

Margam Green Energy Plant, Longlands Lane, Margam, SA13 2SU

Surface Water Drainage Scheme

Technical Note

Project ref:	4756 – Margam Green Energy Plant, Longlands Lane, Margam, SA13 2SU
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Introduction

1. A full planning application for the “*Development at the site entrance to the Margam Green Energy Plant [MGEP] comprising a new modular building to provide a security hut; a smoking shelter; a security barrier system; hardstanding and gravel and changes to the kerb system; shallow retaining wall structures; and signage at the site entrance to MGEP*” at Margam Green Energy Plant, Longlands Lane, Margam was submitted to Neath Port Talbot County Borough Council on 16 November 2022.
2. The application was accompanied by a Flood Consequences Assessment report prepared by Weetwood (ref: 4756/FCA/Final/v2.2/2022-11-11).
3. Planning permission was subsequently granted by Neath Port Talbot County Borough Council on 23 January 2023 (ref: P2022/0972) subject to the following drainage related planning condition:
 3. *No development shall take place until details of the implementation, maintenance and management of a sustainable surface water drainage scheme have been submitted to and approved in writing by the Local Planning Authority. The scheme shall be implemented and thereafter retained, managed and maintained in accordance with the approved details. Those details shall include a scaled plan and cross sectional scaled drawings showing the extent, position, materials and construction method of all hard surfacing, which shall be either made of porous materials, or shall provide for surface run-off water to be directed to a permeable or porous surface within the curtilage of the site, as well as details of the treatment or interception of potentially polluted run-off.*

Reason: In the interests of securing appropriate surface water drainage and to prevent pollution and surface water flooding in accordance with policy BE1(9) of the Local Development Plan.
4. This document presents a preliminary surface water drainage scheme commensurate with the level of detail required to discharge planning condition 3.

Development Proposals and Site Details

5. The approximately 3.7 ha Margam Green Energy Plant site is located south of Harbour Way and north of Heolcae'r-Bont at Ordnance Survey National Grid Reference SS 789 863 (**Figure 1**). The application boundary equates to a much smaller area (hereafter referred to as “the site”) of 99.8 m², located at the site entrance.
6. The development proposals are for the construction of a modular office building, smoking shelter, security barrier system, site signage and associated hardstanding area (**Annex 1**).
7. The Upper Mother Ditch flows predominantly in a northerly direction approximately 0.2 km west of the site.
8. Drain A flows in an easterly direction along the southern boundary of the site and outfalls into the Upper Mother Ditch.
9. Drain A and the Upper Mother Ditch are classified as ordinary watercourses.

10. A topographical survey of the site is provided in **Annex 2**. The survey indicates the site falls in an easterly direction with levels generally ranging between 8.0 metres Above Ordnance Datum (m AOD) and 7.3 m AOD.
11. According to the Soilsdscapes soils dataset produced by the Cranfield Soil and AgriFood Institute¹, soil conditions at the site and within the area west of the site are loamy and clayey soils of coastal flats with naturally high groundwater. Soils conditions east of the site are freely draining slightly acid loamy soils.
12. British Geological Survey (BGS) mapping of surface geology² indicates the underlying bedrock formation comprises mudstone, siltstone and sandstone (South Wales Middle Coal Measures Formation), overlain by clay, silt and sand (Tidal Flat Deposits).
13. According to the British Geological Survey and Natural Resources Wales aquifer designation dataset³ the Tidal Flat superficial deposits at the site are classified as a Secondary (undifferentiated) aquifer whilst the underlying South Wales Middle Coal Measures bedrock is classified as a Secondary A aquifer. The site is not shown to be located within a designated groundwater source protection zone⁴.
14. There is no formal drainage within the site. An existing footway area (23.1 m²) discharges surface water runoff onto the adjacent access road which is collected by a channel drain at the current site entrance, discharging into the main existing surface water drainage system serving the wider site of the MGEP.
15. The surface water drainage system serving the wider MGEP site discharges surface water into Drain A.

