

CATCHMENT 1 PROPOSED LINKED ATTENUATION / SOAKAWAY BASINS

BASIN 1:
TOP OF WATER = 114.650m
BOTTOM OF BASIN = 113.075m
TOTAL VOLUME = 240m³

BASIN 2:
TOP OF WATER = 114.650m
BOTTOM OF BASIN = 111.200m
TOTAL VOLUME = 1,115m³

BASIN 3:
TOP OF WATER = 114.650m
BOTTOM OF BASIN = 111.200m
TOTAL VOLUME = 16,120m³

BASIN 4:
TOP OF WATER = 114.650m
BOTTOM OF BASIN = 112.850m
TOTAL VOLUME = 420m³

TOTAL ATTENUATION WITHIN BASINS = 17,895m³
INFILTRATION RATE = 8.22x10⁻⁶m/s

CATCHMENT 1 OVERFLOW DISCHARGE LOCATION

SURFACE WATER TO INFILTRATE TO GROUND. DURING MORE EXTREME STORM EVENTS SURFACE WATER WILL RISE AND OVERFLOW INTO EXISTING DITCH PRIOR TO DISCHARGING INTO EXISTING 450DIA SEWER.

FLOW LIMIT = 142.6 l/sec

450Ø SEWER HERE CROSSES BELOW EXISTING HIGHWAY. INVERT LEVEL OF EXISTING SEWER = 113.150m
OUTFALL TO ACT AS OVERFLOW TO SOAKAWAY SYSTEM. DOWNSTREAM ROUTE TO BE CONFIRMED.

GREENFIELD RUN OFF

QBAR = 4.5l/s/ha

Rural Runoff Calculator

ICP SUDS

ICP SUDS Input (FSR Method)

Return Period (Years): 100

Area (ha): 1.000

SAAR (mm): 659

Soil: 0.470

Growth Curve: (None)

Partly Urbanised Catchment (QBAR)

