PRICE & MYERS

Liddell Road - Phase 2
West Hampstead, London

Drainage Statement

Prepared by: **Kirsty Burwood MEng CEng MICE**
Reviewed by: **Dimitris Linardatos BEng MSc CEng MICE FIHE**

Job Number: **29100**

Date	Revision	Notes/Amendments/Issue Purpose
16 September 2021	Draft	Draft for comment
23 September 2021	1	For condition discharge

Consulting Engineers
37 Alfred Place
London WC1E 7DP

020 7631 5128
mail@pricemyers.com
www.pricemyers.com

Contents

1 Introduction

This statement has been compiled to enable the Local Authority to discharge the drainage planning conditions for the proposed Liddell Road development planning application (Ref: 2014/7651/P), which is located in West Hampstead in the London Borough of Camden. This development is part of a wider development of Liddell Road, Phase 1, (Ref: 2014/7649/P) which was completed in 2017.

Phase 2 consists of three new buildings, providing 106 residential units and 3,700 sqm of mixed commercial use space. Phase 1 was a primary school. A Flood Risk Assessment (FRA) supporting both phases was submitted in December 2014 as part of the joint planning application and subsequently approved. A Drainage Statement to discharge the conditions for Phase 1 was submitted in April 2016 and subsequently approved. Refer to these reports for additional information if required.

2 Conditions

Condition 16

"Prior to commencement of any works comprised in the build out of the development (excluding the following site preparatory works, works of demolition and breaking up of the existing slab) details of a sustainable urban drainage system to achieve a greenfield run off rate for the 1 in 100 year event, allowing for climate change as detailed in the approved flood risk assessment (Price & Myers, Oct 2014) shall be submitted to and approved by the local planning authority and such system shall be implemented as part of the development and thereafter retained and maintained."

Condition 19

"Prior to commencement of any works comprised in the build out of the development (excluding the following site preparatory works, works of demolition and breaking up of the existing slab) a drainage strategy, prepared in consultation with the sewerage undertaker, detailing any on and/or off site drainage works, has been submitted to and approved by, the local planning authority. No discharge of foul or surface water from the site shall be accepted into the public system until the drainage works referred to in the strategy have been completed.

The strategy shall address the following points:

1. *There should be no increase to average or peak flows of surface water run off leading towards Network Rail assets, including earthworks, bridges and culverts.*
2. *All surface water run-off and sewage effluent should be handled in accordance with Local Council and Water Company regulations.*
3. *Attenuation should be included as necessary to protect the existing surface water drainage systems from any increase in average or peak loadings due to normal and extreme rainfall events.*

4. *Attenuation ponds, next to the railway, should be designed by a competent specialist engineer and should include adequate storm capacity and overflow arrangements such that there is no risk of flooding of the adjacent railway line during either normal or exceptional rainfall events.*
5. *All surface and foul water arising from the proposed works and any associated soakaways must be collected and diverted away from the railway infrastructure."*

3 Drainage Strategy

3.1 Existing Drainage

There is an existing 305mm diameter combined water sewer running from east to west along Maygrove Road to the south of the site.

As part of the Phase 1 works a separate surface and foul water drainage system was constructed. The final construction drainage drawings can be found appended to the rear of this report. The accuracy of these is to be confirmed on site.

There is a private 150mm diameter surface water drainage pipe (exMH53) in the south east corner of the site which discharges into the combined water public sewer in Maygrove Road.

The access road running through the site in the west has a separate foul water network and two surface water pipe networks. The 150mm diameter foul water network and the 150mm surface water network were constructed to facilitate future connections for Phase 2. These combine into a manhole in the south of the site (exC20) where the pipe changes to 225mm diameter and discharges into the combined water public sewer in Maygrove Road.

There is also a combined water drainage connection outside of the site to the south-east, which was constructed for Phase 1, however this is not affected by the Phase 2 works.

There is also a surface water drainage network in the access road which drains part of the Phase 1 school and the access road. This runs north to south following the gradient of the road where it discharges into a surface water pumping chamber. This water is pumped back up the road and exits the site in the east where it connects into the school's surface water network. This is unaffected by the works.

