

Goldring Close, Hayling Island
Surface water drainage design summary

Phase 1

Plot 1 – 22

Storage provided within permeable paving (162m³) with controlled discharge into the attenuation system (basin with swale)

Discharge limited to 9.3 l/s via 70mm orifice plate

Plot 23 – 41

Storage provided within permeable paving (206m³) with controlled discharge into the attenuation system (basin with swale)

Discharge limited to 1.6l/s via 30mm orifice plate

Plot 42 – 51

Storage provided within permeable paving (40m³) with controlled discharge into the existing ditch (enlarged ditch)

Discharge limited to 1.9l/s via 30mm orifice plate

Plot 52 – 57 + Plot 58 – 59 (Phase 2)

Storage provided within permeable paving (130m³) with controlled discharge into the swale

Discharge limited to 2.8l/s via 40mm orifice plate

Attenuation System

Total volume provided within the attenuation system (400m³) comprising

Basin 1 (300m³), 0.7m water depth, 0.3m freeboard, 1:3 side slopes

Swale (70m³), 0.7m water depth, 0.3m freeboard, 1:1 side slopes

Attenuation system discharges into the existing ditch at 1l/s via Hydrobrake flow control device

Total Impermeable Area 0.934ha

Total storage provided 910m³

Phase 2

Plot 122 – 126

Storage provided within permeable paving (30m³) with controlled discharge into the piped network discharging into the attenuation basin (Basin 3)

Discharge limited to 6.4 l/s via 65mm orifice plate

Plot 60 – 63 + Plot 127 – 131

Discharges into the attenuation basin (Basin 3) via piped network

Attenuation Basin 3 (159m³)

0.6m water depth, 0.3m freeboard, 1:3 side slopes

Discharges into the existing boundary ditch at 2l/s via Hydrobrake flow control device

Plot 74 - 80 + Plot 95 - 121

Storage provided within permeable paving (230m³) with controlled discharge into the adjoining permeable paving (serving Plot 64-73)

Discharge limited to 8.3/s via 65mm orifice plate

Plot 64 - 73 + Plot 81 - 94

Storage provided within permeable paving (270m³) with controlled discharge into the existing ditch (enlarged ditch)

Discharge limited to 8.1l/s via 65mm orifice plate

Existing (enlarged) Ditch

Storage provided (190m³), 1.5m wide base (minimum), 1m deep water, 0.3m freeboard, 1:1 side slopes

Outflow from the ditch limited to 7l/s via a headwall with 60mm orifice plate and weir at 1m height

Total Impermeable Area 1.12ha

Total storage provided 880m³

Phase 1 + Phase 2

Total Impermeable Area 2.05ha

Total storage provided 1790m³

Total (offsite discharge) 10.2l/s

(7.2l/s at the outfall of the enlarged ditch + 1l/s from Phase 1 attenuation system + 2l/s from Basin 3)

Additional Notes:-

Please note that the proposed permeable roadways in Phase 2 will not be tanked with an impermeable membrane therefore will allow infiltration to occur. Infiltration has not however been allowed for in the calculations. The Phase 2 site area is crossed with existing granular filled slit trench land drains.

The installed utility trenches will create additional pathways into the underlying permeable layers, these will act in a similar fashion to the existing phase 2 land drains.

Taking these two additional factors into consideration the discharge rate of 10.2l/s is very much the upper limit of the design flow.

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