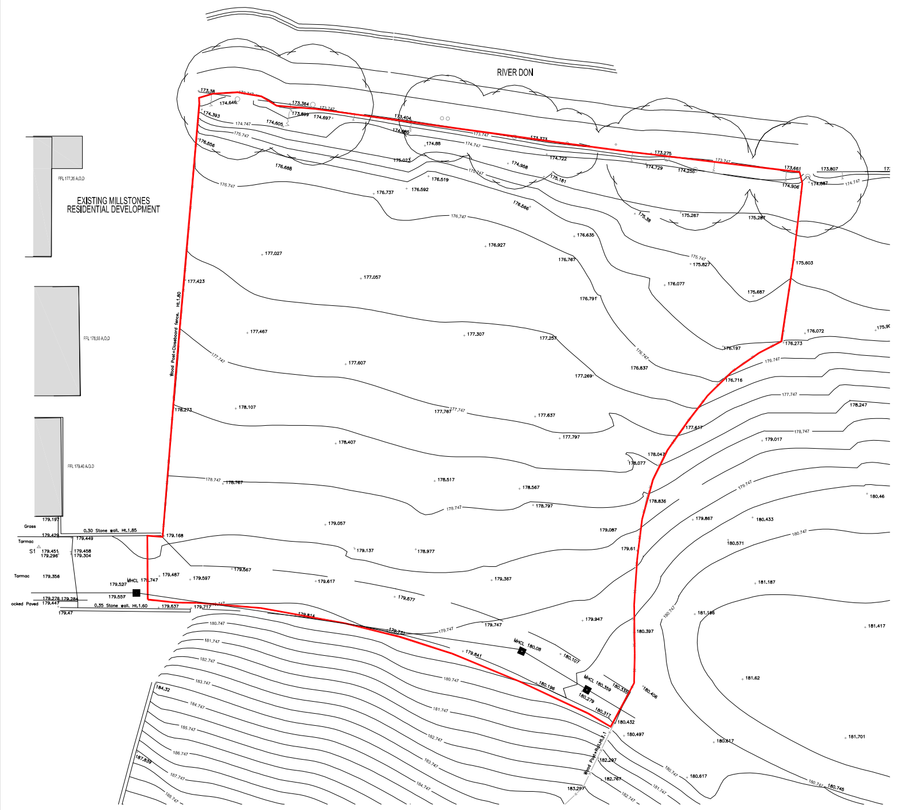
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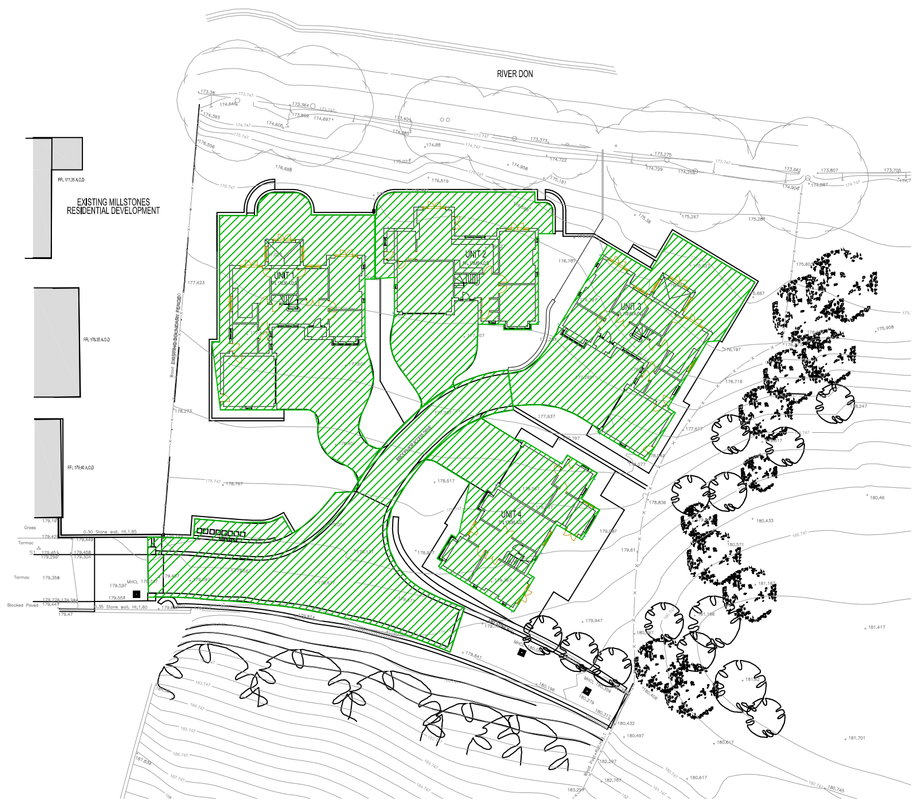
Notes:

1. This drawing is to be read in conjunction with all relevant Architects and Engineers Drawings.

2. It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement.



Existing Topographical Survey (1:500)
Total development site area = 3720m2



Proposed Site Layout Plan showing surfaced and drained catchment area (1:500) Total impermeable area = 1832m2

