

Title: Drainage Strategy (for planning only)

Date: 11/03/2021

I. Introduction

Jubb have been instructed by Galliford Try to provide engineering input relating to drainage and flooding for the development of a new junior school.

The site is approximately 2ha in size and is located on National Grid Reference (ST) 11074 67358. The site is currently undeveloped and is part of the wider Barry Docks development, with a 2 form entry primary school for 420 pupils, a nursery for 96 pupils and associated sports pitches proposed. Barry Docks is approximately 170m away towards the east of the site.

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, Vale of Glamorgan Council (VoG) 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 Welsh Water (DCWW) 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.

An outline SAB pre-application was submitted to the Vale of Glamorgan with a formal response received in January 2021. The application response summarised that the SuDS Approval Body in line with Welsh Governments Statutory Standards for Sustainable Drainage Systems offered no objection in principle to the proposed drainage scheme based on the details provided with the pre-application,

The developer is committed to working closely with the VoG SAB officers to develop the drainage design in line with their comments in advance of submitting a SAB full application.

Refer to JUBB drawing C4294-JUBB-XX-XX-DR-CS-0500-Proposed Drainage Layout, within Appendix A for details of the proposed strategy.

i. Surface Water Strategy

- Subject to SAB approval and agreement with DCWW, the proposed development will discharge to an existing 600Ø sewer which eventually discharges to the nearby Barry docks.

- A system of SuDS features is proposed to treat surface water, utilising rain gardens, basins and permeable paving.
- The permitted rates of discharge are to be discussed and agreed in writing with VoG and DCWW as part of the SABs application process.
- Infiltration systems are not considered feasible due to ground conditions and areas of contaminated land.
- As per discussions with DCWW, the detention basin and two basins at the eastern side of the site discharge via vortex flow controls limiting discharge flows to the downstream network. These include high level overflows to mitigate flood risk.
- The proposed basins have been sized to include a 0.3m freeboard.

ii. SuDS Features

- Runoff from impermeable roadways, hardstanding, footpaths and car parking is proposed to be conveyed into tanked permeable paving and discharged via carrier-pipes within the subbase. Where this is not possible, the runoff will be conveyed to a rain garden and basins. Any remaining areas which cannot feasibly be conveyed to a SuDS feature will be drained via traditional gully/line drains. As part of the management train, the surface water will then discharge to the attenuation basins as a second form of treatment.
- Proposed rainwater pipes from buildings or structures are to pass through the attenuation basins 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 Highways & car parking considered to be medium pollution and roof runoff considered to be low pollution. 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.
- Any proposed drainage connection will require an S106 agreement prior to the completion of works and/or communication of flows to the DCWW network.

