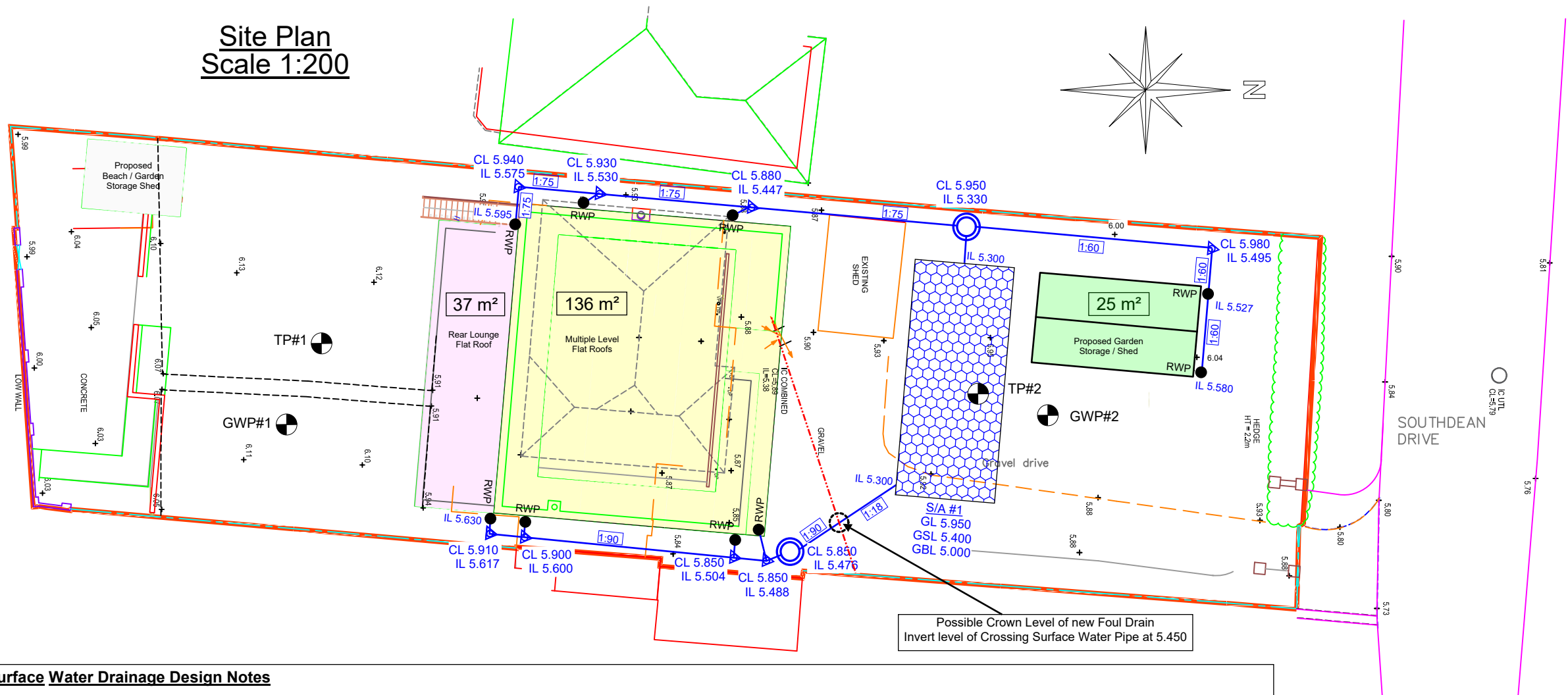


Site Plan
Scale 1:200



Surface Water Drainage Design Notes

As detailed from the British Geological Survey, the Superficial Geological ground conditions here indicates River Terrace Deposits of sand, silt and clay over Bedrock of the Lewes Nodular Chalk Formation et seq. The bedrock was not encountered in either of the Groundwater Monitoring BoreHoles.

In late December 2021 a 75mm diameter BoreHole was augered to a depth of 2150mm below ground level – BGL (3.861 AOD), at the approximate position of a possible rear soakaway, as groundwater monitoring point GWP#1 and groundwater was not encountered at this maximum depth. This borehole was left open but covered.

A second 75mm diameter BoreHole was augered to a depth of 2005mm BGL (3.924 AOD), at the approximate position of a possible front soakaway and groundwater was encountered at 1850mm BGL, quickly rising to 1840mm BGL. An Open Head Piezometer (a slotted monitoring pipe) GWP#2 was installed to this maximum depth.

Groundwater was monitored on a weekly basis from late December 2021 to end February 2022. During the monitoring period, the highest level of groundwater of 952mm BGL (4.998 AOD), was recorded on 9th January 2022 in GWP#2. These to inform the use of infiltration systems for any soakaway to a typical depth of 950mm BGL whilst still maintaining a minimum of freeboard.

