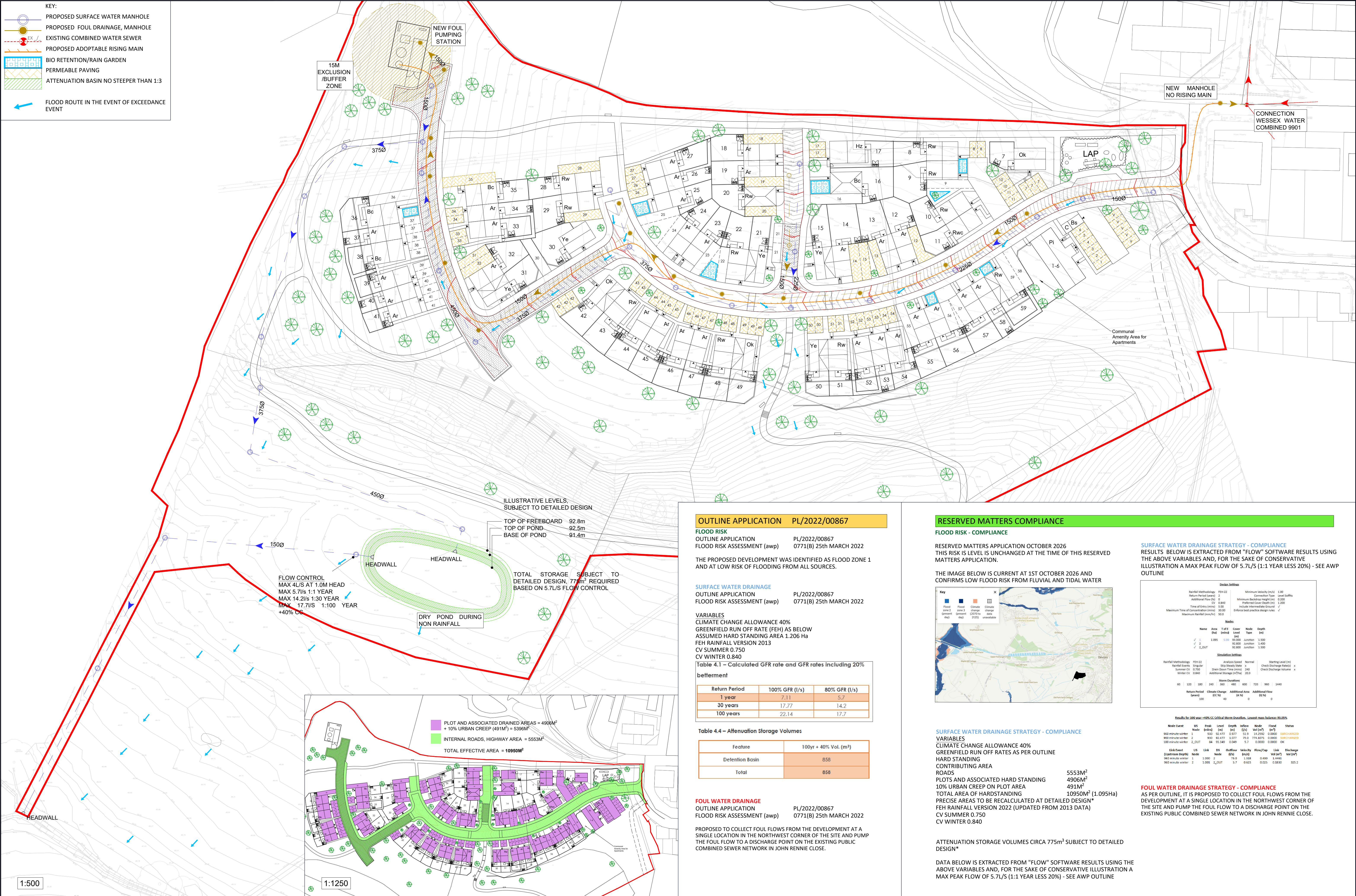
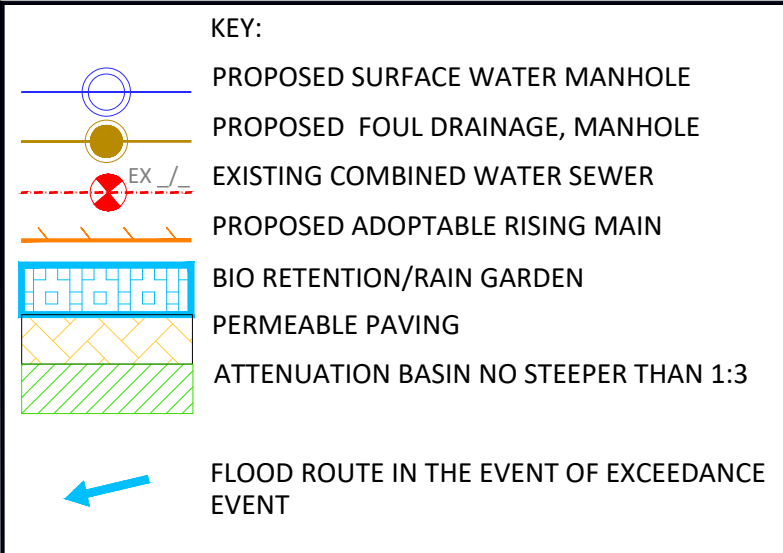




#### OUTLINE APPLICATION PL/2022/00867

FLOOD RISK  
OUTLINE APPLICATION PL/2022/00867  
FLOOD RISK ASSESSMENT (awp) 0771(B) 25th MARCH 2022

THE PROPOSED DEVELOPMENT WAS IDENTIFIED AS FLOOD ZONE 1 AND AT LOW RISK OF FLOODING FROM ALL SOURCES.

