Addendum Drainage Statement – Section 73 application – Station Road Care Home, Station Road, Hampton

The following document has been prepared as an update and addendum to the Flood Risk Assessment and Drainage Strategy report CWA-19-207 prepared by CWA in July 2019.

This Addendum Drainage Statement provides a review of the original CWA report and updates where changes have occurred or an update to the design is required.

Site location

Site location and arrangement remain the same as the original report. Site levels remain broadly unchanged and the neighbouring land uses remain the same.

Site development proposals

The principle to provide a care home on the development site remains the same and the overall arrangement of the building above ground remains broadly similar to the previous scheme, however the extent of the basement and lower ground floor accommodation has been significantly reduced. The previous scheme had accommodation with terraces and courtyard gardens provided at a lower ground floor level. Any residential accommodation has been removed from lower ground floor and the units plus external spaces are now located at ground floor and above. The basement is now much smaller and will comprise of ancillary accommodation. Access road and parking will still be provided on the eastern boundary.

The proposed scheme will incorporate the existing police station building which is to be partially retained.

Existing Ground Conditions

A Phase 2 site investigation undertaken by Solmek in 2021 confirmed the site conditions to comprise soft to firm clay overlaying medium dense gravel to a depth of 6.5-6.9mbgl. This is underlain by stiff to very stiff London Clay to the extent of the investigation.

The 2021 encountered groundwater strikes between 1m and 6.8mbgl. Subsequent long term monitoring of the groundwater level found that this appeared to settle at approximately 3.5mbgl.

The result of the site investigation confirms that the ground conditions preclude the use of soakaways as the cohesive content of the clay at varying depths prevent adequate infiltration results.

Consultation and policy

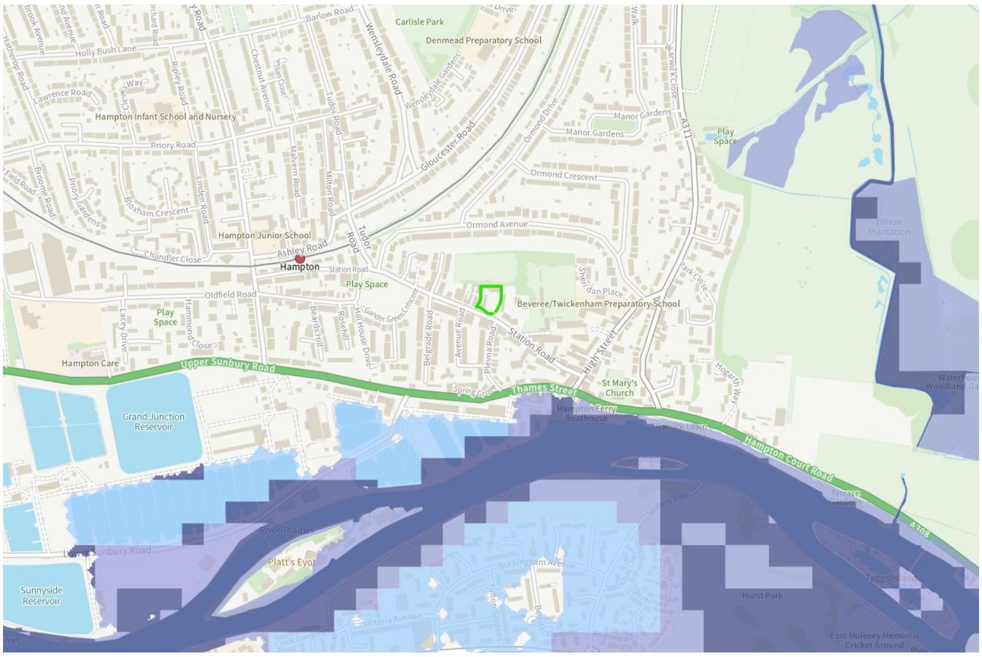
Further to the consultation undertaken by CWA in the preparation of the original report, further discussions have been undertaken with Thames Water to determine the invert levels of the surface water sewer in Station Road. This has been calculated from interpolation and should be checked on site.