The drainage design is based on percolation tests carried out in mid January 2022 to BRE365 principles within Trial Pit TP#1, at a depth of 1015mm BGL and within Trial Pit TP#2, at a depth of 820mm BGL. The Soil Infiltration Rates obtained are detailed in the adjacent table.

Testing produced a range of values and the Soil Infiltration Rate from Trial Pit TP#1 deemed the use of infiltration systems to be non-viable for the rear, south garden.

Testing in Trial Pit TP#2, for the front soakaway produced a minimum soil infiltration rate of 1.148 E-05 metres/second, where a Factor of Safety of 3 has been applied for calculations, where the consequence of failure is "minor inconvenience".

The proposed remodeling of the building consists of 3 stories with a plan impermeable area of 136 square metres. A rear single story flat roof of 37 square metres is also included. The existing shed in the front garden just discharged onto the concrete hard-standing, whereas the proposed garden storage / shed, of increased roof area to 25 square metres, now sits in the front garden, so it seems prudent to also include this roof area as part of the contributing total impermeable area of 198 square metres. Each side of the building will drain through separate Silt Traps into the single front soakaway S/A#1, which has been designed, 9.50 metres long x 4.00 metres wide and 400mm deep, with a cover of 550mm, which will be suitable to drain all of the contributing roof areas of a total of 198 square metres.

The existing rear flat roofed part of the house and the existing flat roofed garage, which both had no positive draining, but just discharged on to the surrounding ground, have now been replaced within the design.

The existing impermeable concrete driveway, with it's dressing of small gravel, will be fully replaced with a permeable gravel finished driveway. The existing impermeable front concrete hard-standing, which just drained by running off into the adjacent garden, will be replaced with a permeable gravel finished parking area.

The existing rear concrete beach access which drains, through open brickways in the beach wall, through the open gate and through the dingy access, onto the beach, will be retained unchanged and the proposed replacement beach storage shed will discharge onto it as existing.

Anecdotaly it has been suggested that some existing roof water drains into the foul water system, though it has not been proven, but any has now been removed within the design.

The proposed soakaway S/A#1 has been designed to meet Building Regulations, below it's lowest incoming pipe, on a 1 in 10 year rainfall return event plus 40% climate change increase. In addition it has been designed, without flooding above ground level, on a 1 in 100 year rainfall return event plus 40% climate change increase.

The soakaway S/A#1 should be sited a minimum of 5 metres from any habitable building or garage to avoid any saturation of the ground and settlement affecting the building structure.

NOTE

This drawing had been produced for discharge of planning conditions only. All levels and details to be checked for Building Regulations approval and construction purposes.

Winter Soil Infiltration Testing Results

TP#1 BRE365 Trial Pit
1500mm long x 500mm wide x 1015mm deep

January 19th 2022 -- 6.465 E-07 m/s
January 21st 2022 -- 3.875 E-07 m/s

The Soil Infiltration Testing produced non-viable results so testing was abandoned after 2 complete tests and no 3rd test took place.

TP#2 BRE365 Trial Pit
1150mm long x 500mm wide x 820mm deep

January 18th 2022 -- 1.430 E-05 m/s
January 19th 2022 -- 1.148 E-05 m/s
January 20th 2022 -- 1.163 E-05 m/s

The Minimum Rate used in the calculations from the three tests within the Trial Pit TP#2 was 1.148 E-05 metres / second.

A Factor of Safety of 3 was applied in the calculations for the design of the Front Geocellular Soakaway.

KEY

GWP Groundwater Monitoring Test Point.

TP Soil Infiltration Testing
BRE365 Trial Pit.

Proposed 250mm diameter surface water inspection chamber.
Osma shallow IC or similar approved.
Cover & Frame class A15 to BS EN 124

Proposed silt trap inspection chamber.
Polypipe Ridgistorm Basic or similar approved.
Minimum Sump Depth to be 435mm
Cover & Frame class B125 to BS EN 124

Proposed surface water drainage.
100mm diameter PVC pipe.
Minimum fall of 1:100
Or as detailed on the layout.

Proposed Geocellular Soakaway.
S/A #1 to be 9m50 x 4m00 x 400mm deep.
Having a footprint area of 38 square metres.
PolyStorm-R PSM1A GeoCells each of
1000mm x 500mm x 400mm
or similar approved.

GL #### Ground level at detailed items

CL #### Cover level of surface water chambers

IL #### Invert level of surface water drains

GSL #### Soffit (top) level of Geocell infiltration structure

GBL #### Base level of Geocell infiltration structure

+ 5.999 All levels are to AOD unless otherwise stated

Mate GeoTechnic Services

01	Original	RC	28-02-22
Rev.	Description	Drn.	Date

Project
Extension & Remodelling
Of Existing Dwelling
#56 Southdean Drive
Middleton-on-Sea
PO22 7TB

Client
Mr Mark Muscat
Drawing
Title
Surface Water
Drainage Layout

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Scale
As Shown
Drawing
Original
A3

Drawing
Number
MGS -- M/59/20 -- rev01