Drainage Strategy

The development site area totals 3720m2

Existing greenfield run off using IH 124 method
based on 50Ha and interpolated down to 0.372Ha

SAAR (mm) 1133, Soil 0.5, Region No 3

Q1 50Ha = 417.1L/sec pro rata to 0.372Ha = 3.10L/sec
Q30 50Ha = 918.5L/sec pro rata to 0.372Ha = 6.834L/sec
Q100 50Ha = 1008.8L/sec pro rata to 0.372Ha = 7.505L/sec

QBAR 50 Ha = 485L/sec pro rata to 0.372Ha = 3.6L/sec

NPPF requires that surface water arising from a developed site should as far as practicable be managed in a sustainable manner to mimic the surface water flows arising from the site prior to development.
Opportunities to reduce the surface water run off and the associated flood risk should be identified.

Consideration has been given to the use of infiltration devices for dealing with the surface water drainage.

A search of recorded borehole logs in the surrounding area and local knowledge of the site show the underlying strata to consist of yellow/brown silty clays which will be unsuitable for any infiltration devices to work effectively.

The nearest water watercourse is the River Don which flows along the Southern Boundary of the site. The site slopes relatively steeply towards the river.

The floor levels of the new dwellings will be a min of 1.15m above the floor levels of the adjacent recently developed site and will not be at risk of fluvial flooding.
Any groundwater, overland flows or sewer flooding will be able to pass through the site and into the watercourse without affecting the proposed properties.

There is a 600mm diam public sewer which runs along the existing access lane to the North of the site.
This will be utilised for the foul drainage connection, but has no capacity to accept any surface water flows from the site.

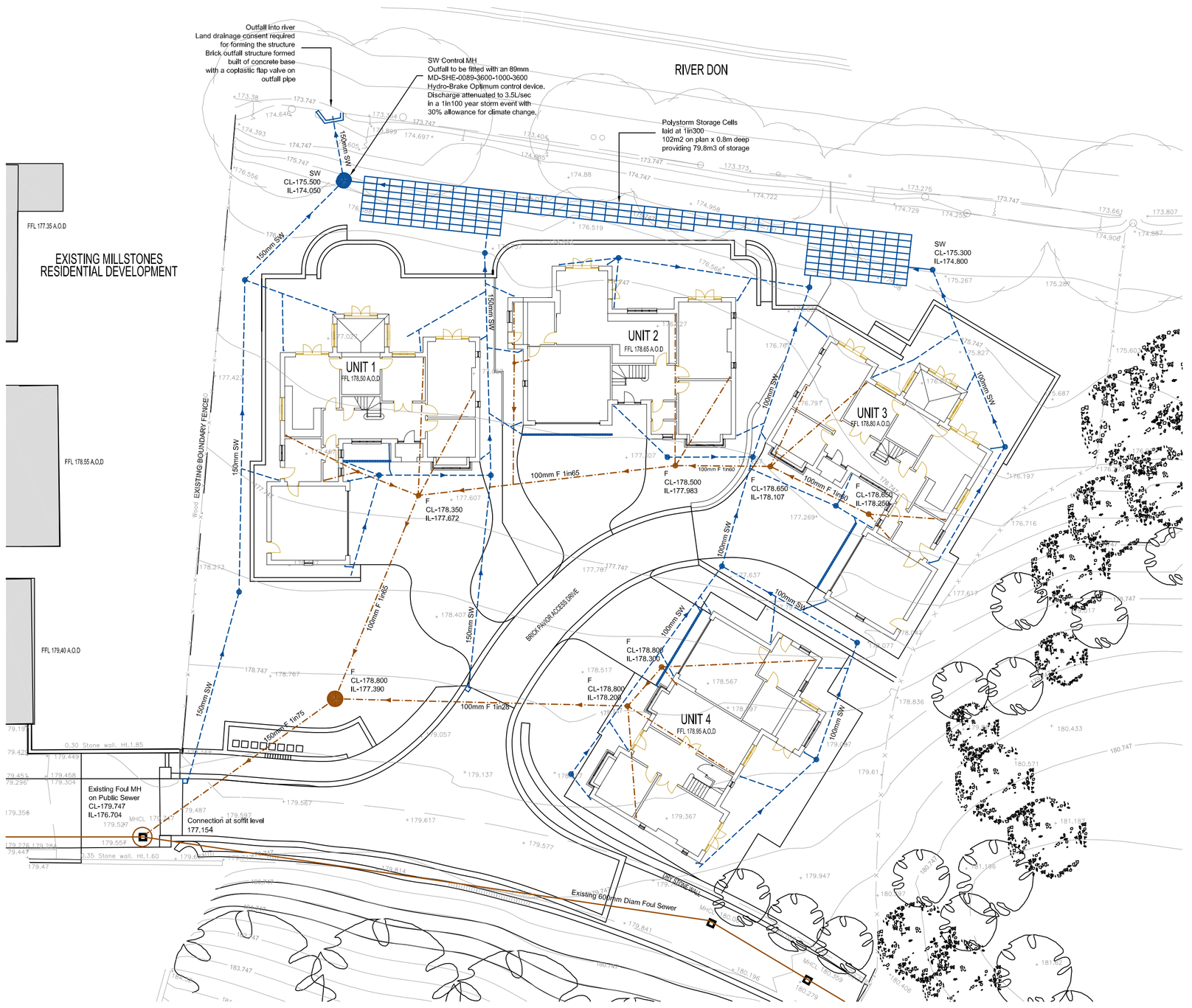
Therefore the proposed strategy for draining the surface water from the site is to form a new piped outfall into the adjacent watercourse with the flows attenuated to an acceptable level.

