HBPW LLP
Civil & Structural Engineering Services

Basement Impact Assessment
For
Proposed Development
at
63-71 High Street, Hampton Hill
TW12 1LZ

REPORT PREPARED ON BEHALF OF
GREATPLANET LIMITED

BASEMENT IMPACT ASSESSMENT

FOR

PROPOSED DEVELOPEMENT

AT

63-71 HIGH STREET, HAMPTON HILL,
LONDON BOROUGH OF RICHMOND UPON THAMES, TW12 1LZ

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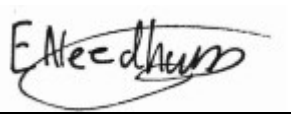
Prepared by	**Name:**	Edward Needham	
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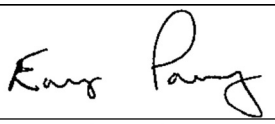
Checked	**Name:**	Emyr Parry	
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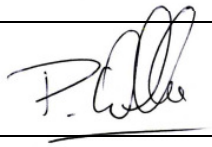
Approved	**Name:**	Paul Withers	
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1	First Issue	25.10.16
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1.0 INTRODUCTION

HBPW LLP are appointed by Greatplanet Limited for the provision of Civil and Structural Engineering Design Services associated with the pre-planning stages on the Proposed Development at 63-71 High Street, Hampton Hill, London Borough of Richmond upon Thames.

As part of HBPW LLP's involvement a Basement Impact Assessment has been prepared and submitted as supporting document to the planning application for the redevelopment of the site.

The Basement Impact Assessment gives an overview of the proposed scheme and in particular assesses the impact of the new subterranean structure.

The Basement Impact Assessment discusses the following:-

- Geotechnical Ground Conditions
- Hydrogeology and Hydrology
- Impact on underground structures adjacent to the site
- Proposed substructure and Basement/subterranean structure
- Temporary works proposals associated with the new subterranean structure
- Movement monitoring to neighboring properties

1.1 SITE DESCRIPTION

The site is located on the West side of High Street, centred at approximately National Grid Reference TQ 1424 7084.

The site location is shown below:-

(Figure 1 – Site Plan, North is shown to the top of the plan)

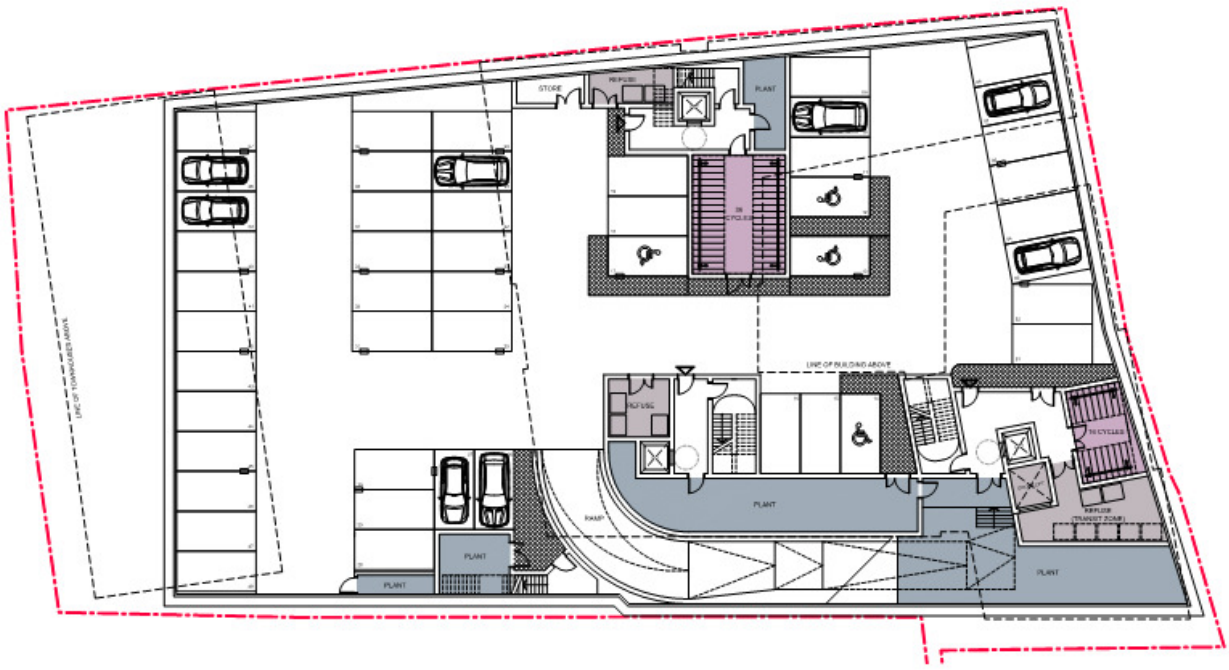
The site forms an approximately rectangular parcel of land (68m by 38m) and is currently occupied by 3 buildings. Two office buildings located at the frontage to High Street are joined by an enclosed overhead link walkway at first floor level. Another building, St Clare Studio, is located in the south west quadrant backing onto the access road to the St Clare Business Park.

To the south of the Site are residential terraces. To the north the land to the rear of the retail/residential frontage is, at time of writing, being developed with a number of 3 storey town houses. The office building to the north of the central access point has an existing basement.

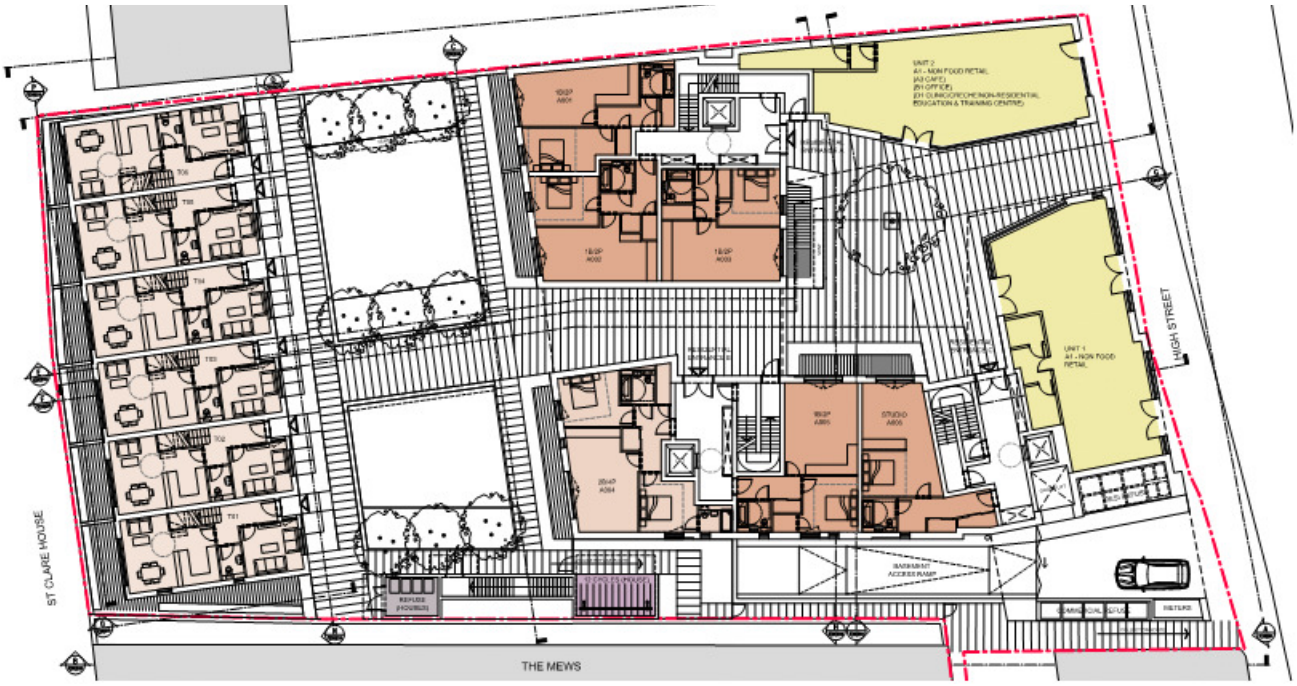
The external areas are predominantly laid to hard standing to provide car parking.