It is intended to maintain the agreed rate of 2 litres/second for discharge to the Thames Water surface water sewer.

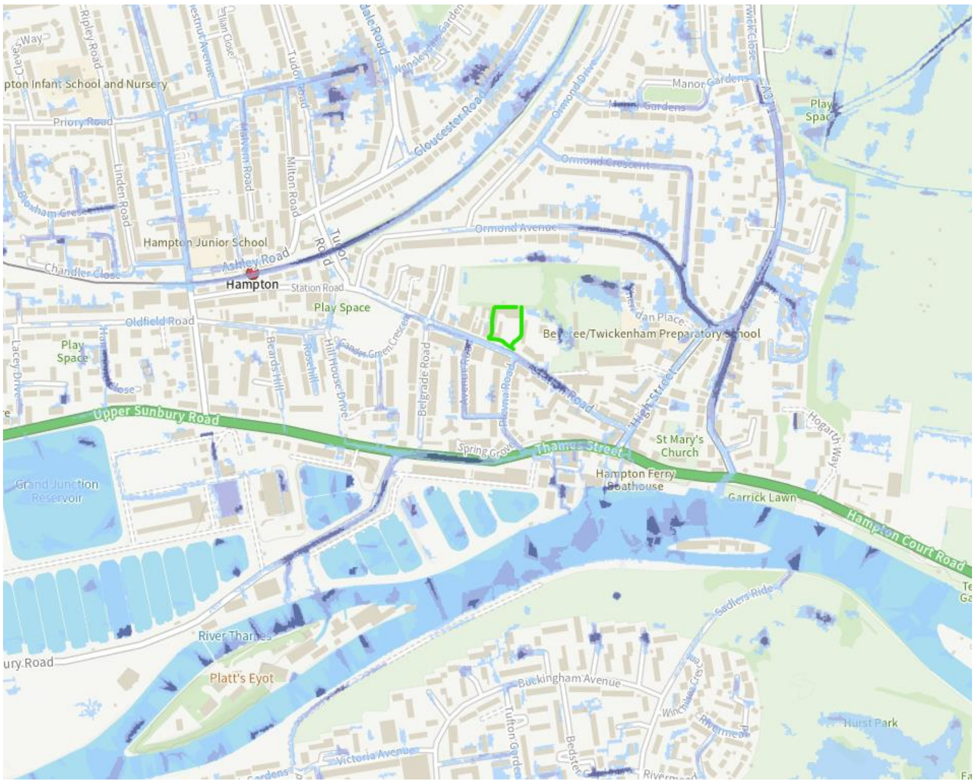
With reference to the latest climate change allowances from the GOV.uk website, the site falls within the Maidenhead and Sunbury Management Catchment and 40% climate change remains the correct allowance for peak rainfall during the 1% annual exceedance event.

Flood Risk

With reference to the flood maps below, the overall flood risk of the development site is unchanged from the original CWA report. The site remains located in Flood Zone 1 which is considered to be appropriate, and the surface water flood risk on the site remains very low.



Fluvial flood risk map



Surface water flood risk map

Sustainable Drainage Proposals and Drainage Strategy

The principles of the sustainable drainage proposals outlined in the original CWA report remain the same. The overall impermeable area of the development remains broadly the same and attenuation tank volumes have been recalculated based upon the proposed impermeable area, including for urban creep.

Due to the lower ground floor level and depth of the attenuation tanks for the original scheme, surface water needed to be pumped from the lower level to achieve the required attenuation and discharge to public sewer. With the removal of the lower ground floor, the surface water strategy is simplified to incorporate a number of cellular attenuation tanks which overall provide sufficient storage on site with a wholly gravity system and vortex flow control device limiting the discharge to the public sewer to 2l/s as previous.

