of flooding upstream and downstream, as well as improving surface water quality from the proposed development site. The CIRIA Report C753 - The SuDS Manual defines the four pillars of SuDS Design as water quality, quantity, amenity and biodiversity. The SuDS strategy used aims to provide the best outcome possible for all four sections. Table 4 below indicates all possible SuDS options, and whether or not they are considered as appropriate for the site.

SuDS Group	Technique	Water quality	Water Quantity	Appropriate?	Comments
Detention	Subsurface storage	N	Y	Yes	Shallow tank suitable
	Detention basin	Y	Y	No	Not possible due to high groundwater
Wetland	Wetland/ Retention Pond	Y	Y	Yes	To be utilised in the low-lying north-west corner
Infiltration	Infiltration trench	Y	Y	No	Limited infiltration and few linear features
	Infiltration basin	Y	Y	No	Limited infiltration possible on site
	Soakaway	Y	Y	No	Limited infiltration possible on site
Filtration	Bio-retention/ filter strips	Y	Y	No	Limited infiltration possible on site
	Filter trench	Y	Y	No	Limited infiltration possible on site
Open Channels	Attenuation swale	Y	Y	No	Limited infiltration and few linear features
	Enhanced dry swale	Y	Y	No	Limited infiltration and few linear features
	Enhanced wet swale	Y	Y	No	Limited infiltration and few linear features

Source control	Green roof	Y	Y	No	Large pitched roofs, plots may be offered for self-build.
	Rainwater harvesting	Y	Y	No	Low flow and limited yield available from small number of properties
	Permeable pavement	Y	Y	Yes	Permeable Paving to be utilised to collect, attenuate and improve water quality.
Proprietary Treatment systems	Petrol Interceptor	Y	N	No	Permeable paving preferred.
Soft Landscaping	Grass and Trees	Y	Y	Yes	Soft landscaped areas are included as part of the scheme. These will help improve the quality of water discharged off site and enhance biodiversity

Table 4: Potential SuDS Mechanisms

6.3.1. After reviewing the SuDS Hierarchy as shown in Table 6, the most practicable options to incorporate were a combination of permeable paving, shallow underground tank and extensive soft landscaping such as natural wetlands.

6.3.2. The maintenance of SuDS is vital ensuring that they work as efficiently as they set out to do, and is discussed in Chapter 8.0.

6.4. Water Quality Control

6.4.1. The proposed site usage will result in a low pollution hazard index due to the site consisting mainly of residential roofs, and residential car parking/courtyard areas, as outlined in table 5 below (extracted from CIRIA C753 "The SuDS Manual", page 568, Table 26.2).

Land Use	Pollution Hazard Level	Pollution Hazard Indices		
		Total Suspended Solids (TSS)	Metals	Hydrocarbons
Residential Roofs	Very Low	0.2	0.2	0.05
Individual property driveways, residential car parks, low traffic roads (e.g. cul-de-sacs, homezones and general access roads) and non-residential car parking with infrequent changes i.e. < 300 traffic movements/day	Low	0.5	0.4	0.4

Table 5: Pollution Hazard Indices Associated with the Proposed Site Use

6.4.2. Water quality is to be addressed by the proposed permeable paving. All features will provide sufficient mitigation indices in order to remediate the pollution hazard discussed in paragraph 6.4.1, as outlined in table 6 below (extracted from CIRIA C753, page 569, Table 26.3).

Type of SuDS Component	Mitigation Indices		
	TSS	Metals	Hydrocarbons
Permeable Paving	0.7	0.6	0.7
Wetlands	0.8	0.8	0.8

Table 6: SuDS features Pollution Mitigation Indices

6.5. **Biodiversity and Amenity Value**

- 6.5.1. Opportunities for improving biodiversity and amenity value is enhanced through soft landscaping around the site. Locally appropriate planting will be incorporated in the low-lying north-west corner of the site to link the site with the nearby SSSI wetland, and allotments within the site will provide functional green space. Additional traditional hedgerows with the possibility for mature tree growth will provide natural screening as well.

6.6. **Proposed Strategy**

- 6.6.1. A copy of the preliminary drainage strategy for both surface and foul water disposals has been produced and is included in Appendix H.

6.7. **Storm Water**

- 6.7.1. As Discussed above in section 6.2, options for surface water discharge are very limited and thus it is proposed that all surface water flows from the development will be collected and discharged at 5l/s in line with standard recommendations to the overlying ground in the North West corner of the site to mimic the existing drainage situation.
- 6.7.2. The scheme will be designed for rainfall events up to and including the 1 in 100 year + 40% allowance for climate change.
- 6.7.3. All access roads with suitable gradients, courtyards and pedestrian footways within the site will be constructed as permeable pavement arrangements. Surface water runoff from the non-pervious Old Town Road and site access will also be channelled towards these permeable paved areas.
- 6.7.4. The permeable paving will be tanked and discharge via suitably sized carrier pipes and the shallow underground to the wetland area.
- 6.7.5. Rainwater runoff from property roofs will be collected by traditional downpipes, and be discharged either to the permeable paving areas or to the green space within site.
- 6.7.6. Based upon MicroDrainage source control calculations included in Appendix J, the volume of storage required is met by a combination of permeable paving and shallow underground tank.

6.8. **Half Drain Times**

- 6.8.1. When assessing attenuation storage, it is necessary to ensure the features drain to half their designed capacity within 24 hours. Half drain times for the permeable paving are shown below in table 7. The half drain times are based upon the 1:100-year rainfall event + 40% climate change allowance.

SuDS Feature	Required Storage Volume	Half Drain Time - Minutes
Underground Shallow Cellular Tank	120m ³	198
Total Storage	120m ³	

Table 7: Half Drain times.

- 6.8.2. In addition to the underground tank, permeable paving will also be provided which will provide additional storage, and during detailed design the tank may be reduced in size or discharge flow rate reduced.

6.9. **Fluvial Flooding**

- 6.9.1. There is very low risk of fluvial flooding on the site and therefore no mitigation measures are deemed necessary.

6.10. **Tidal Flooding**

- 6.10.1. Tidal flooding is one of the main sources of flooding within the site. To minimise the impact of inundation from tidal sources, the ground levels will be kept similar to the existing site. All plots and access/egress routes will be arranged above the 5.0m AOD flood level, whilst areas of the site more at risk of flooding will feature soft landscaping such as wetland areas and allotments.

6.11. **Surface Water/Overland Flow**

- 6.11.1. Part of the network design consideration must be given for a rainfall event in excess of the 1:100-year storm +40% climate change and failures or blockages within the surface water network. Surface water is likely to enter the site from Old Town Lane and the Old Town Inn car park/garden area. Existing flow routes are shown in Appendix K as collecting and channelling excess surface water towards the low-lying adjoining wetland to the north-west. The proposed flow routes, also in Appendix J, mimic these routes whilst leading surface water away from the proposed buildings.

6.12. **Groundwater Flooding**

- 6.12.1. It is indicated there is a potential for groundwater flooding at the surface in lower lying areas, and groundwater flooding to property below ground level across the site. Groundwater was also encountered between 3.8m and 0.7m BGL during the trial pit excavations.
- 6.12.2. This places a significant constraint on possible development on the site.
- 6.12.3. To reduce the risk of groundwater flooding to property, all plot finished floor levels must be kept above existing ground levels as well as above 5.0m AOD.
- 6.12.4. The main risk will be during the construction phase. Excavation work should be kept to a minimum, and the contractors are to provide method statements that allow for the mitigation of the risk of groundwater flooding during construction.

6.13. **Flood Risk from Infrastructure Failure**

- 6.13.1. The site is at very low risk of flooding from infrastructure failure and therefore no mitigation measures are deemed necessary.

7.0 FOUL WATER

- 7.1.1. It is proposed that all foul water drainage from the site will be conveyed via adequately sized below ground carrier pipes and pumped via an adopted pumping station and rising main to the existing foul sewer within Old Town Lane, to the east of the site.
- 7.1.2. The existing foul sewer in High Street is adopted by South West Water and consists of a 6" diameter pipe, flowing south towards the foul treatment works in Old Town.
- 7.1.3. In line with Building Regulations Part H, emergency storage will need to be provided to contain 24-hour foul inflow in the event of any disruption in service. Building Regulations Part H stipulates the minimum daily discharge of foul drainage is 150 litres per head per day. Based on 13 C2 dwellings within the proposed site, and assuming 3 people per dwelling, the emergency storage required at the pumping station will be 5.9m³.
- 7.1.4. Discussion is required with South West Water at detailed design stage to determine the details of the existing sewer and confirmation that there is sufficient capacity in the system.

8.0 IMPLEMENTATION, MAINTENANCE AND SUDS OWNERSHIP

8.1. Implementation

- 8.1.1. In order to ensure that the development has a properly functioning sustainable drainage system, the implementation of the different SuDS components must be considered prior to construction in order to best manage and reduce the risk of flooding during and after the construction phase.
- 8.1.2. In accordance with best practice, the drainage infrastructure, including all SuDS components, are to be in place prior to construction. The contractor is to have a surface water management scheme in place to ensure that surface water does not leave the site in an uncontrolled manner prior to the commissioning of the drainage system.
- 8.1.3. All SuDS components are to be installed with reference to and in accordance with the relevant product manuals and guides, to be obtained from the product manufacturers.

8.2. Maintenance

- 8.2.1. For the life-time of the proposed development, it is vital that the drainage systems on site operate at the required capacity at all times. In order to safeguard all components of the drainage networks, routine and regular maintenance should be carried out. In particular, the SuDS components on the site will need to be strictly monitored as per the below requirements.

Drainage Element	Maintenance Requirements	Maintenance Frequency
Permeable paving	Brushing of surface blocks. Inspect silt accumulation rates and relay laying course if filled with silts and toxins. Removal of weeds, remediate any rutting or broken blocks, replace lost jointing material.	Once every year , and after heavy rain and leaf fall. As required.
Wetlands	Remove litter and debris, cut grass, inspect vegetation and siltation, inlets, outlets, and banks Tidy dead growth, hand cut aquatic plants, remove 25% of vegetation Repair erosion and inlets/outlets, restock aquatic plants, aerate water	Once every month Once every year As required.
Flow Control	Check to ensure the HydroBrake is free from any significant debris. Ensure there are no other potential blockages within the manhole.	Once every 4 months , and after heavy rain. One inspection should be carried out at the end of Autumn, after leaf fall.

Attenuation Tank	Inspect and Identify any areas that are not operating correctly. If required, take remedial action. Check for any silt build up in the catchpits upstream and downstream of the tank. Tank should be cleaned as required.	Monthly for 3 months, then annually. Once every 4 months and must be cleaned regularly. One inspection should be carried out at the end of Autumn, after leaf fall
Roof Gutters	Visual inspections should record locations where leaves are prevalent and additional attention to cleaning is required at these locations.	Once every 3 months. One inspection should be carried out at the end of Autumn, after leaf fall.

Table 8: Maintenance Requirements for on-site SuDS and drainage components

- 8.2.2. In addition to these specific elements, there should be general inspections of all drainage elements at regular, 12 monthly intervals and after heavy rainfalls. All drainage components are to be replaced in line with the specified design life.
- 8.2.3. The overland flow paths should be maintained and remain unobstructed at all times. Any future development on site must be planned in accordance with the overland flood routes drawing included in Appendix J.