1.2 PROPOSED DEVELOPMENT

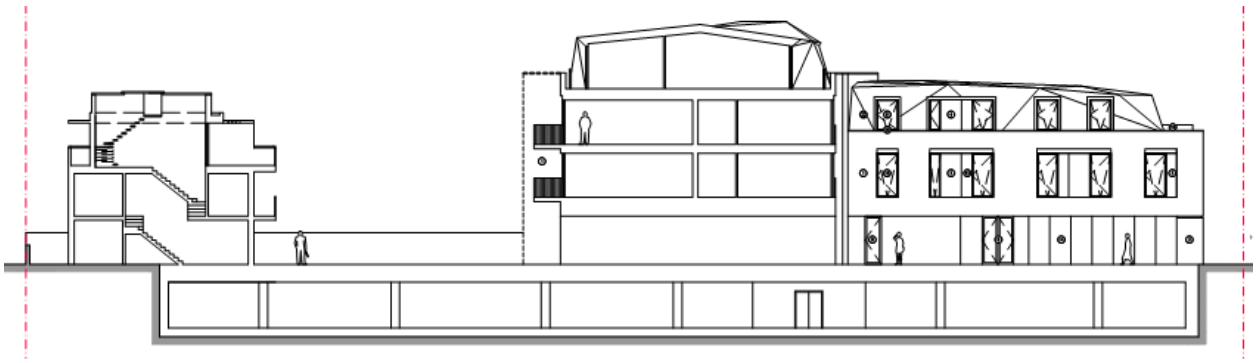
The proposed development following the demolition of the existing buildings will include the construction of six townhouses, two commercial units and thirty five residential apartments. The development will include a basement to provide secure parking for cars and cycles as well as refuse storage and plant areas. The basement will occupy the majority of the site footprint.



(Figure 2 –Proposed Basement Plan)



(Figure 3 – Proposed Plan at Ground Floor)



(Figure 4 – Long section through proposed development)

This report considers an outline scheme for the construction of the new subterranean structure and the proposed structure to the ground floor podium slab. Construction methods above ground floor level fall outside of the scope of this report, however the intended structural design and subsequent load transfer down through the building have been accounted for in the basement scheme design.

2.0 Existing Building and Site

Drawings showing the existing site plan and existing building arrangements are included in Appendix D. The existing buildings on the site are constructed in a combination of methods:-

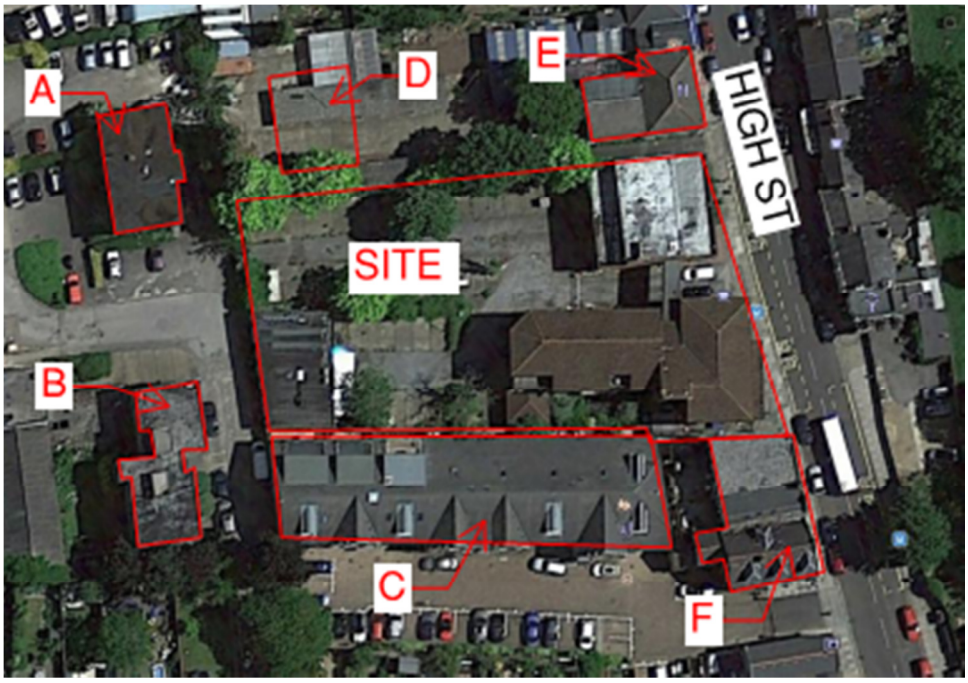
- The north office building is a three storey flat roofed structure, constructed in reinforced concrete framing with masonry cladding. The basement occupies c.50% of the footprint of the building and is accessed by stairs and lift from the ground floor level. The basement is constructed with reinforced concrete walls.
- The south office building is a three storey pitched roof structure, constructed in traditional masonry with a tile roof.

- The building in the southwest corner of the site s a single storey masonry structure with a flat roof.

Surface water from the existing site is disposed by Soakaway chambers located beneath the car park. Foul water is directed to the public sewer.

2.1 Neighbouring Properties

There are six buildings adjacent to the boundary of the proposed site, these are shown below referenced A-F.



(Figure 5 – Site plan showing neighbouring buildings)

Buildings A and B are part of the St Clare Business Park, they are B1 commercial properties of two and three storeys respectively. It is not known whether the two buildings have a basement.

Building C comprises a terrace of eight, two storey plus occupied pitch roof masonry buildings erected pursuant to a planning permission granted in 2002 for B1 office use. The majority have been converted to residential occupation over the past four years. There are no basements in this terrace.

Building F which fronts the High Street is a former two storey masonry built Victorian Dairy also recently converted to residential flats with accommodation in the pitch roof space. Given the period of construction it is expected that this may have a small basement.

Building E is a two storey masonry building, given the period of construction it is not considered to have a basement.

Building D is currently under construction and is a three storey masonry residential property; it does not include a basement.

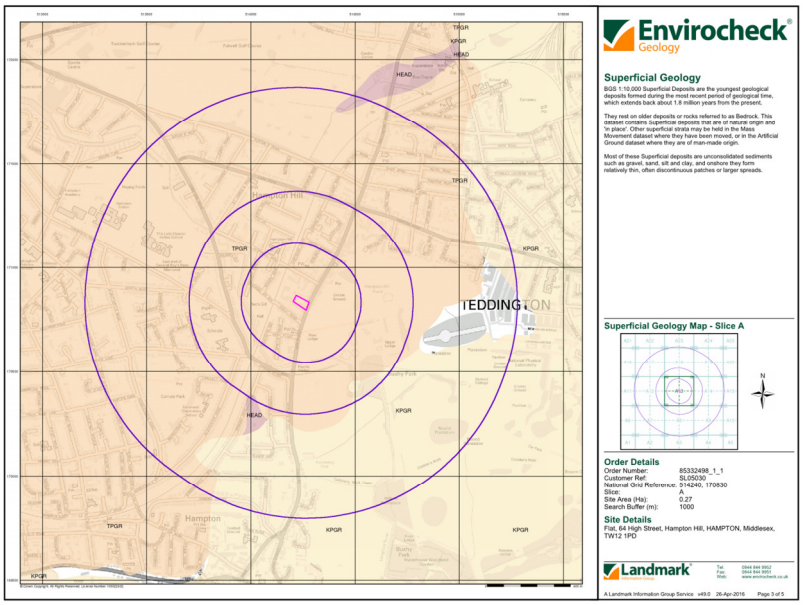
Immediately opposite the proposed development, along the Eastern side of the High street, is 'The Star' Public house and it's car park/garden, the 'Old Violin Workshop' and the 'Cavan Bakery'. These buildings comprise two storey (ground and first floor) structures constructed in traditional brick with slate covered pitched roofs. It is considered likely that 'The Star' Public House will have a small basement; it is unknown whether the remaining buildings have basements.

