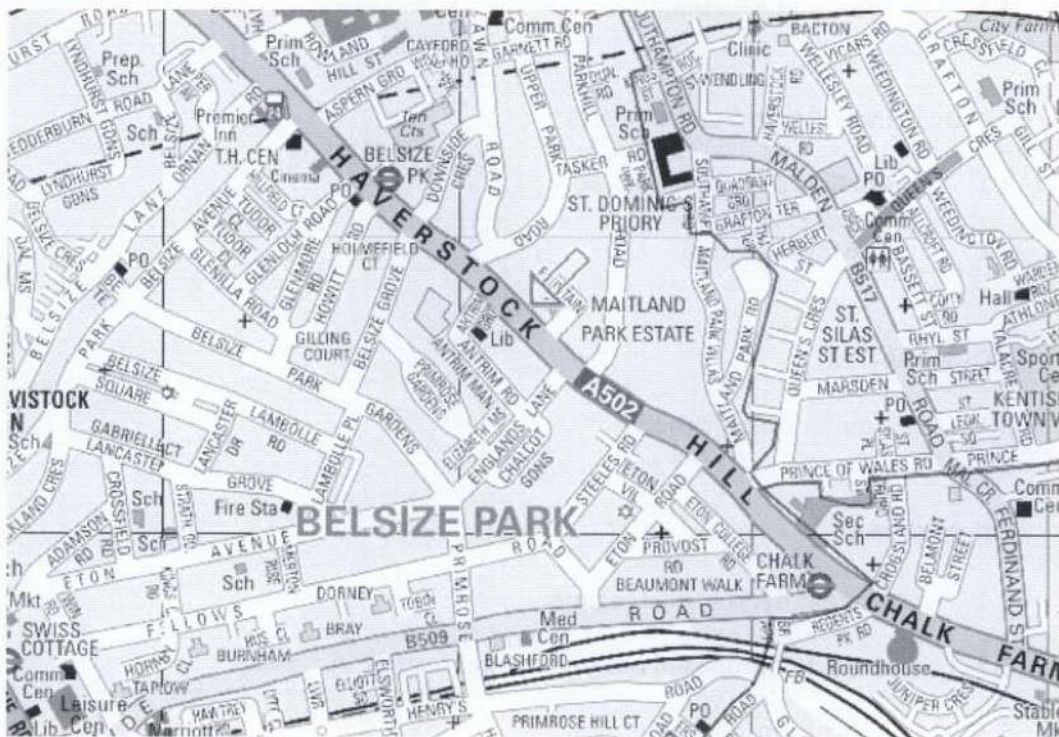


**154 Haverstock Hill
London
NW3 2AY**



*Hydro-geological assessment &
Flooding risk report*

Date Issued:	29 th August 2012
Issued by:	Carly Doyle
Checked by:	Stephen Merritt
Revision:	A

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1. INTRODUCTION

London Basement have been commissioned by Kyson to undertake a hydro-geological assessment and flood risk report to assess the impact of the proposed retro fit basement construction at 154 Haverstock Hill on the local groundwater regime and the risk posed by flooding.

This is in response to the London Borough of Camden's request for information regarding the impact of the proposed basement on groundwater levels and the possible changes subsequent to construction and the client's consulting engineers request for information regarding the water table and ground conditions.

This report presents the findings of a desk based study of the available ground and groundwater conditions in the surrounding area taking into account published geological records from the British Geological Survey and groundwater conditions from the Environment Agency.

Information regarding the proposed water management systems is also presented in the appendices of this report.

Using this information conclusions are drawn on the possible impact of the proposed basement structure on the local groundwater and drainage regime in section 5.

It should be noted that this report does not comprise a geotechnical appraisal of the proposed development.

2. SITE LOCATION

2.1 General

The existing property is believed to have been constructed in the 19th century on a corner plot. The site is located at 154 Haverstock Hill, London NW3 2AY.

A site location plan can be found in the appendices of this document (Figure 6.1).

2.2 Proposed development

The proposal is to create a new basement storey below the footprint of the existing property.

The property is currently of commercial use and the additional space is predominantly for the hotel and restaurant and ancillary use. The space is not intended to be solely habitable such as a self contained dwelling and as such the risk to life has been considerably reduced.

Practical measures are taken to reduce the impact of flooding and low level upstands will be formed around the lightwells to reduce the risk of localised flooding.

Basement spaces are drained by a surface water pump and 'dual' pumps are installed as standard. These are fitted with a high level alarm with battery backup to warn in the event of pump failure. A further battery back up system is available in high risk areas to ensure the pumps continue to operate in the event of mains failure; this is not considered necessary in this proposal and will not be fitted as standard.

Details of the water management systems are presented in appendix 6.4.

Scheme designs for the proposed basement structure are presented in appendix 6.5.

3. GEOLOGY AND GROUND CONDITIONS

3.1 Published geology

The British Geological Survey Map for this area suggests that the site geology comprises of London Clay.

London Clay Formation

The London Clay Formation is an over consolidated firm to very stiff, becoming hard with depth, fissured, blue to grey silty clay of low to very high plasticity. The upper and lower parts may contain silty or fine grained sand partings. It also contains, within it, laminated structured, nodular claystone and rare sand partings. The London Clay is approximately 90m thick in the area. The London Clay is relatively impermeable and this is confirmed by the relatively low permeability typically 1×10^{-9} m/s and lower.

3.2 Site investigation

Reports to varying depths have been sourced and referenced from historic works previously carried out in the Haverstock Hill area.

The factual reports are included in Appendix 6.3.

4. GROUNDWATER

4.1 Aquifer classification

The London Clay is classified as an aquitard, although is slightly more permeable where weathered or where it has a higher proportion of sand.

4.2 Groundwater

The properties of the London Clay formation are well documented and overall groundwater flow rates in the near surface soils are expected to be very low. Local, historic borehole records, to depths of at least 4m, found no water at depths of up to 9.5m below ground level.

5. CONCLUSIONS

5.1 Current hydrological regime

The ground and groundwater conditions indicate that precipitation falling on the site, where not already collected by gulleys from roof and hard standing, has and will continue to infiltrate through the made ground and firm clay passing downwards until it reaches the top of the relatively low permeability London Clay Formation where the direction of flow will become lateral.

Contribution to local groundwater from vertical infiltration of rainwater is to be limited at this site and the development will not alter this.

5.2 Impact of proposed basement construction

The site investigation data confirms the anticipated shallow depth geology suggested by the desk study information.

The site investigation information indicates that the basement will not encounter groundwater or form an obstruction to regional flow. Furthermore, the available borehole information from the BGS in the area confirms that groundwater is not expected until at least 9.5m, which is below the anticipated depth of the proposed construction.

The level used for the 1:200 year flood is considered to be 5.32 AOD.

The flood map from the area is shown in appendix 6.2.

We have received planning approval and carried out many basement works within the roads surrounding the proposed works, including Howitt Road, Lawn Road and Lancaster Grove, all with AOD's ranging well above the 1:200 year floodplain.