Please refer to appended calculations and drainage layout.

Conclusion

The above addendum note confirms the overall flood risk of the site remains as previous with no significant changes. The overall drainage strategy will remain on site and the new drainage system has been redesigned to suit the new impermeable area and achieving a gravity only solution.

Maintenance

The table below provides information in relation to the required inspections and maintenance for long term management of the surface water strategy. It is expected the maintenance will be managed and provided by the client and their sub-contractors as part of their ongoing responsibilities on the site.

All those responsible for maintenance should take appropriate health, safety and welfare precautions for all activities including lone working, if relevant, and risk assessments should always be undertaken. The sites infrastructure Health and Safety File should be consulted before carrying out any works either inside or outside of the development's boundary and information regarding the location of existing utilities passed on to operatives.

The requirements of the Health and Safety at Work Act 1974 and The Construction (Design and Management) Regulations 2015 should be adhered to and any residual risks identified in the Health and Safety File should be managed and information passed on the maintenance operatives through task specific risk assessments.

There are three types of maintenance activities associated with surface water drainage systems.

The SuDS Manual, CIRIA C753, defines these as:

- Regular Maintenance – 'basic tasks undertaken on a frequent and predictable schedule' including vegetation management, litter and debris removal, and inspections.'
- Occasional Maintenance – 'tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example).'

- Remedial Maintenance – 'intermittent tasks that may be required to rectify faults associated with the system, although the likelihood of faults can be minimised by good design. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict.'

Operation and Maintenance Activity	**SuDs Component**		
	Piped Network / Inspection Chambers	**Cellular / Modular Storage**	**Permeable Pavement**
Regular Maintenance			
Inspection	■	■	■
Litter and debris removal	■	□	■
Grass cutting		□	□
Weed and invasive plant control			□
Occasional Maintenance			
Sediment management	■	■	■
Vacuum sweeping and brushing			■
Remedial Maintenance			
Structure rehabilitation/ repair	□	□	□
Infiltration surface reconditioning			□
■ **Will be required** □ **May be required**			
Extract from The SuDs Manual Table 32.1 : Typical key SuDs components operation and maintenance activities			

Piped Network/Chambers Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then six monthly
	Debris removal from catchment surface / gratings (where may cause risks to performance)	Monthly (and after large storms)
	Remove sediment from trapped sumps, manholes and catchpits.	Annually or as required
Remedial Maintenance	Repair / rehabilitation of gratings, inlets and outlets	As required
Monitoring	Inspect / check all gratings, trapped sumps, manholes and catchpits to ensure that they are in good condition and operating as designed	Annually and after large storm events
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of features or pipework is required.	As required

Cellular Storage Maintenance Schedule	Required Action	Typical Frequency
Regular Maintenance	Inspect and identify any features that are not operating correctly. If required take remedial action	Monthly for three months, then annually.
	Remove debris from catchment surface (where may cause risks to performance)	Monthly
	Remove debris from catchment surface (where may cause risks to performance)	Annually or as required
Remedial Maintenance	Repair / rehabilitate inlets, outlets, overflows and vents	As required
Monitoring	Inspect / check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually and after large storm events
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required
Structure Rehabilitation / Repair	Regular Maintenance and Monitoring to identify if repair and / or replacement of storage units is required.	As required
The SuDS Manual Table 21.3: Operation and maintenance requirements for attenuation storage tanks		

Scott White and Hookins
July 2024
IL/303423

KEY:

	Site Boundary
	Proposed S278 works
	Existing Surface Water
	Existing Foul Water
	Proposed Surface Water
	Proposed Foul Water Sewer
	Proposed FW Pumped Rising Main
	Proposed Surface Water Chamber
	Proposed Foul Water Chamber
	Existing Drainage run to be broken out
	Proposed Attenuation Tank
g	Indicative Gully
RE	Indicative Rodding eye
rwp	Indicative Rainwater pipe
svp/ss	Indicative Internal soil vent pipe

Notes

GENERAL

- This drawing is to be read in conjunction with all relevant Engineers and Architects drawings and with the Specification.
- For setting out refer to Architects drawings.
- All dimensions are in millimetres and levels are in metres unless noted otherwise.
- Contractor to take all relevant dimensions on site. Any discrepancies to be advised to the Engineer.
- Contractor to check/scan for services prior to construction to avoid any damage during works.