It is anticipated that there will be some existing drainage runs within the site boundary which served the previous industrial estate. These will be redundant and can be removed as part of the works.

3.2 Surface Water

Proposed Run-Off

The FRA calculated that the Greenfield run-off rate from the entire site (Phase 1 & 2) for a 1 in 100-year storm (with a 30% allowance for climate change) is 14.97 l/s. The discharge rate was agreed to be split as seen in Table 3.1.

Block	Discharge Rate
1	8.47 l/s
2	6.50 l/s
Total	14.97 l/s

Table 3.1 – Proposed Discharge Rates

It is proposed that the three blocks will each have their own point of discharge into the site wide surface water network due to different ownerships, change in levels, and constraints caused by Phase 1. Therefore, the allowable Phase 2 discharge rate has been split fairly evenly across the site and can be seen in Table 3.2.

Block	Discharge Rate
Block A	2.1 l/s
Block B	2.1 l/s
Block C	2.3 l/s
Total	6.5 l/s

Table 3.2: Proposed Discharge Rates

Whilst the approved FRA stated the drainage network would make a 30% allowance for climate it is worth noting that this has been increased to 40% due to changes in policy since 2014. The MicroDrainage calculations for the 1, 30, 100 and 1 in 100 year + 40% climate change events can be found appended to this document.

SuDS Strategy

The site includes the use of SuDS. The proposed drainage layout drawings can be found appended to the rear of this document.

Block A utilises a rainwater harvesting tank which will provide a water supply to appliances and irrigation. This is located below ground and will be provided upstream of any other storage allowing it to fill up first and overflow into other temporary storage features once full. The capacity of the rainwater harvesting system to attenuate rainwater depends on the water use within the building. If there is no activity in the building and the harvester is full, no attenuation will be provided during a subsequent storm event. In the worst-case scenario, the rainwater harvester will provide no attenuation. Therefore, a 60m^3 below ground cellular attenuation tank will provide temporary storage and limits the discharge from the site to 2.1 l/s. This connects in to ExS27 manhole within the access road to the east which was constructed during Phase 1.

Block B utilises an area of permeable paving to the west of the building and will have a minimum 150mm depth of 4/20mm granular material. This works in conjunction with a 40m^3 external below ground cellular attenuation tank and will restrict the discharge to 2.1 l/s. This connects in to ExS25 manhole within the Block A boundary, which was constructed as part of Phase 1.

Block C utilises a 130m^3 below ground cellular attenuation tank and restricts the discharge to 2.3 l/s. This connects in to ExMH53, which utilises an existing 150mm diameter pipe connection into the combined water public sewer in Maygove Road.

Thames Water have approved the surface water discharge rates as part of a pre-development application, their response has been appended to the rear of this document.

Maintenance Schedule

The successful implementation and operation of a SuDS system depends on a robust and clear maintenance strategy being implemented. The following measures will form part of the site's proposed management plan.

The drainage pipes, manholes, gullies, permeable paving etc will be maintained by the separate site owners of each Block and will form part of the overall maintenance regime for the site.

SUDS Element	Maintenance		
	Activity	**Required Action**	**Typical Frequency**
Rainwater Harvesting	**Regular Maintenance**	Inspection of the tank for debris and sediment build-up, inlets/ outlets/ withdrawal devices, overflow areas, pumps, filters	Annually and following poor performance
		Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris	
	Occasional Maintenance	Cleaning and/or replacement of any filters	Three monthly, or as required
	Remedial Actions	Repair of overflow erosion damage or damage to tank	As required
		Pump repairs	
Permeable Paving	**Monitoring / Inspections**	Initial inspection	Monthly for three months after installation
		Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 hours after large storms in first six months
		Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
		Monitor inspection chambers	Annually
	Regular Maintenance	Brushing and vacuuming -standard cosmetic sweep over whole surface	Once a year after autumn leaf fall
		Rubbish and litter removal	As required
	Remedial Actions	Remediate any landscaping which through vegetation maintenance or soil slip, has been raised to within 50mm of the level of the paving.	As required
		Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	
		Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required