The front elevations of the buildings fronting on to the High Street are located at a distance in the order of 15m from the proposed development boundary.

3.0 GEOTECHNICAL GROUND CONDITIONS

A Phase 1 Preliminary Investigation Report (desk study) of the site together and a Phase 2 Geo-environmental Site Investigation has been undertaken by HBPW LLP. It is recommended that this report is read in conjunction with these previous reports.

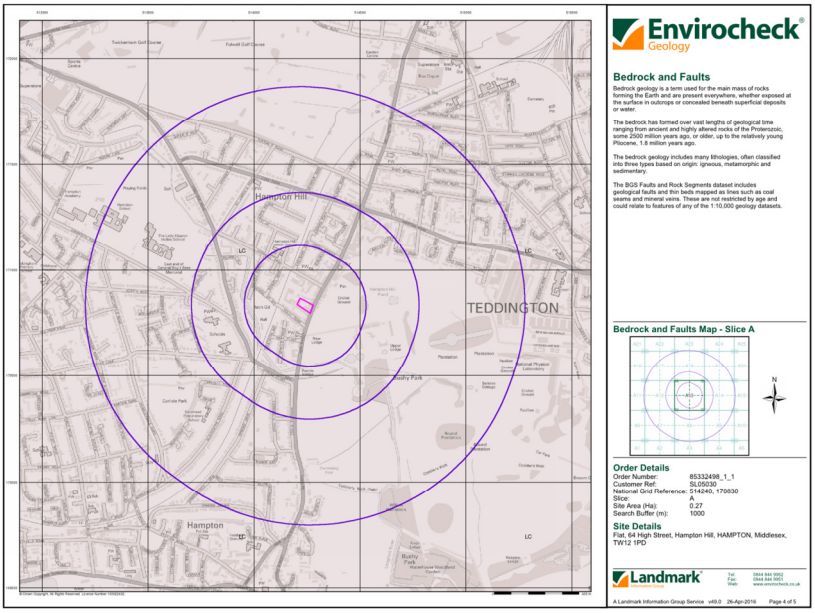
The findings of the Preliminary Investigation Report with respect to anticipated geotechnical ground conditions indicate the site is underlain by superficial deposits of Taplow Gravel Formation (Sands and Gravel) to a depth of at least 8m, overlain by a thin layer of made ground. The underlying bedrock was anticipated to be London Clay Formation.



Superficial Geology

Map Colour	Lex Code	Rock Name	Rock Type	Min and Max Age
	KPGR	Kempton Park Gravel Formation	Sand and Gravel	Devensian - Ipswichian
	TPGR	Taplow Gravel Formation	Sand and Gravel	Wolstonian - Chokierian
	HEAD	Head	Sand and Clay	Quaternary - Ryazanian
	HEAD	Head	Clay	Quaternary - Ryazanian

(Figure 6 – Superficlial Geology)



(Figure 7 – Bedrock Geology)

Following the Phase 2 Site Investigation the following ground model for the site has been determined:-

Table 5.2 Ground Model		
Stratum	***Typical Description***	**Typical depth m bgl**
Site Surface	*Flexible surfacing over 150mm nominal unreinforced Concrete*	To 0.150m
Made Ground	*Made ground was identified within both the boreholes and the trial pits. Made ground within the boreholes ranged in thickness between 1.25 and 1.75 m and typically comprised of discontinuous layers of sandy matrix with gravel and cobbles of crushed stone, concrete, brick, ash.*	To between 1.3 and 1.8m
Relic Topsoil	*A relic topsoil and subsoil layer was encountered in all trial pits this representing the previous gardens to the historical residential developments.*	To between 0.8 and 1.2m
Sand and Gravel – Taplow Gravel	*Medium dense to dense Sand and Gravel*	To 5.6m
London Clay	*Very stiff bluish grey Clay was encountered within both boreholes and extended beyond the maximum depth of the investigation.*	In excess of 15.05m

(Figure 8 – Extract from Geo-environmental report by HBPW LLP)

Borehole logs from the Phase 2 Investigation are included in Appendix A

3.1 GROUNDWATER

During the Phase 2 Investigation two boreholes were excavated to a depth of 15m below ground level. Groundwater was encountered in both boreholes at 4.5m and rising to rest at 4.2m below ground level. Further monitoring recorded groundwater within the boreholes to be nominally 3m below ground level.

4.0 Hydrogeology and Hydrology

As part of the Phase 1 Preliminary Investigation report undertaken by HBPW LLP an Environmental Data Research has been undertaken using the Landmark Envirocheck Product. Key findings are as follows:-

1. The nearest surface water course is the Longford River (Secondary River) 200m away at its closest point which flows to the south towards the Thames. The GQA Grade is River Quality B.
2. The site is not shown to be affected by flooding from Rivers or Sea.
3. The site is not shown to be affected by surface water flooding. Although BGS lists the site due to its basement to present a risk of groundwater flooding.
4. Aquifer designation for the site is as follows:-
    - Superficial deposits (Sands and Gravels) – Principal Aquifer
    - Bedrock (Mudstone) - Unproductive strata.
    - Groundwater Vulnerability – Major Aquifer
    - Source Protection Zone – The site is not in a SPZ

Based on the findings of the Phase 2 Site Investigation works the site is located over London Clay bedrock. The depth from current ground levels to the upper layer of the bedrock is nominally 5.6m. The clay bedrock is overlain with superficial deposits (Taplow Gravel). The recordings of the groundwater encountered during the Phase 2 site investigation and subsequent visits to record groundwater levels would correlate with the anticipated hydrogeology at the site location with regards to perched water levels and potential for associated hydraulic conductivity

The perched aquifer is classified under the 'Major Aquifer' category for groundwater Vulnerability. The presence of a perched aquifer will need to be considered and accounted for in the design of the basement structure to have regard to hydrostatic forces acting on retaining walls and hydrostatic uplift acting on the basement slab.

Groundwater monitoring at the site suggests that groundwater level is stabilised at 3m below ground level. The site is assumed to be subject to some form of groundwater flows at varying depth within the perched aquifer above bedrock. The groundwater flow in the Borough is known to be in an easterly direction from higher ground towards the River Thames.

4.1 Flooding

A Flood Risk Assessment (FRA) has been undertaken for the proposed development by RAB Consultants. A summary of their findings is included below:-

- There have been no recorded instances of the site experiencing flooding. Although local records show flooding locally in July 2007 but not at the site location.

- With regard to fluvial flood risk according to the Environmental Agency's flood map the site lies in Flood Zone 1, which is assessed as having less than a 1 in 1000 year annual exceedance probability, consequently the site is considered to be at a very low risk of flooding from this source.
- On the basis of the 2010 SFRA the site has not experienced groundwater flooding.
- The site is not considered to be at risk from Coastal or Tidal flooding.
- With regards to Pluvial (surface water) flood risk the FRA has considered the risk to the site from surface water flooding. Using the Environmental Agency's flood maps for surface water the FRA classifies the site as having a low risk of flooding with potential for flood depths to reach 0.25m. The site has a surface water flooding annual probability of occurrence of less than a 1in 1000 years

The FRA concludes that no significant sources of flooding have been identified.