Urban: 0.000

Region: Region 5

Calculate

Results

QBAR rural (l/s): 4.5

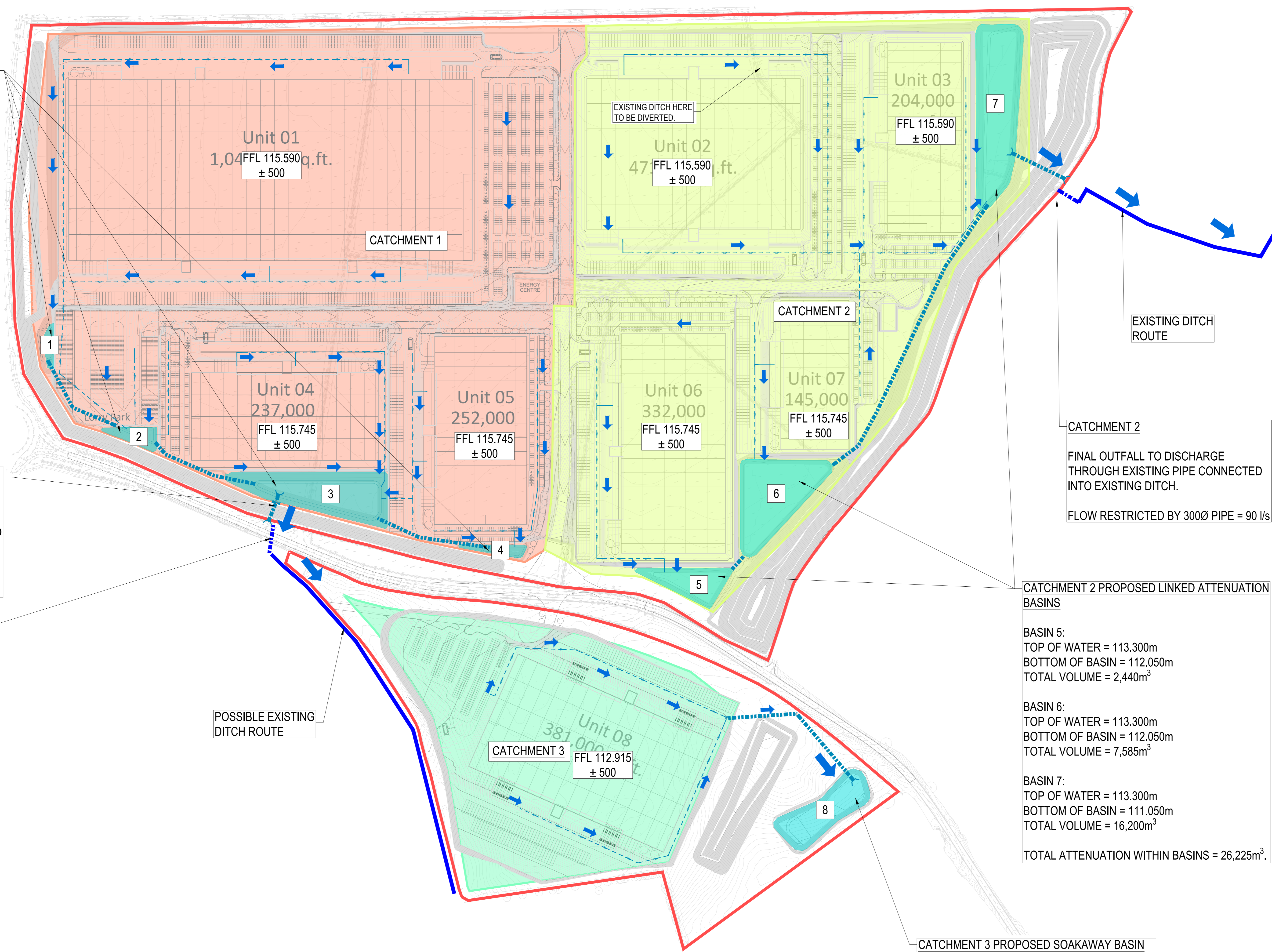
QBAR urban (l/s): 4.5

Region	QBAR (l/s)	Q (100yrs) (l/s)	Q (1 yrs) (l/s)	Q (30 yrs) (l/s)	Q (100 yrs) (l/s)
Region 1	4.5	11.2	3.8	8.5	11.2
Region 2	4.5	11.8	3.9	8.5	11.8
Region 3	4.5	9.4	3.9	7.9	9.4
Region 4	4.5	11.6	3.7	8.8	11.6
Region 5	4.5	16.0	3.9	10.8	16.0
Region 6/Region 7	4.5	14.4	3.8	10.2	14.4
Region 8	4.5	10.9	3.5	8.6	10.9
Region 9	4.5	9.8	4.0	7.9	9.8
Region 10	4.5	9.4	3.9	7.6	9.4

Enter Return Period between 1 and 1000

LEGEND

- SITE BOUNDARY
- CATCHMENT 1
- CATCHMENT 2
- CATCHMENT 3
- EXISTING SURFACE WATER PIPE
- EXISTING DITCH
- PROPOSED ABOVE GROUND STORAGE
- PROPOSED SURFACE WATER PIPE



DRAINAGE STRATEGY

IT IS PROPOSED TO SPLIT THE TOTAL SITE INTO 3NO. DRAINAGE CATCHMENTS THAT WILL HAVE SEPERATE OUTFALLS AS BELOW.

DRAINAGE STRATEGY - CATCHMENT 1

TOTAL IMPERMEABLE AREA = 316860m² | 31.686ha
QBAR GREENFIELD RUN OFF RATE = 4.5l/s/ha
THEREFORE TOTAL DISCHARGE RATE = 142.6l/s
INFILTRATION RATE = 8.22x10⁻⁶m/s

CATCHMENT 1 WILL DRAIN USING A HYBRID STRATEGY OF INFILTRATION TO GROUND AND DISCHARGING AT GREENFIELD RUNOFF RATE INTO AN EXISTING WATERCOURSE DURING MORE EXTREME STORMS ONLY.

SURFACE WATER IS PROPOSED TO BE STORED IN A MIXTURE OF ABOVE GROUND ATTENUATION BASINS AND BELOW GROUND CELLULAR STORAGE TANKS PRIOR TO BEING DISCHARGED INTO AN EXISTING DITCH LOCATED TO THE SOUTH OF CATCHMENT 1. DUE TO THE FOUND PERMEABILITY OF THE EXISTING STRATA THE ATTENUATION BASINS WILL ALSO ACT AS A SOAKAWAY.

IT IS PROPOSED TO INFILTRATE TO GROUND DURING THE MAJORITY OF DESIGN STORMS. DURING MORE EXTREME DESIGN STORMS THE WATER LEVEL WILL RISE TO A LEVEL OF 113.150m AND THEN OVERFLOW INTO THE PROPOSED OUTFALL AND DISCHARGE AT A CONTROLLED DISCHARGE RATE EQUIVALENT TO THE QBAR GREENFIELD RUNOFF RATE.