DRAINAGE

- Any information given on this drawing regarding existing services is believed to be correct. The contractor must check this information and determine the nature and location of other existing services from the various statutory authorities before commencing excavation works.
- Drainage works to be constructed in accordance with BS EN 752 and Approved Document H
- All soft spots and unacceptable material encountered in drainage excavations is to be removed and replaced with granular material to the requirements of the building control officer.
- Pipes to be installed to manufacturers recommendations.
- Pipes under buildings to be laid to a fall of 1:40 minimum unless noted otherwise.
- Plastic plain wall pipes to be PVC-U to BS EN 1401-1, class SN4, with flexible joints, Kitemark certified. Structured wall plastic pipes to be to WIS 04-35-01, Kitemark certified
- Clay pipes to be vitrified clay to BS EN 295-1, with flexible joints, Kitemark certified. Clayware pipes must be extra strength classification protected in accordance with the specified details.
- Concrete pipes to be precast concrete to BS 5911-1 and BS EN 1916, with flexible joints.
- Bedding of pipes to be in accordance with approved document H1.
- Rocker pipes with flexible joints are to be provided at a distance of 150mm and 750mm from the face of construction to manholes, where pipes pass above, below or through ground beams or foundations; at gully connections and soil stack ends.
- Manhole access covers are to be located at the outgoing side of manholes.
- Cover levels are to be fixed on site to suit finished levels. Covers and frames to BS EN124, Grade D to be used in areas subject to heavy vehicular loading, Grade C in areas subject to light vehicular loading and Grade B to be used elsewhere.
- All pipes to be 100Ø unless noted otherwise.
- Manhole positions and level information is indicative only to be confirmed by Architect.
- Access points to be located at base of all rwps and svps.
- All gullies to be trapped
- Positions of SVP's and RWP's is indicative only and should be read in conjuction with Architects drawings.
- Hydrobreak information based on 1 in 100yr + 40% climate control.

HAZARDS LEADING TO UNUSUAL OR SIGNIFICANT RISKS DURING THE CONSTRUCTION PROCESS ARE IDENTIFIED ON THIS DRAWING AS:

NOTE: THE LIST BELOW IDENTIFIES CERTAIN RISKS WHICH ARE DEEMED TO BE UNUSUAL, ABNORMAL OR UNEXPECTED TO A COMPETENT CONTRACTOR CARRYING OUT WORK OF THIS NATURE BUT DOES NOT COVER ALL POSSIBLE SITUATIONS WHICH MAY BE ENCOUNTERED DURING THE CONSTRUCTION PROCESS. IT IS THEREFORE THE MAIN CONTRACTOR'S RESPONSIBILITY TO IDENTIFY ANY FURTHER RISKS/HAZARDS AND TAKE APPROPRIATE ACTION.

RISKS/HAZARDS SPECIFIC TO THIS DRAWING:

PRELIMINARY - NOT FOR CONSTRUCTION

Rev.	Amendment	Drn.	Chkd.	Appd.	Date
P02	Drainage updated to suit revised ground floor layout	RD	TK	IL	10.07.24
P01	Preliminary Issue	RD	TK	IL	17.12.21

Project

Station Road Care Home Hampton

Drawing

Ground Floor Drainage Strategy

Client

Meedhurst

Scott White and Hookins
Structural Engineering | Civil Engineering | Sustainability and BREEAM | CDM Consultancy
Harman House, Andover Road, Winchester, Hampshire SO23 7BS
T: +44 (0)1962 844855 W: www.swh.co.uk E: info@swh.co.uk

Scale at A1 - 1:200

303423-SWH-XX-XX-DR-C-0500 P02

Project | Originator | Zone | Level | Type | Role | Number | Rev.

