

Title: Drainage Strategy – Devonshire Place

Date: 06/12/2022

I. Introduction

Jubb have been instructed by Linc Cymru to provide engineering input relating to drainage strategy and SAB approval for the development of a proposed residential scheme and its associated works, located at the former Dyffryn Lower Comprehensive School in Port Talbot, on National Grid Reference 277060 E, 189470 N, postcode SA13 1EP.

The site is approximately 0.74 Ha in size and is currently occupied by several vacant school buildings. The proposed development will include the demolition of the existing structures and the construction of several residential buildings, comprising of 2-storeys dwellings and 3-storey apartments, with associated access roads and parking facilities.

II. Drainage Strategy

As part of the advancement in Sustainable Drainage Systems (SuDS) design, legislature was implemented on 7th January 2019 in Wales to enforce Schedule 3 of the Flood and Water Management Act 2010. This led to the establishment of SuDS Approval Bodies (SABs) for each LLFA. In the case of this development and under requirements of the above legislature, Neath Port Talbot Council would look to review and approve any surface water drainage design proposed for the development, with the intention of adopting possible SuDS features. Any SuDS proposed would need to conform to CIRA C753, 'The SuDS Manual' and any additional guidance or information provided by the LLFA. Any drainage design previously proposed to connect to a Dwr Cymru surface water (SW) or highway asset would now be subject to a detailed application & formal approval process, prior to construction and/or communication of drainage flows from the development.

Refer to JUBB drawing 22305-JUBB-00-XX-DR-C-500 within Appendix A.

i. Surface Water Strategy

- Discharging of surface water run-off via infiltration soakaways is proposed method of disposal for the development. This method is considered the most viable approach given the good infiltration rated exhibited on site. For further confirmation, additional ground water monitoring will be undertaken over the winter period to ascertain the presence of groundwater on site.
- Subject to SABs approval, the surface water drainage is proposed to drain via SUDs features which provide treatment, to soakaway tanks and unlined raingardens to discharge via infiltration to the ground.
- The brownfield runoff rate for the existing development was calculated as 104.5 l/s. Subsequently, by disposal through infiltration, the proposed discharge rate off-site will be 0 l/s.

- Attenuation tanks are proposed to provide storage and to also act as soakaways and have been sized to accommodate events up to and including the 1-in-100 year storm event + 40% CC, with highly conservative factors of safety.
- Site levels will be designed to convey overland flows away from the proposed development during exceedance events and in the event of failure, runoff will flow freely toward the permeable paving and landscaped areas.
- Additionally, a further precautionary fail-safe measure will be high level overflow pipes fitted on the infiltration tanks, discharging to the proposed foul sewer network, should the unlikely failure occur.