4.2 GROUNDWATER FLOWS

The depth to underside of basement slab is nominally 4m below ground level, this is 1.6m above the bedrock and sits above the water strike level in the boreholes (4.2 and 4.5m) and below the level of settled water level of 3m below ground level.

The Planning Advice Note published by LBRuT– Good Practice Guide on Basement Development suggests that basements constructed just above or below the groundwater table may obstruct groundwater flow around them. However, it is reasonable to conclude that the groundwater flows as a result of the proposed development will not be adversely affected due the following factors:-

- The site has not experienced groundwater flooding in the past.

- There are no large; or buildings with significant subterranean structures in the locality of the development, accordingly groundwater will be able to flow unhindered around the development.

- The depth from ground level to groundwater table is such that any potential rise in groundwater as a result of the development tending to obstruct groundwater flows is unlikely to adversely affect neighbouring buildings.

- The railway line situated 80m to the west of the site is located in a cutting, the approximate ground level at the cutting is 12.5m (AOD), compared to the site ground level which is nominally 16m (AOD). As the groundwater flow is deemed to flow in an easterly direction towards the River Thames, this would suggest that only groundwater flows extending back up to the railway cutting have the potential to be affected by the development. The adjacent photo shows the cutting nearest to the site, taken looking north from the bridge on Holly Road.

- The exiting drainage strategy is to dispose surface water to ground by means of infiltration. For the proposed development it is proposed to dispose of surface water by a restricted connection to the public sewer, this will reduce the volume of

water disposed locally into the ground during storm events, helping to reduce groundwater level and flows.

In light of these considerations it is concluded that groundwater flows will not be adversely affected by the proposed development.

4.2 Drainage

A drainage strategy for the development has been developed by HBPW LLP. The strategy outlines the drainage proposals and demonstrate that the development does not increase the flood risk to neighbouring properties or the public sewer and also the wider infrastructure system.

Drawings showing the proposed drainage strategy are included in Appendix B.

A pre application enquiry has been submitted to Thames Water for the proposal to connect to the public foul sewer in the High Street. Thames Water has confirmed that there is adequate capacity in the infrastructure to accommodate the development's predicted flows. Thames Water have also indicated in principle acceptance to the connection of the surface water discharge to the public sewer, subject to the flows being restricted.

The potential residual risk affecting the proposed development, neighbouring properties and infrastructure have been considered: these include the risk to site drainage and water supply infrastructure caused by pump failure, blockage or surcharging of the site and public sewer network. These risks can be managed by the design of the site drainage by incorporating the following:-

- Use of non-return valves so that in the event of the public sewer flooding the site drainage is not surcharge causing flooding.
- In the event of failure of the pumps to the site drainage, a storage tank is proposed to provide storage for 24 hours for foul water.
- Surface water flows from the site are restricted, excess flows in exceedance of the site discharge rate is to be stored in an underground tank.
- A number of SuDS principles are proposed which will delay the time period from rainfall capture to rainfall entering the public sewer.

In addition regular inspection and maintenance of the private sewer network will be carried out to ensure the site drainage operates as intended.

5.0 IMPACT ON UNDERGROUND STRUCTURES

The nearest Railway is located nominally 80m from the West boundary of the site. As stated above the railway is in a cutting at a level significantly lower that the site. There will be no impact on the railway infrastructure as a consequence of the proposed development. There are no Underground Lines in the area and HBPW LLP is unaware of any other tunnels or infrastructure located near the proposed development.

5.1 Buried Services

An existing High Voltage cable currently runs through the middle of the site. Prior to commencement of construction of the basement it is proposed to divert the cable to a position next to the South boundary of the site.

6.0 PROPOSED SUBSTRUCTURE AND BASEMENT

It is intended to demolish and remove the existing structure from the site prior to commencing with the construction of the development.

The proposals for the basement construction are shown on drawings included in Appendix C and described below:

6.1 SUB-STRUCTURE

It is proposed to adopt a secant bored pile wall construction to form the basement perimeter walls. The piles are to be 600mm diameter and the inside face will be lined with reinforced concrete. The overall thickness of the wall is 750mm. It is proposed that the centreline of the piled wall is set 1m inside the site boundary line, so that construction activity is contained within the confines of the site.

The secant piled wall will be constructed with a capping beam which will in turn support the superstructure and podium slab. Reinforced concrete columns will support the podium/transfer slab at ground floor level within the basement void. The capping beam and podium slab will act to prop the perimeter secant piles in the permanent condition. In the temporary condition the secant piles have been designed to act as cantilevers negating the need for temporary propping.

A 350mm thick reinforced concrete slab is proposed to form the new basement slab level. The slab is designed as a raft, and in the permanent condition is expected to transfer loads from the structure to the bearing stratum below. Slab thickenings will be provided under column locations to spread the applied pressure due to localised load increases.

Ground water level for the purpose of design of the walls and basement slab has been assumed to be present at 1m below ground level. This is nominally 2m higher than recorded in the Phase 2 Ground Investigation. The walls and base slab have been designed (in addition to lateral earth pressure from retained material and surcharge loading) to accommodate the hydrostatic pressures generated both laterally and vertically as a result of a raised water level.

The basement wall adjacent to the High Street will provide support to the carriageway and footway. Agreement with the Local Highway Authority and Structures team will be sought as part of the detailed design with regards to obtaining Technical Approval in accordance with the procedure set out in Design Manual for Roads and Bridges (DMRB) document BD02/05.

6.2 BOUNDARY WALL

It is intended to retain the boundary wall running along the south boundary of the site. The wall divides the site from the terrace of properties comprising Building C in Figure 4. The wall is nominally 2m high and constructed in masonry. Stability of the wall during the construction of the basement will be provided by temporary propping and underpinning where necessary.

6.3 TREES SURROUNDING THE SITE

With the exception of Bushy Park located 50m to the east of the site, there are few trees in the locality of the site, reference is made to the Aboricultural Survey undertaken by Advanced Arboriculture which highlights three trees (T9, T10 and T11) located on the

approach road St Clare Business Park from Holly Road, and one tree (T8) close to the north west boundary of the development. Tree references T9, T10 and T11 are located approximately 20m from the south west corner of the site boundary while tree reference T8 is described in the Aboricultural Survey as being small and having 'negligible future potential'.

None of those present are deemed to have any effect on foundation design or be adversely affected by the proposed development. Trees to be provided as part of the new development landscape design will be planted in suitably sized planters formed in the ground floor podium/transfer slab.

6.4 LAND STABILITY

The site is relatively flat, based on the information available land stability is not considered to be an issue.

7.0 TEMPORARY WORKS PROPOSALS

The following gives an overview to the envisaged construction sequence for the basement. A fully detailed temporary works design will be produced in conjunction with the Contractor prior to construction.

The following sequence is proposed:-

1. Demolition and removal of existing buildings.
2. Installation of secant piled wall.
3. Nominal excavation to enable pile capping beam to be constructed.
4. Construction of reinforced capping beam.
5. Mass excavation of the basement areas down to formation level. Secant piled wall is designed to act as cantilever without the need for temporary propping for stability.
6. Construction of basement slab and foundations.
7. Construction of reinforced concrete wall lining, after this stage the basement will be watertight.
8. Construction of reinforced concrete columns.
9. Construction of ground floor podium/transfer slab.

During excavation works and until stage 7 is complete it is likely that dewatering of groundwater will be required. Permission from Thames Water will be sought with regard to disposal.

8.0 MOVEMENT MONITORING AND POTENTIAL MOVEMENT TO BOUNDARY WALL

Due to the presence of neighbouring properties it is proposed to undertake movement monitoring during the basement construction. This will involve placing reflective targets onto the side of the adjacent properties, onto to which a surveyor can locate the target position in X, Y and Z co-ordinate as construction progresses. It is proposed that monitoring of adjacent properties commences in advance of the start of construction in order to establish a reliable base datum.