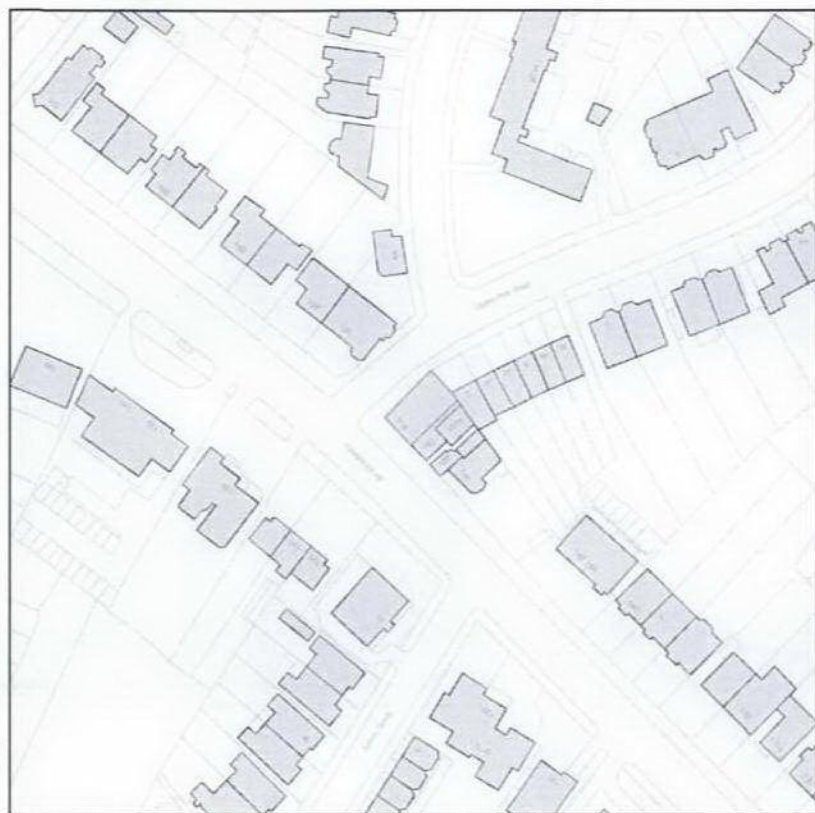
5.3 Conclusion

The information obtained and detailed within this report confirm that the site at 154 Haverstock Hill is within the low probability flood zone 1. As such the risk of flooding from both fluvial and tidal sources is considered low (less than 1 in 1000 annual probability). Based on the ground and groundwater conditions at the site, the proposed basement will have no discernable impact on the local hydrology and will therefore not impact or influence neighbouring properties. It is well outside of 20 metres from a canal or watercourse and consequently the likelihood of flooding is minimal.

6. APPENDICES

- 6.1 Site location plan**
- 6.2 EA flood risk map**
- 6.3 Site investigation report**
- 6.4 Water management systems**
- 6.5 Proposed basement plans**

Site Location Plan



6.2 EA flood risk map

Map of NW3 2AY – indicates no flood risk (areas of flood risk would be shown in blue).



6.3 British geological survey borehole reports

Norwest Holst Soil Engineering Ltd.						Borehole No. 1	
Contract No. F7406		BOREHOLE LOG		Sheet 1 of 1		1159	
Location: Haveringstock HS11		Client: London Borough of Camden		Chainage:		Ground Level: m A.O.D.	
Method of Boring: Shell & Auger		TØ 2 ESE		Date: 18/5/82			
Diameter of Borehole: 150mm							
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D. %	Daily Progress
MADE GROUND: Soft, dark brown, sandy silty CLAY with much fine to coarse gravel of flint, brick and quartzite.		0.50			0.50 (20)		
Soft, orange brown, slightly sandy silty CLAY with a little fine gravel and rootlets.		1.10			1.50 (50)		
Stiff, brown, slightly sandy silty CLAY with a little fine to medium gravel. Becoming less sandy with depth.					2.50 (50)		
		4.00			3.50 (50)		
End of Borehole.							
Type of Sample		Remarks (Observations of Ground Water etc.) (-) U100 blows					
☒ S.P.T. ☐ Undisturbed ☐ C.P.T. ☐ Vane ☐ Jar ☐ Water ☒ Bulk ☐ Piezometer		Borehole dry during boring. No casing. Water levels are subject to seasonal or tidal variations and should not be taken as constant					

Norwest Holst Soil Engineering Ltd.						Borehole No. 2	
BOREHOLE LOG						Sheet <u>1</u> of <u>1</u>	
Contract No. <u>F7406</u>		Location <u>Haverstock Hill</u>		Chainage <u>1160</u>		Ground Level <u>m.A.O.D.</u>	
Client <u>London Borough of Camden</u>		Method of Boring <u>Shell & Auger</u>		Date <u>19/5/87</u>			
Diameter of Borehole <u>150mm</u>		<u>TØ28SE</u>					
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
MADE GROUND: Soft dark brown, very sandy silty CLAY with much fine to coarse gravel of flint, bricks, coal, glass, sandstone.		0.50			0.50 (30)		
Firm orange brown (locally mottled grey), sandy silty CLAY with some fine to medium gravel and rootlets. Becoming less sandy with depth.		1.00			1.50 (50)		
Stiff, brown (locally mottled grey) slightly silty CLAY with occasional sand and fine gravel.					2.50 (50)		
		4.00			3.50 (50)		
End of Borehole.							
Type of Sample ☒ S.P.T. ☐ Undisturbed ☐ C.P.T. ☒ Vane ☐ Jar ☒ Water ☒ Bulk ☐ Piezometer Remarks (Observations of Ground Water etc.) (-) U100 blows Borehole dry during boring. No casing. Water levels are subject to seasonal or tidal variations and should not be taken as constant							

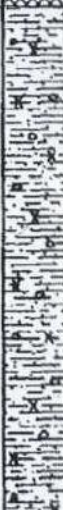
Norwest Holst Soil Engineering Ltd.						Borehole No. 3	
BOREHOLE LOG				Sheet 1 of 1			
Contract No. F7406				Chainage 1161			
Location Haverstock Hill				Ground Level m A.O.D.			
Client London Borough of Camden				Date 19/5/82			
Method of Boring Shell & Auger				TQ28SE			
Diameter of Borehole 150mm							

Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth #1 Sampling	Sampling and Coring	"N"/ R.O.D. %	Daily Progress
Concrete	[Cross-hatch pattern]	0.05					
MADE GROUND: Firm, grey, sandy silty CLAY with much fine to medium gravel of brick, flint, glass and sandstone	[Dotted pattern]	0.50			0.50 (30)		
	[Dotted pattern]	0.95					
Firm, orange brown, slightly sandy silty CLAY with occasional fine gravel.	[Horizontal lines]				1.50 (50)		
Firm brown (locally mottled grey), slightly sandy silty CLAY with occasional sand and fine gravel.	[Vertical lines]				2.50 (50)		
	[Vertical lines]	3.30					
Stiff, brown, slightly silty CLAY with occasional sand and fine gravel.	[Horizontal lines]				3.50 (50)		
	[Horizontal lines]	4.00					
End of Borehole.							

