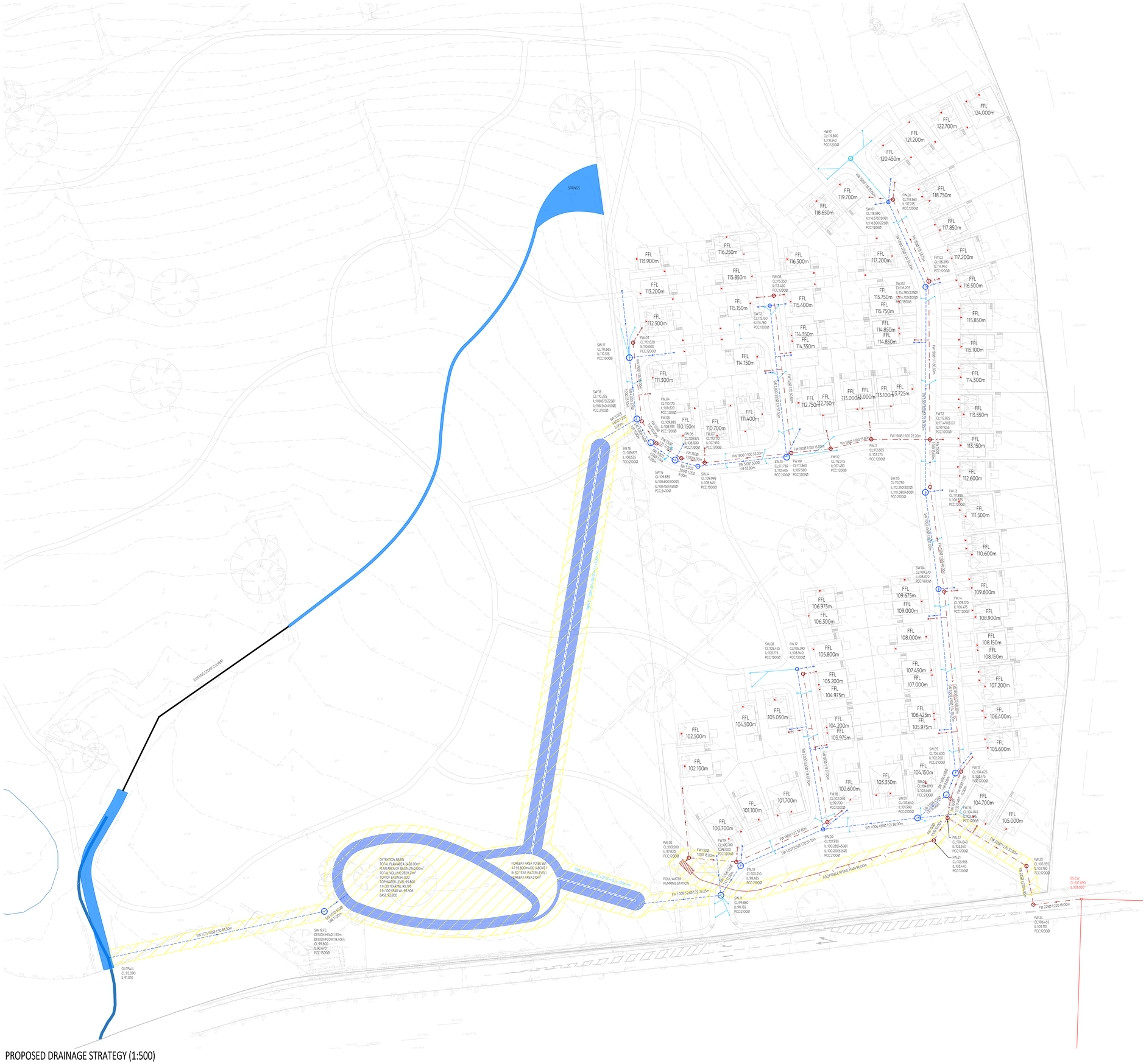

PROPOSED DRAINAGE STRATEGY (1:500)

SURFACE WATER PRINCIPLES

NPPG HIERARCHY OF SURFACE WATER DRAINAGE

THE NATIONAL PLANNING PRACTICE GUIDANCE ANY NYCC SUSTAINABLE DRAINAGE SYSTEMS GUIDANCE - 2022 UPDATE, SETS OUT THE HIERARCHY OF DRAINAGE TO PROMOTE THE USE OF SUSTAINABLE DRAINAGE SYSTEMS, BY ALIGNING MODERN DRAINAGE SYSTEMS WITH NATURAL WATER PROCESSES. THE AIM OF HIERARCHY OF DRAINAGE IS TO DRAIN SURFACE WATER RUN-OFF AS SUSTAINABLE, AS REASONABLY PRACTICABLE.