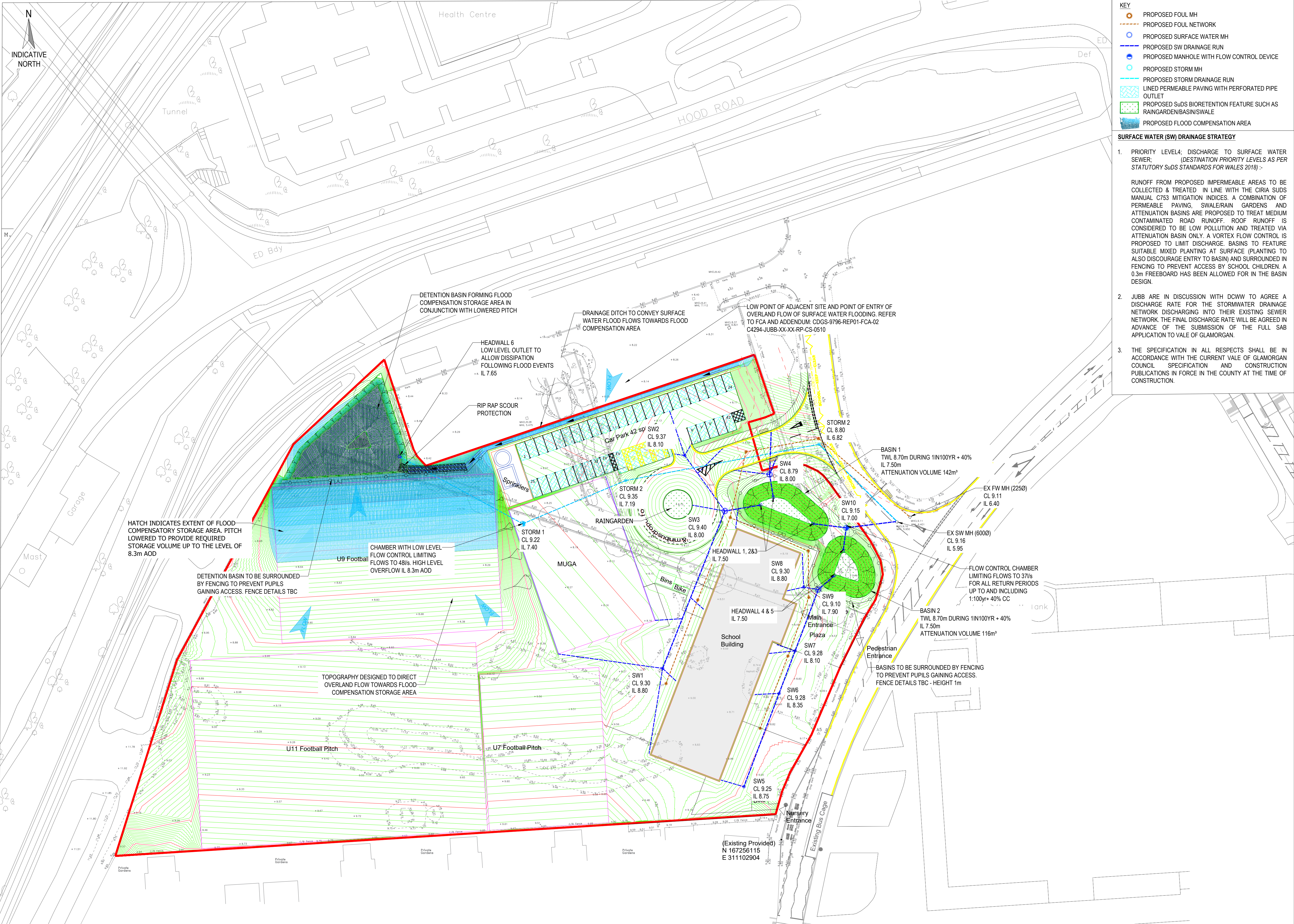
iii. Foul Water Strategy

- Foul water (FW) discharging from the proposed school building will discharge to the foul drainage in the adjacent road east of the site.
- Any proposed drainage connection will require an 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 the outside of the ownership boundary or pass through 3rd party land it would require a S104 adoption agreement with DCWW.

iv. Flooding

- For details on the potential sources of flooding and proposals to manage the risk refer to report C4294-JUBB-XX-XX-RP-CS-0510 – Flood Consequence Assessment Addendum.

Appendix A – C4294-JUBB-XX-XX-DR-CS-0500-Proposed Drainage Layout



KEY

- PROPOSED FOUL MH
- PROPOSED FOUL NETWORK
- PROPOSED SURFACE WATER MH
- PROPOSED SW DRAINAGE RUN
- PROPOSED MANHOLE WITH FLOW CONTROL DEVICE
- PROPOSED STORM MH
- PROPOSED STORM DRAINAGE RUN
- LINED PERMEABLE PAVING WITH PERFORATED PIPE OUTLET
- PROPOSED SUDS BIORETENTION FEATURE SUCH AS RAINGARDEN/BASIN/SWALE
- PROPOSED FLOOD COMPENSATION AREA

SURFACE WATER (SW) DRAINAGE STRATEGY

1. PRIORITY LEVEL4; DISCHARGE TO SURFACE WATER SEWER: (DESTINATION PRIORITY LEVELS AS PER STATUTORY SUDS STANDARDS FOR WALES 2018) :-

RUNOFF FROM PROPOSED IMPERMEABLE AREAS TO BE COLLECTED & TREATED IN LINE WITH THE CIRIA SUDS MANUAL C753 MITIGATION INDICES. A COMBINATION OF PERMEABLE PAVING, SWALE/RAIN GARDENS AND ATTENUATION BASINS ARE PROPOSED TO TREAT MEDIUM CONTAMINATED ROAD RUNOFF. ROOF RUNOFF IS CONSIDERED TO BE LOW POLLUTION AND TREATED VIA ATTENUATION BASIN ONLY. A VORTEX FLOW CONTROL IS PROPOSED TO LIMIT DISCHARGE. BASINS TO FEATURE SUITABLE MIXED PLANTING AT SURFACE (PLANTING TO ALSO DISCOURAGE ENTRY TO BASIN) AND SURROUNDED IN FENCING TO PREVENT ACCESS BY SCHOOL CHILDREN. A 0.3m FREEBOARD HAS BEEN ALLOWED FOR IN THE BASIN DESIGN.