Type of Sample S.P.T. Undisturbed C.P.T. X Vane Jar Δ Water Bulk Piezometer	Remarks (Observations of Ground Water etc.) (-) U100 blows Borehole dry during boring. No casing. Water levels are subject to seasonal or tidal variations and should not be taken as constant
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Norwest Holst Soil Engineering Ltd.						Borehole No. 4	
BOREHOLE LOG						Sheet <u>1</u> of <u>1</u> 1162	
Contract No. <u>F740E</u> Location <u>Haverstock Hill</u> Client <u>London Borough of Camden</u> Method of Boring <u>Shell & Auger</u> Diameter of Borehole <u>150mm</u>						Chainage <u> </u> Ground Level <u> </u> m.A.C.D. Date <u>19/5/87</u>	
<i>TQ 18 SE</i>							
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D.%	Daily Progress
MADE GROUND: Soft-firm, black, very sandy very silty CLAY with some fine to coarse gravel - of bricks flint and sandstone.		0.35			0.50 (20)		
Stiff, brown (locally mottled grey) slightly sandy silty CLAY with occasional fine to medium gravel.					1.50 (50) 2.50 (50) 3.50 (50)		
End of Borehole.		4.00					
Type of Sample ☐ S.P.T. ☐ Undisturbed ☐ C.P.T. ☐ Vane ☐ Jar ☐ Water ☐ Bulk ☐ Piezometer						Remarks (Observations of Ground Water etc.) (-) U100 blows Borehole dry during boring. No casing. Water levels are subject to seasonal or tidal variations and should not be taken as constant	

Norwest Holst Soil Engineering Ltd.						Borehole No. 5	
BOREHOLE LOG							
Contract No. F7406		Location Haverstock Hill		Sheet 1 of 2		1163	
Client London Borough of Camden		Method of Boring Shell & Auger		Chainage			
Diameter of Borehole 150mm		Ground Level		Date 19/5/87			
		20/5/87					
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N" / R.O.D. %	Daily Progress
TOPSOIL		0.10					
MADE GROUND: Soft, dark brown, very sandy silty CLAY with some brick, glass and flint gravel.		0.50			0.50 (30)		
MADE GROUND: Firm brown, slightly sandy, silty CLAY with occasional fine to coarse gravel and rootlets.		1.50		150mm to 1.50m 19/5	1.50 (50)		
Stiff, laminated, brown (locally mottled grey), silty CLAY with occasional pockets of fine sand and fine gravel.		2.50			2.50 (50)		
					4.00 (50)		
					5.50 (50)		
					7.00 (50)		
					8.50 (50)		
Stiff, laminated, fissured, grey slightly silty CLAY.		9.50					19/5 20/5
Type of Sample S.P.T. Undisturbed C.P.T. X Vane Jar Water Bulk Piezometer		Remarks (Observations of Ground Water etc.) Borehole dry during boring. (-) U100 blows Water levels are subject to seasonal or tidal variations and should not be taken as constant					

Norwest Holst Soil Engineering Ltd.						Borehole No. 6	
Contract No. F7406		BOREHOLE LOG		Sheet 1 of 2		1164	
Location Haverstock Hill		TP 28 SE		Chainage		Ground Level M.A.O.D.	
Client London Borough of Camden		Method of Boring Shell & Auger		Date 20/5/87		Diameter of Borehole 150mm	
Description of Strata	Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	"N"/R.O.D. %	Daily Progress
Concrete		0.05					
MADE GROUND: Firm, brown, slightly sandy silty CLAY with some fine to medium brick, flint, ash, glass and sandstone gravel. Becoming less sandy with depth mottled grey from 2.00m.				150mm to 1.50m	0.50 (33) 1.50 (50) 2.50 (50)		
Stiff, brown (locally mottled grey), slightly silty CLAY with occasional sand and fine gravel.		3.00			4.00 (50) 5.50 (50) 7.00 (50)		
Stiff, fissured, grey, slightly silty CLAY with occasional shell fragments.		8.00			8.50 (60)		
Type of Sample S.P.T.  Undisturbed C.P.T.  Vane Jar  Water Bulk  Piezometer		Remarks (Observations of Ground Water etc.) (-) U10C blows Borehole dry during boring. Water levels are subject to seasonal or tidal variations and should not be taken as constant					

Norwest Holst Soil Engineering Ltd.				BOREHOLE LOG		Borehole No. 7		
Contract No. F7406		Location: Haverstock Hill		Sheet 1 of 2		1165		
Client: London Borough of Camden		Method of Boring: Shell & Auger		Chainage:				
Diameter of Borehole: 150mm		Ground Level: m A.O.D.		Date: 21/5/87				
Description of Strata		Legend	Depth Below G.L. (m)	O.D. Level (m)	Casing Depth at Sampling	Sampling and Coring	'N'/H.C.D. %	Daily Progress
Tarmac			0.30					
MADE GROUND: Soft, brown/black, slightly sandy, silty CLAY with some cinder ash, brick and sandstone gravel.			1.00		150mm to 1.50m	0.50 (30)		
Firm, orange brown, gravelly CLAY with a little sand and silt. Fine to coarse gravel - of subrounded quartzite.			2.50			1.50 (50)		
Stiff, brown (locally mottled grey) slightly silty CLAY with occasional sand and fine gravel and a little organic matter.			8.00			2.50 (50)		
						4.00 (50)		
						5.50 (50)		
						7.00 (50)		
Stiff, fissured, grey, slightly silty CLAY with occasional pockets of fine sand.						8.50 (50)		
Type of Sample		Remarks (Observations of Ground Water etc.)						
☒ S.P.T. ☐ Undisturbed ☒ C.P.T. ☒ Vane ☐ Jar ☐ Water ☐ Bulk ☐ Piezometer		Borehole dry during boring. Water levels are subject to seasonal or tidal variations and should not be taken as constant						

delta dual V3 sump installation instructions and technical details

application

The Delta Dual V3 Sump is designed to evacuate water collected from the Delta cavity membrane system installed in basement applications.

The Dual V3 Sump can also be used for collecting wastewater from small light wells, baths, showers, wash hand basins, sinks, dishwashers and washing machines. It is not possible to collect wastewater from a W.C.

Ground water in basement applications is collected via the cavity membrane system through the clear opening at the top of the chamber or can enter the chamber through one of the three 110mm inlets on the side of the chamber. It is important to note that ground water is collected at slab level to prevent dewatering below this level.

method of operation

The Delta Dual V3 sump chamber is manufactured from high-density polyethylene and is designed to resist ground water pressure.