SUDS Element	Maintenance		
	Activity	**Required Action**	**Typical Frequency**
Attenuation Tank	**Monitoring / Inspections**	Inspect all inlets, outlets, vents, overflows and control structures to ensure they are working as they should	Annually or after severe storms
		Inspect and identify any elements that are not operating correctly.	Monthly for three months, then half yearly or as required.
	Regular Maintenance	Remove sediments / debris from catch pits / gullies and control structures	Annually, after severe storms or as required
	Remedial Actions	Repair inlets, outlets, vents, overflows and control structures.	As required

Table 3.3: SuDS Maintenance Strategy as taken from the CIRIA SuDS manual

3.3 Foul Water

Each block has its own separate foul water drainage network. Block A connects into exMHF22 in the access road, Block B connects into exMHF20 in the Block A site boundary and Block C connects in to exC20 in the access road via an existing spur constructed during Phase 1.

Thames Water have confirmed that the combined water sewer in Maygrove Road has sufficient capacity to cater for the increase in foul water flow. Their response has been appended to this document.

3.4 Network Rail

The surface water from the site is being discharged to the public sewer at its Greenfield run off rate via the use of attenuation tanks and hydrobrakes; no infiltration is proposed adjacent to the Network rail boundary.

The surface water drainage will not cause flooding on the Network Rail site in the event of a large rainfall event, as our network can cater for a 1 in 100-year storm with an additional 40% allowance for climate and our site is set at a lower level.

4 Attachments

- As-Built Phase 1 Drainage Drawings
  - 22885-620 – Manhole Schedules & Setting Out Co-Ordinates
  - 22885-625 – Below Ground Drainage Layout Full Site
- Drawings (including 29100 PM Document Issue Register):
  - 29100-6000 – Below Ground Drainage Site Wide Layout
  - 29100-6001 – Below Ground Drainage Block A Sheet 1
  - 29100-6002 – Below Ground Drainage Block B Sheet 2
  - 29100-6003 – Below Ground Drainage Block C Sheet 3
  - 29100-6004 – Below Ground Drainage Block C Sheet 4
  - 29100-6101 – Below Ground Drainage Details Sheet 1
  - 29100-6102 – Below Ground Drainage Details Sheet 2
  - 29100-6103 – Below Ground Drainage Details Sheet 3
  - 29100-6104 – Below Ground Drainage Details Sheet 4
  - 29100-6105 – Below Ground Drainage Details Sheet 5
  - 29100-6106 – Below Ground Drainage Details Sheet 6
  - 29100-6200 – Access Chambers Schedules
  - 29100-GN02 – General Notes
- MicroDrainage Model
  - 29100 PM SW Network Details
  - 29100 PM 1 in 1, 30 & 100
  - 29100 PM 1 in 100 year + 40% CC
  - 29100 PM FW Network Details
- Approvals
  - Thames Water Pre-Development Enquiry Response

Manhole Reference	Cover Level (m)	Invert Level (m)	Manhole Type	Manhole depth (m)	Internal Manhole Size	Cover Clear Opening and Cover Grade	Comments
F1	50.300	49.650	IC	0.650	750x600 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS B125 Recessed Cover	Internal manhole - double sealed and bolted
F2	50.300	49.303	IC	0.997	600x450 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS B125 Recessed Cover	Internal manhole - double sealed and bolted
F3	50.339	49.045	IC	1.294	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
F4	50.075	48.900	IC	1.175	600x450 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS B125 Recessed Cover	Internal manhole - double sealed and bolted
F5	50.075	48.776	IC	1.299	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
F6a	50.930	49.730	IC	1.200	1000x675 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS B125 Recessed Cover	
F6	50.961	48.535	TYPE B	2.426	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
F7	50.981	50.357	IC	0.624	1200x750 Rectangular Precast Concrete Blocks	600x600 eccentric BS EN 124 CLASS B125 Recessed Cover	
F8	50.981	49.932	IC	1.049	750x600 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS B125 Recessed Cover	
F9	50.974	49.682	IC	1.292	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
F10	50.980	49.600	IC	1.380	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS D400	Steps Required
F11a	50.950	50.000	IC	0.950	600x450 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS D400 Recessed Cover	
F11	50.980	49.282	TYPE B	1.698	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400 Recessed Cover	Steps Required
F12	51.000	48.191	TYPE B	2.809	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
F20	49.610	47.000	TYPE B	2.610	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
F21	49.076	46.400	TYPE B	2.676	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
F22	47.980	44.600	TYPE A	3.380	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125	Ladder required
F23	49.280 TBC	44.300	TYPE A	4.980	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125	Cover level TBC - To match existing levels Ladder required
C1	50.517	47.060	TYPE A	3.457	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Ladder required
C2	47.786	46.500	TYPE B	1.286	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
C20	47.250	44.000	TYPE A	3.250	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125	Ladder required