9.0 CONCLUSIONS AND RECOMMENDATIONS

- 9.1.1. CampbellReith have been commissioned by the Council of the Isles of Scilly to provide an FRA to support a planning application for the proposed Ennor Farm residential development, TR21 ONL.
- 9.1.2. The proposed development comprises 13 properties or 'self-build' serviced plots, with associated hard landscaping including vehicle access and parking areas, and soft landscaping including allotments and wetlands.
- 9.1.3. The site is located within Flood Zone 1 as shown on the Environment Agency coastal flooding mapping explained in Section 4.0 of this report. The site is also at a low risk of flooding from surface water, but relatively high risk from tidal and groundwater sources which will constrain the site with the arrangement and levels of plots and green spaces.
- 9.1.4. There will be adequate space on the site to contain storm water through a range of techniques including permeable paving, soakaways and a wetland area for the 1 in 100 year +40% climate change event. All surface water flows will be discharged to the ground or the existing surface water network present in Old Town.
- 9.1.5. Sustainable Drainage Systems (SuDS) will be introduced for the proposed development to attenuate surface water flows to the required rainfall events. In addition, the SuDS will also improve water quality for the car parking areas and wetlands will provide amenity and biodiversity value in line with the recommendations within the NPPF.
- 9.1.6. By adequately sizing the SuDS storage facilities, adequate measures will be provided to minimise flood risk on the site.
- 9.1.7. The proposed foul water drainage strategy will discharge into the existing sewer within Old Town Lane. Approval will need to be sought from the Council of the Isles of Scilly concerning capacity and discharge location in to the existing system.

Appendix A: Site Location Plan



Ennor Farm, St Mary's

Client: Council of Isle of Scilly

Figure 1:
Site Location Plan

Scale: 1:10000@A4
CampbellReith OS Copyright: © Crown copyright. All rights reserved. Licence number 100020027
Contains Ordnance Survey data © Crown copyright and database right 2020.
Job Number: 13394
Drawn by - Checked by: RP - AD
N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces\DTS (pdf in Outputs)
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces\DTS (pdf in Outputs)
Date (Revision History): 24/01/2020 (P1, First Issue, 24/01/20, RP)

CampbellReith
consulting engineers

LONDON 020 7340 1700 ☐ MANCHESTER 0161 819 3060
REDHILL 01737 784 500 ☒ BIRMINGHAM 01675 467 484
BRISTOL 0117 916 1066 ☐ DUBAI 00 971 4453 4735
www.campbellreith.com

Appendix B: Site Photographs



Photograph 1: Taken from entrance to site in SE corner, looking along track along southern boundary. Hedge in background is western boundary.



Photograph 2: Taken from entrance to site in SE corner, looking along eastern boundary. Hedge in background with mature trees is northern boundary. Mound of stone in right foreground covers soakaway feature.

Ennor Farm, St Mary's

Site Photographs

Client: Council of Isle of Scilly

1 - 2

Job Number: 13394
 Date: 24/01/2020
 Drawn by: RP
 Checked by: AD
 Drg No: 13394-CRH-XX-XX-FG-G-7004
 Status/Revision: P1
 File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
 Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
 consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
 REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
 BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 3: Taken from the middle of the southern boundary facing NW. Field in foreground well grazed. Note the site slopes down to corner with ivy clad trees on boundary. Land in NW lower lying and has rushes. Note overhead power lines with pole on western boundary.



Photograph 4: Taken from the middle of the southern boundary facing NE.

Ennor Farm, St Mary's

Site Photographs
3 - 4

Client: Council of Isle of Scilly

Job Number: 13394
Date: 24/01/2020
Drawn by: RP
Checked by: AD
Drg No: 13394-CRH-XX-XX-FG-G-7004
Status/Revision: P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 5: Taken from the middle of the southern boundary facing ENE - note detached house in background at higher level beyond site boundary and road. Blue plastic structure reportedly soakaway / cess pit from house.



Photograph 6: Taken from the middle of the southern boundary facing E. Note road beyond eastern boundary and more houses of Old Town.

Ennor Farm, St Mary's

Site Photographs
5 - 6

Client: Council of Isle of Scilly

Job Number: 13394
Date: 24/01/2020
Drawn by: RP
Checked by: AD
Drg No: 13394-CRH-XX-XX-FG-G-7004
Status/Revision: P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 7: Taken from the SW corner of the site facing E. Southern boundary on right and rear garden of adjacent restaurant / free house lies south of the site.



Photograph 8: Taken from the SW corner of the site facing N along western boundary. Land to the west used for grazing.

Ennor Farm, St Mary's

Site Photographs

Client: Council of Isle of Scilly

7 - 8

Job Number: 13394
 Date: 24/01/2020
 Drawn by: RP
 Checked by: AD
 Drg No: 13394-CRH-XX-XX-FG-G-7004
 Status/Revision: P1
 File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
 Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
 consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
 REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
 BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 9: Taken from the SW corner of the site facing SW, field with mixed storage, grazing and residential barn conversion. Note solar panels in background.



Photograph 10: Taken from the SW corner of the site facing W, more of field to west of site.

Ennor Farm, St Mary's

Site Photographs
9 - 10

Client: Council of Isle of Scilly

Job Number: 13394
Date: 24/01/2020
Drawn by: RP
Checked by: AD
Drg No: 13394-CRH-XX-XX-FG-G-7004
Status/Revision: P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 11: Taken from NW corner of the site facing ENE, trees along northern boundary. Note land to north at lower level (c.0.5m lower)



Photograph 12: Taken from the SW corner of the site facing N, small field immediately beyond, much standing water. Reeds of SSSI visible in background c.30m N

Ennor Farm, St Mary's

Site Photographs

Client: Council of Isle of Scilly

11 - 12

Job Number: 13394
 Date: 24/01/2020
 Drawn by: RP
 Checked by: AD
 Drg No: 13394-CRH-XX-XX-FG-G-7004
 Status/Revision: P1
 File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
 Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
 consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
 REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
 BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 13: Taken from the SW corner of the site facing NW, Reeds and SSSI in background c. 20m NW of site.



Photograph 14: Pump house, adjacent SW corner of site (to WSW).

Ennor Farm, St Mary's

Site Photographs
13 - 14

Client: Council of Isle of Scilly

Job Number: 13394
Date: 24/01/2020
Drawn by: RP
Checked by: AD
Drg No: 13394-CRH-XX-XX-FG-G-7004
Status/Revision: P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Revision History: P1, First Issue, 24/01/20, RP

CampbellReith
consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com



Photograph 15: Mound / structure reportedly old borehole / well next to pumphouse, adjacent SW corner of site (to WSW).



Photograph 16: Aerial photo of wider area.

Ennor Farm, St Mary's

Client: Council of Isle of Scilly

Site Photographs
15 - 16

Job Number: 13394
Date: 24/01/2020
Drawn by: RP
Checked by: AD
Drg No: 13394-CRH-XX-XX-FG-G-7004
Status/Revision: P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Revision History: P1, First Issue, 24/01/20, RP

© CampbellReith 2020

CampbellReith
consulting engineers

LONDON 020 7340 1700 • MANCHESTER 0161 819 3060
REDHILL 01737 784 500 • BIRMINGHAM 0121 766 8009
BRISTOL 0117 916 1066 • www.campbellreith.com

Appendix C: Topographical Survey

10500N

10500N

10450N

10450N

CONSTRUCTION AND GROUND FEATURES

- KERB LINE
- TARMAC/CONCRETE EDGE
- TRACK
- BANK
- WALL
- RETAINING WALL
- BUILDING
- TREE/HEDGE CANOPY LINE
- WARNINGS/STEPS
- SMALL STRUCTURES

SERVICES (LINE TYPES)

- OVERHEAD WIRE

FENCES

- POST AND CHAINLINK
- POST AND WIRE
- WOODEN FENCE

TREES

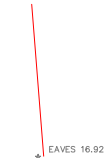
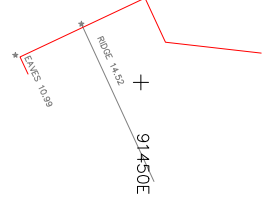
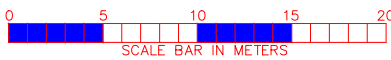
- BUSH
- EVERGREEN/FR
- PALM TREE
- DECIDUOUS

SERVICES (COVERS)

- GULLY DRAIN
- LAMP POST
- TELEGRAPHY POLE
- ELECTRICITY POLE
- GAS
- WATER
- SIGN POST
- MANHOLE TYPES
- ELECTRICITY
- TELEPHONE
- SURVEY STATION MARK
- STAY
- TRIAL/BORE HOLE
- CABLE TELEVISION

LEGEND

10400N



91500E

SHEET 1 OF 1

NATIONWIDE SURVEYS

BEECH MEWS
BEECH LANE
ST.AUSTELL
CORNWALL
PL25 4TE

TEL:01726 72980
EMAIL:nwsurveys@aol.com
WEB:nationwide-surveys.co.uk

SURVEY AT OLD TOWN 2 ST MARYS ISLES OF SCILLY	LEVELS RELATED TO GPS OSGB36 (v15) GRID AND LEVEL	
CLIENT DUCHY OF CORNWALL	SCALE 1 IN 200 @ A1	NORTH POINT
DATE 5TH APRIL 2017	DRAWING No DOC1701A	

10400N



Ennor Farm, St Mary's

Client: Council of Isle of Scilly

Lidar

Scale: 1:2500@A3
CampbellReith OS Copyright: © Crown copyright. All rights reserved. Licence number 100020027
Contains Ordnance Survey data © Crown copyright and database right 2020. Contains public sector information licensed under the Open Government Licence v3.0.
Job Number: 13394
Drawn by - Checked by: RP - AD
Drg No - Status/Revision: 13394-CRH-XX-XX-FG-G-7005 - P1
File location: N:\13250 - 13499\13394 B - Ennor Farm St Marys\Project_Workspaces (pdf in Outputs)
Date (Revision History): 25/02/2020 (P1, First Issue, 25/02/20, RP)

© Campbell Reith Hill LLP 2020

CampbellReith
consulting engineers

LONDON 020 7340 1700 ☐ MANCHESTER 0161 819 3060
REDHILL 01737 784 500 ☒ BIRMINGHAM 01675 467 484
BRISTOL 0117 916 1066 ☐ DUBAI 00 971 4453 4735
www.campbellreith.com

Appendix D: Trial Pit records

Soakaway Investigation Letter Report

In line with BRE Digest 365

Site Name: Ennor Farm

Job Number: 20664

Client: Council of the Isles of Scilly c/o Campbell Reith

Date: 06 August 2020

Introduction

- Wheal Jane Consultancy (WJC) was commissioned Campbell Reith on behalf of the council of the Isles of Scilly, to undertake a Soakaway Investigation at the site known as "Ennor Farm."
- This report has been prepared by Wheal Jane Consultancy solely for the benefit of Campbell Reith. It shall not be relied upon or transferred to any third party without the prior written authorisation of WJC.
- The aim of this investigation is to assess the site's drainage characteristic by completing soakaway tests in line with BRE 365.

Site Works

- An intrusive site investigation was conducted on Wednesday 5th August 2020. The investigation was overseen by a geotechnical engineer from Wheal Jane Consultancy.
- The formerly installed windowless sample borehole was located and the water level measured. Water was located at 1.20m and noted as being very silty.
- The site works can be summarised as follows;

Exploratory Hole Type	Exploratory Hole ID	Hole Depths (mBGL)
Trial Pit	TP01 – TP02	1.10m – 2.00m

- Exploratory hole logs are included as Appendix A.
- Trial Pit Photographs are included as Appendix B.
- A plan showing the location of the exploratory holes is provided as Figure 1.

Ground Conditions

Strata	Depth Encountered (mBGL)	Typical Thickness (m)	Brief Description & Comments
	From	To	
Topsoil	0.00	0.50	-
Weathered Granite	1.10 – 2.00	Unproven	Generally granular with high silt fraction.

Topsoil:	• Topsoil was encountered within both trial pits to depths of 0.50m.
Weathered Granite:	• Weathered granite was encountered in both trial pits to depths of up to 2.00m. In TP01 in the east of the site, the unit was encountered as SAND with a high silt fraction

Soakaway Investigation Letter Report

In line with BRE Digest 365

	and many cobbles and boulders of granite. The trial pit refused on granite boulders in this exploratory hole. • The granite exhibited a greater degree of weathering in TP02. Yellowish brown very silty sand was encountered from 1.20m.
--	---

Soakaway Test Results

Exploratory Hole	Test 1	Test 2	Test 3	Average
TP01	3.44 E-6*	×	×	3.44 E-6
TP02	Test Failed	×	×	

*Test extrapolated due to time constraints.