Two powerful Delta V3 pumps are fitted, one to operate as the main duty pump the other to act as a back up. During regular maintenance the operation of the two pumps are reversed.

The sump chamber is fitted with two brass nonreturn valves to prevent water travelling back into the chamber once the pumps have stopped and a gate valve for isolation or maintenance purposes.

maintenance

The Delta Dual V3 sump chamber is manufactured using high quality components designed to give a long a trouble free life. With any piece of mechanical equipment regular preventative maintenance is important to keep this product working efficiently on a day-to-day basis. We recommend the sump is serviced twice a year by specialist pump engineers.

electrical connections

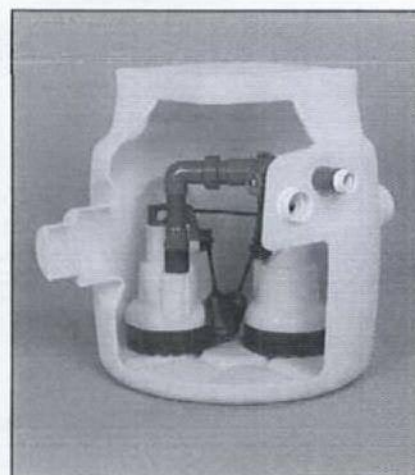
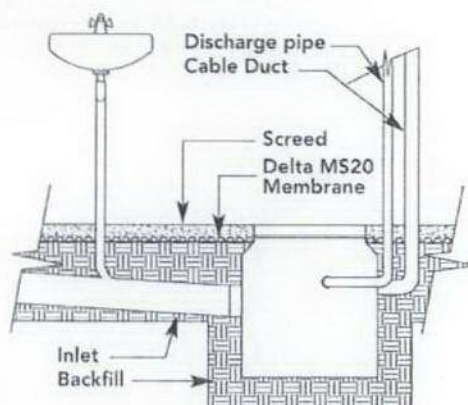
Each pump and high level alarm are to be electrically connected to a non switched fused spur (total of three). This spur should have it's own dedicated supply from the main fuse board.

It is advisable to leave 500mm of the pump electrical cable in the sump to allow for servicing of the pump(s) outside the sump.

Pumps must not be wired to a 'RCD' or similar protective device.

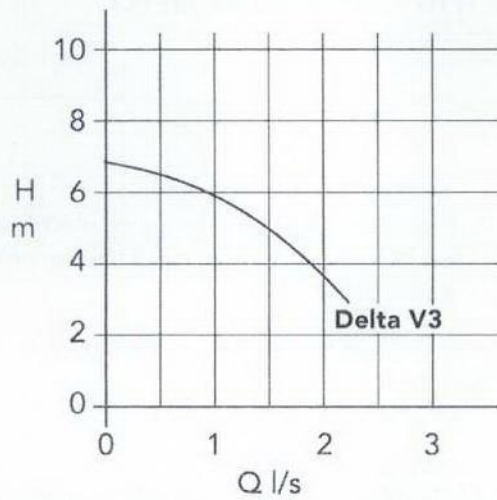
float(s)

Ensure float(s) does not foul chamber sides. It may be necessary to rotate pipe work on pump to achieve this as there may have been some movement during transit.

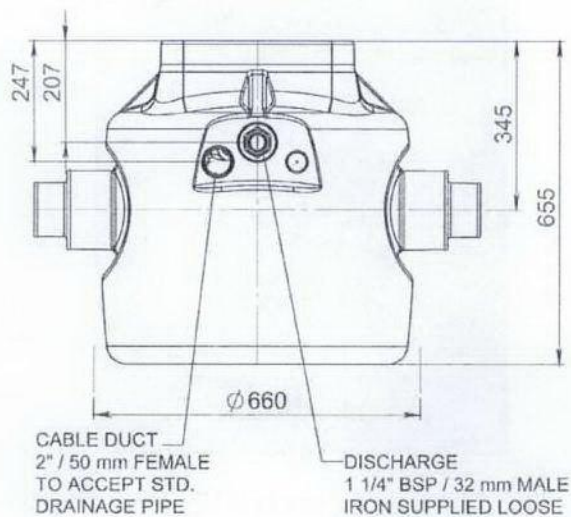
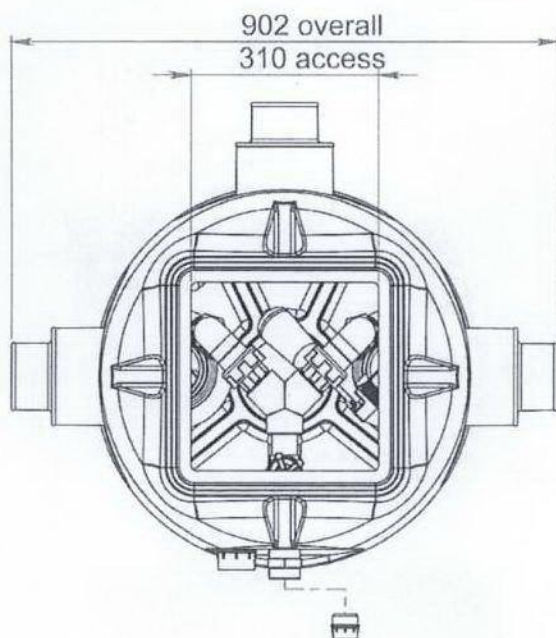


Cutaway of Delta Dual V3 Sump

delta dual V3 sump - Delta V3 technical details



Performance tolerance to ISO 2548,
Class C (water under normal conditions)



high level alarm

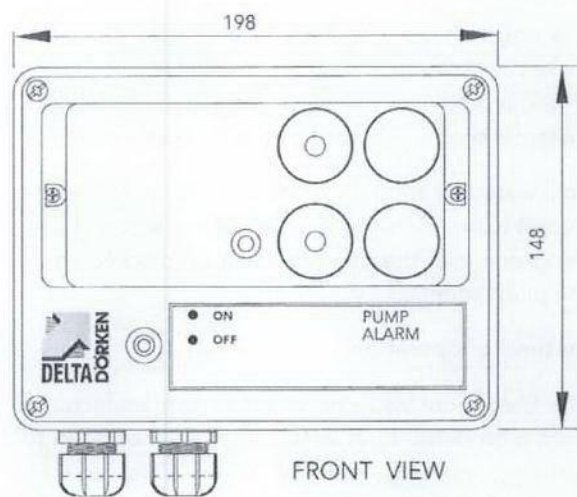
The Delta Dual V3 sump chamber can be fitted with a mains dependent / mains independent high-level alarm. An audible signal will be heard in case of pump failure. This alarm is normally operational from the mains power supply (240/1/50) however in case of a power cut the alarm is power by a built in back up battery.

Overall Size of Alarm Box:

L = 198mm

W = 148mm

D = 106mm



delta foul V3 sump installation instructions and technical details

application

The Delta Foul V3 Sump is designed to collect foul water from kitchens, bathrooms and utility rooms installed in basements.