CP004-01_FM_ST_008_D

DO NOT SCALE FROM THIS DRAWING

Summary of Results for 100 year Return Period (+40%)

Half Drain Time : 658 minutes.

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
15 min Summer	11.859	0.759	0.0	1.7	1.7	59.9	O K
30 min Summer	11.970	0.870	0.0	1.8	1.8	77.9	O K
60 min Summer	12.079	0.979	0.0	1.8	1.8	95.3	O K
120 min Summer	12.174	1.074	0.0	1.9	1.9	110.7	O K
180 min Summer	12.215	1.115	0.0	1.9	1.9	117.3	O K
240 min Summer	12.233	1.133	0.0	1.9	1.9	120.2	O K
360 min Summer	12.241	1.141	0.0	1.9	1.9	121.6	O K
480 min Summer	12.231	1.131	0.0	1.9	1.9	120.0	O K
600 min Summer	12.215	1.115	0.0	1.9	1.9	117.4	O K
720 min Summer	12.198	1.098	0.0	1.9	1.9	114.6	O K
960 min Summer	12.164	1.064	0.0	1.8	1.8	109.1	O K
1440 min Summer	12.109	1.009	0.0	1.8	1.8	100.2	O K
2160 min Summer	12.037	0.937	0.0	1.8	1.8	88.7	O K
2880 min Summer	11.973	0.873	0.0	1.8	1.8	78.3	O K
4320 min Summer	11.859	0.759	0.0	1.7	1.7	59.9	O K
5760 min Summer	11.766	0.666	0.0	1.6	1.6	44.8	O K
7200 min Summer	11.691	0.591	0.0	1.6	1.6	32.8	O K
8640 min Summer	11.602	0.502	0.0	1.6	1.6	23.8	O K
10080 min Summer	11.462	0.362	0.0	1.5	1.5	17.2	O K
15 min Winter	11.905	0.805	0.0	1.7	1.7	67.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.153	0.0	61.9	22
30 min Summer	90.705	0.0	81.3	37
60 min Summer	56.713	0.0	101.5	66
120 min Summer	34.246	0.0	122.7	126
180 min Summer	25.149	0.0	135.3	184
240 min Summer	20.078	0.0	143.9	244
360 min Summer	14.585	0.0	156.9	362
480 min Summer	11.622	0.0	166.6	480
600 min Summer	9.738	0.0	174.5	526
720 min Summer	8.424	0.0	181.3	588
960 min Summer	6.697	0.0	192.0	712
1440 min Summer	4.839	0.0	208.2	982
2160 min Summer	3.490	0.0	225.2	1388
2880 min Summer	2.766	0.0	238.0	1792
4320 min Summer	1.989	0.0	256.8	2556
5760 min Summer	1.573	0.0	270.8	3296
7200 min Summer	1.311	0.0	281.7	4032
8640 min Summer	1.129	0.0	291.2	4680
10080 min Summer	0.994	0.0	299.2	5440
15 min Winter	138.153	0.0	69.3	22