AS STATED IN THE NATIONAL PLANNING PRACTICE GUIDANCE, THE AIM SHOULD BE TO DISCHARGE SURFACE WATER RUN-OFF AS HIGH UP THE DRAINAGE HIERARCHY, AS REASONABLY PRACTICABLE:

- INTO THE GROUND (INFILTRATION).
- TO A SURFACE WATER BODY.
- TO A SURFACE WATER SEWER, HIGHWAY DRAIN, OR ANOTHER DRAINAGE SYSTEM.
- TO A COMBINED SEWER.

INFILTRATION

PWA ATTENDED A SITE WALK OVER ON 14.02.24 THE LAND WAS OBSERVED TO BE WATERLOGGED AND SATURATED, INDICATING THE EXISTING GROUND HAS IMPEDED DRAINAGE. TO PROPOSED INFILTRATION, IT IS RECOMMENDED WHILE A PHASE 2 SITE INVESTIGATION, SOAKAWAY TESTING THE BRE 365 IS UNDERTAKEN AT THE LOCATION OF THE PROPOSED SOAKAWAYS.

ALTHOUGH WITH THE ABOVE, IT IS CONSIDERED THAT INFILTRATION WILL NOT BE A FEASIBLE OPTION FOR THE SURFACE WATER DISCHARGE ON THE SITE.

WATERCOURSE

IF INFILTRATION HAS BEEN DISCOUNTED AS A VIABLE SOLUTION, THE NEXT METHOD IN PRIORITY SHOULD BE TO DISCHARGE TO A WATERCOURSE OR SURFACE WATER BODY.

AFTER A DESKTOP STUDY, UK RIVER MAPS LOCATED CLOUGH SKYE BROOK. LOCATED AT THE SOUTHWEST BOUNDARY IT IS RECOMMENDED A DIALOGUE WITH THE ENVIRONMENT AGENCY AND LLFA IS ENTERED TO DISCUSS FEASIBILITY OF A SURFACE WATER OUTFALL AT THIS LOCATION.

FOLLOWING THE ABOVE ASSESSMENT, IT HAS BEEN DETERMINED THAT THE WATERCOURSE ON SITE SHOULD BE USED FOR THE DISCHARGE OF SURFACE WATER FLOWS.

SURFACE WATER DESIGN

FURTHER TO THE ASSESSMENT OF THE SURFACE WATER HIERARCHY, THE DESIRED OUTFALL FOR THE SURFACE WATER DRAINAGE IS THE EXISTING ON SITE DRAIN WHICH ULTIMATELY DISCHARGES TO MIRES BECK TO THE SOUTH OF SITE.

RUN-OFF RATES

IN LINE WITH CURRENT NATIONAL GUIDANCE AND SUSTAINABLE DRAINAGE SYSTEMS GUIDANCE - 2022 UPDATE, SECTION 4.2, THE SITE IS BEING TREATED AS ENTIRELY GREENFIELD FOR THE PURPOSE OF THE DRAINAGE DESIGN ONLY.

AN ASSESSMENT OF THE PROPOSED IMPERMEABLE AREAS FOR THE DEVELOPMENT HAS RESULTED IN A TOTAL DRAINED AREA OF 20,618m² (2.062ha), BASED ON THIS IMPERMEABLE AREA, THE EXISTING QBAR (1 IN 2.33 YEAR RETURN PERIOD) GREENFIELD RATE FOR THE DEVELOPMENT IS 18.40l/s. THE DEVELOPMENT MUST SEEK TO RESTRICT THE PROPOSED SURFACE WATER FLOWS FOR A 1 IN 1, 30 AND 100 YEAR RETURN PERIODS WITH AN APPROPRIATE ALLOWANCE FOR CLIMATE CHANGE.