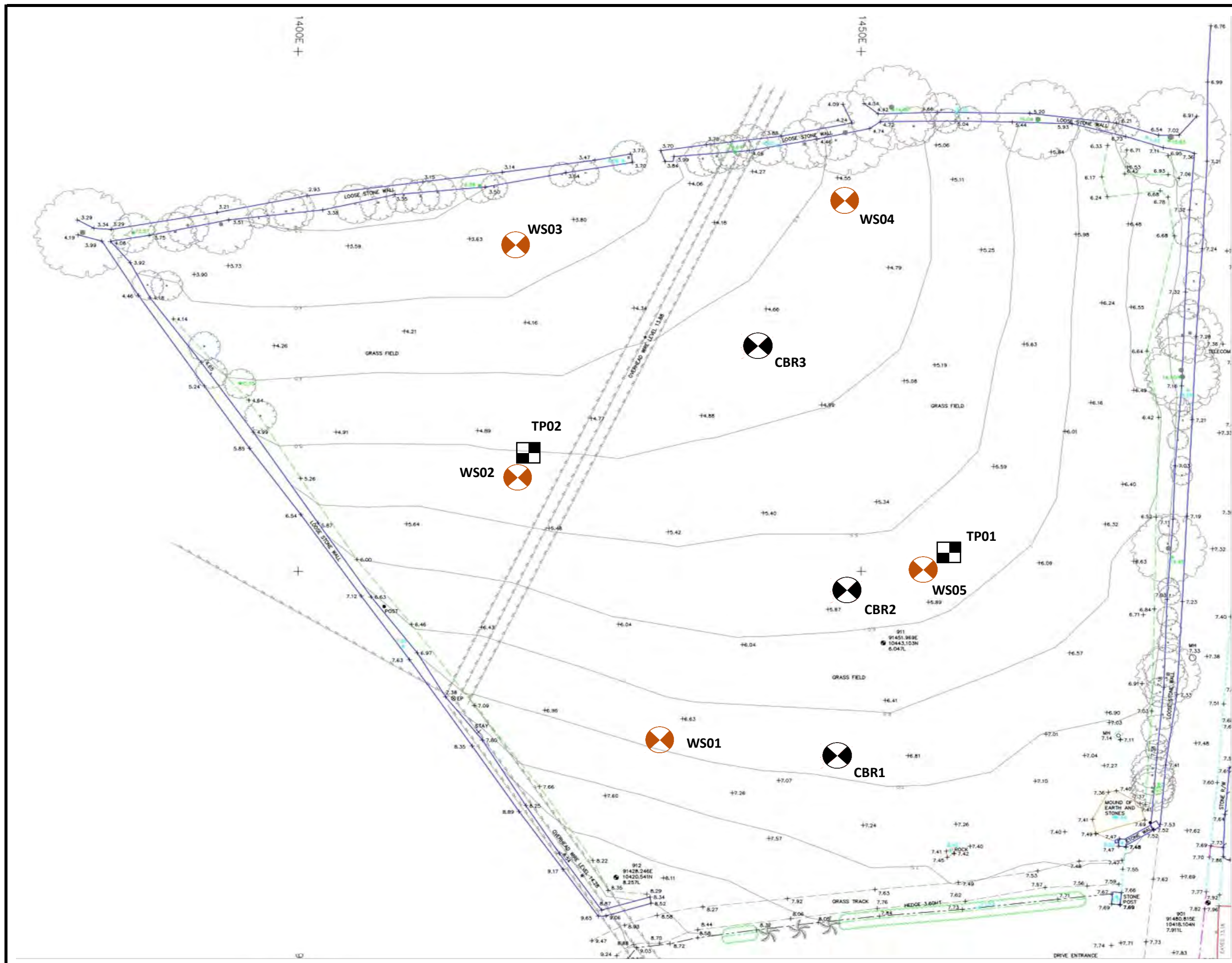
- Soakaway records are contained as Appendix C.

Soakaway Investigation Letter Report

In line with BRE Digest 365



Figures



Legend:

-  Windowless Sample Borehole
-  CBR completed using DCP method



Title:

Exploratory Hole Location Plan

Project:

Ennor Farm

20064

Client:

Council of Isles of Scilly c/o
Campbell Reith

Date: 06/08/2020

Scale: NTS

Drawn by: DJ

Revision: A

Figure: 1

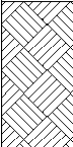
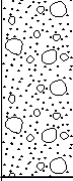
Soakaway Investigation Letter Report

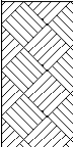
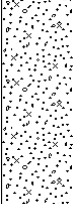
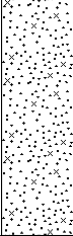
In line with BRE Digest 365



Appendix A

Exploratory Hole Logs

						Site Ennor Farm		Trial Pit Number TP01																																																													
Machine : 8 Tonne Method : Trial Pit		Dimensions 1.80m x 0.50m		Ground Level (mOD) 5.90		Client Council of the Isles of Scilly c/o Campbell Reith		Job Number 20664																																																													
		Location		Dates 05/08/2020		Engineer		Sheet 1/1																																																													
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water																																																													
						Grass over brown sandy gravelly TOPSOIL with frequent rootlets.																																																															
				5.40	0.50 (0.50)	Greyish brown very silty SAND with high cobble and boulder content. Cobbles and boulders are rounded to well rounded granite.																																																															
				4.80	1.10 (0.60)	Complete at 1.10m																																																															
Plan <table border="1"> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> </table>						.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	Remarks Infiltration Test complete from 0.53m. Groundwater not encountered. Trial pit refused at 1.10m.			
.	.	.	.	.	.	.	.	.	.																																																												
.	.	.	.	.	.	.	.	.	.																																																												
.	.	.	.	.	.	.	.	.	.																																																												
.	.	.	.	.	.	.	.	.	.																																																												
.	.	.	.	.	.	.	.	.	.																																																												
.	.	.	.	.	.	.	.	.	.																																																												
						Scale (approx) 1:25	Logged By DJ	Figure No. 20664.TP01																																																													

 				Site Ennor Farm		Trial Pit Number TP02																																																														
Machine : 8 Tonne Method : Trial Pit		Dimensions 2.30 x 0.50m		Ground Level (mOD) 5.00		Client Council of the Isles of Scilly c/o Campbell Reith		Job Number 20664																																																												
		Location		Dates 05/08/2020		Engineer		Sheet 1/1																																																												
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water																																																												
						Grass over brown sandy gravelly TOPSOIL with frequent rootlets. (0.50)																																																														
				4.50	0.50	Greyish brown very silty slightly gravelly SAND. Gravel is rounded, fine to coarse granite. (0.70)																																																														
				3.80	1.20	Light yellowish brown very silty SAND. (0.80)																																																														
				3.00	2.00	Complete at 2.00m																																																														
Plan <table border="1"> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> <tr><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td><td>.</td></tr> </table>						.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	Remarks Trial pit terminated at 2.00m. Groundwater not encountered Infiltration Test completed from 1.08m.		
.	.	.	.	.	.	.	.	.	.																																																											
.	.	.	.	.	.	.	.	.	.																																																											
.	.	.	.	.	.	.	.	.	.																																																											
.	.	.	.	.	.	.	.	.	.																																																											
.	.	.	.	.	.	.	.	.	.																																																											
.	.	.	.	.	.	.	.	.	.																																																											
						Scale (approx) 1:25	Logged By DJ	Figure No. 20664.TP02																																																												

Soakaway Investigation Letter Report

In line with BRE Digest 365



Appendix B

Trial Pit Photographs



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref:

20064



TP01 Before



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref:

20064



TP01 Pit



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref: 20064



TP01 Spoil & Reinstatement



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref:

20064



TP02 Before



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref:

20064



TP02 Pit



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref:

20064



TP02 Pit & Spoil



Title: Site Photographs

Project: Ennor Farm

Client: IOS Council c/o Campbell Reith

Report Title: Infiltration Testing

Date: 06/08/2020

Ref: 20064



TP02 Reinstatement

Soakaway Investigation Letter Report

In line with BRE Digest 365



Appendix C

Soakaway Records

Site : Ennor Farm

Client : Council of the Isles of Scilly c/o Campbell Reith

Engineer :

Job Number
20664

Sheet
1 / 2

Location	Date	Level	Location
TP01	05/08/2020	5.90 mOD	1

Pit Width (m)	0.50
Pit Depth (m)	1.10
Pit Length (m)	1.80

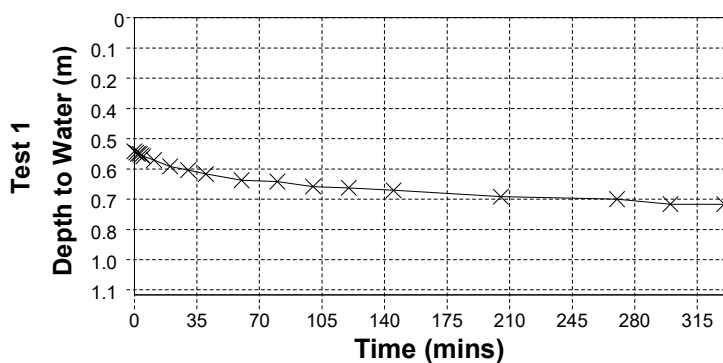
Soil type at test level	Silty SAND with cobbles and boulders.
Groundwater	None
Drain discharge depth	Unknown
Sidewall stability	Stable
Stone filled or open pit	Open pit

	1
Effective depth (m)	0.57
Volume outflowing between 75% & 25% (m3)	0.26
Mean surface area through which outflow occurs (m2)	2.21
Time for outflow between 75% & 25% (min)	562.00
SOIL INFILTRATION RATE (ms-1), f	3.44E-6

Remarks

Results extrapolated due to time constraints.

Elapsed time (mins)	Depth to Water Test 1
0	0.53
1	0.535
2	0.54
3	0.54
4	0.545
5	0.55
11	0.565
20	0.59
30	0.605
40	0.62
60	0.645
80	0.65
100	0.67
120	0.675
145	0.685
205	0.71
270	0.72
300	0.74
330	0.74



Soakaway Test (BRE Digest 365)

Site : Ennor Farm

Client : Council of the Isles of Scilly c/o Campbell Reith

Engineer :

Job Number

20664

Sheet

2 / 2

Location	Date	Level	Location
TP02	05/08/2020	5.00 mOD	1

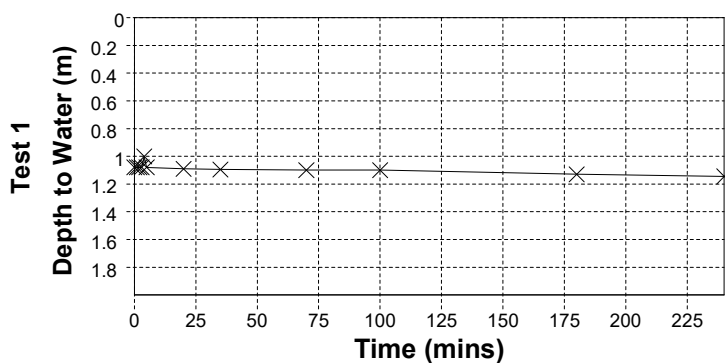
Pit Width (m)	0.50
Pit Depth (m)	2.00
Pit Length (m)	2.30