Proposed Surface Water Drainage Scheme

16. In accordance with PPG para. 056, surface water runoff should be disposed of according to the following hierarchy: Into the ground (infiltration); To a surface water body; To a surface water sewer, highway drain, or another drainage system; To a combined sewer.
17. As detailed in paragraph 11, the site is underlain by soils with impeded drainage and shallow groundwater levels. As such, the disposal of surface water by infiltration is deemed to be unsuitable. It is therefore proposed to discharge surface water runoff to Drain A.
18. The proposed impermeable area has been calculated to be 99.1 m² (0.01 ha) based on the Site Entrance – Layout Plan (**Annex 1**). Due to site constraints and proposed ground levels, 19.5 m² (0.002 ha) of proposed impermeable area will continue to drain towards the existing channel drain at the current site entrance. Runoff from the remaining 79.6 m² (0.008 ha) of impermeable area will discharge indirectly to Drain A via a filter drain.
19. Runoff from the filter drain will discharge to ground where possible with exceedance flows directed overland via existing topography towards Drain A.
20. The filter drain and surrounding soft landscaped areas intercepting runoff will prevent, so far as possible, any discharge from the site for the majority of rainfall events of less than 5 mm and will also contribute to volume control (via evapotranspiration).
21. The filter drain will have an attenuation storage capacity of 1.5 m³.
22. A preliminary surface water drainage layout and cross section construction details are provided in **Annex 3**.
23. Flows resulting from rainfall in excess of the 1 in 100 AEP rainfall event including an allowance for climate change will be managed in exceedance routes. The site will be profiled to ensure that flood flows are directed away from built development.
24. The filter drain will provide water quality benefits through the filtration of sediments.

¹ www.landis.org.uk/soilsdscapes/

² <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

³ <https://www.bgs.ac.uk/map-viewers/geoindex-onshore/>

⁴ <https://lle.gov.wales/catalogue/item/SourceProtectionZonesSPZMerged/?lang=en>

25. Table 26.2 of the CIRIA SuDS Manual identifies commercial roofs as having a low pollution hazard level. The pollution hazard indices for total suspended solids, hydrocarbons and metals are 0.20, 0.20 and 0.05 for commercial roofs respectively.
26. Table 26.3 of the CIRIA SuDS Manual 2015 indicates that the SuDS mitigation indices for filter drains for total suspended solids, hydrocarbons and metals are 0.40, 0.40 and 0.40 respectively. As such, the proposed surface water drainage system provides adequate water quality treatment.
27. The proposed surface water drainage system at the site will remain private and be maintained by the landowner. An indicative maintenance schedule is presented in **Table 1**.

Table 1: Maintenance Requirements

Schedule	Required action	Frequency
Filter Drain		
Regular maintenance	Remove litter including leaf litter and debris from filter drain surface, access chambers and pre-treatment devices	Monthly (or as required)
	Inspect filter drain surface, inlet/outlet pipework and control systems for blockages, clogging, standing water and structural damage	Monthly
	Inspect pre-treatment systems, inlets and perforated pipework for silt accumulation, and establish appropriate silt removal frequencies	Six monthly
	Remove sediment from pre-treatment devices	Six monthly (or as required)
Occasional maintenance	Remove or control tree roots where they are encroaching the sides of the filter drain, using recommended methods (eg NJUG, 2007 or BS 3998:2010)	As required
	At locations with high pollution loads, remove surface geotextile and replace, and wash or replace overlying filter medium	Five yearly (or as required)
	Clear perforated pipework of blockages	As required

Summary

28. This Technical Note presents a preliminary surface water drainage scheme to accompany an application to discharge planning condition 3 of application ref: P2022/0972. The proposals are for the construction of a modular office building, smoking shelter, security barrier system, site signage and associated hardstanding area at the site entrance of Margam Green Energy Plant, Longlands Lane, Margam.

Surface water will be discharged indirectly to Drain A to the southern boundary of the site. Attenuation storage and water quality treatment will be provided using a filter drain.