The Foul V3 Sump can be used for collecting waste water from baths, showers, wash hand basins, sinks, dishwashers and washing machines.

It is not possible to collect ground water from the Delta cavity membrane system due to the possibilities of odour problems. It is important that the membrane system is completely sealed from the pump chamber.

Foul water will enter the chamber through one of the three 110mm inlets on the side of the chamber. If only using one inlet the other two can be blocked using the plugs supplied.

method of operation

The Delta Foul V3 sump chamber is manufactured from high density polyethylene and is designed to resist ground water pressure. A single Delta 612SE pump is fitted in the chamber and designed to handle solid waste.

Due to the tank capacity and non macerating action, the pump will operate infrequently and is very quiet in operation.

The sump chamber is fitted with a brass non return valve to prevent waste water travelling back into the chamber once the pump has stopped.

maintenance

The Delta Foul V3 sump chamber is manufactured using high quality components designed to give a long a trouble free life. With any piece of mechanical equipment regular preventative maintenance is important to keep this product working efficiently on a day to day basis. We recommend the sump is serviced twice a year by specialist pump engineers.

electrical connections

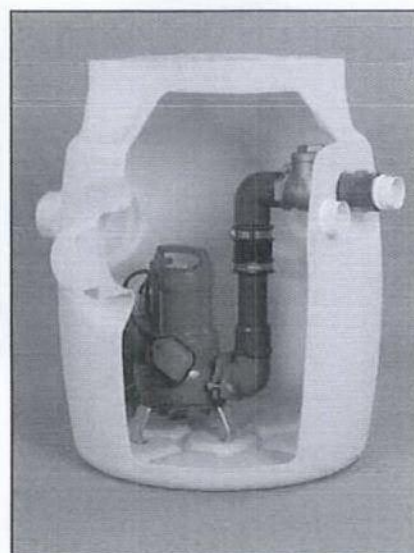
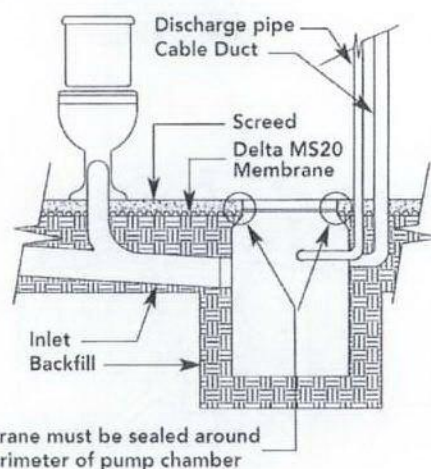
The 612SE pump and high level alarm are to be electrically connected to non switched fused spurs (total of two). These spurs should have their own dedicated supply from the main fuse board.

It is advisable to leave 500mm of the pump electrical cable in the sump to allow for servicing of the pump(s) outside the sump.

The pump must not be wired to a 'RCD' or similar protective device.

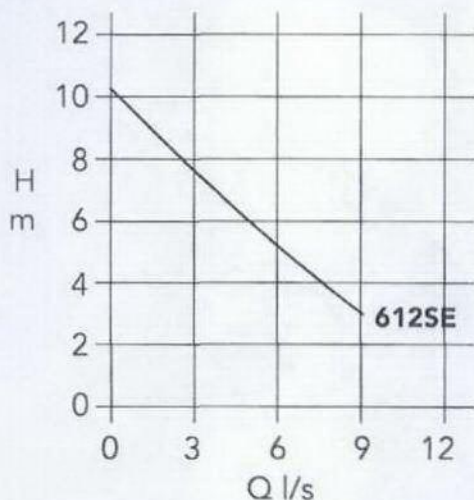
float

Ensure float switch does not foul chamber sides. It may be necessary to rotate pipe work on pump to achieve this as there may have been some movement during transit.

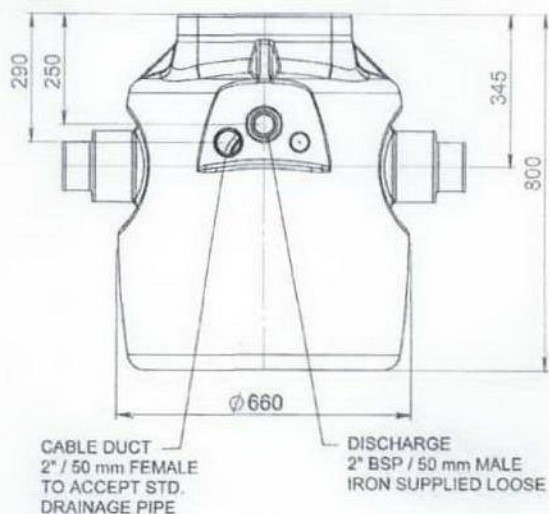
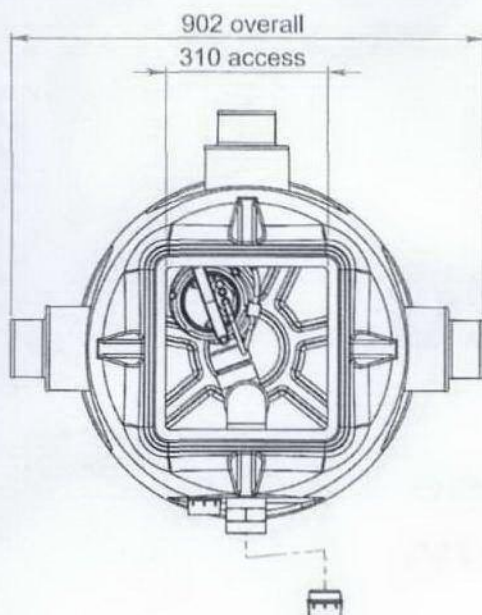


Cutaway of Delta Foul V3 Sump

delta foul V3 sump - 612SE technical details



Performance tolerance to ISO 2548,
Class C (water under normal conditions)



high level alarm

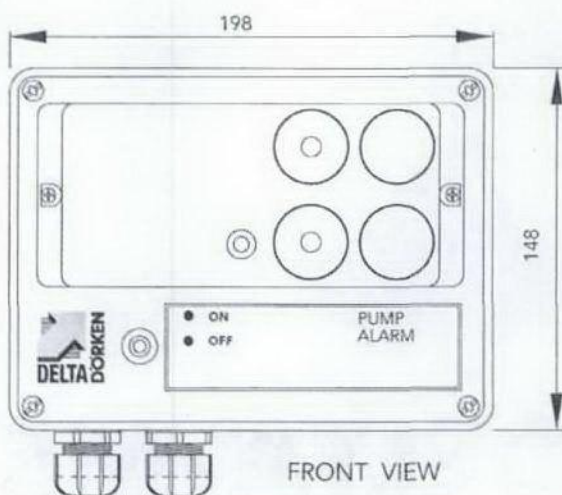
The Delta Foul V3 sump chamber can be fitted with a mains dependent / mains independent high-level alarm. An audible signal will be heard in case of pump failure. This alarm is normally operational from the mains power supply (240/1/50) however in case of a power cut the alarm is powered by a built in back up battery.