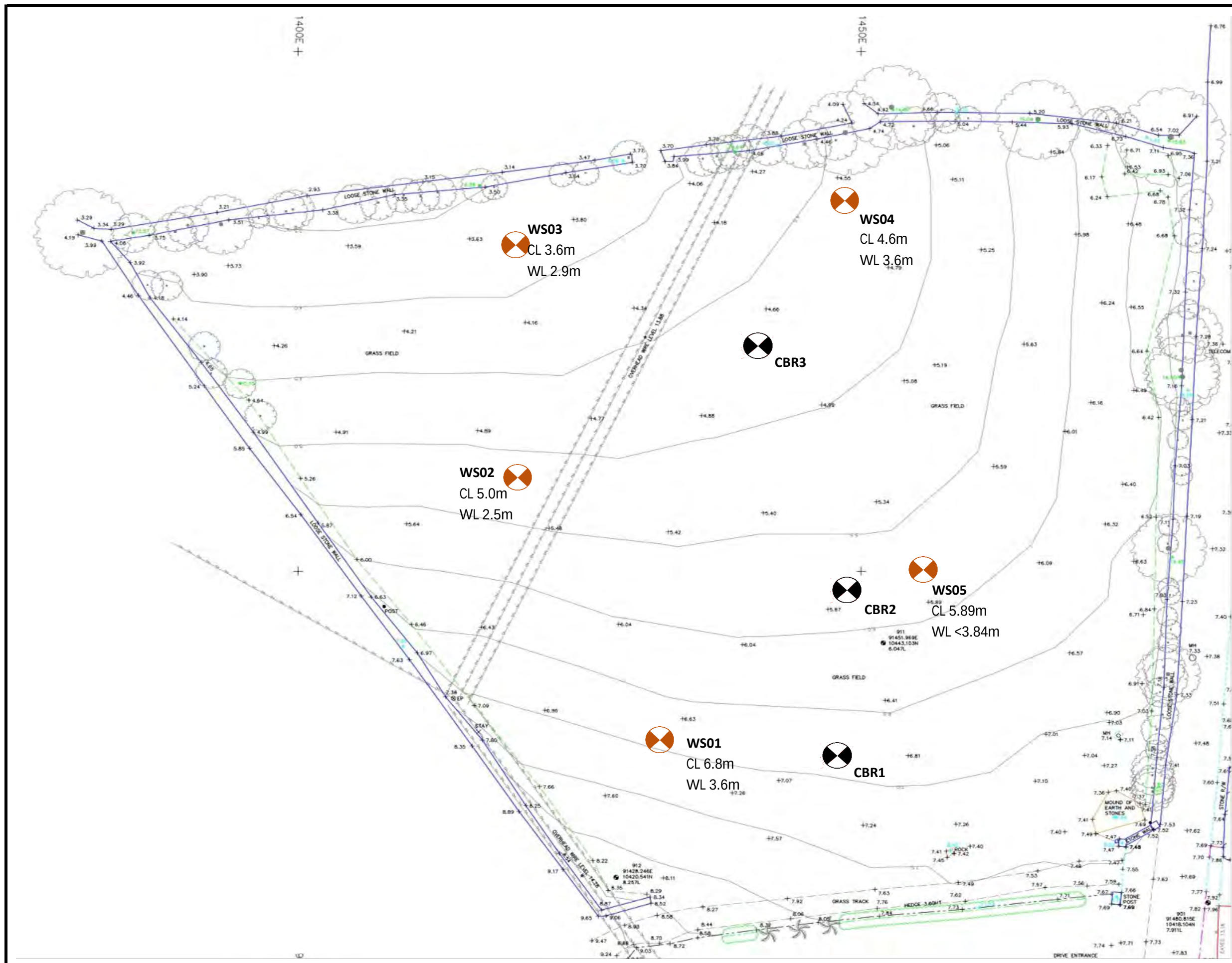
Soil type at test level	Silty SAND
Groundwater	None
Drain discharge depth	Unknown
Sidewall stability	Stable
Stone filled or open pit	Open pit

	1
Effective depth (m)	0.92
Volume outflowing between 75% & 25% (m3)	
Mean surface area through which outflow occurs (m2)	
Time for outflow between 75% & 25% (min)	
SOIL INFILTRATION RATE (ms-1), f	Test Failed

Remarks

Elapsed time (mins)	Depth to Water Test 1
0	1.08
1	1.08
2	1.08
3	1.08
4	1.00
5	1.08
20	1.09
35	1.095
70	1.10
100	1.10
180	1.13
240	1.145





Legend:

-  Windowless Sample Borehole
-  CBR completed using DCP method



Title:

Exploratory Hole Location Plan

Project:

Ennor Farm

19937C

Client:

Council of Isles of Scilly c/o
Campbell Reith

Date: 24/01/2020

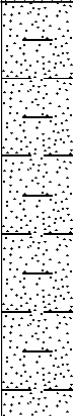
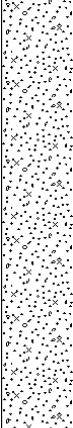
Scale: NTS

Drawn by: BH

Revision: A

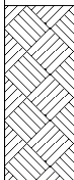
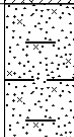
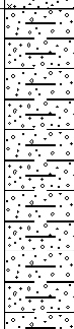
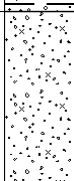
Figure: 3.1

Excavation Method Drive-in Windowless Sampler.	Dimensions	Ground Level (mOD) 6.80	Client Council of the Isles of Scilly c/o Campbell Reith	Job Number 19937C
	Location Ennor Farm	Dates 11/12/2019	Engineer Wheal Jane Consultancy	Sheet 1/2

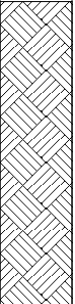
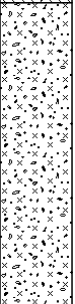
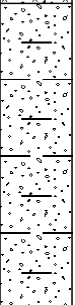
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	ES1				(0.68)	Grass over dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse.		
1.00-1.45 1.00	SPT N=2 ES2		1, 1/0, 1, 0, 1	6.12	0.68	Very loose orangish brown clayey, fine to coarse SAND.		
1.20	D3				(1.12)			
2.00-2.45 2.00-3.00	SPT N=7 B4		1, 2/1, 2, 2, 2	5.00	1.80 (0.20)	Soft orangish brown sandy, gravelly CLAY. Gravel is angular to subangular, fine to coarse of granite. Sand is fine to coarse.		
				4.80	2.00	Loose to very dense orangish grey silty, gravelly fine to coarse SAND. Gravel is angular to subangular, fine to coarse of granite.		
3.00-3.45	SPT N=17		1, 3/4, 3, 5, 5		(2.05)			
			Water strike(1) at 3.20m.					
3.60-4.05	SPT N=50		10, 50/50					

Remarks Hole terminated due to encountering bedrock. Samples damp from 3.20m.	Scale (approx) 1:20	Logged By BH
Figure No. 19937C.WS01		

						Site Isles of Scilly, Ennor Farm		Number WS01	
Excavation Method Drive-in Windowless Sampler.		Dimensions		Ground Level (mOD) 6.80		Client Council of the Isles of Scilly c/o Campbell Reith		Job Number 19937C	
		Location Ennor Farm		Dates 11/12/2019		Engineer Wheal Jane Consultancy		Sheet 2/2	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description		Legend	Water
				2.75	4.05	Complete at 4.05m			
Remarks Hole terminated due to encountering bedrock. Samples damp from 3.20m.						Scale (approx) 1:20		Logged By BH	
						Figure No. 19937C.WS01			

				Site Isles of Scilly, Ennor Farm		Number WS02			
Excavation Method Drive-in Windowless Sampler.		Dimensions		Ground Level (mOD) 5.00		Client Council of the Isles of Scilly c/o Campbell Reith		Job Number 19937C	
		Location Ennor Farm		Dates 11/12/2019		Engineer Wheal Jane Consultancy		Sheet 1/1	
Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	
0.40	ES1				(0.50)	Grass over dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse.			
				4.50	0.50	Loose dark brown very silty, clayey fine to coarse SAND.			
0.90	ES2				(0.60)				
1.00-1.45	SPT N=10		1,2/2,3,3,2						
				3.90	1.10	Firm orangish brown sandy, gravelly CLAY. Gravel is angular to subangular, fine to coarse of granite. Sand is fine to coarse.			
1.60	D3				(0.90)				
2.00-2.45	SPT N=11		1,2/2,3,3,3	3.00	2.00	Medium to very dense orangish grey, silty, sandy angular to subangular, fine to coarse GRAVEL of granite. Sand is fine to coarse.			
2.00-3.00	B4								
			Water strike(1) at 2.50m.		(1.45)				
3.00-3.45	SPT N=81		10,11/10,14,21,36						
				1.55	3.45	Complete at 3.45m			
Remarks Groundwater encountered at 2.50m. Hole terminated due to encountering bedrock.							Scale (approx) 1:20	Logged By BH	
							Figure No. 19937C.WS02		

Excavation Method Drive-in Windowless Sampler	Dimensions	Ground Level (mOD) 3.60	Client Council of the Isles of Scilly c/o Campbell Reith	Job Number 19937C
	Location Ennor Farm	Dates 11/12/2019	Engineer Wheal Jane Consultancy	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water	Instr
0.20	ES1				(0.80)	Grass over dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse.			
0.70-3.35	WA2		Water strike(1) at 0.70m.	2.80	0.80	Soft orangish grey gravelly, sandy SILT. Gravel is angular to subangular, fine to coarse of granite. Sand is medium to coarse.		▽1	
0.80-1.60	B3				(0.80)				
1.00-1.45	SPT N=8		1,2/2,2,2,2		1.60	Loose to very dense light brown clayey, sandy angular to subangular, fine to coarse GRAVEL of granite. Sand is fine to coarse.			
1.70	ES4				(1.75)				
2.00-2.45	SPT N=7		1,1/1,2,2,2		3.35	Complete at 3.35m			
2.90-3.35	SPT N=69		8,11/14,16,18,21	0.25					

Remarks

Groundwater encountered at 0.70m.
Water sample taken.
Installed for Gas/Groundwater Monitoring. 0.00m-0.60m plain. 0.60m - 2.60m slotted.
Hole terminated due to encountering bedrock.
Hole partially collapsed prior to installation.

Scale (approx)

1:20

Logged By

BH

Figure No.

19937C.WS03

Excavation Method
Drive-in Windowless Sampler.

Dimensions

Ground Level (mOD)
4.60

Client
Council of the Isles of Scilly c/o Campbell Reith

Job Number
19937C

Location
Ennor Farm

Dates
11/12/2019

Engineer
Wheal Jane Consultancy

Sheet
1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.60	ES1			3.90	(0.70)	Grass over dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse.		
1.00-2.00 1.00-1.45	B2 SPT N=8		Water strike(1) at 1.00m. 2,2/2,2,2,2		0.70	Loose to very dense orangish grey silty, very gravelly, fine to coarse SAND. Gravel is angular to subangular, fine to coarse of granite.		▽1
1.50	ES3							
2.00-2.45	SPT N=4		1,2/1,1,1,1		(2.75)			
3.00-3.45	SPT N=82		7,14/12,16,20,34	1.15	3.45	Complete at 3.45m		

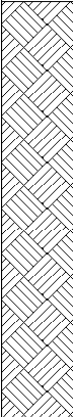
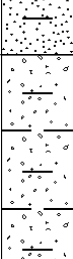
Remarks
Groundwater encountered at 1.00m.
Hole terminated due to encountering bedrock.