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Control (l/s)	Max Σ Outflow (l/s)	Max Volume (m³)	Status
30 min Winter	12.031	0.931	0.0	1.8	1.8	87.6	O K
60 min Winter	12.154	1.054	0.0	1.8	1.8	107.6	O K
120 min Winter	12.265	1.165	0.0	1.9	1.9	125.5	O K
180 min Winter	12.322	1.222	0.0	1.9	1.9	133.7	O K
240 min Winter	12.357	1.257	0.0	1.9	1.9	137.7	O K
360 min Winter	12.383	1.283	0.0	1.9	1.9	140.6	O K
480 min Winter	12.380	1.280	0.0	1.9	1.9	140.3	O K
600 min Winter	12.362	1.262	0.0	1.9	1.9	138.1	O K
720 min Winter	12.334	1.234	0.0	1.9	1.9	135.0	O K
960 min Winter	12.285	1.185	0.0	1.9	1.9	128.6	O K
1440 min Winter	12.205	1.105	0.0	1.9	1.9	115.8	O K
2160 min Winter	12.102	1.002	0.0	1.8	1.8	99.2	O K
2880 min Winter	12.006	0.906	0.0	1.8	1.8	83.6	O K
4320 min Winter	11.840	0.740	0.0	1.7	1.7	56.8	O K
5760 min Winter	11.711	0.611	0.0	1.6	1.6	35.9	O K
7200 min Winter	11.559	0.459	0.0	1.5	1.5	21.8	O K
8640 min Winter	11.358	0.258	0.0	1.4	1.4	12.3	O K
10080 min Winter	11.211	0.111	0.0	1.3	1.3	5.3	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
30 min Winter	90.705	0.0	91.1	37
60 min Winter	56.713	0.0	113.8	66
120 min Winter	34.246	0.0	137.5	124
180 min Winter	25.149	0.0	151.4	182
240 min Winter	20.078	0.0	161.3	238
360 min Winter	14.585	0.0	175.7	354
480 min Winter	11.622	0.0	186.7	464
600 min Winter	9.738	0.0	195.5	572
720 min Winter	8.424	0.0	202.9	672
960 min Winter	6.697	0.0	215.1	758
1440 min Winter	4.839	0.0	233.2	1066
2160 min Winter	3.490	0.0	252.3	1516
2880 min Winter	2.766	0.0	266.5	1936
4320 min Winter	1.989	0.0	287.6	2728
5760 min Winter	1.573	0.0	303.1	3456
7200 min Winter	1.311	0.0	315.8	4112
8640 min Winter	1.129	0.0	326.2	4840
10080 min Winter	0.994	0.0	335.2	5448

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.239

Time From:	**(mins) To:**	**Area (ha)**	**Time From:**	**(mins) To:**	**Area (ha)**
0	4	0.120	4	8	0.119

Model Details

Storage is Online Cover Level (m) 13.300

Complex Structure

Cellular Storage

Invert Level (m) 11.100 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	50.0	50.0	1.201	0.0	86.0
1.200	50.0	86.0			

Cellular Storage

Invert Level (m) 11.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	50.0	50.0	0.801	0.0	93.2
0.800	50.0	93.2			

Cellular Storage

Invert Level (m) 11.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	35.0	35.0	0.801	0.0	61.4
0.800	35.0	61.4			

Cellular Storage

Invert Level (m) 11.650 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.00000 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.00000

Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)
0.000	35.0	35.0	0.801	0.0	61.4
0.800	35.0	61.4			

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0056-2000-2100-2000
Design Head (m)	2.100
Design Flow (l/s)	2.0
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	56
Invert Level (m)	10.400
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	**Head (m)**	**Flow (l/s)**
Design Point (Calculated)	2.100	2.0
Flush-Flo™	0.247	1.3
Kick-Flo®	0.504	1.1
Mean Flow over Head Range	-	1.5

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

Depth (m)	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**	**Depth (m)**	**Flow (l/s)**
0.100	1.1	1.200	1.6	3.000	2.4	7.000	3.5
0.200	1.3	1.400	1.7	3.500	2.5	7.500	3.6
0.300	1.3	1.600	1.8	4.000	2.7	8.000	3.7
0.400	1.2	1.800	1.9	4.500	2.8	8.500	3.8
0.500	1.1	2.000	2.0	5.000	3.0	9.000	3.9
0.600	1.1	2.200	2.0	5.500	3.1	9.500	4.0
0.800	1.3	2.400	2.1	6.000	3.2		
1.000	1.4	2.600	2.2	6.500	3.4		