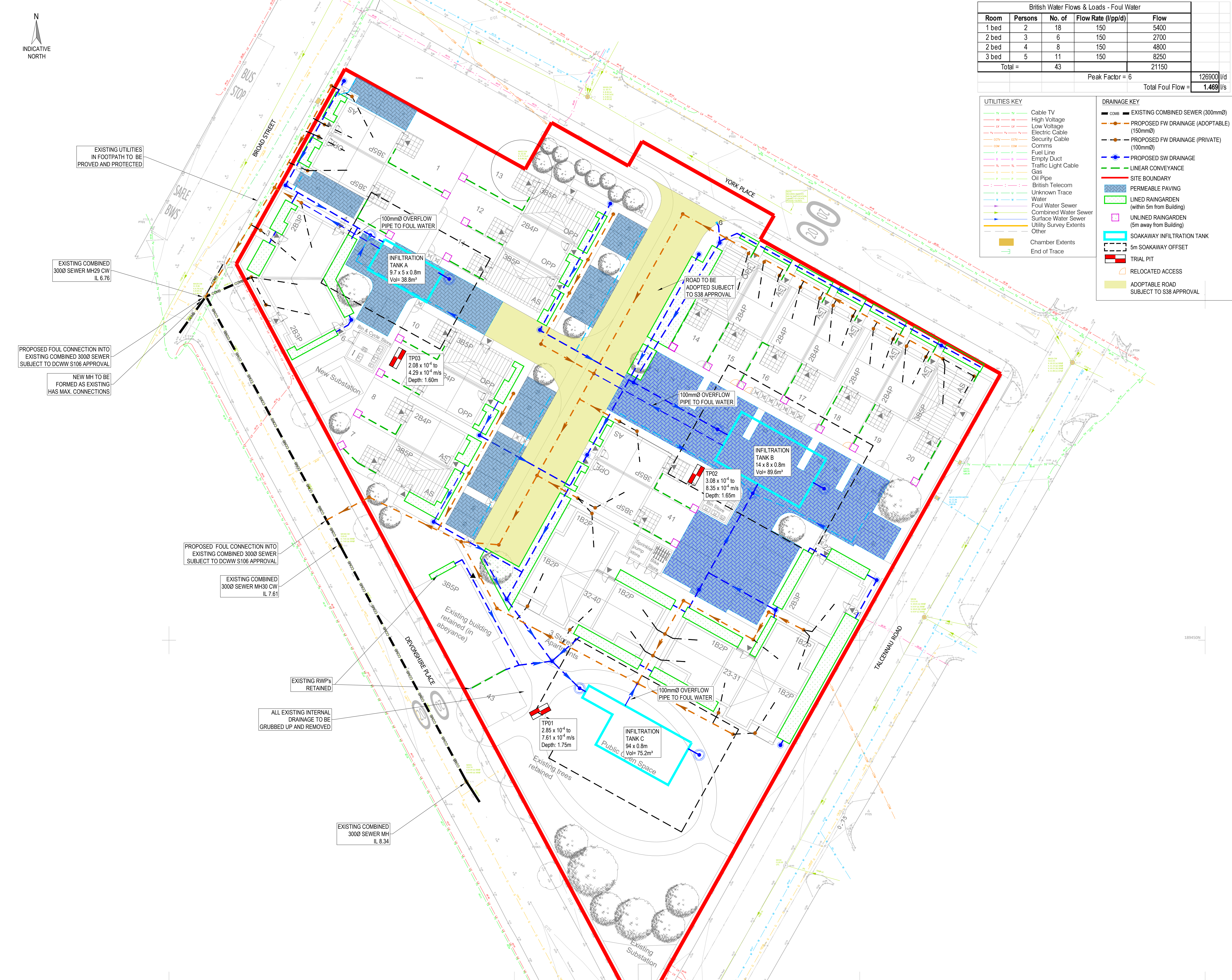
ii. SuDS Features

- Runoff from impermeable front half of roofs, roadways, hardstanding footpaths and car parking is proposed to be conveyed into lined raingardens (located within 5m from building extents) and permeable paving and discharged to one of three soakaway infiltration tanks, located 5m away from building extents.
- Runoff from impermeable rear half of roofs and patios is proposed to be conveyed into unlined raingardens located 5m away from building extents and allowed to drain via localised infiltration to the ground.
- Where possible, proposed rainwater pipes from buildings are to pass through adjacent rain gardens to aid treatment, improve water quality and reduce peak flow rates.
- The SuDS features proposed have been selected based upon mitigation index values given within Tables 26.2 & 26.3 of CIRIA C753, with the land use considered to be low pollution hazard level. The SuDS features proposed are suitable up to medium pollution hazard level. We note that not all SuDS features are equal in their ability to treat surface water, and the three main categories of pollutants: total suspended solids (TSS), metals & hydrocarbons.

iii. Foul Water Strategy

- Foul water from the proposed residential development will be conveyed via the internal foul water network and will discharge to the existing DCWW combined sewer on Devonshire Place.
- The proposed drainage connection will require a S106 agreement prior to the completion of works and/or communication of flows to the DCWW network.
- If a section of pipework is to cross outside of the ownership boundary or pass through 3rd party land it would require a S104 adoption agreement with DCWW.
- The foul drainage for the development will serve 43 units, with an anticipated discharge rate of 1.47 l/s.