APPROXIMATE REQUIRED STORAGE DURING 1 IN 100 YEAR STORM + 40% ALLOWANCE FOR CLIMATE CHANGE = APPROXIMATELY 22,700m³.

AVAILABLE ABOVE GROUND STORAGE = 17,895m³
REMAINING STORAGE TO BE LOCATED WITHIN A MIXTURE OF BELOW GROUND ATTENUATION AND CONTROLLED ABOVE GROUND LOCALISED PONDING ENSURING PONDING DOES NOT LEAVE THE SITE BOUNDARY.

DRAINAGE STRATEGY - CATCHMENT 2

TOTAL IMPERMEABLE AREA = 265218m² | 26.5ha
QBAR GREENFIELD RUN OFF RATE = 4.5l/s/ha
THEREFORE TOTAL DISCHARGE RATE = 119.3l/s

SURFACE WATER IS PROPOSED TO BE STORED IN A MIXTURE OF ABOVE GROUND ATTENUATION BASINS AND BELOW GROUND CELLULAR STORAGE TANKS PRIOR TO BEING DISCHARGED INTO AN EXISTING DITCH LOCATED TO THE EAST OF CATCHMENT 2. THE EXISTING DITCH DISCHARGES BELOW THE CARRIAGEWAY TO THE EAST VIA A 300DIA SEWER, THEREFORE THE MAXIMUM RRICTED RATE OF 90l/s

DUE TO THE FOUND LOW PERMEABILITY OF THE EXISTING STRATA THE ATTENUATION BASINS WILL NOT ACT AS SOAKAWAYS.

REQUIRED STORAGE DURING 1 IN 100 YEAR STORM + 40% ALLOWANCE FOR CLIMATE CHANGE = APPROXIMATELY 24,100m³.

DRAINAGE STRATEGY - CATCHMENT 3

TOTAL IMPERMEABLE AREA = 84140m² | 8.41ha
INFILTRATION RATE = 3.13x10⁻⁵ m/s

DUE TO THE FOUND PERMEABILITY OF THE EXISTING STRATA IT IS PROPOSED TO DRAIN CATCHMENT 3 VIA INFILTRATION BASINS. SURFACE WATER IS PROPOSED TO BE DRAINED INTO A SOAKAWAY BASIN.

REQUIRED STORAGE DURING 1 IN 100 YEAR STORM + 40% ALLOWANCE FOR CLIMATE CHANGE = APPROXIMATELY 5,300m³

CATCHMENT 2

FINAL OUTFALL TO DISCHARGE THROUGH EXISTING PIPE CONNECTED INTO EXISTING DITCH.

CATCHMENT 2 PROPOSED LINKED ATTENUATION BASINS

BASIN 5:
TOP OF WATER = 113.300m
BOTTOM OF BASIN = 112.050m
TOTAL VOLUME = 2,440m³

BASIN 6:
TOP OF WATER = 113.300m
BOTTOM OF BASIN = 112.050m
TOTAL VOLUME = 7,585m³

BASIN 7:
TOP OF WATER = 113.300m
BOTTOM OF BASIN = 111.050m
TOTAL VOLUME = 16,200m³

TOTAL ATTENUATION WITHIN BASINS = 26,225m³

CATCHMENT 3 PROPOSED SOAKAWAY BASIN

FINAL OUTFALL TO DISCHARGE DIRECTLY INTO PROPOSED SOAKAWAY.

BASIN 8:
TOP OF WATER = 108.200m
BOTTOM OF BASIN = 106.500m
TOTAL VOLUME = 5,700m³

INFILTRATION RATE = 3.13x10⁻⁵ m/s

Rev	Date	Description
R4	27.03.24	ATTENUATION AMENDED
R3	26.02.24	ATTENUATION AMENDED
R2	21.12.23	CLIMATE CHANGE VALUE INCREASED
R1	09.11.23	PRELIMINARY ISSUE

HDR
Berkhamstead Office
Boorne House
Pinecroft Street
Berkhamstead
Herts, UK, SG2
United Kingdom
T: +44 (0)20 8669 1903
E: info@hadr.co.uk
W: www.hadr.co.uk

TRITAX SYMMETRY
A TRITAX BIG BOX COMPANY

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M40 JUNCTION 10

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PLANNING

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