Overall Size of Alarm Box:

L = 198mm

W = 148mm

D = 106mm



DELTA®

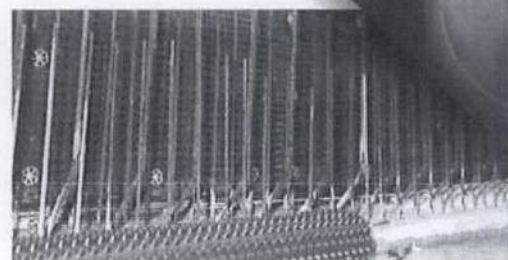
DELTA® protects property. Saves energy. Creates comfort.

DÖRKEN

DELTA®-MS 20

General-purpose seepage layer for long-term safety.

Resistant to compression and degradation in soil.



PREMIUM QUALITY

DELTA®-branded quality products
made by Dörken.

■ Drainage
system

■ For building
construction
and civil
engineering

■ For vertical
and horizontal
application

Delta Membrane Systems Ltd

Unit 7
Bossett Business Centre
Hurricane Way
North Weald, Epping
Essex CM16 6AA

Tel: 01992 523811 Fax: 01992 524046
e-mail: info@deltamembranes.com
website: www.deltamembranes.com



Agrément Certificate
00/3742
Product Sheet 2

DELTA MEMBRANE SYSTEMS

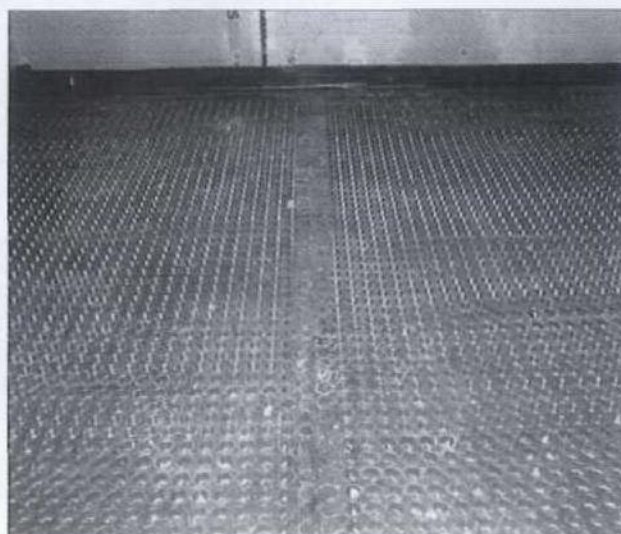
DELTA-MS20

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Delta-MS20, a moulded HDPE membrane for damp-proofing walls, floors and vaulted ceilings in new construction or existing buildings. It can be used above or below ground, over a contaminated or damp background, to support a dry lining and flooring.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to water and water vapour — the product is water resistant and has a high resistance to water vapour transmission (see section 5).

Resistance to salt transfer — the product provides an effective barrier to the transmission of salts or other contaminants from the substrate (see section 7).

Resistance to puncture, impact and loading — the membrane has a high resistance to puncture and will not be damaged by normal foot traffic during installation, or while laying concrete or screeding. It can support the long-term loadings likely to be experienced in service without undue deformation (see section 8).

Durability — under normal conditions of use the membrane will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is incorporated (see section 11).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

Date of Third issue: 2 July 2010

Originally certificated on 24 November 2000

The BBA is a UKAS accredited certification body — Number 113. The schedule of the current scope of accreditation for product certification is available in pdf format via the UKAS link on the BBA website at www.bbacerts.co.uk

Readers are advised to check the validity and latest issue number of this Agrément Certificate by either referring to the BBA website or contacting the BBA direct.

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e-mail: mail@bba.stor.co.uk
website: www.bbacerts.co.uk

DELTA®

DELTA® protects property. Saves energy. Creates comfort.

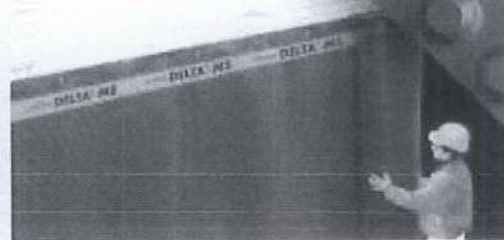
DÖRKEN

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**High compressive strength
for extra safety.**

Low point loads.

Fast, tailored application straight from the roll
for waterproofing of basements, foundations,
and subterranean structures.



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system

■ For vertical
and horizontal
application

■ For building,
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civil-engineering
construction

Delta Membrane Systems Ltd

Unit 7
Bassett Business Centre
Hurricane Way
North Weald, Epping
Essex CM16 6AA

Tel: 01992 523811 Fax: 01992 524046

e-mail: info@deltamembranes.com
website: www.deltamembranes.com



Agrément Certificate

00/3742

Product Sheet 1

DELTA MEMBRANE SYSTEMS

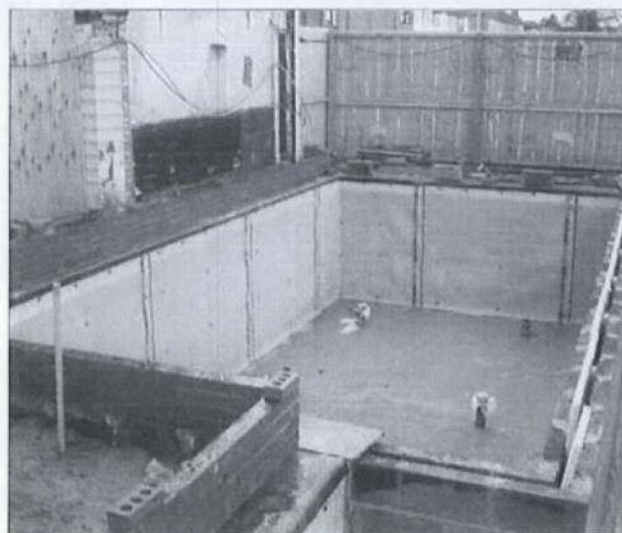
DELTA-MS500

PRODUCT SCOPE AND SUMMARY OF CERTIFICATE

This Certificate relates to Delta-MS500, a moulded HDPE membrane for damp-proofing walls, floors and vaulted ceilings in new construction or existing buildings. It can be used above or below ground, over a contaminated or damp background, to support a dry lining and flooring.

AGRÉMENT CERTIFICATION INCLUDES:

- factors relating to compliance with Building Regulations where applicable
- factors relating to additional non-regulatory information where applicable
- independently verified technical specification
- assessment criteria and technical investigations
- design considerations
- installation guidance
- regular surveillance of production
- formal three-yearly review.



KEY FACTORS ASSESSED

Resistance to water and water vapour — the membrane is water resistant and has a high resistance to water vapour transmission (see section 5).