III. Appendix A – JUBB Drainage Layout 22305-JUBB-00-XX-DR-C-500



British Water Flows & Loads - Foul Water				
Room	Persons	No. of	Flow Rate (l/pp/d)	Flow
1 bed	2	18	150	5400
2 bed	3	6	150	2700
2 bed	4	8	150	4800
3 bed	5	11	150	8250
Total =		43		21150
			Peak Factor = 6	126900 l/d
			Total Foul Flow =	1.469 l/s

UTILITIES KEY

- TV Cable TV
- HV High Voltage
- LV Low Voltage
- EC Electric Cable
- SC Security Cable
- Comms Comms
- F Fuel Line
- ED Empty Duct
- TL Traffic Light Cable
- G Gas
- O Oil Pipe
- BT British Telecom
- U Unknown Trace
- W Water
- FWS Foul Water Sewer
- CWS Combined Water Sewer
- SWS Surface Water Sewer
- US Utility Survey Extents
- Other

Chamber Extents
End of Trace

DRAINAGE KEY

- COMB EXISTING COMBINED SEWER (300mmØ)
- PROPOSED FW DRAINAGE (ADOPTABLE) (150mmØ)
- PROPOSED FW DRAINAGE (PRIVATE) (100mmØ)
- PROPOSED SW DRAINAGE
- LINEAR CONVEYANCE
- SITE BOUNDARY
- PERMEABLE PAVING
- LINED RAINGARDEN (within 5m from Building)
- UNLINED RAINGARDEN (5m away from Building)
- SOAKAWAY INFILTRATION TANK
- 5m SOAKAWAY OFFSET
- TRIAL PIT
- RELOCATED ACCESS
- ADOPTABLE ROAD SUBJECT TO S38 APPROVAL

