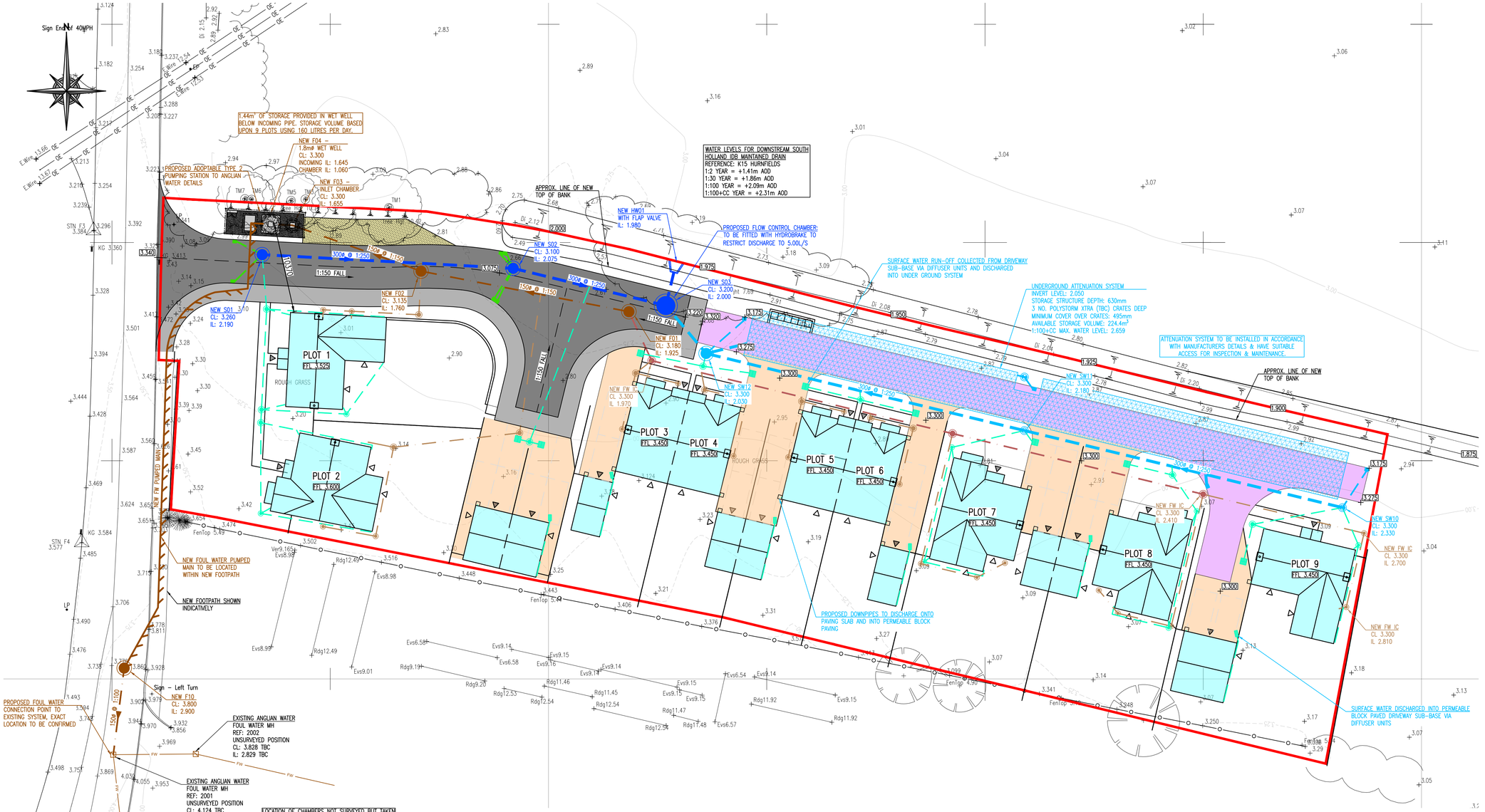


KEY:

- EXISTING FOUL SEWER – AWS
- PROPOSED FOUL WATER SEWER – S104 ADOPTABLE
- PROPOSED FOUL WATER CHAMBER – S104 ADOPTABLE
- PROPOSED FOUL WATER RISING MAIN – S104 ADOPTABLE
- PROPOSED FOUL WATER SEWER – MAN. CO.
- PROPOSED FOUL WATER CHAMBER – MAN. CO.
- PROPOSED FOUL DRAIN – PRIVATE
- PROPOSED FOUL INSPECTION CHAMBER – PRIVATE
- PROPOSED SURFACE WATER SEWER – S104 ADOPTABLE
- PROPOSED SURFACE WATER CHAMBER – S104 ADOPTABLE
- PROPOSED SURFACE WATER DRAIN – MAN. CO.
- PROPOSED SURFACE WATER CHAMBER – MAN. CO.
- PROPOSED SURFACE WATER DRAIN – PRIVATE
- PROPOSED SURFACE INSPECTION CHAMBER – PRIVATE
- PROPOSED SURFACE CATCHPIT PPIC – PRIVATE
- PROPOSED SURFACE DIFFUSER/COLLECTOR UNIT – PRIVATE
- PROPOSED DOWNPIPE DISCHARGING ONTO PAVING – PRIVATE
- PROPOSED ROAD GULLY & LATERAL – S38 ADOPTABLE
- PROPOSED UNDERGROUND ATTENUATION TANK – MAN. CO.
- 3.67 EXISTING SITE LEVEL
- 3.0000 PROPOSED SITE LEVEL
- 1:150 FALL PROPOSED SURFACE FALL
- AREA A – PROPOSED TARMAC ROAD/FOOTPATH (S38 ADOPTABLE) TOTAL AREA: 600m²
- AREA B – PROPOSED DWELLING ROOFS TOTAL AREA: 990m²
- AREA C – PERMEABLE SHARED DRIVEWAY, TYPE C SYSTEM – LINED SUB-BASE, RUN-OFF TO DISCHARGE TO ADOPTABLE SYSTEM (MANAGEMENT COMPANY) TOTAL AREA: 380m²
- AREA D – PERMEABLE PRIVATE DRIVEWAY, TYPE C SYSTEM – LINED SUB-BASE, RUN-OFF TO DISCHARGE TO ATTENUATION SYSTEM (PRIVATE) TOTAL AREA: 580m²

TOTAL DRAINED AREA: 2,550m²

0 2.5 5 7.5 10 15 20 25m
1:250

PROJECT DETAILS

THE SITE IS LOCATED ON THE EASTERN SIDE OF FLEET ROAD, FLEET HARGATE. THE POSTCODE FOR THE SITE IS PE12 8LZ AND THE APPROXIMATE CENTRE OF THE SITE AT NATIONAL GRID REFERENCE TF 39308 25129.
THE SITE SIZE IS LESS THAN A HECTARE (APPROXIMATELY 0.53 HA) AND IS LOCATED WITHIN FLOOD ZONE 3. THE SITE IS CURRENTLY AGRICULTURAL GREENFIELD LAND.
THE PROPOSED DEVELOPMENT INCLUDES PROPOSALS FOR THE CONSTRUCTION OF 9 DWELLINGS WITH ADOPTABLE ROADS, SHARED DRIVEWAYS AND PRIVATE DRIVEWAY AS FOLLOWS:

- DWELLINGS (ROOFS): 990m²
- ADOPTABLE ROAD AND FOOTPATH: 600m²
- SHARED DRIVEWAY: 380m²
- PRIVATE DRIVEWAYS: 580m²
- TOTAL IMPERMEABLE AREA: 2,550m² (APPROX 48% OF THE SITE)

SITE INVESTIGATIONS UNDERTAKEN IN MARCH 2022 FOUND THE SITE TO BE UNDERLAIN BY CLAY & SAND. INFILTRATION TESTS WERE CONDUCTED IN ACCORDANCE WITH BRE 365, AND AN INFILTRATION RATE OF 5.31×10^{-6} WAS ESTABLISHED. INFILTRATION WAS THEREFORE DEEMED AN UNSUITABLE TECHNIQUE FOR SURFACE WATER DISPOSAL.