Resistance to salt transfer — the membrane provides an effective barrier to the transmission of salts or other contaminants from the substrate (see section 7).

Resistance to puncture, impact and loading — the membrane has a high resistance to puncture and will not be damaged by normal foot traffic during installation, or while laying concrete, or screeding. It can support the long-term loadings likely to be experienced in service without undue deformation (see section 8).

Durability — under normal conditions of use the system will provide an effective barrier to the transmission of salts, liquid water and water vapour for the life of the structure in which it is incorporated (see section 11).

The BBA has awarded this Agrément Certificate to the company named above for the product described herein. The product has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Simon Wroe
Head of Approvals — Materials

Greg Cooper
Chief Executive

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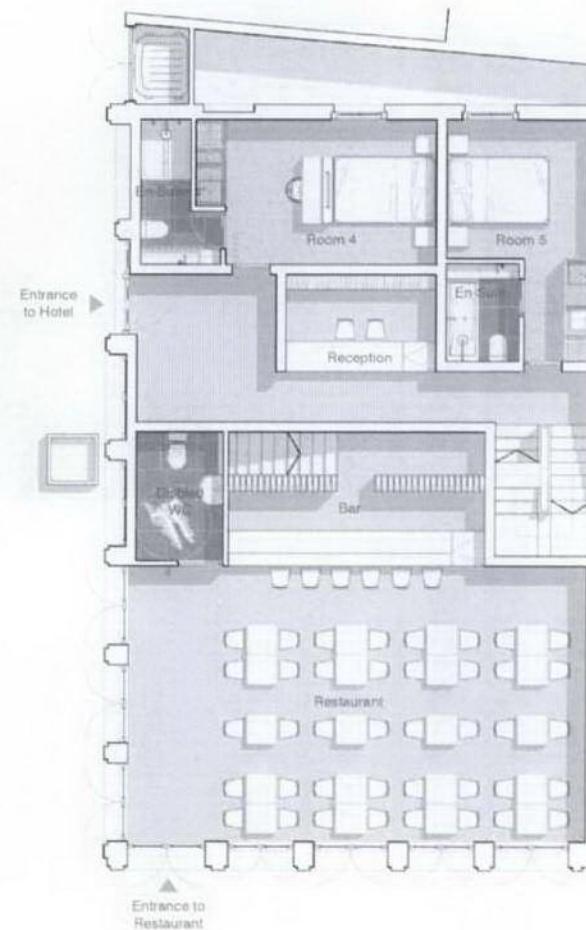
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website: www.bbacerts.co.uk

Floor Plans



Basement Plan



Ground Floor Plan

Scale @1:100



kyson

Floor Plans



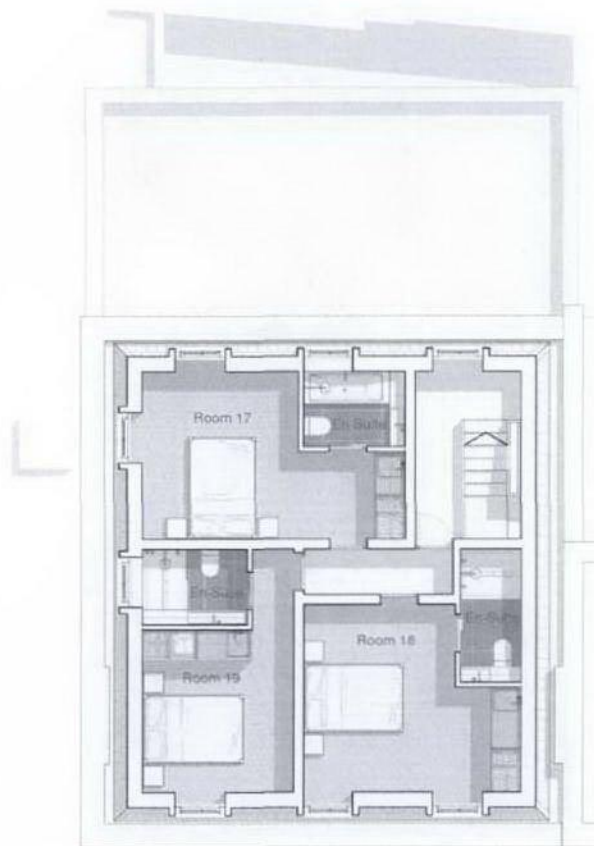
First Floor Plan



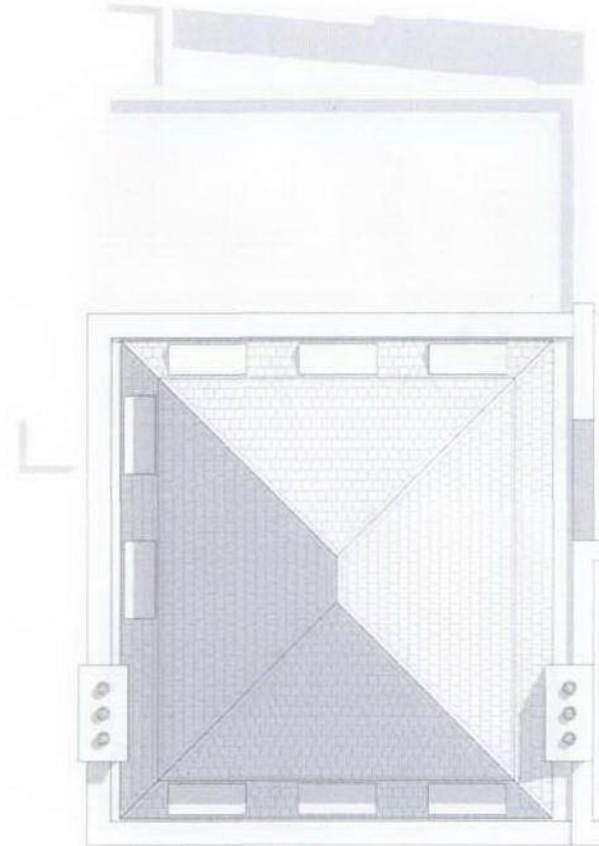
Second Floor Plan



Floor Plans



Third Floor Plan



Roof Plan

P/2100

Elevations

Key

- 1 New mansard roof with dormer windows
- 2 New parapet
- 3 Existing parapet level
- 4 Facade to be refurbished and made good
- 5 New timber sash windows
- 6 New timber doors
- 7 Two-storey rear extension / brickwork to match existing
- 8 New shopfront
- 9 New lightwell
- 10 Entrance to restaurant
- 11 Listed telephone box



Front Elevation

Scale @1:100

kyson

Proposed Drawings

P/2101

Elevations

Key

- 1 New mansard roof with dormer windows
- 2 New parapet
- 3 Existing parapet level
- 4 Facade to be refurbished and made good
- 5 New timber sash windows
- 6 New architectural elements to match existing
- 7 Two-storey rear extension / brickwork to match existing
- 8 New shopfront
- 9 Entrance to hotel
- 10 Refuse store
- 11 Listed telephone box