SURFACE WATER DRAINAGE  
OUTLINE APPLICATION PL/2022/00867  
FLOOD RISK ASSESSMENT (awp) 0771(B) 25th MARCH 2022

VARIABLES  
CLIMATE CHANGE ALLOWANCE 40%  
GREENFIELD RUN OFF RATE (FEH) AS BELOW  
ASSUMED HARD STANDING AREA 1.206 Ha  
FEH RAINFALL VERSION 2013  
CV SUMMER 0.750  
CV WINTER 0.840

Table 4.1 – Calculated GFR rate and GFR rates including 20% betterment

| Return Period | 100% GFR (l/s) | 80% GFR (l/s) |
|---------------|----------------|---------------|
| 1 year        | 7.11           | 5.7           |
| 30 years      | 17.77          | 14.2          |
| 100 years     | 22.14          | 17.7          |

Table 4.4 – Attenuation Storage Volumes

| Feature         | 100yr + 40% Vol. (m³) |
|-----------------|-----------------------|
| Detention Basin | 858                   |
| Total           | 858                   |

FOUL WATER DRAINAGE  
OUTLINE APPLICATION PL/2022/00867  
FLOOD RISK ASSESSMENT (awp) 0771(B) 25th MARCH 2022

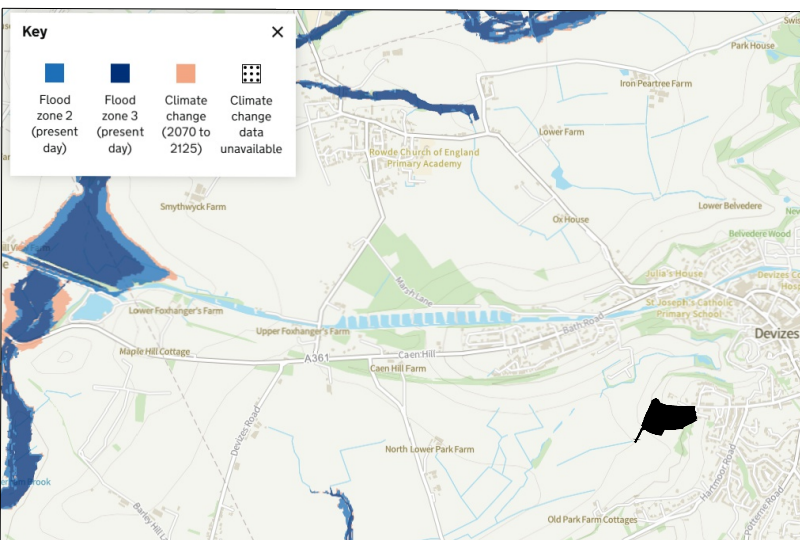
PROPOSED TO COLLECT FOUL FLOWS FROM THE DEVELOPMENT AT A SINGLE LOCATION IN THE NORTHWEST CORNER OF THE SITE AND PUMP THE FOUL FLOW TO A DISCHARGE POINT ON THE EXISTING PUBLIC COMBINED SEWER NETWORK IN JOHN RENNIE CLOSE.

#### RESERVED MATTERS COMPLIANCE

##### FLOOD RISK - COMPLIANCE

RESERVED MATTERS APPLICATION OCTOBER 2026  
THIS RISK IS LEVEL IS UNCHANGED AT THE TIME OF THIS RESERVED MATTERS APPLICATION.

THE IMAGE BELOW IS CURRENT AT 1ST OCTOBER 2026 AND CONFIRMS LOW FLOOD RISK FROM FLUVIAL AND TIDAL WATER



##### SURFACE WATER DRAINAGE STRATEGY - COMPLIANCE

VARIABLES  
CLIMATE CHANGE ALLOWANCE 40%  
GREENFIELD RUN OFF RATES AS PER OUTLINE  
HARD STANDING  
CONTRIBUTING AREA  
ROADS  
PLOTS AND ASSOCIATED HARD STANDING 5553M²  
10% URBAN CREEP ON PLOT AREA 4906M²  
TOTAL AREA OF HARDSTANDING 10950M² (1.095Ha)  
PRECISE AREAS TO BE RECALCULATED AT DETAILED DESIGN\*  
FEH RAINFALL VERSION 2022 (UPDATED FROM 2013 DATA)  
CV SUMMER 0.750  
CV WINTER 0.840