FOUL & COMBINED WATER MANHOLE SCHEDULES

Channel Drain	
No.	Unit Reference
CD01	M100D 10.0
CD02	M100D 30.0
CD03	M100D 10.0
CD04	M100D 10.0
CD05	M100D 30.0
CD06	M100D 0.0
CD07	M200D 0.0
CD08	M200D 0.0
CD09	M200D 10.0
~~CD10a~~	~~M100D 10.0~~
~~CD10b~~	~~M100D 10.0~~
~~CD11~~	~~M100D 0.0~~
~~CD12~~	~~M100D 0.0~~
~~CD13~~	~~M100D 0.0~~
CD14	M100D 20.0
CD15	M100D 0.0
CD16	M100D 20.0
CD17	M100D 0.0
CD18	M100D 10.0

Slot Drain	
No.	Unit Reference
BS01	M100D 0.0*
BS02	M100D 0.0*
BS03	M100D 10.0*
BS04	M100D 0.0*
BS05	M100D 0.0*
BS06	M100D 10.0*
BS07	M100D 10.0*
BS08	M100D 10.0*
BS09	M100D 0.0*
BS10	M100D 30.0*

* With brikslot grating

CHANNEL DRAIN & BRICKSLOT SCHEDULE

Manhole Reference	Cover Level (m)	Invert Level (m)	Manhole Type	Manhole depth (m)	Internal Manhole Size	Cover Clear Opening and Cover Grade	Comments
S1	50.085	48.885	IC	1.200	750x600 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS D400	
S2	48.410	47.207	IC	1.203	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS D400	Steps Required
S3	47.510	46.300	IC	1.210	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS D400	Steps Required
S4	49.227	48.215	IC	1.012	1200x750 Rectangular Precast Concrete Blocks	600x600 eccentric BS EN 124 CLASS D400	Sealed Manhole
S5	50.408	48.095	TYPE B	2.313	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
S6a	50.370	49.190	IC	1.180	475mm Polypropylene Ring	440mm diameter Hepworth SPK8 Recessed Cover	
S6	50.378	49.145	IC	1.233	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
S7	50.378	49.071	IC	1.307	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
S8a	50.290	48.800	IC	1.490	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
S9	50.975	49.775	IC	1.200	1000x675 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS D400	
S10	50.910	48.016	TYPE B	2.894	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
S11	50.980	50.200	IC	0.780	600x450 Rectangular Precast Concrete Blocks	600x450 Opening BS EN 124 CLASS D400	
S12	50.910	47.945	TYPE B	2.965	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
S13	50.983	49.695	IC	1.288	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
S14	50.974	49.507	IC	1.467	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125 Recessed Cover	Steps Required
S15	50.914	47.873	TYPE A	3.491	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400 Recessed Cover	450mm Deep sump Ladder required
S16	50.988	50.000	IC	0.988	475mm Polypropylene Ring	440mm diameter Hepworth SPK8 Recessed Cover	
S17	51.600	49.827	TYPE B	2.223	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125 Recessed Cover	450mm Deep sump Steps Required
S18	50.837	47.950	TYPE A	3.337	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	450mm Deep sump Ladder required
S25	49.610	47.500	TYPE B	2.110	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
S26	48.890	47.055	TYPE B	1.835	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Steps Required
S27	47.890	46.680	IC	1.210	1200x750 Rectangular Precast Concrete Blocks	1200x675 Opening BS EN 124 CLASS B125	Steps Required
S28	49.230	46.373	TYPE B	2.857	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125	Steps Required
S29	47.620	46.200	TYPE B	1.870	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS B125	450mm Deep sump Steps Required
SW PUMP	47.185	45.947	GRP PUMP	1.238	GRP PUMP	600x600 eccentric BS EN 124 CLASS D400	Refer to New Haden Quote - P-171337 A0
FC1	50.870	47.100	TYPE B	3.770	1200 Diameter Precast Concrete Rings	600x600 eccentric BS EN 124 CLASS D400	Ladder required