PROPOSED DISCHARGE RATE: 18.40l/s

CLIMATE CHANGE

IN LINE WITH THE LATEST WHICH GUIDANCE SETS CLIMATE CHANGE ALLOWANCES BASED ON RIVER BASIN MANAGEMENT CATCHMENTS. THE CLIMATE CHANGE ALLOWANCES FOR THE DEVELOPMENT SHOULD BE SET IN LINE WITH THE BELOW.

WHARFE AND LOWER OUSE MANAGEMENT CATCHMENT

2070S EPOCH - CENTRAL ALLOWANCE.

3.3% (1 IN 30 YEAR): 40%
1% (1 IN 100 YEAR): 50%

PROPOSED DRAINAGE SYSTEM

TO RESTRICT PROPOSED FLOWS TO A RATE OF 18.40l/s. THE PROPOSED DRAINAGE SYSTEM SHOULD SEEK TO IMPLEMENT SOURCE CONTROL SUDS METHODS WHERE POSSIBLE AND AN ATTENUATION SYSTEM TO STORE THE RESTRICTED FLOWS.

FOUL WATER DESIGN

AFTER A REVIEW OF THE LOCAL WATER AUTHORITY SEWER RECORDS, THERE IS AN EXISTING PUBLIC COMBINED SEWER LOCATED WITHIN WHALLEY ROAD WHICH IS SOUTHEAST OF THE DEVELOPMENT.

PROPOSED DRAINAGE IS PRELIMINARY ONLY AND IS SUBJECT TO DETAILED DESIGN.

SITE LOCATION

OS X (EASTINGS)	376307
OS Y (NORTHINGS)	434565
NAT GRID	SD76307 34565
POSTCODE	BB12 7RH

NOTES:

1. COPYRIGHT IN THIS DOCUMENT BELONGS TO PAUL WAITE ASSOCIATES LIMITED & ALL RIGHTS IN IT ARE RESERVED BY THE OWNER.
2. NO PART OF THIS DRAWING MAY BE COPIED, TRANSFERRED, OR MADE AVAILABLE TO USERS OTHER THAN THE ORIGINAL RECIPIENT, INCLUDING ELECTRONICALLY, WITHOUT PRIOR PERMISSION FROM PAUL WAITE ASSOCIATES LIMITED.
3. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS & ENGINEERS DRAWINGS & SPECIFICATIONS.
4. ALL DIMENSIONS ARE SHOWN IN MILLIMETRES.
5. NO DIMENSIONS TO BE SCALED FROM THIS DRAWING.
6. ONLY FOR PAPER COPIES OF DRAWINGS SHOULD BE REFERRED TO FOR CONSTRUCTION USE. THE USE OF AUTOCAD DRAWINGS/DWGS IS UNDERTAKEN ENTIRELY AT THE DEVELOPERS RISK AND ALL DIMENSIONS AND SETTING OUT MUST BE CHECKED IN CONJUNCTION WITH THE ARCHITECT AND ENGINEERS CONSTRUCTION DRAWINGS. ALL DRAWINGS SHOULD BE CONFIRMED AS LATEST ISSUE ON THE DOCUMENT ISSUE SHEET PRIOR TO COMMENCEMENT OF WORKS AND SHOULD BE USED ONLY FOR THEIR DEFINED DRAWING STATUS. ANY DISCREPANCIES BETWEEN THE ARCHITECT AND ENGINEERS DRAWINGS ARE TO BE IMMEDIATELY NOTIFIED TO ALL PARTIES.