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FIGURES

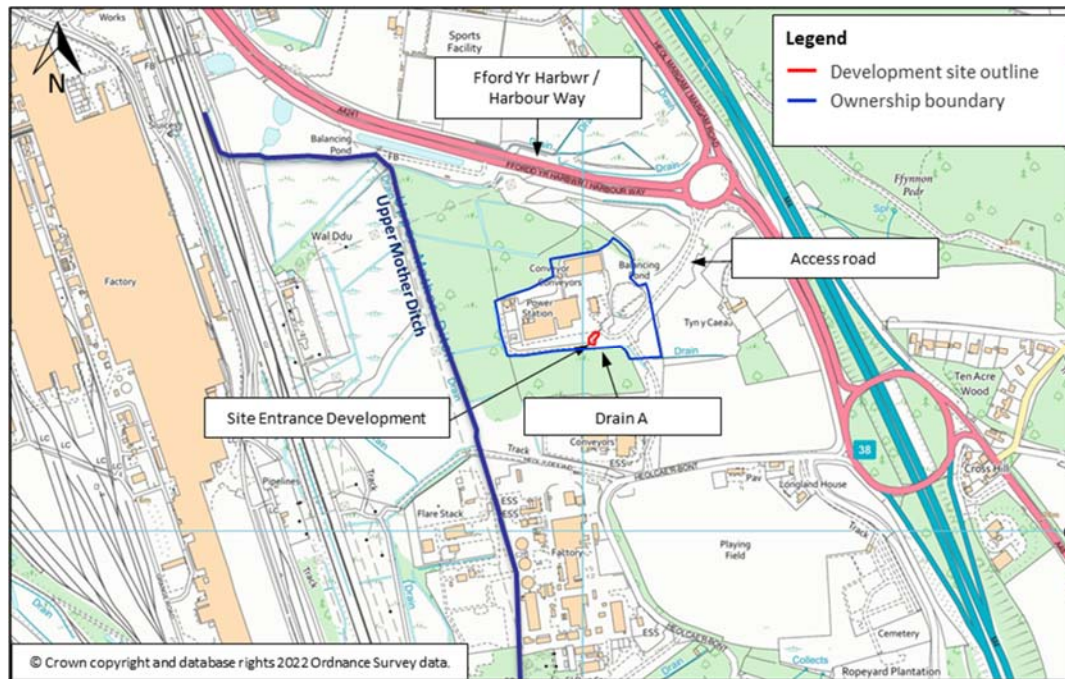
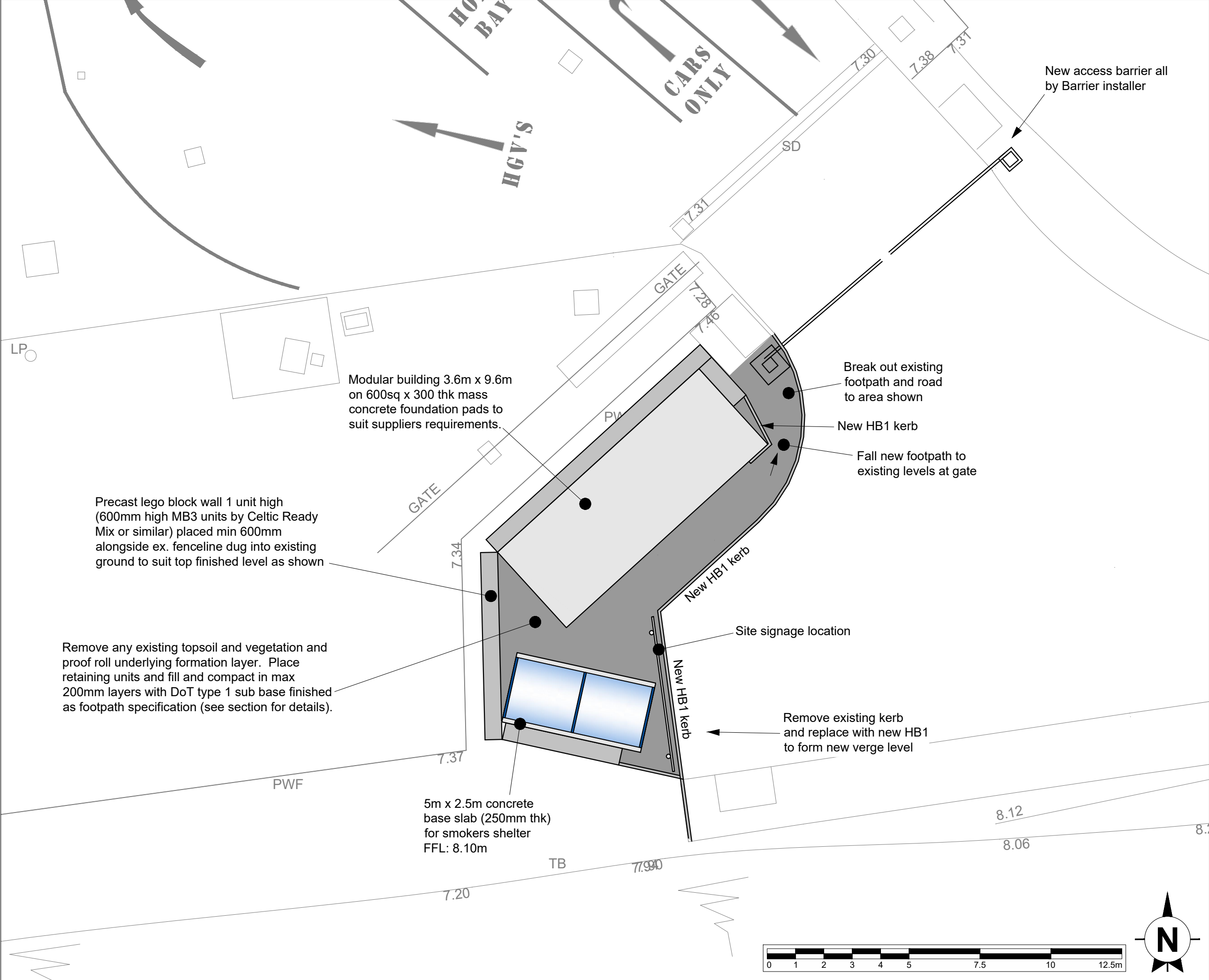