SURFACE WATER MANHOLE SCHEDULE

MANHOLE SETTING OUT CO-ORDINATES		
SOP	Eastings (m)	Northings (m)
AT01	525189.157	184814.148
AT02	525217.519	184809.147
AT03	525215.852	184799.693
AT04	525187.507	184804.792
C1	525219.142	184798.160
C2	525213.084	184761.395
C20	525104.262	184779.602
F1	525117.953	184848.987
F10	525172.161	184819.816
F11	525183.758	184817.815
F11a	525215.248	184810.373
F12	525183.471	184804.893
F2	525130.894	184845.588
F20	525089.665	184823.468
F21	525107.880	184815.830
F22	525105.560	184795.934
F23	525116.708	184785.538
F3	525135.472	184832.780
F4	525136.246	184809.234
F5	525137.119	184814.143
F6	525150.957	184814.132
F6a	525155.446	184839.590
F7	525207.567	184829.655
F8	525189.624	184832.819
F9	525181.635	184834.228
FC1	525219.084	184804.419
S1	525107.808	184840.618
S10	525158.921	184815.511
S11	525168.403	184820.531
S12	525168.804	184813.627
S13	525204.965	184814.248
S14	525186.798	184817.007
S15	525185.903	184810.368
S16	525218.716	184827.339
S17	525221.974	184812.212
S18	525220.834	184805.178
S2	525111.045	184803.621
S25	525088.971	184821.801
S26	525108.641	184813.452
S27	525104.328	184794.345
S28	525114.610	184786.892
S29	525106.269	184788.363
S3	525107.947	184784.640
S4	525114.196	184820.593
S5	525142.751	184815.606
S6	525138.735	184839.535
S6a	525139.055	184842.084
S7	525137.931	184835.199
S8a	525136.263	184824.641
S9	525161.010	184821.645
SW PUMP	525108.560	184778.404

Notes :

1. This Drawing is to be read in conjunction with all relevant Architect's Engineer's and specialists' drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale this bar should be 50mm long @ A1 or 25mm long @ A3.
3. Health & Safety :
   All specific drawing notes are to be read in conjunction with the project "Information Pack" and "Site Rules".
4. For general notes refer to Drawing No. 22885-600
5. Location of manhole covers to be co-ordinated with the Architects & Landscape Architects.

Ver	Date	Drawn	Eng	Amendment
16	04.08.17	AH	KB	Final Construction
15	04.04.17	DLa	KB	Issued for Construction
14	16.03.17	DLa	KB	Issued for Construction
WIP	23.01.17	KB	KB	Work in Progress
13	08.08.16	KB	KB	Manhole S6a added as clouded.
12	18.07.16	KB	KB	Relocated attenuation tank and manhole levels and setting out updated, as clouded.
11	24.05.16	KB	KB	Attenuation tank and F6a setting out included and manholes updated, as clouded.
10	12.05.16	DLa	KB	Linear drains added. Updates clouded
9	19.04.16	DLa	KB	Manhole schedules & setting out co-ordinates amended to suit updated layout as clouded.
8	11.04.16	DLa	KB	Issued for Construction
7	08.04.16	DLa	KB	Issued for Draft Construction
6	12.02.16	AH	KB	Issued for Construction
5	14.12.15	DLa	KB	Revisions Clouded
4	26.10.15	DLa	KB	Issued for Tender
3	18.09.15	DLa	KB	Issued for Tender
2	28.04.15	DLa	KB	Issued for Tender
1	21.04.15	DLa	KB	Issued for Tender