Scale (approx)
1:20

Logged By
BH

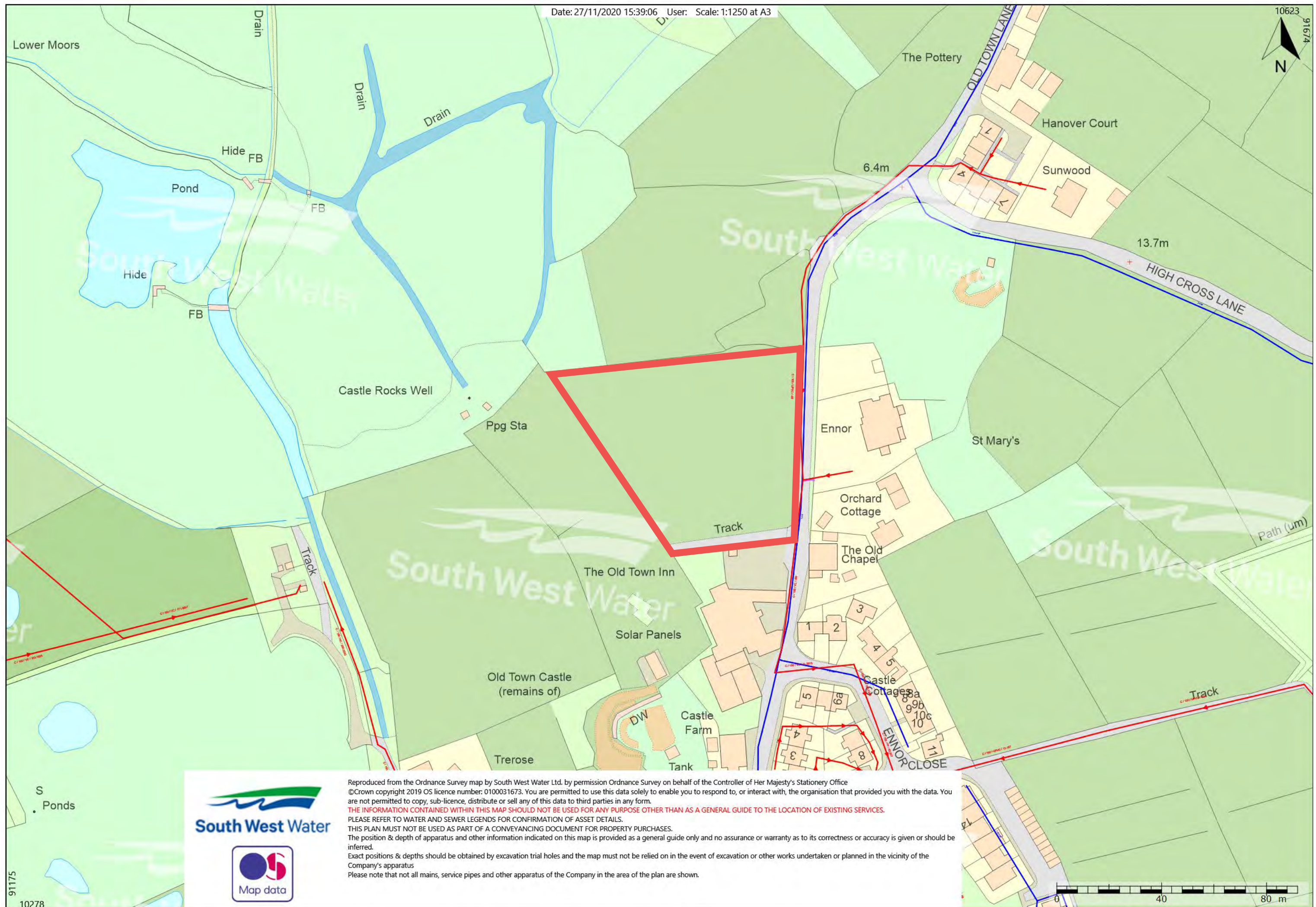
Figure No.
19937C.WS04

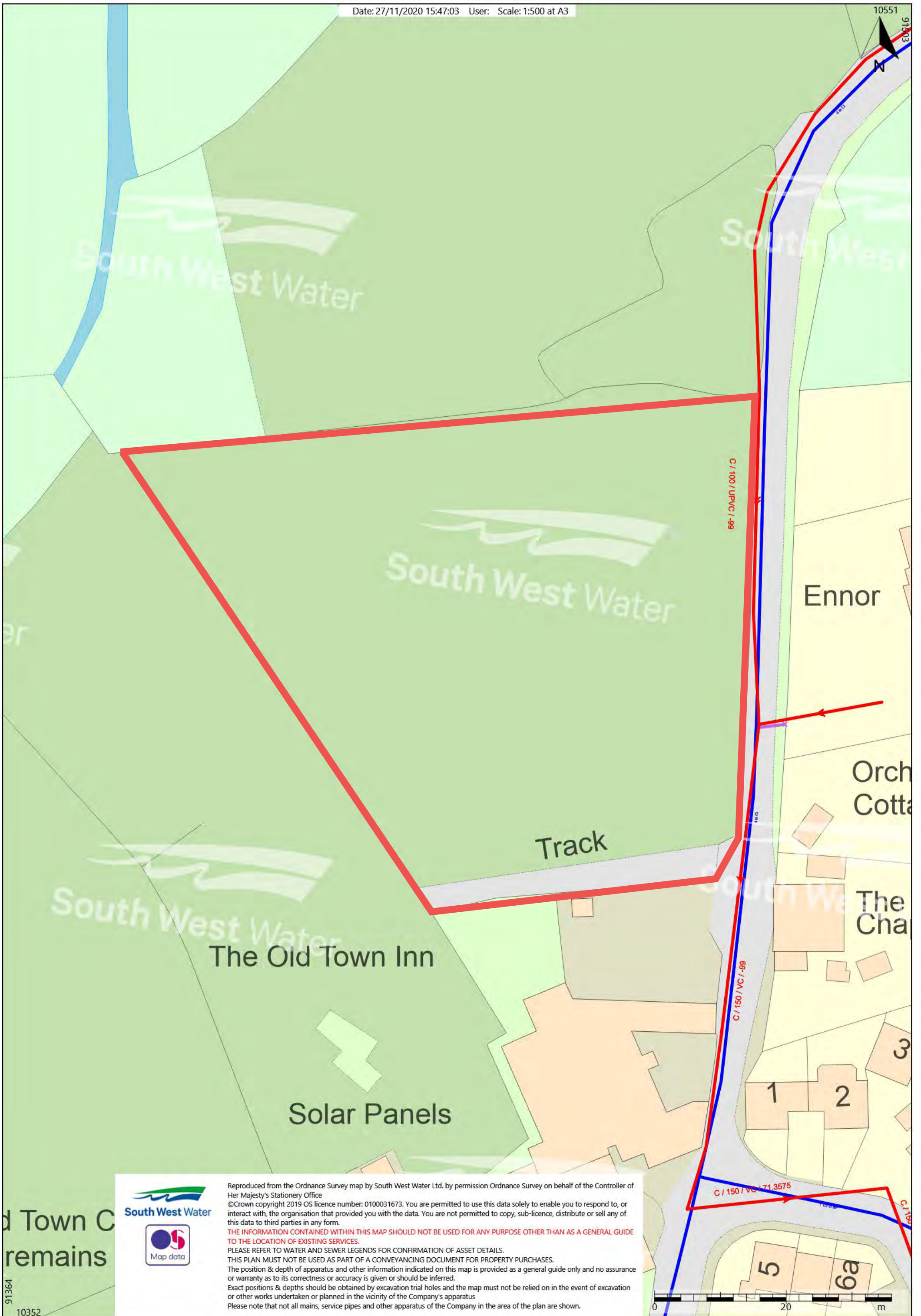
Excavation Method Drive-in Windowless Sampler	Dimensions	Ground Level (mOD) 5.89	Client Council of the Isles of Scilly c/o Campbell Reith	Job Number 19937C
	Location Ennor Farm	Dates 11/12/2019	Engineer Wheal Jane Consultancy	Sheet 1/1

Depth (m)	Sample / Tests	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	Description	Legend	Water
0.50	ES1				(1.10)	Grass over dark brown slightly clayey, sandy TOPSOIL. Sand is fine to coarse.		
1.00-1.45 1.00	SPT N=8 ES2		1, 1/1, 2, 1, 4	4.79	1.10 (0.40)	Loose orangish brown clayey, fine to coarse SAND.		
1.40	D3			4.39	1.50	Very dense orangish grey clayey, angular to subangular, fine to coarse GRAVEL of granite.		
1.60-2.05	SPT N=78		1, 12/14, 9, 17, 38	3.84	2.05	Complete at 2.05m		

Remarks No groundwater encountered. Hole terminated due to encountering bedrock.	Scale (approx) 1:20	Logged By BH
Figure No. 19937C.WS05		

Appendix E: South West Water Asset Plans





Reproduced from the Ordnance Survey map by South West Water Ltd. by permission Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office
©Crown copyright 2019 OS licence number: 0100031673. You are permitted to use this data solely to enable you to respond to, or interact with, the organisation that provided you with the data. You are not permitted to copy, sub-licence, distribute or sell any of this data to third parties in any form.

THE INFORMATION CONTAINED WITHIN THIS MAP SHOULD NOT BE USED FOR ANY PURPOSE OTHER THAN AS A GENERAL GUIDE TO THE LOCATION OF EXISTING SERVICES.

PLEASE REFER TO WATER AND SEWER LEGENDS FOR CONFIRMATION OF ASSET DETAILS.

THIS PLAN MUST NOT BE USED AS PART OF A CONVEYANCING DOCUMENT FOR PROPERTY PURCHASES.

The position & depth of apparatus and other information indicated on this map is provided as a general guide only and no assurance or warranty as to its correctness or accuracy is given or should be inferred.

Exact positions & depths should be obtained by excavation trial holes and the map must not be relied on in the event of excavation or other works undertaken or planned in the vicinity of the Company's apparatus

Please note that not all mains, service pipes and other apparatus of the Company in the area of the plan are shown.

Appendix F: Flood Maps

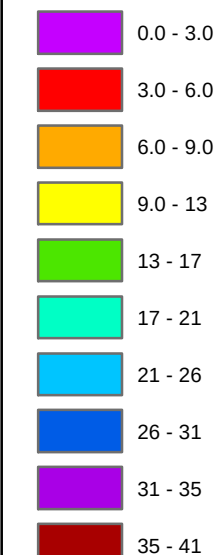
ENQ20/DCIS/162188 - Depth Map undefended 1 in 200 year taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

St Marys Undef 1 in 200 year - depth
metres



This map displays the depths (m) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.