A monitoring regime is to be developed prior to construction to establish frequency of surveying intervals and to determine and agree acceptable trigger limits of movement to protect neighbouring properties.

In addition reflective targets will be placed on the side of the newly constructed capping beam in order to record movement during construction. The temporary and permanent works will be designed to limit eventual movement to acceptable limits.

Ciria report C580 'Embedded Retaining Walls – guidance for economic design', outlines an approach to assessing potential damage to buildings near excavations. It is proposed to adopt this approach during the basement construction activity,

At this stage of the design it is anticipated the category of movement expected is between 1 and 2 based on Table 2.5 from C580.

Table 2.5 *Classification of visible damage to walls (after Burland* et al*, 1977, Boscardin and Cording, 1989; and Burland, 2001)*

Category of damage	Description of typical damage (ease of repair is underlined)	Approximate crack width (mm)	Limiting tensile strain ε_{lim} (per cent)
0 Negligible	Hairline cracks of less than about 0.1 mm are classed as negligible.	< 0.1	0.0–0.05
1 Very slight	Fine cracks that can easily be treated during normal decoration. Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.	< 1	0.05–0.075
2 Slight	Cracks easily filled. Redecoration probably required. Several slight fractures showing inside of building. Cracks are visible externally and some repointing may be required externally to ensure weathertightness. Doors and windows may stick slightly.	< 5	0.075–0.15
3 Moderate	The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced. Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired.	5–15 or a number of cracks > 3	0.15–0.3
4 Severe	Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows. Windows and frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.	15–25 but also depends on number of cracks	> 0.3
5 Very severe	This requires a major repair involving partial or complete rebuilding. Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion. Danger of instability.	usually > 25 but depends on number of cracks.	

Notes

1. In assessing the degree of damage, account must be taken of its location in the building or structure.
2. Crack width is only one aspect of damage and should not be used on its own as a direct measure of it.

(Figure 9 – Classification of Visible Damage to Walls - extract from C580)

At this stage it is proposed to monitor only buildings C, D, E and F as shown in Figure 5 due to the foundation support of the existing properties being in close proximity to the site boundary.

The extent and limit of this monitoring is subject to completion of detailed design.

The distance between the development and the properties on the Eastern side of the High Street is such that there is a very low risk of the occurrence of any damage due to movement/vibration as a consequence of constructing the proposed basement. It is therefore not proposed at this stage to undertake movement monitoring of the properties located on the Eastern side of the High Street.
It is however proposed that a condition survey is undertaken of the properties prior to construction.

9.0 SUPERSTRUCTURE

It is not intended to describe the superstructure in any specific detail as part of this report. However, for completeness it is proposed to construct the superstructure using a reinforced concrete frame with in-situ flat reinforced concrete slabs with a combination of exposed and rendered masonry external walls.

Appendix A

Borehole logs

Borehole Log

Borehole No. **CP1** Sheet 1 of 2

Project Name: Hampton Hill	Project No. 51831	Co-ords: -	Hole Type CP
Location: Former offices and studios, 65b High Street, Hampton Hill, Hampton, Greater London		Level:	Scale 1:50
Client: HBPW LLP		Dates: 19/05/2016 - 19/05/2016	Logged By AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		0.20 - 1.20	B		0.05 0.20			MADE GROUND (bituminous surfacing) MADE GROUND (crushed stone) MADE GROUND (crushed brick and concrete)
		1.20		N=43 (6,10/9,10,12,12)	1.30			Dense SAND and GRVEL
		1.20 - 2.00	B					
		2.50		N=31 (5,7/8,7,7,9)				
		4.00		N=37 (6,10/8,10,9,10)				
		4.50	B					
		5.50		N=22 (7,6/5,4,6,7)				
		5.60 - 6.00	B		5.60			Very stiff bluish grey CLAY (London Clay)
		6.00 - 6.45	U					
		7.50		N=42 (7,9/10,10,11,11)				
		9.00 - 9.45	U					
		9.45 - 9.60	D					

Continued on next sheet

Remarks
Waiting for access - 1.5 hours, hand excavated trial pit from 0.00m to 1.20m - 1 hour

Borehole Log

Borehole No. **CP1** Sheet 2 of 2

Project Name: Hampton Hill	Project No. 51831	Co-ords: -	Hole Type CP
Location: Former offices and studios, 65b High Street, Hampton Hill, Hampton, Greater London		Level:	Scale 1:50
Client: HBPW LLP		Dates: 19/05/2016 - 19/05/2016	Logged By AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.50		N=55 (9,12/12,13,14,16)				
		12.00 - 12.60	U					
		13.50		N=51 (11,11/11,13,13,14)				
		14.60		N=60 (12,13/14,15,15,16)				
					15.05			End of borehole at 15.05 m

Remarks
Waiting for access - 1.5 hours, hand excavated trial pit from 0.00m to 1.20m - 1 hour

Borehole Log

Borehole No. **CP2** Sheet 1 of 2

Project Name: Hampton Hill	Project No. 51831	Co-ords: -	Hole Type CP
Location: Former offices and studios, 65b High Street, Hampton Hill, Hampton, Greater London		Level:	Scale 1:50
Client: HBPW LLP		Dates: 20/05/2016 - 20/05/2016	Logged By AJ

Well	Water Strikes	Samples and In Situ Testing: Depth (m)	Type	Results	Depth (m)	Level (m)	Legend	Stratum Description
					0.05			MADE GROUND (Bituminous surface)
					0.20			MADE GROUND (Crushed Stone)
		0.40 - 1.20	B		0.40			MADE GROUND (Concrete)
								MADE GROUND (Ash and Stone fill)
		1.20		N=5 (1,2/1,2,1,1)				
					1.80			Medium dense becoming dense SAND and GRAVEL
		2.50		N=28 (6,7/7,6,8,7)				
		2.50 - 3.50	B					
		4.00		N=32 (5,6/8,7,9,8)				
		5.50		N=23 (6,8/7,6,5,5)				
		5.60 - 6.00	B		5.60			Very stiff bluish grey CLAY (London clay)
		6.00 - 6.45	U					
		6.45 - 6.60	D					
		7.00 - 7.45	U					
		7.45 - 7.60	D					
		8.50		N=37 (8,8/9,9,10,9)				
		10.00 - 10.45	U					

Continued on next sheet

Remarks
Hand excavation - 1 Hr

Borehole Log

Borehole No. **CP2** Sheet 2 of 2

Project Name: Hampton Hill	Project No. 51831	Co-ords: -	Hole Type CP
Location: Former offices and studios, 65b High Street, Hampton Hill, Hampton, Greater London		Level:	Scale 1:50
Client: HBPW LLP		Dates: 20/05/2016 - 20/05/2016	Logged By AJ

Well	Water Strikes	Samples and In Situ Testing			Depth (m)	Level (m)	Legend	Stratum Description
		Depth (m)	Type	Results				
		10.45 - 10.60	D					
		11.50		N=43 (9,10/11,10,10,12)				
		13.00		N=50 (8,9/10,12,13,15)				
		14.00 - 14.60	U					
		14.60		N=57 (10,12/13,14,14,16)				
					15.05			End of borehole at 15.05 m

Remarks
Hand excavation - 1 Hr

Appendix B

Drainage Strategy Drawings

DO NOT SCALE - IF IN DOUBT ASK

DRAINAGE KEY

RWP	Rainwater Pipe
SVP	Soil Vent Pipe
G	Gully
SW — SW	Surface water sewer
FW — FW	Foul Water sewer
→	Surface fall/gradient

DRAINAGE AREAS KEY

Total site Area: 2462 m² (approx.)

Roof/Paved area: 1297m² - Impermeable drained area with no 1st stage interception.

