DRAINAGE STRATEGY
THE LANDOWNER WISHES TO DEVELOP THE EXISTING SCHOOL SITE (BROWNFIELD SITE) FOR A RESIDENTIAL DEVELOPMENT OF 10 HOUSE PLOTS.

RAINWATER HARVESTING IS NOT SUITABLE FOR USE FROM THE ROAD. THEREFORE NO FEESABLE DEMAND FOR POTABLE WATER RE-USE.

THE USE OF GREY WATER RAIN WATE RHARVESTING IS NOT FINANCIALLY VIABLE FOR EACH PROPERTY. REFER TO RWH COST FEASIBILTY EXERCISE.

200 LITRE RAIN WATER BUTTS WILL BE USED TO THE REAR OF PROPERTIES.

INFILTRATION TESTING HAS NOT BEEN UNDERTAKEN ON THE SITE. HOWEVER BASED ON THE GROUND INVESTIGATION UNDERTAKEN BY TERRA FIRMA WALES THEY HAVE ADVISED THAT INFILTRATIO WOULD NOT BE VIABLE OR RECOMMENDED DUE TO THE FOLLOWING FINDINGS.

THE LIKELIHOOD OF THE SOAKAWAYS WORKING IN THE COHESIVE SOIL IS LOW.

BASED ON THE CHEMICAL TEST RESULTS IN THE NEAR-SURFACE SOILS, SOAKAWAYS SHOULDN'T BE INSTALLED WITHIN THE MADE GROUND DUE TO A RISK OF MOBILISING THE HIGH CONCENTRATIONS OF PAH INTO THE AQUATIC ENVIRONMENT.

THERE ARE NO WATERCOURSES/SURFACE WATER SYSTEMS WITHIN 20m OF THE SITE

IN ACCORDANCE WITH STANDARD S1 HIERARCHY, LEVEL 1 & 2 CANNOT BE ACHIEVED.

AN EXISTING COMBINED SYSTEM IS LOCATED ON THE SITE WHICH PREVIOUSLY SERVED THE SCHOOL. THIS SYSTEM OUTFALLS TO A 225mm Φ COMBINED SYSTEM IN QUEENS ROAD.

IT IS PROPOSED TO TREAT RUN OFF FROM THE ROAD USING SURFACE SUDS FEATURES IN THE FORM OF GRASS LINED SWALES, RAIN GARDENS AND TURFSTONE PAVING. TREATED RUN OFF WILL BE ATTENUATED ON SITE USING ATTENUATION CELLS AND A TRADITIONAL PIPED SYSTEM TO MANAGE ALL RAIN FALL EVENTS UP TO AND INCLUDING 1 IN 100 YEAR PLUS 30% RAINFALL EVENT FOR ALL DURATIONS UP TO AND INCLUDING THE 10080 MINUTE DURATION. 10% URBAN CREEP WILL BE APPLIED IN THESE CALCULATIONS.

FLOWS TO BE RESTRICTED FROM THE OVERALL SITE IN ORDER TO ACHIEVE 30% BETTERMENT ON THE PRE DEVELOPMENT RUN OFF RATE. TO BE CALCULATED AND DISCHARGE RATE AGREED WITH DCWW.

THE IH24 GREENFIELD RUN OFF RATE IS 12.24 LITRES PER SECOND
THE ICP SUDS PRE DEMOLITION Q BAR URBAN RUN OFF CALCULATION IS 22.5 LITRE PER SECOND.
THE ICP SUDS POST DEMOLITION Q BAR URBAN RUN OFF CALCULATION IS 12.8 LITRE PER SECOND.
THE LOWER OF THE VALUES HAS BEEN USED WHEN CALCULATION THE 30% BETTERMENT IN TERMS OF RUN OFF FOR THE FUTURE SITE. BASED ON THIS IT IS PROPOSED TO RESTRICT FLOWS TO A TOTAL OF 8 LITRES PER SECOND FROM THE SITE TO THE RECEIVING SYSTEM WHICH REPRESENTS 34.6% BETTERMENT ON THE IH24 GREENFIELD RUN OFF RATE.