2. JUBB ARE IN DISCUSSION WITH DOWW TO AGREE A DISCHARGE RATE FOR THE STORMWATER DRAINAGE NETWORK DISCHARGING INTO THEIR EXISTING SEWER NETWORK. THE FINAL DISCHARGE RATE WILL BE AGREED IN ADVANCE OF THE SUBMISSION OF THE FULL SAB APPLICATION TO VALE OF GLAMORGAN.

3. THE SPECIFICATION IN ALL RESPECTS SHALL BE IN ACCORDANCE WITH THE CURRENT VALE OF GLAMORGAN COUNCIL SPECIFICATION AND CONSTRUCTION PUBLICATIONS IN FORCE IN THE COUNTY AT THE TIME OF CONSTRUCTION.

- NOTES:**
- THIS DRAWING TO BE READ IN CONJUNCTION WITH ALL RELEVANT ENGINEERS & ARCHITECTS DRAWINGS, TOGETHER WITH THEIR LATEST SPECIFICATIONS. ANY DISCREPANCIES ARE TO BE REPORTED TO THE ENGINEER (JUBB) IMMEDIATELY
 - ALL EXISTING MANHOLE INVERTS TO BE CHECKED AND REPORTED TO THE ENGINEER PRIOR TO THE COMMENCEMENT OF DRAINAGE WORKS.
 - WHERE REQUIRED, EXISTING PIPE CONNECTIONS ARE TO BE CCTV SURVEYED AND INSPECTED BY THE ENGINEER AND LOCAL AUTHORITY. IF THE PIPE CONNECTION IS FOUND TO BE DAMAGED OR IN DISTRESS, THE CONTRACTOR IS TO CARRY OUT REMEDIAL WORKS OR PROVIDE A NEW CONNECTION TO THE EXISTING SEWER (PIPE SIZE AND GRADIENT TO BE DETERMINED BY THE ENGINEER
 - DEVELOPMENT SITE SUBJECT TO SAB APPROVAL PRIOR TO THE COMMENCEMENT OF WORKS.
 - MH COVERS AND FRAMES TO CONFORM TO BS EN 124. ALL TRAFFICKED COVERS TO CONFIRM TO C250 LOAD CLASS AND ALL NON-TRAFFICKED COVERS TO CONFORM TO B125.
 - PIPE WORK BEDDING: TYPE S BEDDING AND SURROUND TO ALL PIPES EXCEPT IN THE FOLLOWING CIRCUMSTANCES, IN WHICH TYPE Z BEDDING AND SURROUND ARE TO BE USED:
 - IN LANDSCAPED AREAS (INACCESSIBLE TO VEHICLES) WHERE DEPTH TO CROWN OF PIPE IS LESS THAN 0.35m
 - IN AREAS OF SUBJECT TO POSSIBLE VEHICULAR LOADING (E.G. DRIVEWAYS OR ROADS) WHERE DEPTH IS LESS THAN 1.2m
 - ALL SURFACE WATER DRAINAGE TO BE MINIMUM DN150mm TWINWALL AND MANUFACTURED TO BS-EN 1401 AND BS 4660 UNLESS NOTED OTHERWISE.
 - ALL RWP's TO BE FITTED WITH RODDABLE GULLIES AT JUNCTURE WITH GROUND
 - ALL PROPOSED DRAINAGE TO BE INSTALLED TO SEWERS FOR ADOPTION 7th EDITION STANDARD AND BUILDING REGULATIONS PART H REQUIREMENTS.
 - SUDS FEATURES TO BE DESIGNED, CONSTRUCTED & MAINTAINED IN LINE WITH GUIDANCE OF CIRIA REPORT C753 THE SUDS MANUAL & STATUTORY SUDS STANDARDS FOR WALES 2018
 - ATTENUATION BASINS INCLUDE 1.3 SIDES & 0.3m ALLOWANCE FOR FREEBOARD

P2	02.03.21	UPDATED LAYOUT	AH	GS
P1	21.01.21	Preliminary issue	ME	GS
Rev	Date	Description	By	Apvd

PROJECT:
BARRY WATERFRONT SCHOOL

TITLE:
PROPOSED DRAINAGE LAYOUT

CLIENT:
GALLIFORD TRY CONSTRUCTION

SCALE@A1:
1:500

PROJECT REF: 20111
DRAWING No: C4294-JUBB-XX-XX-DR-CS-0500
STATUS: S0
REV: P2

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