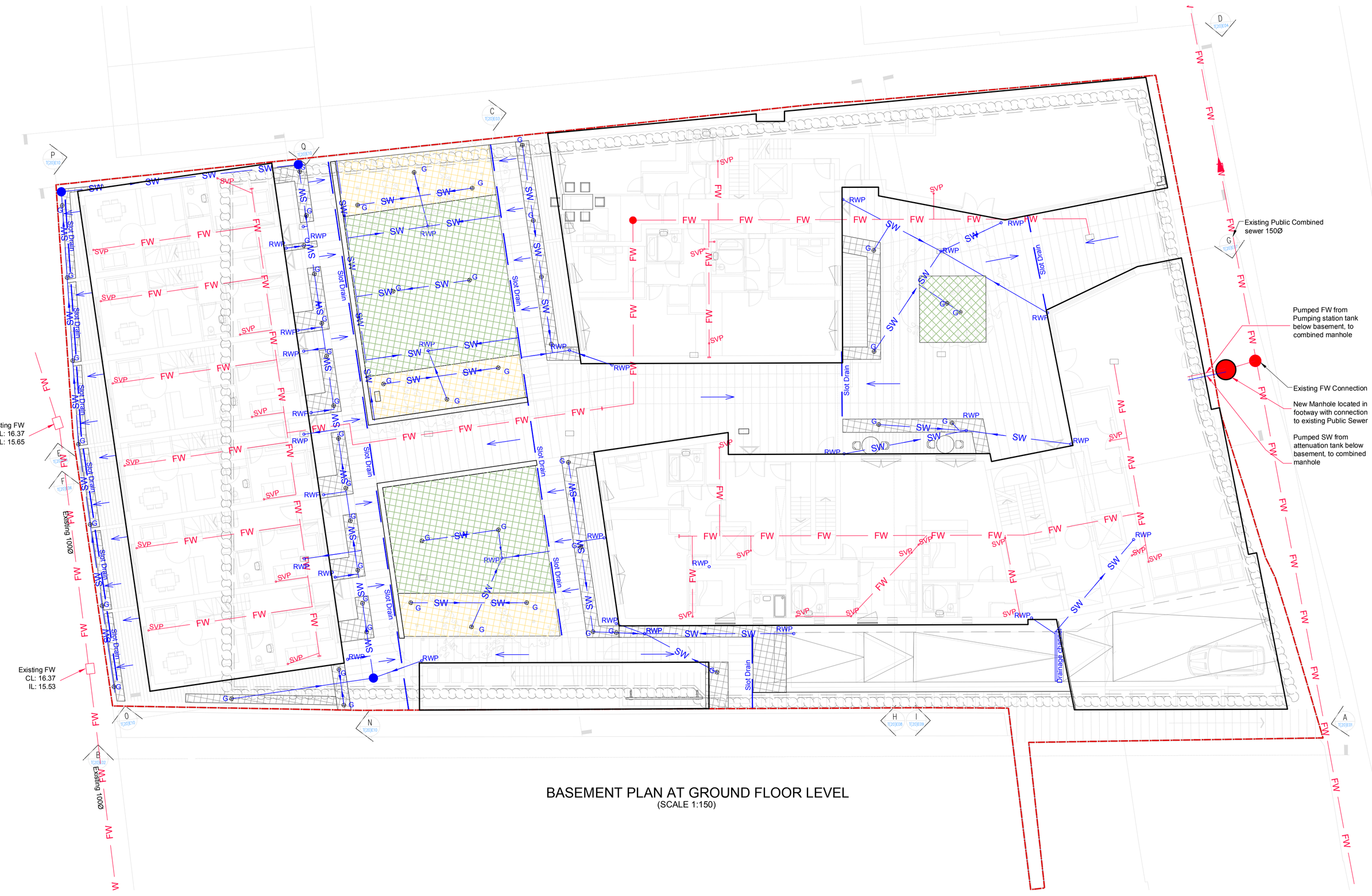
Rain Garden/Bio retention system comprising: 355m² recessed planters with soil and drainage layer and connection to drainage system under, providing interception, temporary storage and treatment

Paved areas: 810m² - Impermeable drained area, run off directed to Bio retention system prior to discharge to drainage system

DRAINAGE AREAS
(SCALE 1:250)

PLANTERS AT GROUND FLOOR LEVEL KEY

- Planter, 0.70m deep + 0.1m drainage layer
- Planter, 0.25m deep + 0.1m drainage layer
- Planter, 0.50m deep + 0.1m drainage layer



BASEMENT PLAN AT GROUND FLOOR LEVEL
(SCALE 1:150)

0 10 20 30 40 50 60 70 80 90 100
MILLIMETRES AT ORIGINAL DRAWING SIZE

A1

General Notes

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings and details.
3. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
5. All dimensions are in millimetres unless otherwise stated.
6. All access and gradients to be in accordance with Building Regulations Part M: Access to and use of buildings.
7. Drainage to be in accordance with Building Regulations Part H: Drainage and Waste Disposal & relevant British Standards.
8. Linear drainage /kerb drain sizing and gully capacity are to be confirmed by manufacturer.
9. Where banking steeper than 1:3 is proposed, appropriate slope stabilisation measures are to be provided.
10. Gravel margin around building perimeter to ensure the integrity of the DPC at client discretion.
11. Contractor to obtain any necessary approvals from the water authority prior to operation.
12. External threshold drains to be provided at level access to buildings where necessary due to approach gradients.
13. All planting within 5m of proposed drainage to be specified so as not to cause root damage to drainage, or be provided with suitable root protection measures.
14. Any positions of RWPs and foul connection points shown are for information only and to be confirmed by others - refer to architects drawings for setting out information.
15. Cover class to manholes/inspection chambers are to suit anticipated vehicle loadings in accordance with BS EN 124 (D400 where potential for HGV loading, C250/B125 in footway/lightly trafficked areas). A15 covers may be used only in areas not accessible by vehicles.
16. Buried concrete should be specified in accordance with the requirements of BRE Special Digest 1: 2005 Concrete in Aggressive Ground (Ref. 8.13). Design Sulphate Class and required Aggressive Chemical Environment for Concrete Class to be confirmed by SI.
17. Before handover, all manholes shall be inspected, all rubble removed, and the whole system shall be thoroughly flushed and cleaned.

HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION

In addition to the hazards/ risks associated with the types of work detailed on this drawing please note the following:

Construction:
1)
2)
3)
etc

Cleaning / Maintenance:
1)
2)
3)
etc

Demolition:
1)
2)
3)
etc

It is assumed that all works will be carried out by a competent contractor working, where appropriate, to an approved method statement

DESCRIPTION	REV	DATE	BY	CHKD	APPR
Basement layout revised to suit Architect drawings	C	21.07.17	TS	EP	PW
Layout updated	B	18.10.16	RB	EP	PW
Drawing updated	A	04.10.16	RB	EP	PW
1st Issue	-	27.05.16	RB	EP	PW