THE OVERALL SITE IS SPLIT INTO TWO SITES. DISCHARGE WILL BE AT A RESTRICTED RATE USING A A HIGH AND LOW LEVEL FLOW CONTROL CHAMBER TO OVERCOME THE TOPOGRAPHY. A WEIR IS PROVIDED IN EACH FLOW CONTROL CHAMBER SET ABOVE THE HIGHEST MODELLED WATER LEVEL FOR THE 1 IN 100 YEAR PLUS 30% RAINFALL EVENT. THIS OVERFLOW PIPE WILL CONVEY FLOWS UNRESTRICTED TO THE DOWNSTREAM SYSTEM AND TO PREVENT FLOODING ON SITE OCCURING. THIS WILL BE UTILISED IN THE EVENT OF SYSTEM FAILURE OR RAINFALL EVENTS IN EXCESS OF THE 1 IN 100 YEAR PLUS 30% RAINFALL EVENT.

EACH BUILDING PLOT WILL HAVE ITS OWN NON ADOPTED, NON INFILTRATING RAIN GARDEN CONNECTION TO THE PIPED SYSTEM MANHOLE CHAMBERS IN THE ROAD BY MEANS OF A CONNECTOR PIPE. THESE FLOWS FROM EACH BUILDING PLOT WILL BE RESTRICTED.

200 LITRE RAIN WATER BUTTS WILL BE UTILISED AND CONNECTED DIRECTLY TO DOWNSPOUT LOCATIONS. AN OVERFLOW IS PROVIDED WITH THE RAIN WATER BUTT THAT WILL DIRECT FLOWS BACK INTO THE RAIN WATER DOWN SPOUT ONCE THE BUTT IS FULL.

RUN OFF FROM THE HOUSE ROOF WILL BE COLLECTED BY:
DRAINAGE CHANNELS AND WILL BE CONVEYED TO THE SURFACE OF THE RAIN GARDENS

WATER FROM PATHS DIRECTED TO DRAINAGE CHANNELS WILL CONVEY WATER TO THE SURFACE OF THE NON INFILTRATING RAIN GARDEN SYSTEMS

THE RAIN WATER BUTTS AND FREEBOARD TO RAIN GARDENS WILL ACT AS A MECHANISM AID FOR DEALING WITH INTERCEPTION FLOWS.

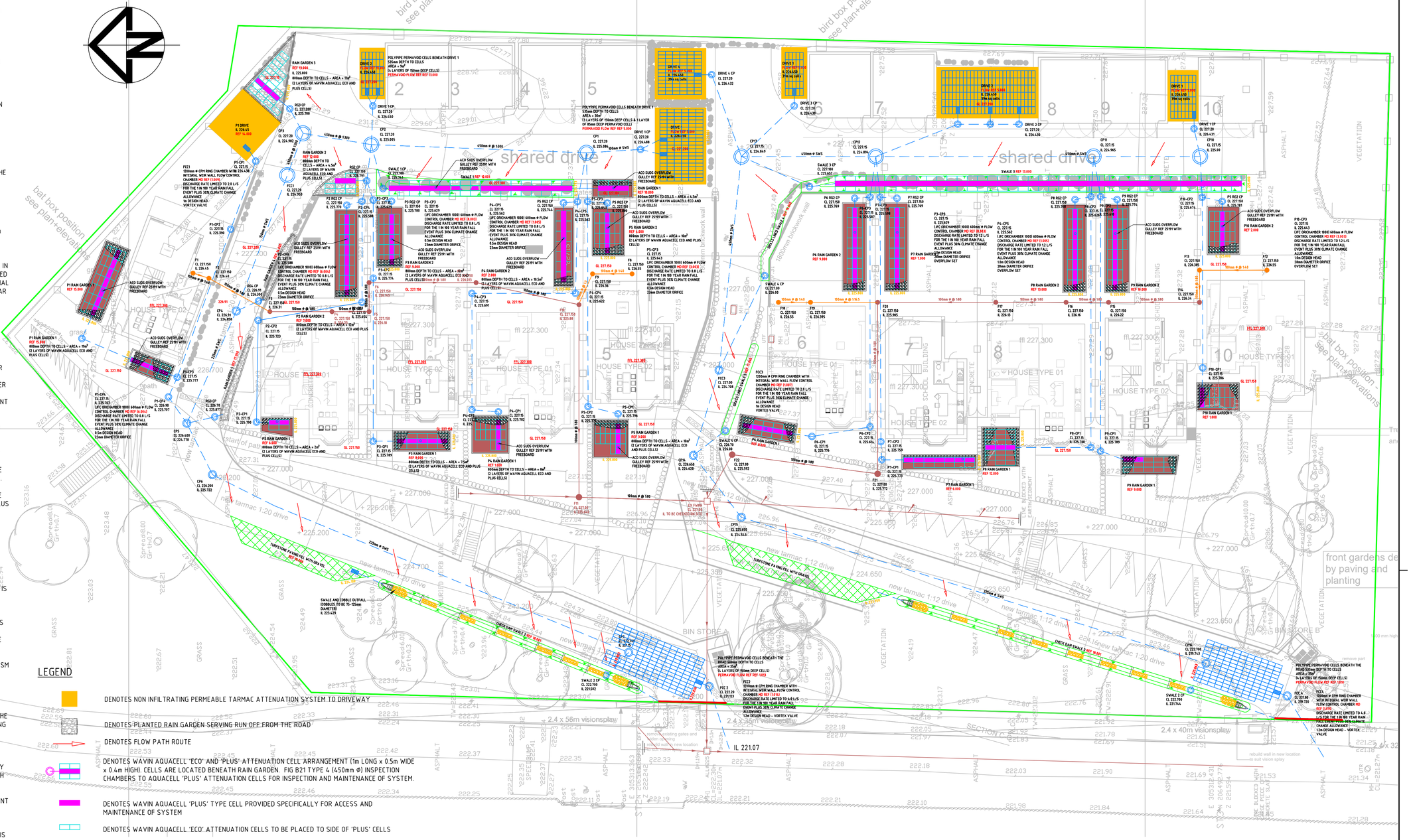
A 125mm DEPTH OF FREEBOARD IS PROVIDED WITHIN THE RAIN GARDENS.