Figure 1: Site Location

ANNEX 1

Development Proposals



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Revision History		Date

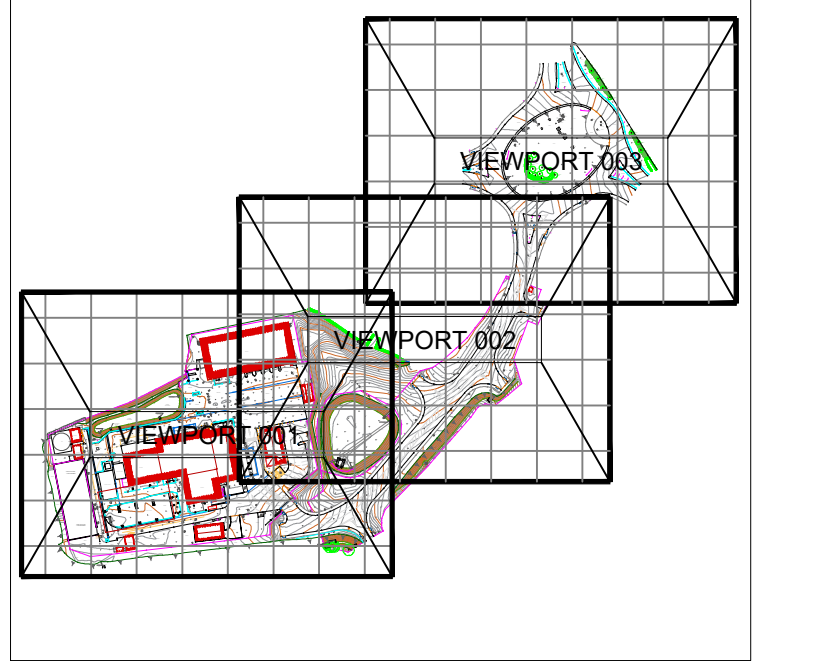
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Project: MARGAM		
Drawing title: SITE ENTRANCE - LAYOUT PLAN		
Date: September 2022	Drawn by: SM	Checked: AR
Drawing number: 2774-01-10	Status: --	
Scale(s): 1:125@A3	Rev: --	
planning environment design		

ANNEX 2

Topographical Survey

- #### GENERAL NOTES
1. The contractor is to check and verify all buildings and site dimensions and levels, including existing sewer invert levels, before works start on site. The contractor is to comply in all respects with the current building legislation, British Standards, building regulations etc.
 2. Positions of existing services/statutory undertakers (apparatus adjacent to or crossing proposed excavations are to be checked by the contractor prior to starting work. Utility locations shown are to be verified by the contractor prior to commencement of work.
 3. This drawing is to be read in conjunction with and checked against all other drawings, engineering details, specifications and any structural, geotechnical or other special document provided.
 4. Any anomaly or contradictions between any of the above is to be reported immediately to Corner Point Surveys Ltd.
- The topographical survey has been undertaken to OSN15 and located to OS Grid and Datum using GPS instrumentation,

LEGEND	
AB	ARMCO BARRIER
AL	APEX LEVEL
BAR	BARRIER
BB	BANK BASE
BD	BOLLARD
CL	COVER LEVEL
CONT	CONTAINER
CP	CONCRETE PUNTH
DC	DRAINAGE CHANNEL
DKB	DROP KERB BOTTOM
DP	DOWNPIPE
EB	ELECTRICITY BOX
EVL	EAVE LINE
FFL	FINISHED FLOOR LEVEL
FP	FOOTPATH
GKB	GULLY KERB BOTTOM
GU	GULLY
GW	GABION WALL
HW	HEADWALL
IC	INSPECTION CHAMBER
IN	INVERT LEVEL
KB	KERB BOTTOM
LP	LAMP POST
MH	MANHOLE
PRF	POST & RAIL FENCE
PWF	POST & WIRE FENCE
RL	RIDGE LEVEL
RP	REFLECTOR POST
RS	ROAD SIGN
SD	SLOT DRAIN
ST	STOP TAP
TB	TOP OF BANK
TP	TACTILE PAVING
VE	VENT
VEG	VEGETATION



ANNEX 3

Proposed Drainage Layout and Construction Details

Delivering client focussed services nationally

Flood Risk Assessments
Flood Consequences Assessments
Surface Water Drainage
Foul Water Drainage
Environmental Impact Assessments
River Realignment and Restoration
Water Framework Directive Assessments
Environmental Permit and Land Drainage Applications
Sequential, Justification and Exception Tests
Utility Assessments
Expert Witness and Planning Appeals
Discharge of Planning Conditions

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