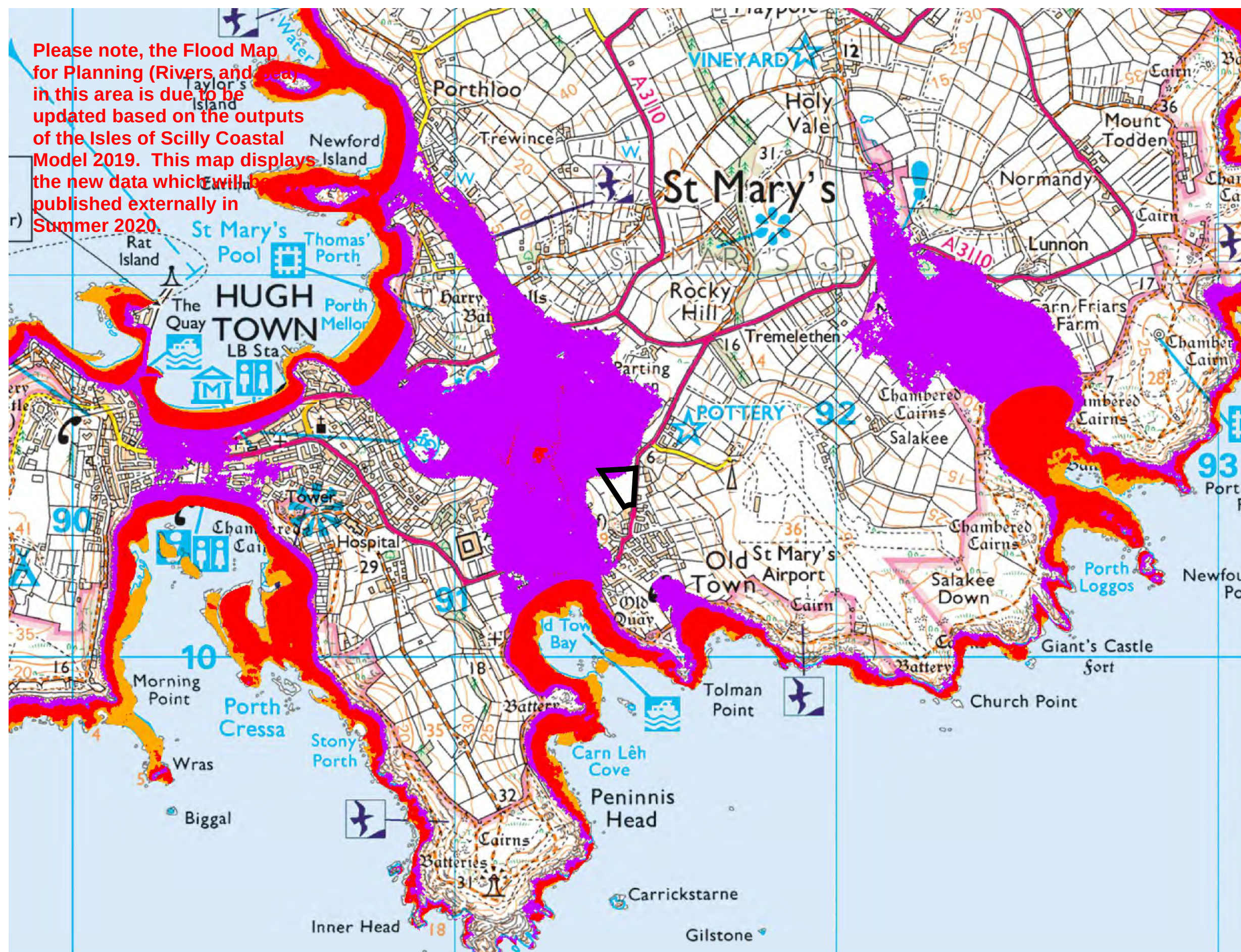
Site Boundary

1:10,000 Correct as of the
25th February 2020

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

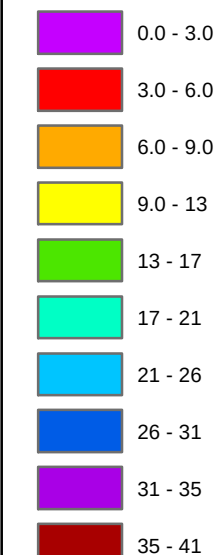
ENQ20/DCIS/162188 - Depth Map undefended 1 in 200 year + cc taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

St Marys Undef 1 in 200 year+cc - Depth
metres



This map displays the depths (m) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

Climate change scenarios
To calculate the impact of climate change on wave overtopping discharge rates, changes were applied to the water level, wind speeds and wave heights. For more information, please see the attached caveat.



Site Boundary

1:10,000 Correct as of the
25th February 2020

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

ENQ20/DCIS/162188 - Depth Map undefended 1 in 1000 year taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

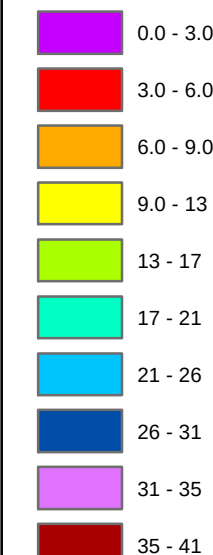
Please note this map is intended only as a guide - it is not accurate at individual property level

Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.



Legend

St Marys Undef 1 in 1000 year - depth metres



This map displays the depths (m) across the site for a 1 in 1000 year (0.1% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.



Site Boundary

1:10,000 Correct as of the 25th February 2020

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

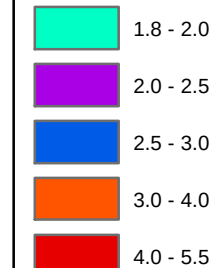
ENQ20/DCIS/162188 - Head of Water Map undefended 1 in 200 year taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

St Marys Undef 1 in 200 year - head of water
mAO



Head of Water
This map displays the head of water (mAO) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.



Site Boundary

1:10,000 Correct as of the 25th February 2020 

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

ENQ20/DCIS/162188 - Head of Water Map undefended 1 in 200 year+cc taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

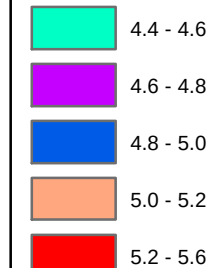
Please note this map is intended only as a guide - it is not accurate at individual property level



Please note, the Flood Map for Planning (Rivers and Sea) in this area is due to be updated based on the outputs of the Isles of Scilly Coastal Model 2019. This map displays the new data which will be published externally in Summer 2020.

Legend

St Marys Undef 1 in 200 year+cc - head of water
mAO



Head of Water
This map displays the head of water (mAO) across the site for a 1 in 200 year (0.5% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.

Climate change scenarios
To calculate the impact of climate change on wave overtopping discharge rates, changes were applied to the water level, wind speeds and wave heights. For more information, please see the attached caveat.



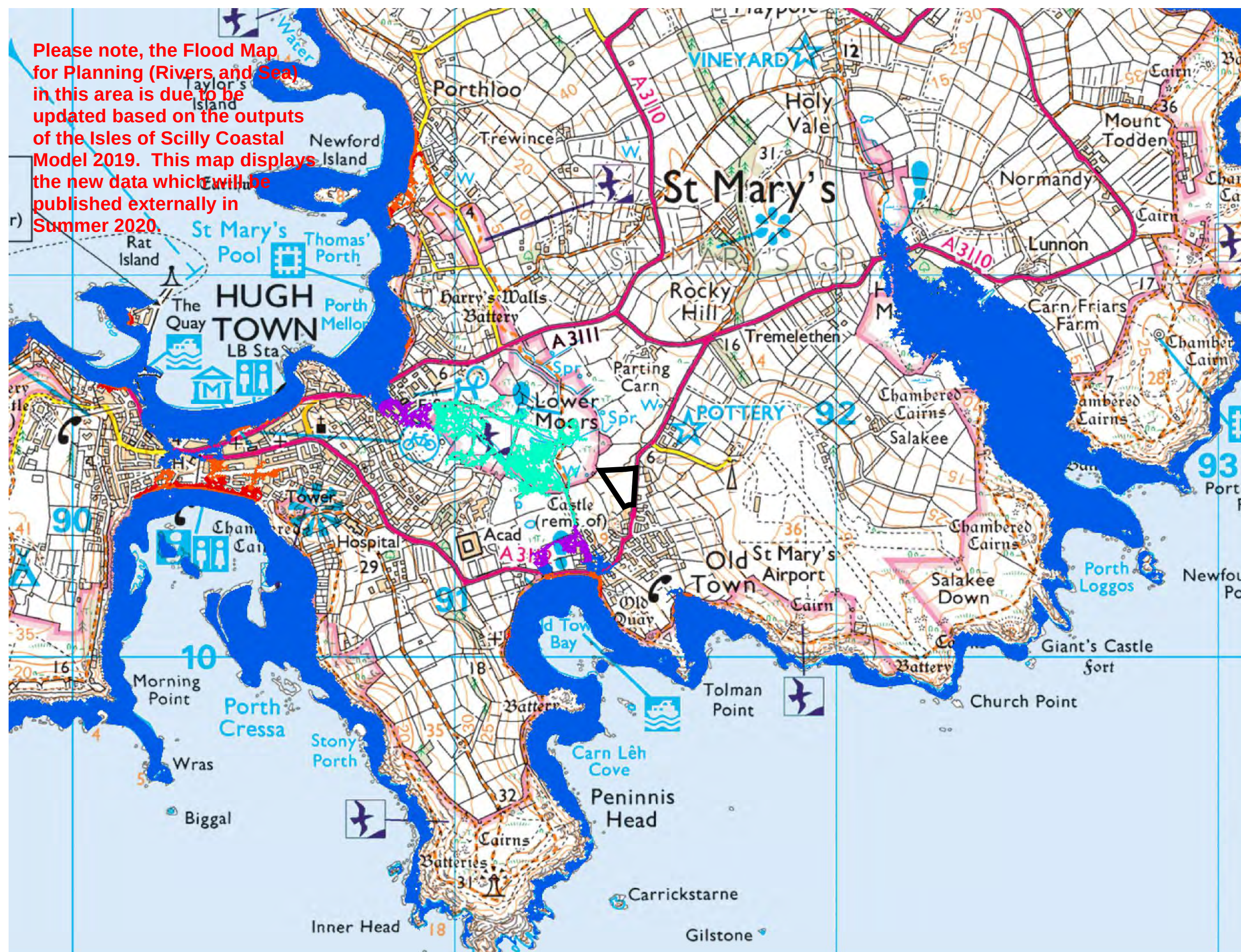
Site Boundary

1:10,000 Correct as of the 25th February 2020 

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

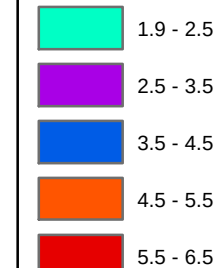
ENQ20/DCIS/162188 - Head of Water Map undefended 1 in 1000 year taken from the Isles of Scilly Coastal Model 2019 centred on St Mary's, Isles of Scilly

Please note this map is intended only as a guide - it is not accurate at individual property level



Legend

St Marys Undef 1 in 1000 year - head of water
mAOd



Head of Water
This map displays the head of water (mAOd) across the site for a 1 in 1000 year (0.1% AEP) event, taken from the Isles of Scilly Coastal Model 2019 and includes an allowance for wave overtopping.



Site Boundary

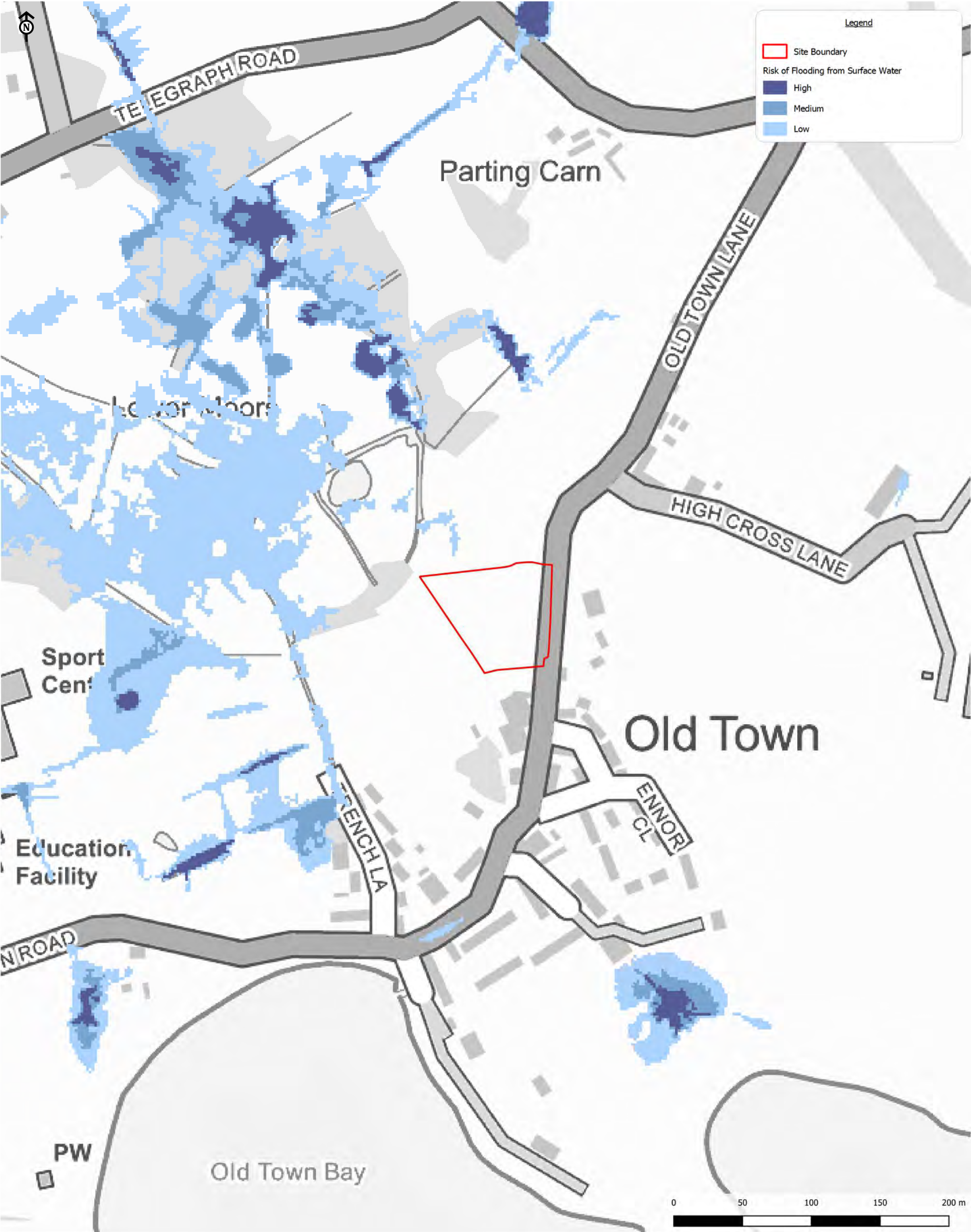
1:10,000 Correct as of the 25th February 2020

© Environment Agency copyright and / or database rights 2020. All rights reserved.
© Crown copyright and database rights 2020. All rights reserved.
Ordnance Survey licence number 100024198, 2020.