ROOF RUN OFF AND CATCHMENT TO RAIN GARDENS WILL RECEIVE TREATMENT FROM THE FULL DEPTH OF THE ENHANCED SOIL MEDIUM AND AGGREGATE LAYER BEFORE ENTERING THE AQUACELL SYSTEM.

IT SHOULD BE FURTHER NOTED THAT THE RAIN GARDENS ARE MODELLED ONLY AS ATTENUATION CELLS AND DO NOT TAKE INTO ACCOUNT FOR THE VOLUME PROVIDED BY THE STONE SURROUND OR ENHANCED SOILS. A 100mm FREEBOARD IS PROVIDED IN EACH RAIN GARDEN

IT SHOULD BE NOTED THAT THE HYDRAULIC CALCULATIONS DO NOT TAKE INTO ACCOUNT THE USE OF RAIN WATER HARVESTING BUTTS AND REPRESENT MANAGEMENT OF ALL CONTRIBUTING AREAS/WORST CASE SCENARIO FOR THESE RAIN FALL EVENTS.

UNRESTRICTED ACCESS FOR MAINTENANCE AND REPLACEMENT OF THE SUDS SYSTEM IS PROVIDED.



LEGEND

- DENOTES NON INFILTRATING PERMEABLE TARMAC ATTENUATION SYSTEM TO DRIVEWAY
- DENOTES PLANTED RAIN GARDEN SERVING RUN OFF FROM THE ROAD
- DENOTES FLOW PATH ROUTE
- DENOTES WAVIN AQUACELL 'ECO' AND 'PLUS' ATTENUATION CELL ARRANGEMENT (1m LONG x 0.5m WIDE x 0.4m HIGH). CELLS ARE LOCATED BENEATH RAIN GARDEN. FIG B21 TYPE 4 (450mm Φ) INSPECTION CHAMBERS TO AQUACELL 'PLUS' ATTENUATION CELLS FOR INSPECTION AND MAINTENANCE OF SYSTEM.
- DENOTES WAVIN AQUACELL 'PLUS' TYPE CELL PROVIDED SPECIFICALLY FOR ACCESS AND MAINTENANCE OF SYSTEM
- DENOTES WAVIN AQUACELL 'ECO' ATTENUATION CELLS TO BE PLACED TO SIDE OF 'PLUS' CELLS
- DENOTES 708x354x150 & 85mm DEEP PERMAVOID CELLS
- DENOTES FLOW PATH ROUTE
- DENOTES OUTLINE OF OWNERSHIP BOUNDARY
- DENOTES UNOBSTRUCTED ACCESS TO MAINTAIN RAIN GARDEN SYSTEMS.
- REF (1.000) — DENOTES PIPE/STRUCTURE REFERENCE
- 150 SWS — DENOTES DIFFUSER UNIT FOR DISCHARGE OF FLOWS
- DENOTES DRAINAGE CHANNELS TO CONVEY WATER TO THE SURFACE OF THE RAIN GARDEN
- DENOTES EMERGENCY OVERFLOW DRAINAGE CHANNEL TO DIRECT EXCEEDEANCE FLOWS INTO THE SUB BASE OF THE DRIVEWAY
- DENOTES 200 LITRE WATER BUTT FOR GARDEN IRRIGATION
- DENOTES 75-125mm DIAMETER COBBLES TO SURFACE OF PLANTED RAIN GARDEN AT OUTFALL TO DRAINAGE CHANNEL
- DENOTES LOAMY SOIL SURFACE