The QBAR for the site is 3.6L/sec

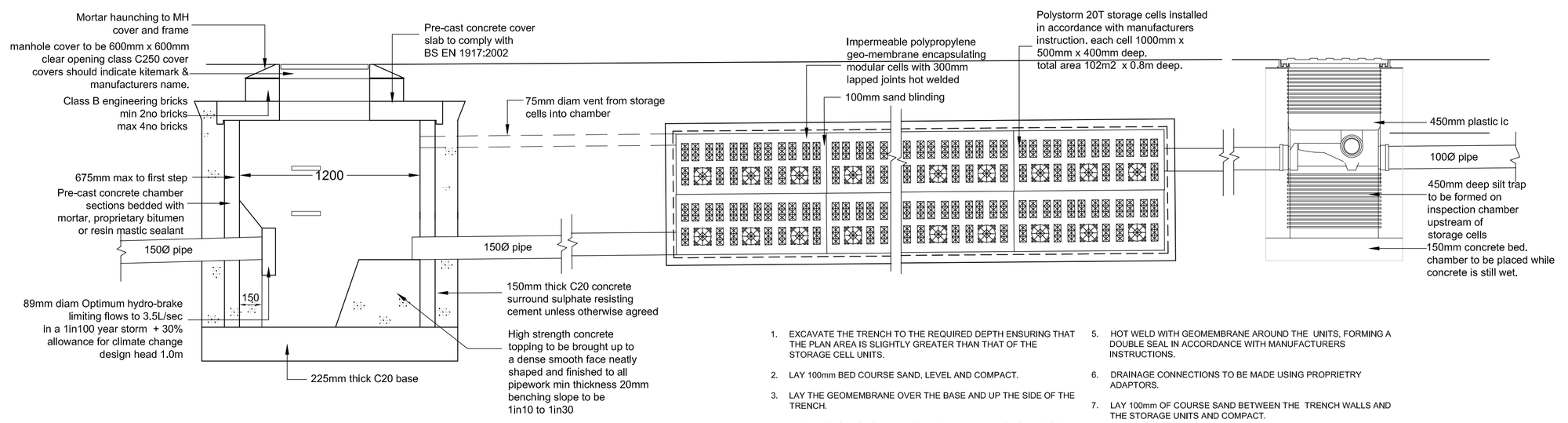
The site drainage will be designed to ensure that the peak discharge rate does not exceed 3.6L/sec in a 1in100 year storm event with a 30% allowance for climate change.

The proposed surfaced and drained catchment area is 1832m2

This can be achieved by attenuating the flows using a 89mm Hydro-brake and providing 79.8m3 of storage.
See micro-drainage calculations



Drainage layout Plan (1:250)



Typical Section Through Attenuation Storm Cells (1:25)

1. EXCAVATE THE TRENCH TO THE REQUIRED DEPTH ENSURING THAT THE PLAN AREA IS SLIGHTLY GREATER THAN THAT OF THE STORAGE CELL UNITS.
2. LAY 100mm BED COURSE SAND, LEVEL AND COMPACT.
3. LAY THE GEOMEMBRANE OVER THE BASE AND UP THE SIDE OF THE TRENCH.
4. LAY THE STORAGE CELL UNITS PARALLEL WITH EACH OTHER OR IN A BRICK BONDED FORMATION. FOR MULTI LAYERS USE THE CLIPS AND THE SHEAR CONNECTERS.
5. HOT WELD WITH GEOMEMBRANE AROUND THE UNITS, FORMING A DOUBLE SEAL IN ACCORDANCE WITH MANUFACTURERS INSTRUCTIONS.
6. DRAINAGE CONNECTIONS TO BE MADE USING PROPRIETRY ADAPTORS.
7. LAY 100mm OF COURSE SAND BETWEEN THE TRENCH WALLS AND THE STORAGE UNITS AND COMPACT.
8. LAY 100mm BED OF COARSE SAND OVER THE GEOTEXTILE AND COMPACT. BACKFILL WITH STONE FREE AS DUG MATERIAL.

No.	Revision	Date	Drwn

Status: Approval

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Client: Yorkshire Land Ltd

Project: Development on land West of Millstones Bower Hill, Oxspring

Drawing title: Drainage Proposals

Drawn	Chkd	Date	Scale
PB		April 2014	var

Contract No.	Drg No.	Revision
14089	C-50	