Isles of Scilly Coastal Model (2019)

We have provided data from the Isles of Scilly Coastal Model, 2019. Please consider the following information when using this model data:

- This is coastal model, and does not consider the risk of flooding from other source, including fluvial or surface water flooding.
- Model scenarios were completed with increases to the still water levels, wind speeds and wave heights to represent the impacts of climate change.
- The maps and digital data supplied should be considered only a summary of the conclusions of the study. It will be necessary to collect more detailed topographic information for particular sites where development is proposed and undertake a more detailed site-specific hydrological and hydraulic analysis for the location using guidance from the National Planning Policy Framework (NPPF)
- In this commission the focus has been on flooding from the sea rather than from fluvial sources. It is important that consideration is given to fluvial flooding for any development sites if appropriate. The impact of combined fluvial and tidal events should be examined to understand the impact that this has upon flood depth extent and the duration of inundation
- Any assessment of Flood Risk undertaken must be appropriate for the decisions that need to be based upon it, consider the risks and also take into account any limitations of the data used.
- Please be aware that the Environment Agency does not guarantee that this data is suitable for your purposes.



Ennor Farm, St Mary's
Client: Council of Isle of Scilly

Surface Water Flood Risk

Appendix G: Development Proposals



PLOT	ILLUSTRATIVE HOUSETYPE	NUMBER OF BEDS	*SEMI/ DETACHED
01	TYPE A/B	2B4P	DETACHED
02	TYPE A/B	2B4P	DETACHED
03	TYPE E	2B4P	DETACHED
04	TYPE A/B	2B4P	DETACHED
05	TYPE E	2B4P	DETACHED
06	TYPE E	2B4P	DETACHED
07	TYPE A/B	2B4P	DETACHED
08	TYPE E	2B4P	DETACHED
09	TYPE A/B	2B4P	DETACHED
10	TYPE C	2B4P/ 4B6P	SEMI DETACHED
11	TYPE C	2B4P/ 4B6P	SEMI DETACHED
12	TYPE D	2B4P	SEMI DETACHED
13	TYPE D	2B4P	SEMI DETACHED

*SEMI/ DETACHED - Plots are to be detached or semi detached in accordance with the site plan and plot table above.

Scale, materiality and form are to be informed the the Design Code.

Contractors to check all dimensions on drawings.
Any discrepancies must be reported to KTA or the contract administrator before proceeding.
Do not scale from planning drawings, work to figured dimensions.
This drawing must be read in conjunction with all relevant consultants drawings.
This drawing is © KTA.

Revision Schedule			
Revision Number	Revision Date	Revision Description	Issued/ Authorised by
P5	JAN 2021	PLANNING ISSUE	MC/AC
P4	JAN 2021	DRAFT PLANNING ISSUE - HOME ZONE	MC/AC
P3	JAN 2021	DRAFT PLANNING ISSUE	MC/AC
P2	NOV 2020	DRAFT ISSUE - Foul pumping station added	MC/AC
P1	JULY 2020	DRAFT ISSUE	MC/AC

- Existing tree/ grouping Refer to Arboricultural Impact Assessment for further detail
- Tree/ grouping removed Refer to Arboricultural Impact Assessment for further detail
- Proposed tree
- Proposed landscaped stone hedge bank
- Proposed communal space/ landscaping
- Proposed front garden
- Proposed back garden
- Proposed home zone/ parking
- Proposed landscaped path

PLANNING ISSUE



Kensington Court, Woodwater Park, Pynes Hill, Exeter, EX2 5TY
Tel: 01392 360338
Email: kt@kta.uk.com
Web: www.kta.uk.com

Project
Ennor Farm

Title
SITE PLAN AS PROPOSED
as proposed Author AC/MC Checked by AC

Date 08/01/2021 08:41:57 Scale As indicated @ A1

Project 2002 Status Pre Construction

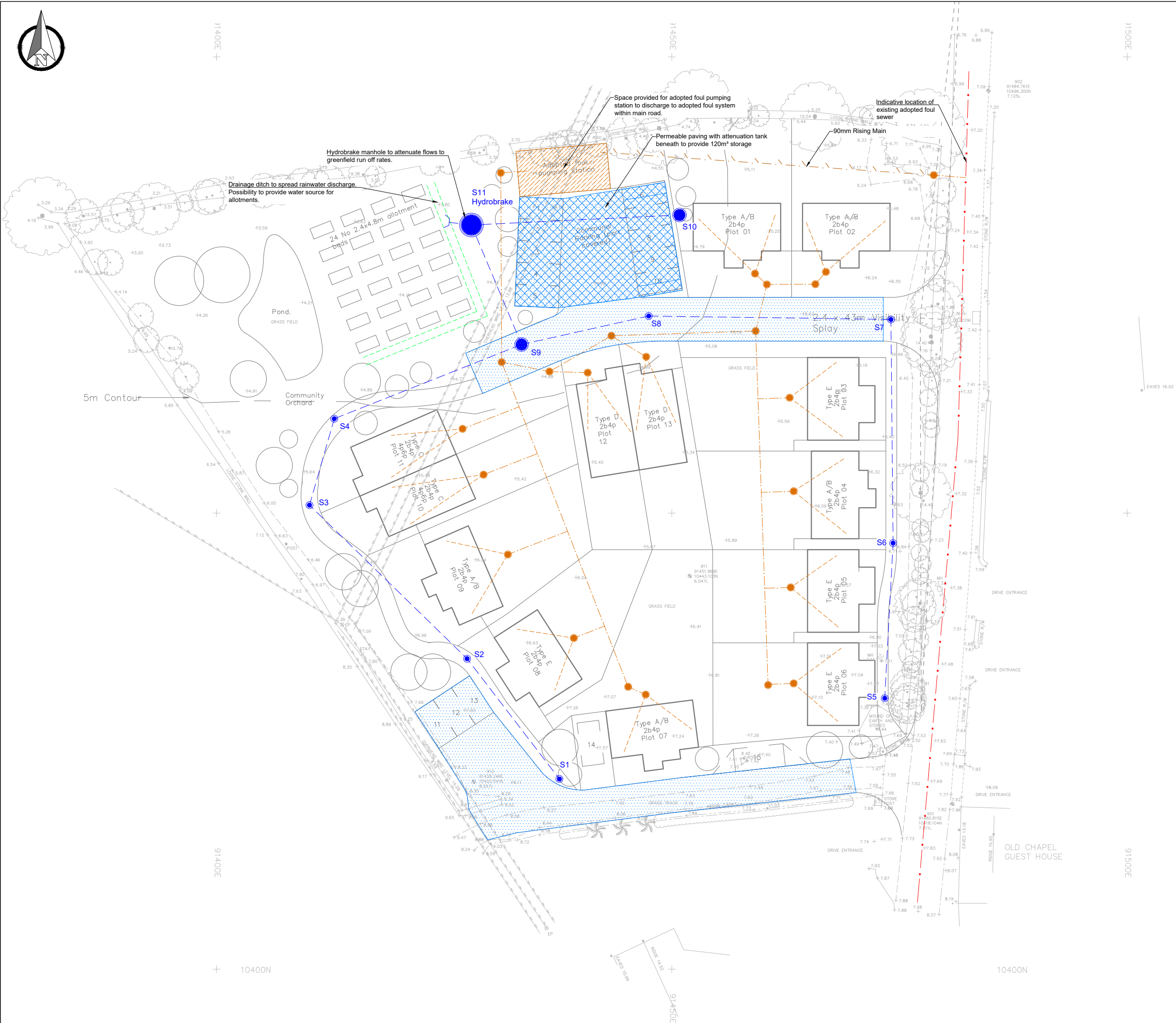
Drawing number
SC-KT-XX-XX-DR-A-2002-S0-SK100 -P5

QMF 73 - Issue 3 - 08/08/19

SITE PLAN AS PROPOSED
1 : 200



Appendix H: Proposed Drainage Strategy



Notes

- Do not scale from this drawing on print or electronically. Work from figured dimensions only.
- No deviation from the details on this drawing is allowed without CampbellReith's prior permission in writing.
- Read this drawing with all Architect's, Service Engineer's and CampbellReith's relevant details, specifications and drawings.
- All work is to be done in accordance with the relevant specifications issued by CampbellReith, British Standard Codes of Practice, Statutory Requirements and the Contract Documents.
- Drawing status:**
P: Preliminary Evolving drawings for approvals, tenders, billings etc.
C: Construction Fully developed drawings issued under instructions for construction.
- Only status C drawings to be used for construction.
- Suitability code:

Work in progress

S0 - Work in progress

Shared (Non-contractual)

S1 - For coordination, S2 - For information, S3 - For internal review and comment, S4 - For construction approval.

Documentation (For contractors purposes)

D1 - For Costing, D2 - For Tender, D3 - For contractor design, D4 - for manufacture/procurement.

Construction

A - For construction, B - For construction but with comments (i.e. areas in abeyance), CR - Construction Record (Final Construction ONLY. Any deviations to that which is on site is not the liability of CampbellReith)

Legend

- Proposed Surface Water Sewer
- Proposed Surface Water Manhole
- Proposed Permeable Paving
- Proposed Attenuation Crates
- Proposed Foul Water Sewer
- Proposed Foul Water Manhole
- Proposed Pumping Station
- Proposed Rising Main
- Indicative Existing Adopted Foul Water Sewer
- Drainage Ditch

P2	Masterplan updated following drainage strategy.	27/11/20	PT
P1	Issued for Information	01/10/20	PT
Rev	Description	Date	By

CampbellReith
consulting engineers

London 020 7340 1700 Manchester 0161 819 3060
Surrey 01737 784 500 Birmingham 01675 467 484
Bristol 0117 916 1066 Dubai 00 971 4345 7088
www.campbellreith.com

Job Title	Ennor Farm
Client	Council of Isles of Scilly

Proposed Drainage
Strategy

Drawn by	Date made	Scale @ A1	Checked by	Suitability	CR Project
PT	01/10/20	1:200		S1	13394

Project No.	Originator	Volume	Lvl/Loc	Type	Role	Number	Rev
13394	CRH	XX	XX	DR	C	5050	P2

Appendix I: MicroDrainage Source Control Results

CampbellReith		Page 1
Raven House 29 Linkfield Lane Surrey RH1 1SS		
Date 27/11/2020 14:37	Designed by PeteT	
File 13394 Ennor Farm Source ...	Checked by	
XP Solutions		Source Control 2020.1