DRAINAGE AND SuDS STRATEGY

AS STATED IN CIRIA SuDS MANUAL 2015 THE OBJECTIVE OF SUSTAINABLE DRAINAGE SYSTEMS IS TO MAXIMISE THE BENEFITS AND MINIMISE THE NEGATIVE IMPACTS OF SURFACE WATER RUNOFF FROM DEVELOPED AREAS. BY APPLYING SUDS METHODOLOGY, STORM RUNOFF FROM THE SITE IS CONTROLLED TO ENSURE THAT FLOW RATES IN DOWNSTREAM WATERCOURSES ARE NOT INCREASED AND THE WATER IS APPROPRIATELY TREATED TO REMOVE ANY CONTAMINANTS, THUS ENSURING THE QUALITY OF THE WATER IN THE NATURAL ENVIRONMENT DOWNSTREAM.

DRAINAGE HIERARCHY

	DRAINAGE HIERARCHY	Y/N	COMMENT
1	INFILTRATION TO MAXIMUM EXTENT	N	INFILTRATION UNFEASIBLE – PROVEN BY TESTING APPENDED WITHIN CALCULATIONS
2	DISCHARGE TO WATERCOURSE	Y	SURFACE WATER DRAINAGE SHALL BE DISCHARGED INTO THE RIPARIAN WATERCOURSE ALONG THE NORTHERN BOUNDARY
3	DISCHARGE TO SURFACE WATER SEWER	N	NOT REQUIRED
4	DISCHARGE TO COMBINED SEWER	N	NOT REQUIRED

SUMMARY OF DRAINAGE STRATEGY

SURFACE WATER DRAINAGE AND SuDS STRATEGY

KEY ASPECTS PROPOSED:

- IT IS PROPOSED TO PROVIDE SOURCE CONTROL TO THE SURFACE WATER RUN-OFF FROM THE PRIVATE DRIVEWAYS VIA UTILISING PERMEABLE BLOCK PAVING. SURFACE WATER WILL BE COLLECTED FROM THE SUB-BASE BENEATH AND DISCHARGE INTO THE UNDERGROUND DRAINAGE NETWORK.
- WHERE POSSIBLE ROOF WATER WILL BE DIRECTED INTO/ONTO THE PERMEABLE DRIVEWAYS VIA DIFFUSER UNITS OR DISCHARGING ONTO A PAVING SLAB LOCAL, TO PROVIDE ADDITIONAL TREATMENT.
- SURFACE WATER CATCHMENT FROM THE ROOFS, PRIVATE DRIVES AND SHARED DRIVEWAY WILL BE CONVEYED VIA UNDERGROUND PIPES INTO THE ADOPTABLE ANGLIAN WATER DRAINAGE NETWORK BENEATH THE ROAD.
- THE ADOPTABLE ROAD SHALL DRAIN VIA GULLIES TO THE ADOPTABLE SEWER UNDER THE ROAD CONSTRUCTION.
- THE USE OF A FILTER DRAINS AND SWALES WERE CONSIDERED, HOWEVER DUE TO THE HIGH GROUNDWATER TABLE AND LOW SOIL INFILTRATION RATES AS WELL AS THE SITE LAYOUT CONSTRAINTS THESE FEATURES WERE DEEMED UNSUITABLE.
- THE ADOPTABLE DRAINAGE SYSTEM, AND THEREFORE ALL THE IMPERMEABLE AREA ONSITE, SHALL DISCHARGE TO THE ADJACENT WATERCOURSE AT A CONTROLLED RATE OF 5L/S.
- SURFACE WATER RUNOFF SHALL BE ATTENUATED IN UNDERGROUND CRATES, MAINTAINED BY THE MANAGEMENT COMPANY, BELOW THE SHARED DRIVE FOR ALL STORM EVENTS UP TO AND INCLUDING THE 1 IN 100–YEAR EVENT PLUS 40% ALLOWANCE FOR CLIMATE CHANGE. A 10% ALLOWANCE FOR URBAN CREEP HAS ALSO BEEN APPLIED.
- THE SURFACE WATER OUTFALL ROUTE TO THE SOUTH HOLLAND IDB SYSTEM IS TO BE IMPROVED IN ACCORDANCE WITH THE DRAWINGS APPROVED UNDER PLANNING REF: H05–0681–20, AS ANNOTATED ON DRAWING SW 22–212–001.