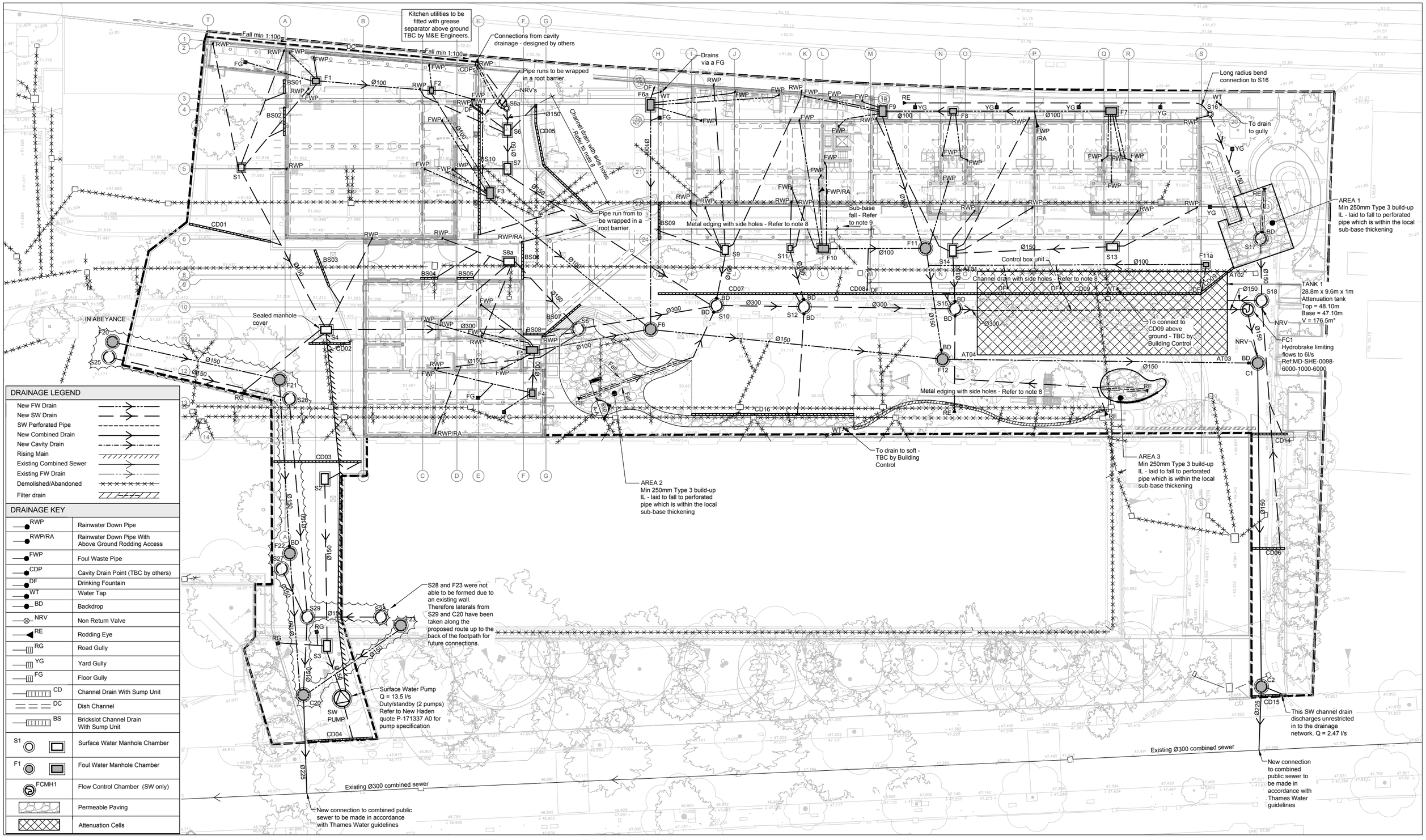
KINGSGATE SCHOOL
LIDDELL ROAD

MANHOLE SCHEDULES
& SETTING OUT
CO-ORDINATES

Status
FINAL CONSTRUCTION

Drawn DLa	Eng KB
Scales NTS at A1	NTS at A3
Drawing No 22885-620	Ver 16

PRICE&MYERS
Consulting Engineers
37 Alfred Place London WC1E 7DP
T 020 7631 5128 F 020 7462 1390
E mail@pricemyers.com www.pricemyers.com



DRAINAGE LEGEND

- New FW Drain
- New SW Drain
- SW Perforated Pipe
- New Combined Drain
- New Cavity Drain
- Rising Main
- Existing Combined Sewer
- Existing FW Drain
- Demolished/Abandoned
- Filter drain

DRAINAGE KEY

RWP	Rainwater Down Pipe
RWP/RA	Rainwater Down Pipe With Above Ground Rodding Access
FWP	Foul Waste Pipe
CDP	Cavity Drain Point (TBC by others)
DF	Drinking Fountain
WT	Water Tap
BD	Backdrop
NRV	Non Return Valve
RE	Rodding Eye
RG	Road Gully
YG	Yard Gully
FG	Floor Gully
CD	Channel Drain With Sump Unit
DC	Dish Channel
BS	Brickslot Channel Drain With Sump Unit
S1	Surface Water Manhole Chamber
F1	Foul Water Manhole Chamber
FCMH1	Flow Control Chamber (SW only)
	Permeable Paving
	Attenuation Cells

Notes :

1. This Drawing is to be read in conjunction with all relevant Architect's Engineer's and specialists' drawings and specifications.
2. Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale this bar should be 50mm long @ A1 or 25mm long @ A3.
3. Health & Safety : All specific drawing notes are to be read in conjunction with the project "Information Pack" and "Site Rules".
4. For general notes refer to Drawing No. 22885-600
5. Permeable surfaces TBC with Landscape Architect.
6. All buried surface water pipes to be Ø150mm & all foul water pipes to be Ø100mm U.N.O.