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 198 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	4.273	0.273	0.0	5.0	5.0	62.2	0 K
30 min Summer	4.324	0.324	0.0	5.0	5.0	73.9	0 K
60 min Summer	4.376	0.376	0.0	5.0	5.0	85.7	0 K
120 min Summer	4.419	0.419	0.0	5.0	5.0	95.5	0 K
180 min Summer	4.432	0.432	0.0	5.0	5.0	98.5	0 K
240 min Summer	4.436	0.436	0.0	5.0	5.0	99.3	0 K
360 min Summer	4.433	0.433	0.0	5.0	5.0	98.7	0 K
480 min Summer	4.423	0.423	0.0	5.0	5.0	96.5	0 K
600 min Summer	4.409	0.409	0.0	5.0	5.0	93.3	0 K
720 min Summer	4.394	0.394	0.0	5.0	5.0	89.8	0 K
960 min Summer	4.340	0.340	0.0	5.0	5.0	77.6	0 K
1440 min Summer	4.252	0.252	0.0	5.0	5.0	57.6	0 K
2160 min Summer	4.168	0.168	0.0	5.0	5.0	38.3	0 K
2880 min Summer	4.129	0.129	0.0	4.7	4.7	29.4	0 K
4320 min Summer	4.097	0.097	0.0	3.6	3.6	22.2	0 K
5760 min Summer	4.082	0.082	0.0	2.9	2.9	18.7	0 K
7200 min Summer	4.073	0.073	0.0	2.5	2.5	16.5	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	178.357	0.0	65.8	25
30 min Summer	108.100	0.0	80.0	38
60 min Summer	65.518	0.0	97.8	66
120 min Summer	39.709	0.0	118.6	122
180 min Summer	29.627	0.0	132.8	174
240 min Summer	24.067	0.0	143.8	204
360 min Summer	17.956	0.0	161.0	268
480 min Summer	14.587	0.0	174.4	336
600 min Summer	12.415	0.0	185.6	402
720 min Summer	10.883	0.0	195.2	470
960 min Summer	8.531	0.0	204.1	598
1440 min Summer	6.053	0.0	217.0	842
2160 min Summer	4.295	0.0	231.6	1176
2880 min Summer	3.366	0.0	241.9	1508
4320 min Summer	2.388	0.0	257.1	2212
5760 min Summer	1.872	0.0	269.4	2944
7200 min Summer	1.550	0.0	278.7	3672

CampbellReith		Page 2
Raven House 29 Linkfield Lane Surrey RH1 1SS		
Date 27/11/2020 14:37	Designed by PeteT	
File 13394 Ennor Farm Source ...	Checked by	
XP Solutions		Source Control 2020.1

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
8640 min Summer	4.066	0.066	0.0	2.1	2.1	15.0	0 K
10080 min Summer	4.061	0.061	0.0	1.9	1.9	13.9	0 K
15 min Winter	4.308	0.308	0.0	5.0	5.0	70.2	0 K
30 min Winter	4.366	0.366	0.0	5.0	5.0	83.5	0 K
60 min Winter	4.427	0.427	0.0	5.0	5.0	97.4	0 K
120 min Winter	4.482	0.482	0.0	5.0	5.0	109.9	0 K
180 min Winter	4.780	0.780	0.0	5.0	5.0	114.4	Flood Risk
240 min Winter	4.793	0.793	0.0	5.0	5.0	114.4	Flood Risk
360 min Winter	4.498	0.498	0.0	5.0	5.0	113.6	0 K
480 min Winter	4.482	0.482	0.0	5.0	5.0	110.0	0 K
600 min Winter	4.458	0.458	0.0	5.0	5.0	104.4	0 K
720 min Winter	4.431	0.431	0.0	5.0	5.0	98.2	0 K
960 min Winter	4.348	0.348	0.0	5.0	5.0	79.4	0 K
1440 min Winter	4.219	0.219	0.0	5.0	5.0	50.0	0 K
2160 min Winter	4.129	0.129	0.0	4.7	4.7	29.4	0 K
2880 min Winter	4.103	0.103	0.0	3.8	3.8	23.4	0 K
4320 min Winter	4.078	0.078	0.0	2.8	2.8	17.9	0 K
5760 min Winter	4.067	0.067	0.0	2.2	2.2	15.3	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
8640 min Summer	1.328	0.0	286.5	4408
10080 min Summer	1.166	0.0	293.1	5136
15 min Winter	178.357	0.0	73.8	25
30 min Winter	108.100	0.0	89.7	39
60 min Winter	65.518	0.0	109.5	66
120 min Winter	39.709	0.0	132.9	122
180 min Winter	29.627	0.0	148.8	176
240 min Winter	24.067	0.0	161.2	218
360 min Winter	17.956	0.0	180.4	294
480 min Winter	14.587	0.0	195.4	372
600 min Winter	12.415	0.0	207.9	444
720 min Winter	10.883	0.0	218.7	516
960 min Winter	8.531	0.0	228.6	646
1440 min Winter	6.053	0.0	243.2	880
2160 min Winter	4.295	0.0	259.4	1172
2880 min Winter	3.366	0.0	271.0	1528
4320 min Winter	2.388	0.0	288.1	2248
5760 min Winter	1.872	0.0	301.8	2944

CampbellReith		Page 3
Raven House 29 Linkfield Lane Surrey RH1 1SS		
Date 27/11/2020 14:37	Designed by PeteT	
File 13394 Ennor Farm Source ...	Checked by	
XP Solutions		Source Control 2020.1

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m ³)	Status
7200 min Winter	4.060	0.060	0.0	1.8	1.8	13.6	0 K
8640 min Winter	4.055	0.055	0.0	1.6	1.6	12.4	0 K
10080 min Winter	4.051	0.051	0.0	1.4	1.4	11.5	0 K

Storm Event	Rain (mm/hr)	Flooded Volume (m ³)	Discharge Volume (m ³)	Time-Peak (mins)
7200 min Winter	1.550	0.0	312.2	3672
8640 min Winter	1.328	0.0	321.0	4384
10080 min Winter	1.166	0.0	328.4	5128

CampbellReith		Page 4
Raven House 29 Linkfield Lane Surrey RH1 1SS		
Date 27/11/2020 14:37	Designed by PeteT	
File 13394 Ennor Farm Source ...	Checked by	
XP Solutions		Source Control 2020.1

Model Details

Storage is Online Cover Level (m) 5.000

Cellular Storage Structure

Invert Level (m) 4.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	240.0	0.0	0.501	0.0	0.0
0.500	240.0	0.0			

Hydro-Brake® Optimum Outflow Control

Unit Reference MD-SCL-0101-5000-0800-5000
Design Head (m) 0.800
Design Flow (l/s) 5.0
Flush-Flo™ Calculated
Objective Minimise blockage risk
Application Surface
Sump Available Yes
Diameter (mm) 101
Invert Level (m) 4.000
Minimum Outlet Pipe Diameter (mm) 150
Suggested Manhole Diameter (mm) 1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	0.800	5.0	Kick-Flo®	0.478	4.0
Flush-Flo™	0.189	5.0	Mean Flow over Head Range	-	4.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.100	3.7	1.200	6.0	3.000	9.3	7.000	13.8
0.200	5.0	1.400	6.5	3.500	9.9	7.500	14.3
0.300	4.8	1.600	6.9	4.000	10.6	8.000	14.7
0.400	4.5	1.800	7.3	4.500	11.2	8.500	15.1
0.500	4.0	2.000	7.6	5.000	11.8	9.000	15.6
0.600	4.4	2.200	8.0	5.500	12.3	9.500	16.0
0.800	5.0	2.400	8.3	6.000	12.8		
1.000	5.5	2.600	8.6	6.500	13.3		

©1982-2020 Innovyze

Appendix J: Existing and Proposed Overland Flood Routes

1. Do not scale from this drawing on print or electronically. Work from figured dimensions only.
2. No deviation from the details on this drawing is allowed without CampbellReith's prior permission in writing.
3. Read this drawing with all Architect's, Service Engineer's and CampbellReith's relevant details, specifications and drawings.
4. All work is to be done in accordance with the relevant specifications issued by CampbellReith, British Standard Codes of Practice, Statutory Requirements and the Contract Documents.
5. Drawing status:

P: Preliminary	Evolving drawings for approvals, tenders, billings etc.
C: Construction	Fully developed drawings issued under instructions for construction.

7. Suitability code:

Work in progress

S0 - Work in progress

Shared (Non-contractual)

S1 - For coordination, **S2** - For information, **S3** - For internal review and comment, **S4** - For construction approval.

Documentation (For contractors purposes)

D1 - For Costing, D2 - For

manufacture/procurement.

Construction

A - For construction, **B** - For construction but with comments (i.e. areas in abeyance), **CR** - Construction Record (Final Construction ONLY. Any deviations to that which is on site is not the liability of CampbellReith)

Legend

→ Existing Overland Flow Arrow

P1	Issued for Information	26.11.20	NJB
Rev	Description	Date	By

CampbellReith
consulting engineers

London	020 7340 1700	☐	☐	Manchester	0161 819 3060
Surrey	01737 784 500	☐	☐	Birmingham	01675 467 484
Bristol	0117 916 1066	☒	☐	Dubai	00 971 4345 7088

www.campbellreith.com

Job Title	ENNOR FARM, ST MARY'S
Client	ISLES OF SCILLY COUNCIL

Existing Overland Flood Flow Routes

Drawn by	Date made	Scale @ A1	Checked by	Suitability	CR Project
NJB	26.11.20	1:200		S1	13394

Project No.	Originator	Volume	Lvl/Loc	Type	Role	Number	Rev
13394	CRH	XX	XX	DR	C	4200	P1

1. Do not scale from this drawing on print or electronically. Work from figured dimensions only.
2. No deviation from the details on this drawing is allowed without CampbellReith's prior permission in writing.
3. Read this drawing with all Architect's, Service Engineer's and CampbellReith's relevant details, specifications and drawings.
4. All work is to be done in accordance with the relevant specifications issued by CampbellReith, British Standard Codes of Practice, Statutory Requirements and the Contract Documents.
5. Drawing status:

P: Preliminary	Evolving drawings for approvals, tenders, billings etc.
C: Construction	Fully developed drawings issued under instructions for construction.

6. Only status **C** drawings to be used for construction.

7. Suitability code:

Work in progress

S0 - Work in progress

Shared (Non-contractual)

S1 - For coordination, **S2** - For information, **S3** - For internal review and

comment, **S4** - For construction approval

Documentation (For contractors purposes)

D1 - For Costing, **D2** - For Tender, **D3** - For contractor design, **D4** - for

manufacture/procurement.

Construction

A - For construction, **B** - For construction but with comments (i.e. areas in abeyance), **CR** - Construction Record (Final Construction ONLY. Any deviations to that which is on site is not the liability of CampbellReith)

Legend

→ Proposed Overland Flow Arrow

P1	Issued for information	26.11.20	NJB
Rev	Description	Date	By

CampbellReith
consulting engineers

London	020 7340 1700	☐	☐	Manchester	0161 819 3060
Surrey	01737 784 500	☐	☐	Birmingham	01675 467 484
Bristol	0117 916 1066	☒	☐	Dubai	00 971 4345 7088
www.campbellreith.com					

Job Title	ENNOR FARM, ST MARY'S
Client	ISLES OF SCILLY COUNCIL

Proposed Overland Flood Flow Routes

Drawn by	Date made	Scale @ A1	Checked by	Suitability	CR Project
NJB	26.11.20	1:200		S1	13394

Project No.	Originator	Volume	Lvl/Loc	Type	Role	Number	Rev
13394	CRH	XX	XX	DR	C	4201	P1

London

15 Bermondsey Square
London
SE1 3UN

T: +44 (0)20 7340 1700
E: london@campbellreith.com

Birmingham

Chantry House
High Street, Coleshill
Birmingham B46 3BP

T: +44 (0)1675 467 484
E: birmingham@campbellreith.com

Surrey

Raven House
29 Linkfield Lane, Redhill
Surrey RH1 1SS

T: +44 (0)1737 784 500
E: surrey@campbellreith.com

Manchester

No. 1 Marsden Street
Manchester
M2 1HW

T: +44 (0)161 819 3060
E: manchester@campbellreith.com

Bristol

Wessex House
Pixash Lane, Keynsham
Bristol BS31 1TP

T: +44 (0)117 916 1066
E: bristol@campbellreith.com

Campbell Reith Hill LLP. Registered in England & Wales. Limited Liability Partnership No OC300082
A list of Members is available at our Registered Office at: 15 Bermondsey Square, London, SE1 3UN
VAT No 974 8892 43