- NOTES
- THIS DRAWING IS PRELIMINARY AND SUBJECT TO CHANGE DURING DETAILED DESIGN. NOT TO BE USED FOR CONSTRUCTION PURPOSES.
 - DO NOT SCALE FROM THIS DRAWING, USE FIGURED DIMENSIONS ONLY.
 - ANY DISCREPANCIES SHOULD BE REPORTED TO THE ENGINEER IMMEDIATELY.
 - ALL DIMENSIONS IN M UNLESS STATES OTHERWISE. TYPE S AND S1 BEDDING AND SURROUND TO ALL CARRIER DRAINS EXCEPT WHERE DEPTH IS LESS THAN 1.2M OR IN AREAS BENEATH ASPHALT IN WHICH CASE TYPE Z1 BEDDING AND SURROUND IS TO BE USED.
 - MH COVERS AND FRAMES TO CONFORM TO BS EN 124: HIGHWAYS AND FOOTWAYS TO FRONT OF BUILDINGS (D400) -FOOTWAYS TO REAR OF BUILDINGS AND INTERNAL ATRI/AVOID AREAS (B125)
 - ALL DRAINAGE (150mm-600mm) TO BE TWIN WALL UPVC PIPEWORK IN ACCORDANCE WITH BS-EN-13476-1:2007 AND TO ACHIEVE THE HAPAS SPECIFICATION ISSUED BY THE BBA.
 - ALL INTERNAL RWPS AND SVPS TO HAVE ABOVE GROUND ACCESS FITTINGS.
 - ALL EXTERNAL RWPS TO BE FITTED WITH RODDABLE GULLIES AT JUNCTURE WITH GROUND.
 - FOUL DRAINAGE PIPE MATERIAL TO BE UPVC IN ACCORDANCE WITH BS-EN 1401-1 AND TO ACHIEVE HAPAS SPECIFICATION ISSUED BY THE BBA.
 - ROOT BARRIERS TO BE INSTALLED WHERE SEWERS ARE WITHIN 1.5M OF PROPOSED / EXISTING TREES.
 - INSPECTION CHAMBER ACCESS TO BE RESTRICTED TO 350MMØ WHEN DEPTH TO INVERT LEVEL EXCEEDS 1.2M.
 - ALL INTERNAL DRAINAGE TO BE 100Ø PIPEWORK UNLESS SPECIFIED OTHERWISE.
 - ALL DRAINAGE TO BE CONSTRUCTED IN LINE WITH BUILDING REGULATIONS PART H.
 - WHERE PIPEWORK IS TO BE ABANDONED, IT IS TO BE GRUBBED UP, DUG OUT AND REMOVED.
 - SOAKAWAYS HAVE BEEN DESIGNED IN LINE WITH THE CIRIA SUDS MANUAL C753. NO INTERCEPTION, AS PER SUDS MANUAL TABLE G2.1.
 - CONTRACTOR TO VERIFY DESIGN INFILTRATION RATES AT PROPOSED LOCATIONS OF INFILTRATION PRIOR TO CONSTRUCTION. INFILTRATION TESTS TO BE CARRIED OUT AT PROPOSED DEPTH OF THE BASE OF THE INFILTRATION FACILITIES AND IN STRICT ACCORDANCE WITH BRE DIGEST 365. CONTRACTOR TO ADVISE ENGINEER IF INFILTRATION TEST RESULTS ARE LOWER THAN THE DESIGN INFILTRATION RATE.
 - CONTRACTOR TO VERIFY THAT THE STRATA ENCOUNTERED AT THE BASE OF THE SOAKAWAY MATCHES TESTING DATA PROVIDED AND INFORM THE ENGINEER OF ANY CHANGES OR INCONSISTENCIES ACROSS THE LENGTH OR WIDTH OF EACH FEATURE. ANY SEEPAGE OR GROUNDWATER ENCOUNTERED SHOULD ALSO BE COMMUNICATED TO THE ENGINEER.
 - STOCKPILING OF SOILS OR CONSTRUCTION MATERIAL AND HAVE TRAFFICKING WITH MACHINERY TO BE AVOIDED IN AREAS OF PROPOSED INFILTRATION TO AVOID OVER CONSOLIDATION OF SUB-SOILS.
 - CONTRACTOR TO PROTECT ANY EXCAVATIONS FOR SOAKAWAY FEATURES OR INSTALLED STRUCTURES FROM SILTATION FROM SITE RUNOFF.
 - ATTENUATION AND INFILTRATION FEATURES HAVE BEEN DESIGNED FOR ALL RETURN PERIODS UP TO AND INCLUDING 1 IN 100 YEAR +40% ALLOWANCE FOR CLIMATE CHANGE, AND TO 1/2 DRAIN DOWN WITHIN 24 HOURS.
 - TOPOGRAPHICAL SURVEY TAKEN FROM LANDMARK SURVEYS WALES.
 - UTILITY SURVEY TAKEN FROM LANDMARK SURVEYS WALES DRAWING NUMBER 6388.
 - RWP & SVP LOCATIONS TO BE CONFIRMED.
 - REFER TO DRAINAGE STANDARD DETAILS ON JUBB DRAWINGS 510 & 511.

P3	06.12.22	Updated layout	KP	GS
P2	12.10.22	SAB Pre App	KP	GS
P1	07.10.22	Preliminary issue	KP	GS
Rev	Date	Description	By	Apvd

PROJECT:
DEVONSHIRE PLACE,
PORT TALBOT

TITLE:
DRAINAGE LAYOUT

CLIENT:
LINC CYMRU

SCALE@A1:
1:250

PROJECT REF:
22305
DRAWING No: 22305-JUBB-00-XX-DR-C-0500
REV: P3

Revision Referencing
P = Preliminary A = Approval T = Tender C = Construction