7. The installation of the dish channel and channel drains, along the northern boundary with Network Rail, are to be coordinated with the Structural Engineers capping beam and setting out drawings.
8. Where stated on the drawing, channel drains or metal edging adjacent to the non-porous wet pour surfacing, require side entry holes to be drilled/cut on the side of the wet pour. The hole is to be located at the base of the permeable surfacing (40mm) below the finished cover level. It is recommended that a 15mm hole is made every 300mm.
9. Where stated on the drawing this section of metal edging adjacent to the wet pour surfacing should not have any side holes cut/drilled. The sub-base is required to fall towards the west to allow sub-surface water to flow towards the side holes on the metal edging which is adjacent to the soft landscaping.

Ver	Date	Drawn	Eng	Amendment
9	04.08.17	AH	KB	Final Construction
8	02.06.17	KB	KB	Notes added as clouded.
7	04.04.17	DLa	KB	Amended to suit latest Landscape Architects layout as clouded.
6	16.03.17	DLa	KB	Amended to suit latest Landscape Architects layout as clouded.
WIP	23.01.17	DLa	KB	Work in Progress
5	08.08.16	KB	KB	Changes as clouded - cavity drainage and S6a added.
4	18.07.16	KB	KB	Changes as clouded. Attenuation tank size amended. F12, C1, FC1 & S18 moved to suit. F13 removed.

KINGSGATE SCHOOL
LIDDELL ROAD

BELOW GROUND DRAINAGE LAYOUT
FULL SITE

Status
FINAL CONSTRUCTION

Drawn DLa	Eng KB
Scales 1:200 at A1	1:400 at A3
Drawing No 22885-625	Ver 9

PRICE&MYERS
Consulting Engineers
37 Alfred Place London WC1E 7DP
T 020 7631 5128 F 020 7462 1390
E mail@pricemyers.com www.pricemyers.com