Side Elevation

Scale @1:100

kyson

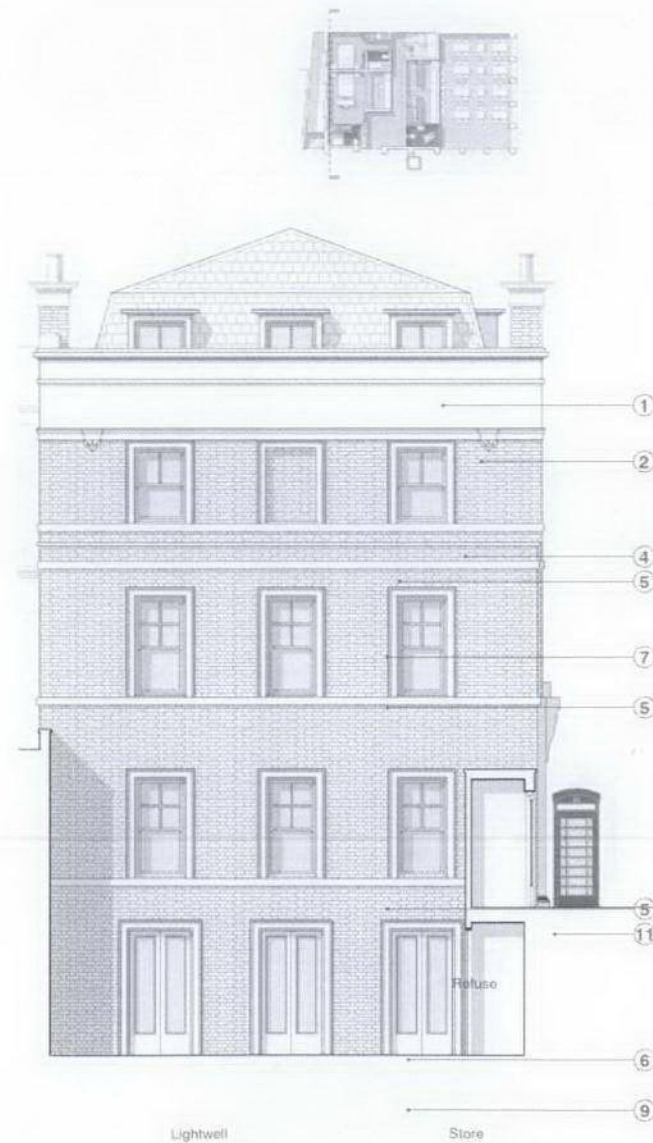
Proposed Drawings

P/2100

Elevations

Key

- 1 New mansard roof with dormer windows
- 2 New parapet
- 3 Existing parapet level
- 4 Facade to be refurbished and made good
- 5 New timber sash windows
- 6 New timber doors
- 7 Two-storey rear extension / brickwork to match existing
- 8 New shopfront
- 9 New lightwell
- 10 Entrance to restaurant
- 11 Listed telephone box

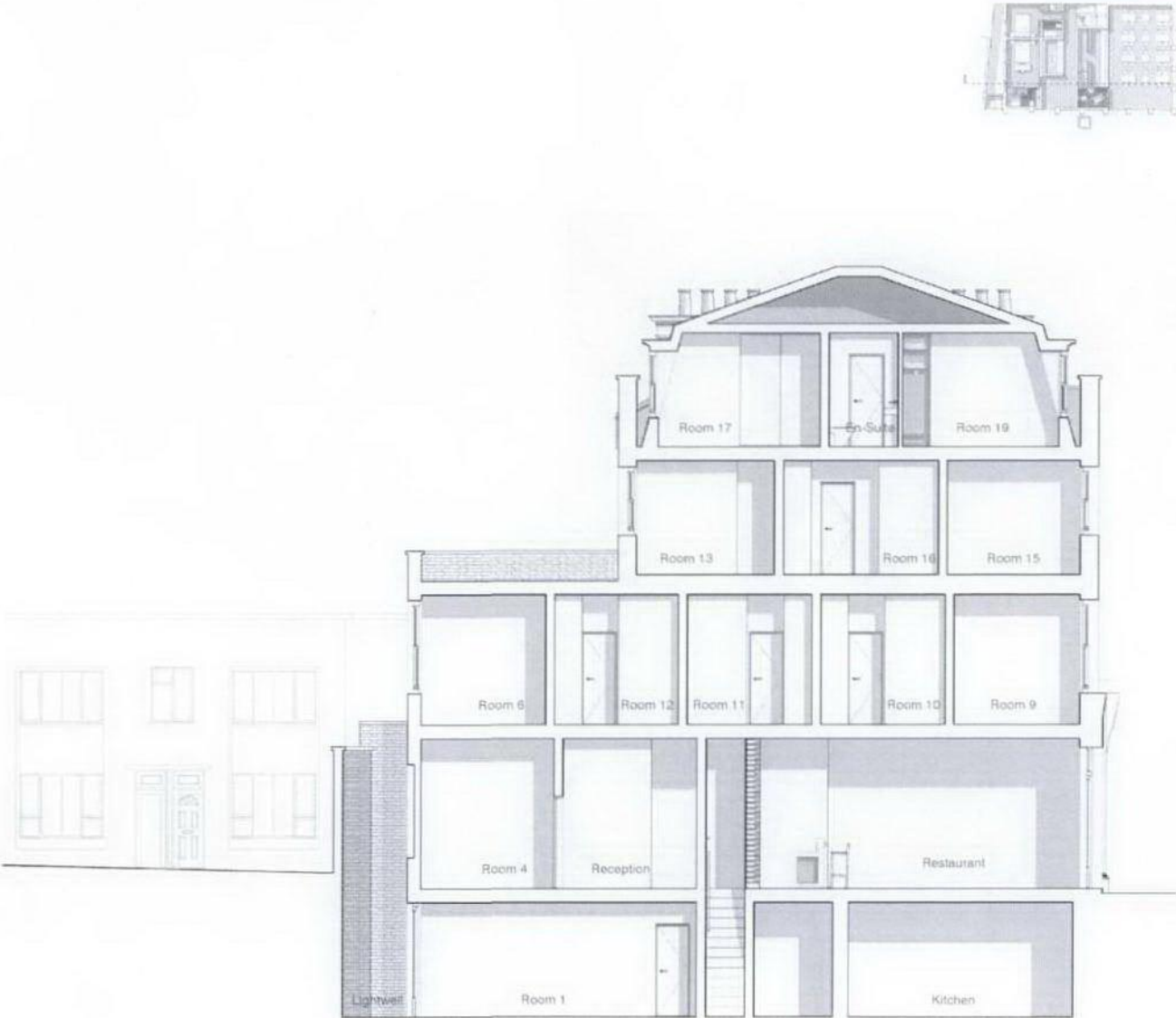


Rear Elevation

Scale @1:100

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Section



Scale @1:100

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