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Fax: (01777) 862491

STATUS
PLANNING

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PROJECT
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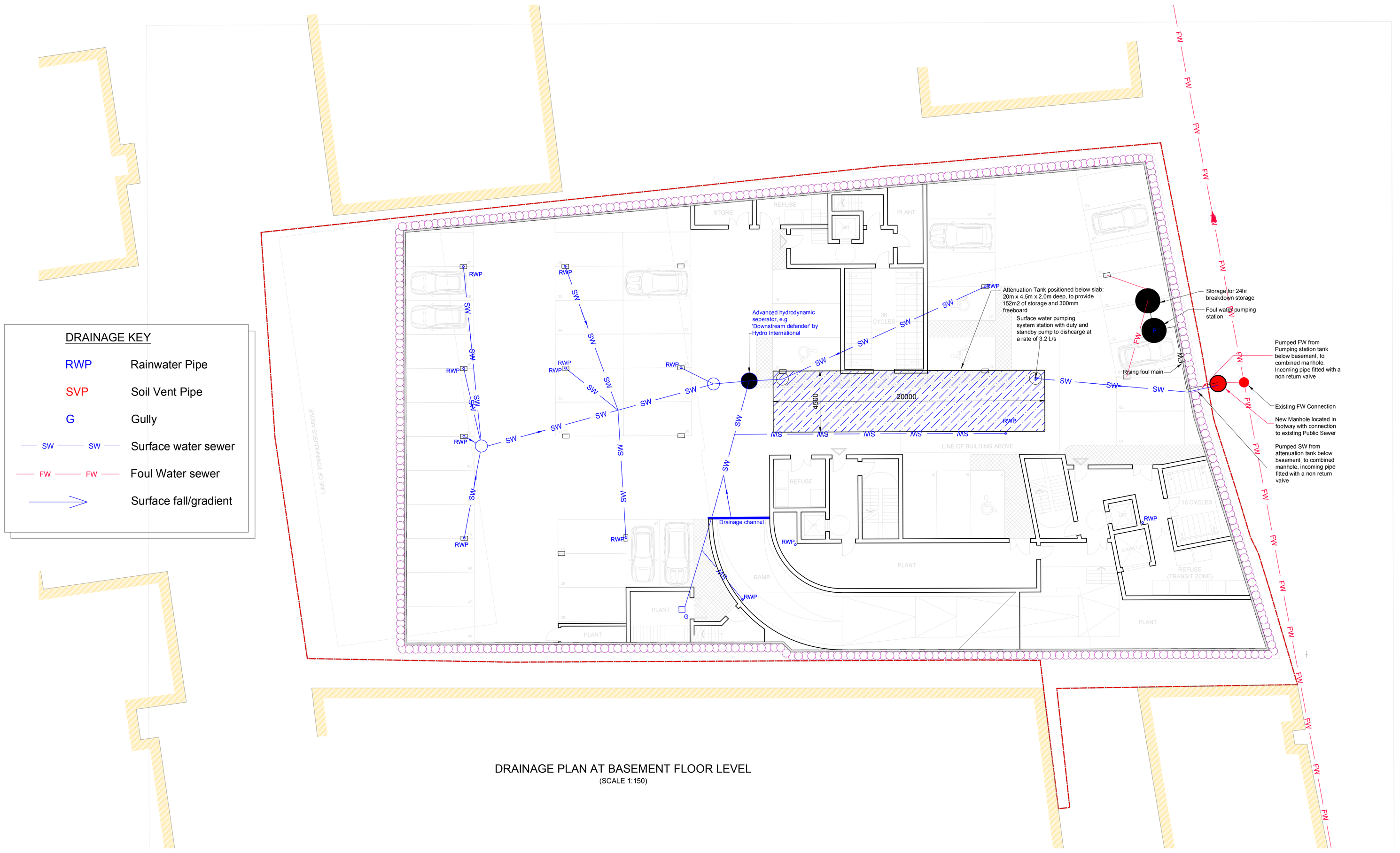
HAMPTON HILL

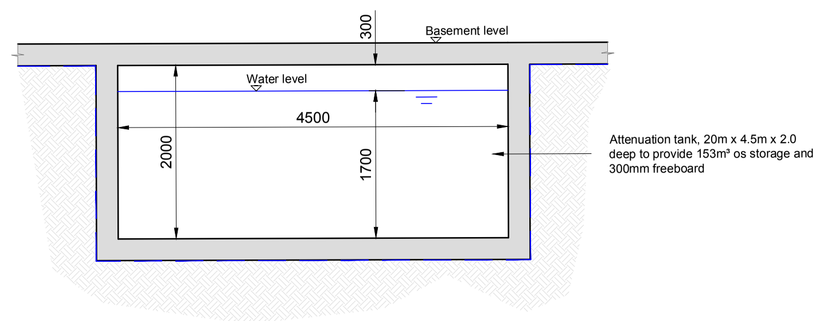
DRAWING TITLE
DRAINAGE LAYOUT AT GROUND FLOOR LEVEL

DRAWN	EP	DATE	MAY 2016
PROJECT ENGINEER	EP		
CHECKED	SS	SCALE	AS SHOWN @ A1
APPROVED	EP		
DRAWING NUMBER	SL05030.401	REVISION	C

DO NOT SCALE - IF IN DOUBT ASK



DRAINAGE PLAN AT BASEMENT FLOOR LEVEL
(SCALE 1:150)



TYPICAL SECTION THROUGH ATTENUATION TANK
(SCALE 1:50)

0 10 20 30 40 50 60 70 80 90 100
MILLIMETRES AT ORIGINAL DRAWING SIZE

A1

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13. All planting within 5m of proposed drainage to be specified so as not to cause root damage to drainage, or be provided with suitable root protection measures.
14. Any positions of RWPs and foul connection points shown are for information only and to be confirmed by others - refer to architects drawings for setting out information.
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HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION

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Construction:
1)
2)
3)
etc

Cleaning / Maintenance:
1)
2)
3)
etc

Demolition:
1)
2)
3)
etc

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DESCRIPTION	REV	DATE	BY	CHKD	APPR
Basement layout revised to suit Architect drawings	C	21.07.17	TS	EP	PW
Layout updated	B	18.10.16	RB	EP	PW
Drawing updated	A	04.10.16	RB	EP	PW
1st Issue	-	27.05.16	RB	EP	PW

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HAMPTON HILL

DRAWING TITLE
DRAINAGE LAYOUT AT BASEMENT FLOOR LEVEL

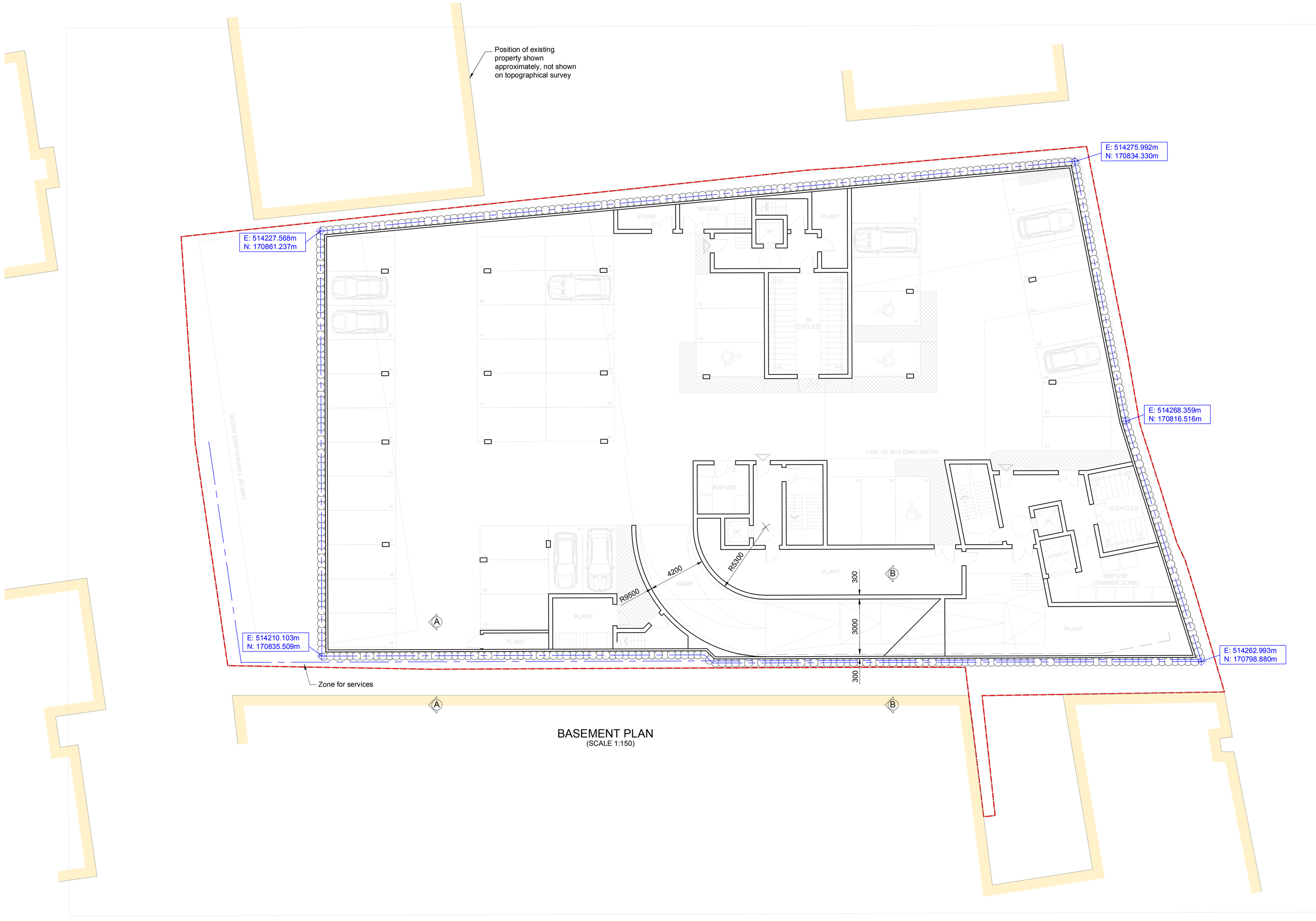
DRAWN	EP	DATE	MAY 2016
PROJECT ENGINEER	EP		
CHECKED	SS	SCALE	AS SHOWN @ A1
APPROVED	EP		

