

Drainage Strategy Note

Project Sustainable Distillery Research Centre
Subject Outline Drainage Strategy
Project no 0045290
Date 28 February 2021

Revision	Description	Issued by	Date	Approved (signature)
P01	For Outline Planning	AM	28.02.21	

1 Introduction

Buro Happold has been commissioned by the Cornish Geothermal Distillery Company to prepare an outline stormwater and foul water drainage strategy in support of an outline planning application to Cornwall Council for the proposed development of a Sustainable Distillery Research Centre at United Downs, Redruth.

This Drainage Strategy Note describes the foul and storm water drainage strategy for the proposed facility and its associated infrastructure and external works. It has been prepared in accordance with national standards, best practice and the requirements of South West Water and Cornwall Council. It should be read in conjunction with all other relevant planning documentation.

1.1 Site location and description

The Site is an elongated parcel of land covering approximately 0.85ha, located in United Downs, near Redruth, TR16 5HY and is approximately centred at NGR SW 74487 41359. It is located on land to the south of the United Downs Industrial Estate and at the northern edge of the former United Mines landfill site. It is accessed from the service road of the former landfill site.

The Site is generally relatively flat, with levels ranging between about 95m AOD and 100m AOD. A steep bank slopes down parallel and adjacent to the northern boundary, before sloping upwards again between the Site and the neighbouring United Downs Industrial Estate.

Much of the site has undergone landfilling, with a large amount of landfill infrastructure believed to lie below ground on site. Contaminated ground can therefore be expected across much of the site.

1.2 Local stakeholders and approving authorities

With regards to development planning and permissions, residual flood risk and drainage related issues, there are two principal stakeholders and/or approving authorities associated with the development site. They are as follows:

Cornwall Council (CC) are the local governing, planning authority and Lead Local Flood Authority (LLFA), having responsibility for:

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- leading the management of risk of flooding from ordinary watercourses, canals, ponds and reservoirs in their area;
- surface water flood risk in relation to planning applications, under The Flood and Water Management Act.

South West Water (SWW) are the statutory sewerage undertaker with powers under The Water Industry Act 1991 and provide the water supply to this area.

Preliminary enquiries have been made to SWW at this stage and are reported on herein. SWW assets in the vicinity of the site are shown in the sketch in Appendix A.

1.3 Ground conditions

A site investigation to assess the viability of an infiltration-based surface water disposal has not yet been carried out. At this stage, it is considered unlikely that infiltration will prove viable, given the known ground contamination and previous usage of the site (see Ground Engineering Desk Study report). BRE Digest 365 compliant soakaway tests are proposed to confirm the assumptions made in the development of this surface water drainage strategy.

1.4 Description of proposal

The scheme proposes 5 new buildings with a total plan area of 0.08ha, a small car and cycle park with a plan area of 0.01ha, and a gravel service road with a plan area of approximately 0.3ha (all areas approximate).

The surfacing and subbase of the existing service road, making up much of the eastern portion of the site (0.4ha), is to be retained.

2 Outline Surface Water Strategy

2.1.1 Levels of service

The levels of service for the new surface water drainage shall be:

- no flooding of the drainage system up to and including a 1 in 30-year storm event;
- management of flood water on site up to the 1 in 100-year storm event; and
- consideration of, and allowance for, the impacts of climate change, in accordance with Cornwall Council policy and the development's expected lifespan.

2.2 Flood risk

The site lies entirely within Flood Zone 1 as designated by the Environment Agency. The site is considered to be at very low risk of flooding from surface water or from flooding from rivers and the sea. The site does not sit within any of Cornwall Council's Critical Drainage Areas.

As the site occupies less than one hectare, a formal Flood Risk Assessment is not required.

2.3 Greenfield runoff rates

In accordance with Cornwall Council guidance, a greenfield run off rate has been calculated using the IH124 method. The results are summarised below in Table 2-1 for a range of storm events.

Table 2—1 Theoretical greenfield runoff rates for 0.85ha site

Storm Event	0.85ha site greenfield runoff rate (l/s)
Q_{BAR}	2.9
1 in 1 year	2.26
1 in 30 year	5.65
1 in 100 year	7.04

2.4 Proposed strategy

Given the ground conditions are anticipated, it is proposed surface water is collected from areas of roofs and areas of hardstanding and conveyed to the sewer within the United Downs Industrial Estate via a network of buried gravity drains. SWW have confirmed the sewer has sufficient capacity to accept greenfield controlled flows from this development.

Following best practice for SuDS, flows will be attenuated at source where possible. Brown roofs are proposed for the buildings, providing a means of attenuation and storage of stormwater and improvement in runoff water quality.

A flow control device, such as a vortex flow control device or orifice plate, will be used to restrict flows offsite to the theoretical greenfield rates outlined in Table 2-1, or other rates if agreed with the LLFA and SWW. Subsurface attenuation crates are proposed to provide temporary storage of stormwater during major storm events prior to discharge offsite.

Given the ground conditions anticipated at the site, an infiltration strategy is considered inappropriate for this scheme, but a future site investigation is proposed to confirm this assumption. The subsurface attenuation will be lined with a suitable geomembrane to prevent ground contamination leaching into surface water systems. Final investigation informed

Site levels will be set such that overland flows do not discharge uncontrolled onto neighbouring sites or onto the adjacent highway.