KEY

- EXISTING COMBINED WATER SEWER
- EXISTING COMBINED WATER MANHOLE
- PROPOSED SURFACE WATER SEWER
- PROPOSED SURFACE WATER MANHOLE
- PROPOSED SURFACE WATER FLOW CONTROL MANHOLE
- PROPOSED SURFACE WATER INSPECTION CHAMBER
- PROPOSED GULLY
- PROPOSED POND
- PROPOSED FOUL WATER SEWER
- PROPOSED FOUL WATER MANHOLE
- PROPOSED FOUL WATER INSPECTION CHAMBER
- SITE BOUNDARY

AREA	TOTAL AREA m² (ha)
PROPOSED IMPERMEABLE	20,618m² (2.062ha)
PRIVATE IMP. + 10%	14,886m² (1.489ha)
SHARED IMP.	7,086m² (0.709ha)
TOTAL	21,972m² (2.197ha)

*TOTALS FOR HECTARES (ha) AND METERS SQUARED (m²) DIFFER SLIGHTLY DUE TO ROUNDING AND ACCUMULATION OF INDIVIDUAL AREAS.

GREENFIELD RUNOFF RATES

RETURN PERIOD (YEARS)	FLOW RATE (l/s)
1 IN 1 YEAR	16.0l/s
1 IN 30 YEAR	31.20l/s
1 IN 100 YEAR	38.30 l/s
1 IN 2.33 YEAR (QBAR)	18.40l/s

TABLE 1: DESIGNERS RISK ASSESSMENT

RISK REFERENCE	RISK DESCRIPTION	RISK CONSIDERATION/ MITIGATION
R.01	LOCATION AND LEVELS OF EXISTING PUBLIC SEWER	SURVEY SHOULD BE UNDERTAKEN TO DETERMINE ACTUAL LOCATION AND LEVELS OF EXISTING PUBLIC SEWER BEFORE SITE WORKS COMMENCE.
R.02	DRAINAGE LESS THAN 1.2m COVER TO CROWN IN ROAD	CONCRETE SLAB PROTECTION SHOULD BE INTRODUCED WHERE DRAINAGE HAS INSUFFICIENT COVER FOR HIGHWAY AREAS.
R.03	ADOPTABLE PUMPING STATION	LOCATION, ACCESS AND LAYOUT TO BE CONFIRMED WITH UNITED UTILITIES.
R.04	REDUCTION OF FLOOD RISK ACROSS THE SITE	INTRODUCTION OF OPENING CULVERT WORKS TO THE WEST OF THE DEVELOPMENT SITE COULD REDUCE FLOOD RISK.
R.05	EXISTING OFFSITE CULVERT	CULVERT DOWNSTREAM OF WATERCOURSE CONNECTION SHOULD BE INVESTIGATED TO ENSURE POSITIVE OUTFALL.

TABLE 2: NOTE TO DEVELOPER

NOTE REFERENCE	NOTE DESCRIPTION
N.01	SVP AND RWP LOCATIONS TBC BY ARCHITECT. LATERAL LOCATIONS INDICATIVE UNTIL FULL DESIGN OF PRIVATE DRAINAGE IS PROGRESSED.
N.02	CHANNEL DRAINS AND GULLIES DRAINING PRIVATE AREAS TO CONNECT INTO PRIVATE DRAINAGE SYSTEM.
N.03	SECTION 106 APPROVAL TO BE OBTAINED BEFORE CONNECTION INTO EXISTING PUBLIC SEWER IS MADE.
N.04	LAND DRAINAGE CONSENT APPROVAL TO BE OBTAINED BEFORE CONNECTION INTO WATERCOURSE IS MADE.

Rev	Date	Remarks	Drawn	Chk'd
P01	26/03/26	FIRST ISSUE.	LE	LS

PWA / GROUP

CIVIL STRUCTURAL GEO-ENVIRONMENTAL

SUMMIT HOUSE, 8 PARIAN WAY, THE CROSSINGS, CROSSHILLS, KEIGHLEY, BD20 7BW

01535 633550
info@pwagroup.co.uk
www.pwagroup.co.uk

Client: APPLETHWAITE

Project: PROPOSED RESIDENTIAL DEVELOPMENT WHALLEY ROAD READ

Title: DRAINAGE STRATEGY

Size	Scale	Designed	Checked	Date
A1	1:500	JLE	LS	MAR 26

Drawing Status: PRELIMINARY

Job Number	Originator	Zone	Level	Type	Role	Drawing No.	Rev
24028	PWA	00	XX	DR	C	1002	P01