SURFACE WATER STORAGE VOLUMES

- ATTENUATION VOLUME PROVIDED IN THE ATTENUATION TANKS AND MODELLED STONE MEDIA: 224.4m³
- ATTENUATION VOLUME USED IN 1 IN 2 YRS STORM EVENT: 23.9m³
- ATTENUATION VOLUME USED IN 1 IN 10 YRS STORM EVENT: 55.5m³
- ATTENUATION VOLUME USED IN 1 IN 30 YRS STORM EVENT: 84.5m³
- ATTENUATION VOLUME USED IN 1 IN 100 YRS STORM EVENT + 40% CLIMATE CHANGE : 217.8m³

FOUL WATER

- THE LEVELS OF THE PROPOSED SITE AND EXISTING ANGLIAN FOUL WATER LOCAL TO THE SITE MAKE A GRAVITY DISCHARGE UNACHIEVABLE. THEREFORE, AN ADOPTABLE TYPE 2 PUMPING STATION WILL BE INCORPORATED TO DISCHARGE FLOWS FROM THE DEVELOPMENT TO THE EXISTING SYSTEM WITHIN FLEET ROAD.

EXCEEDANCE FLOWS

THE SURFACE WATER SYSTEM IS DESIGNED TO RECEIVE AND CONTAIN WITHIN THE SITE BOUNDARY ALL RAINFALL UP TO & INCLUDING 1:100 +40% AEP. LARGER FLOWS ARE EXPECTED TO DISCHARGE AS OVERLAND FLOW INTO THE ADJACENT WATERCOURSE TO THE NORTHERN BOUNDARY. EXCEEDANCE FLOWS ARE EXCEPTIONAL EVENTS GREATER THAN 1 IN 100–YR EVENT PLUS 40% OR DUE TO BLOCKAGE OF STORM SEWER SYSTEM. IN THE EXTREMELY UNLIKELY EVENT THAT THE WATER LEVEL WITHIN THE RECEIVING WATERCOURSE IS AT THE MAXIMUM WATER FOR THE 1:100+CC EVENT LEVEL SUPPLIED BY SHIDB AND A 1:100+CC EVENT OCCURS OVERLAND FLOODING WILL BE GENERATED BY THE DEVELOPMENT. THIS FLOOD VOLUME WILL COMFORTABLY BE STORED WITHIN THE RIPARIAN WATERCOURSE TO THE NORTHERN BOUNDARY WITH MINIMUM AFFECT TO THE WATER LEVEL. PLEASE REFER TO DRAWING SW 22–212–004 FOR EXCEEDANCE ROUTES AND FURTHER DETAILS.

REV.	DESCRIPTION	DRN.	APP.	DATE
B	DRAWING GENERALLY DEVELOPED.	MP	APW	08.07.22
A	PRELIMINARY – FOR COMMENT.	MP	APW	01.07.22
–	PRELIMINARY – FOR COMMENT.	MP	APW	31.05.22

SHIELDS WILSON
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STRUCTURAL AND CIVIL ENGINEERING

STATUS: FOR INFORMATION

CLIENT: APPLEGATE HOMES (LINCS) LTD.

PROJECT: PROPOSED RESIDENTIAL DEVELOPMENT
LAND OFF FLEET ROAD,
FLEET HARGATE, SPALDING

TITLE: PROPOSED SITE DRAINAGE STRATEGY ARRANGEMENT

DATE	MAY '22	SCALE @A1 1:250	DRAWING NO.	REV.
DRAWN	MP		SW 22–212–002	B

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