3 Outline Foul Water Strategy

A sanitary drainage network is required to safely and effectively manage sanitary flows, providing a means of conveyance to an appropriate outfall. Small domestic sanitary flows are expected from the proposed buildings.

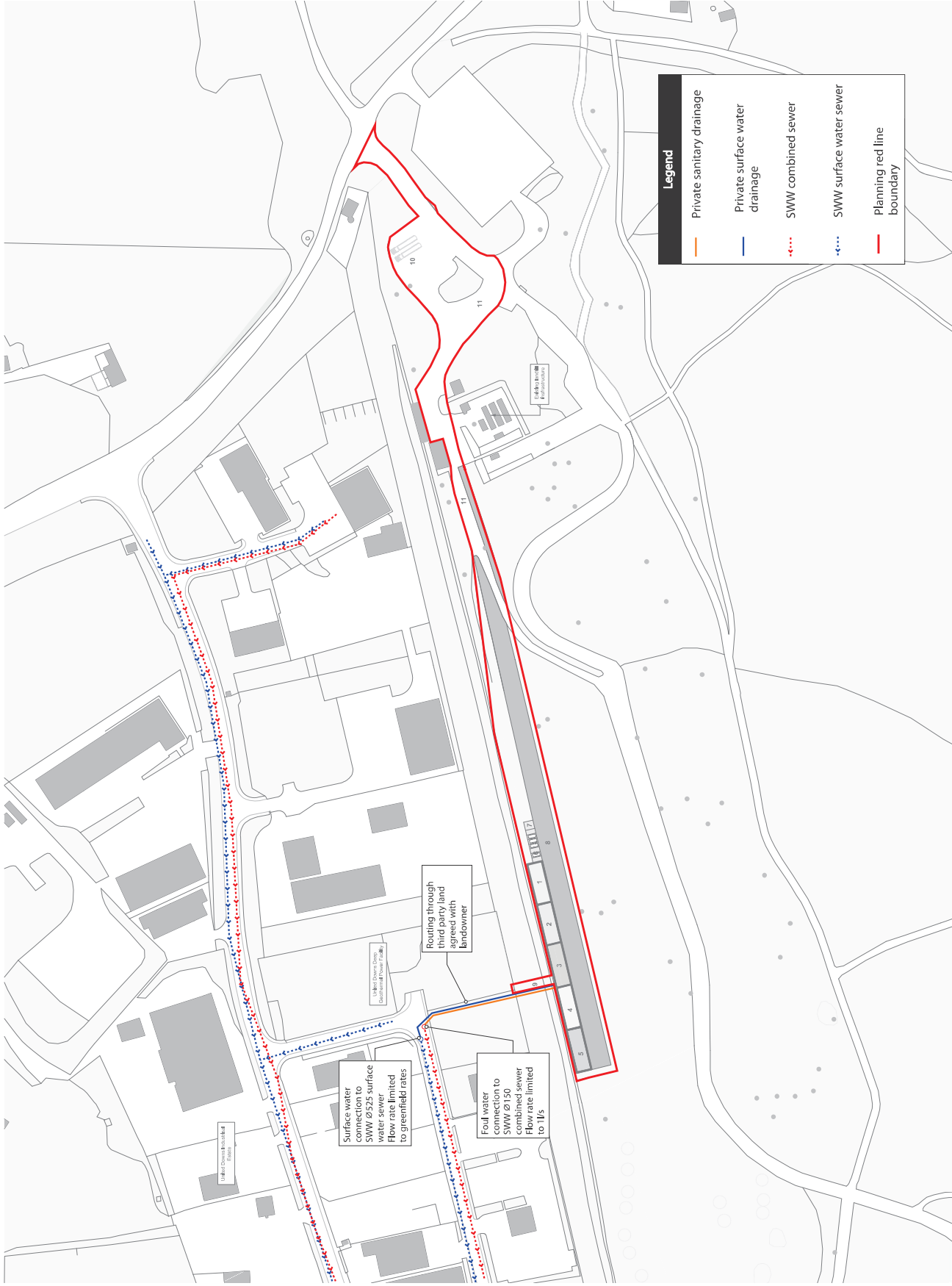
Sanitary flows should be discharged to one of the following (Building Regulations Part H):

- A public sewer; or where that is not reasonably practicable,
- A private sewer communicating with a public sewer; or where that is not reasonably practicable,
- Either a septic tank or which has an appropriate form of secondary treatment or another wastewater treatment system; or where that is not reasonably practicable,
- A cesspool.

Sanitary flows from the development's domestic fixtures. will be conveyed to the South West Water combined sewer within the United Downs Industrial Estate. It is expected such flows will be minimal, with peak flows of less than 1 l/s. Permission from South West Water to discharge foul flows at this rate has been obtained.

Industrial flows from the distillery development will not discharge to the sewer. Industrial flows will be transported offsite for disposal elsewhere.

Appendix A – Foul and Surface Water Drainage Connections Sketch



BURO HAPPOLD Project: SUSTAINABLE DISTILLERY RESEARCH CENTRE Sketch Title: FOUL & SURFACE WATER DRAINAGE CONNECTIONS	Project Number: 0045290 Sketch Number: SKE-C-0005	Status: FOR OUTLINE PLANNING Date: 28.02.21 Initials: AM Revision: P01
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