ALL SURFACE WATER DRAINAGE TO BE 100mm DIAMETER UNO
ALL CP (CATCHPIT CHAMBERS) CHAMBERS TO BE FIG B21 TYPE 4 CHAMBERS WITH 300mm DEEP SUMPS

N O T E - FOUL DRAINAGE

The Developer must self-vet and clarify that the design criteria, material standards and workmanship specifications for the proposed potentially adoptable sewers are in accordance with those set out in 'Sewers For Adoption 7th Edition' and the requirements of the Statutory Undertaker - Dwr Cymru Welsh Water (DCWW).

Pipes laid to bedding detail Type 'B' as per specification for highway works using `OSMA', `ULTRARIB', `MARLEY QUANTUM' or similar approved structural walled thermoplastic pipes, and must conform to `Sewers For Adoption 7th Edition'

A Contractor who is accredited to the British Plastics Federation - Plastic Pipe Group, must undertake the installation of structured wall plastic pipes.

All chambers to be type 3 with B125 covers as a minimum in accordance with the guidance notes

All 150mm diameter pipes to be PVC material.
Plastic pipes for adoption must have a short-term ring stiffness factor of not less than 8kN per square Metre (SN8)).

- The maximum length of pipe for laying is 3 metres.
- Infill manhole covers will not be permitted.
- All plastic inspection chambers with preformed bases, the whole of the main channel must be used (i.e., do not use the branch connections to change direction).

NOTE : THE DEVELOPER MUST SELF-VET AND CERTIFY THAT THE DESIGN CRITERIA, MATERIAL STANDARDS AND WORKMANSHIP SPECIFICATIONS FOR THE PROPOSED POTENTIALLY ADOPTABLE SEWERS ARE IN ACCORDANCE WITH THOSE SET OUT IN 'SEWERS FOR ADOPTION 7th EDITION' AND THE REQUIREMENTS OF THE STATUTORY UNDERTAKER - DWR CYMRU WELSH WATER (DCWW). PIPES LAID TO BEDDING DETAIL TYPE 'B' AS PER SPECIFICATION FOR HIGHWAY WORKS USING 'OSMA', 'ULTRARIB', 'MARLEY QUANTUM' OR SIMILAR APPROVED STRUCTURAL WALLED THERMOPLASTIC PIPES AND MUST CONFORM TO 'SEWERS FOR ADOPTION 7th EDITION' PART 2, SECTION B - SEWER DESIGN. PIPES >300mmΦ TO BE LAID USING CONCRETE PIPES, CLASS M TO BS.5911 : PART 100 A CONTRACTOR WHO IS ACCREDITED TO THE BRITISH PLASTICS FEDERATION - PLASTIC PIPE GROUP, MUST UNDERTAKE THE INSTALLATION OF STRUCTURED WALL PLASTIC PIPES.

NOTE : THE ADOPTABLE FOUL DRAINAGE DESIGN IS SUBJECT TO APPROVAL BY DWR CYMRU WELSH WATER. ANY CONTRACTOR COMMENCING DRAINAGE WORKS PRIOR TO TECHNICAL APPROVAL WILL BE ACTING UNLAWFULLY.

ALL ADOPTABLE DRAINAGE TO COMPLY WITH : SEWERS FOR ADOPTION 7th EDITION

DRAINAGE SUBJECT TO SAB APPROVAL

NOT TO BE USED FOR CONSTRUCTION

NEW ADOPTED ACCESS ROAD AND DRAINAGE INFRASTRUCTURE TO SERVE FUTURE RESIDENTIAL DEVELOPMENT AT QUEENS ROAD, MERTHYR TYDFIL

OVERALL DRAINAGE LAYOUT

SCALE : 1:250 @ A1 ORIGINAL DRAWING SIZE

REV	DATE	BY
A	16.10.23	MA
	ISSUED TO SAB FOR FULL APPLICATION	

REVISIONS

Drawing Number: QR__D04 — REV: A