ATTENUATION STORAGE VOLUMES CIRCA 775m³ SUBJECT TO DETAILED DESIGN\*

DATA BELOW IS EXTRACTED FROM "FLOW" SOFTWARE RESULTS USING THE ABOVE VARIABLES AND, FOR THE SAKE OF CONSERVATIVE ILLUSTRATION A MAX PEAK FLOW OF 5.7L/S (1:1 YEAR LESS 20%) - SEE AWP OUTLINE

##### SURFACE WATER DRAINAGE STRATEGY - COMPLIANCE

RESULTS BELOW IS EXTRACTED FROM "FLOW" SOFTWARE RESULTS USING THE ABOVE VARIABLES AND, FOR THE SAKE OF CONSERVATIVE ILLUSTRATION A MAX PEAK FLOW OF 5.7L/S (1:1 YEAR LESS 20%) - SEE AWP OUTLINE

| Design Settings                      |           |                                    |                 |                        |                |     |     |     |     |
|--------------------------------------|-----------|------------------------------------|-----------------|------------------------|----------------|-----|-----|-----|-----|
| Rainfall Methodology                 | FEH-22    | Minimum Velocity (m/s)             | 1.00            |                        |                |     |     |     |     |
| Return Period (years)                | 2         | Connection Type                    | Level Suffix    |                        |                |     |     |     |     |
| Additional Flow (l/s)                | 0         | Minimum Backflow Height (m)        | 0.200           |                        |                |     |     |     |     |
| CV                                   | 0.840     | Preferred Cover Depth (m)          | 1.200           |                        |                |     |     |     |     |
| Time of Entry (mins)                 | 1.00      | Include Intermediate Ground        | ✓               |                        |                |     |     |     |     |
| Maximum Time of Concentration (mins) | 30.00     | Enforce best practice design rules | ✓               |                        |                |     |     |     |     |
| Maximum Rainfall (mm/h)              | 50.0      |                                    |                 |                        |                |     |     |     |     |
| Nodes                                |           |                                    |                 |                        |                |     |     |     |     |
| Name                                 | Area (ha) | T of E (mins)                      | Cover Level (m) | Node Type              | Node Depth (m) |     |     |     |     |
| ✓ 1                                  | 1.095     | 1.00                               | 92.000          | Junction               | 1.500          |     |     |     |     |
| ✓ 2                                  |           |                                    | 92.800          | Junction               | 1.400          |     |     |     |     |
| ✓ 2, OUT                             |           |                                    | 92.800          | Junction               | 1.500          |     |     |     |     |
| Simulation Settings                  |           |                                    |                 |                        |                |     |     |     |     |
| Rainfall Methodology                 | FEH-22    | Analysis Speed                     | Normal          | Starting Level (m)     |                |     |     |     |     |
| Rainfall Events                      | Single    | Stop Storage Time                  | 240             | Check Discharge Method | ✓              |     |     |     |     |
| Summer CV                            | 0.750     | Drain Down Time (mins)             | 240             | Check Discharge Volume | ✓              |     |     |     |     |
| Winter CV                            | 0.840     | Additional Storage (m³/h)          | 25.0            |                        |                |     |     |     |     |
| Storm Durations                      |           |                                    |                 |                        |                |     |     |     |     |
| Return Period (years)                | 60        | 120                                | 180             | 240                    | 360            | 480 | 600 | 720 | 960 |
| Climate Change (°C)                  | 100       | 40                                 | 0               | 0                      | 0              | 0   | 0   | 0   | 0   |
| Additional Area (ha)                 |           |                                    |                 |                        |                |     |     |     |     |
| Additional Flow (l/s)                |           |                                    |                 |                        |                |     |     |     |     |

Results for 100 year +40% CC Critical Storm Duration, Lowest mean balance 95.50%

| Node Event        | US (m/s) | Peak (m/s) | Level (m) | Depth (m) | Inflow (l/s) | Node (m³) | Flow (m³) | Link (m³) | Discharge (m³) | Status     |
|-------------------|----------|------------|-----------|-----------|--------------|-----------|-----------|-----------|----------------|------------|
| 960 minute winter | 1        | 95.0       | 92.477    | 0.977     | 33.9         | 14.258    | 0.0000    | 0.0000    | 0.0000         | OK/CHANGED |
| 960 minute winter | 2        | 95.0       | 92.477    | 1.077     | 33.9         | 775.8271  | 0.0000    | 0.0000    | 0.0000         | OK/CHANGED |
| 180 minute winter | 2, OUT   | 84         | 91.340    | 0.049     | 5.7          | 0.0500    | 0.0000    | 0.0000    | 0.0000         | OK         |

FOUL WATER DRAINAGE STRATEGY - COMPLIANCE  
AS PER OUTLINE, IT IS PROPOSED TO COLLECT FOUL FLOWS FROM THE DEVELOPMENT AT A SINGLE LOCATION IN THE NORTHWEST CORNER OF THE SITE AND PUMP THE FOUL FLOW TO A DISCHARGE POINT ON THE EXISTING PUBLIC COMBINED SEWER NETWORK IN JOHN RENNIE CLOSE.