DRAWING NUMBER	REVISION
SL05030.402	C

Appendix C

Substructure drawings

DO NOT SCALE - IF IN DOUBT ASK



BASEMENT PLAN
(SCALE 1:150)

0 10 20 30 40 50 60 70 80 90 100
MILLIMETRES AT ORIGINAL DRAWING SIZE

A1

NOTES

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6. It is the responsibility of the contractor to execute the works at all times in strict accordance with the requirements of the Health And Safety At Work Act 1974 and CDM regulations 2015. The contractor will be deemed to have allowed for full compliance, including full liaison with the Principal Designer and CDMC, within his rates.

HEALTH, SAFETY AND ENVIRONMENTAL INFORMATION

In addition to the hazards/ risks associated with the types of work detailed on this drawing please note the following:

Construction:
1)
2)
3)
etc

Cleaning / Maintenance:
1)
2)
3)
etc

Demolition:
1)
2)
3)
etc

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DESCRIPTION	REV	DATE	BY	CHKD	APPR
Drawing revised	E	21.07.17	TS	EP	PW
Drawing revised	D	23.09.16	MG	EP	PW
Drawing revised	C	23.09.16	MG	EP	PW
Pile layout amended	B	22.09.16	MG	EP	PW
Revised	A	04.07.16	RB	EP	PW
1st Issue	-	26.04.16	RB	EP	PW

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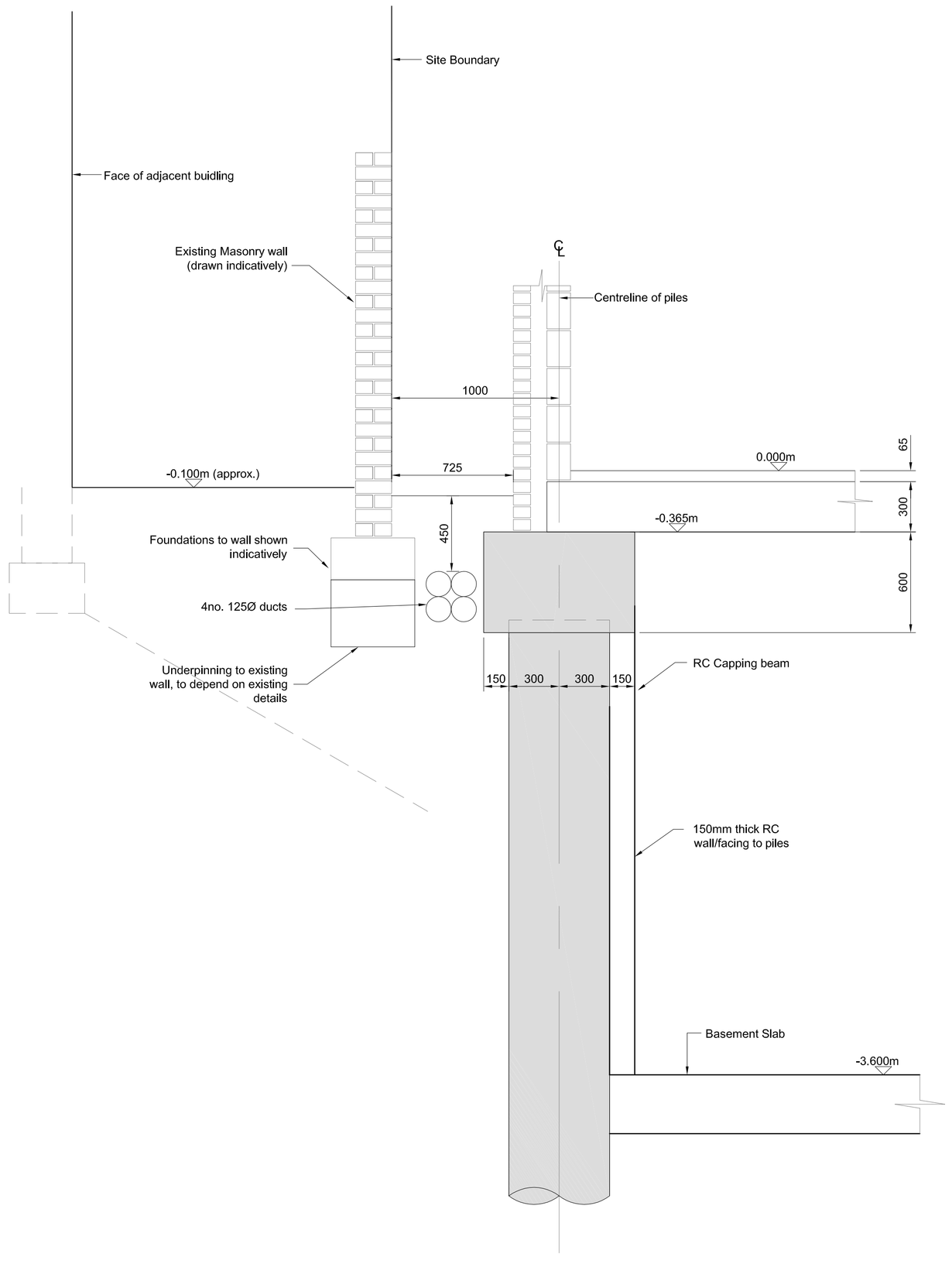
DRAWING TITLE
BASEMENT PLAN STRUCTURAL PLAN

DRAWN	EP	DATE	JUNE 2016
PROJECT ENGINEER	EP		
CHECKED	SS	SCALE	AS SHOWN @ A1
APPROVED	EP		
DRAWING NUMBER	SL05030.101	REVISION	E

DO NOT SCALE - IF IN DOUBT ASK



SECTION A-A
(SCALE 1:20)

0 10 20 30 40 50 60 70 80 90 100
MILLIMETRES AT ORIGINAL DRAWING SIZE

A1

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Construction:
1)
2)
3)
etc

Cleaning / Maintenance:
1)
2)
3)
etc

Demolition:
1)
2)
3)
etc

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DESCRIPTION	REV	DATE	BY	CHKD	APPR

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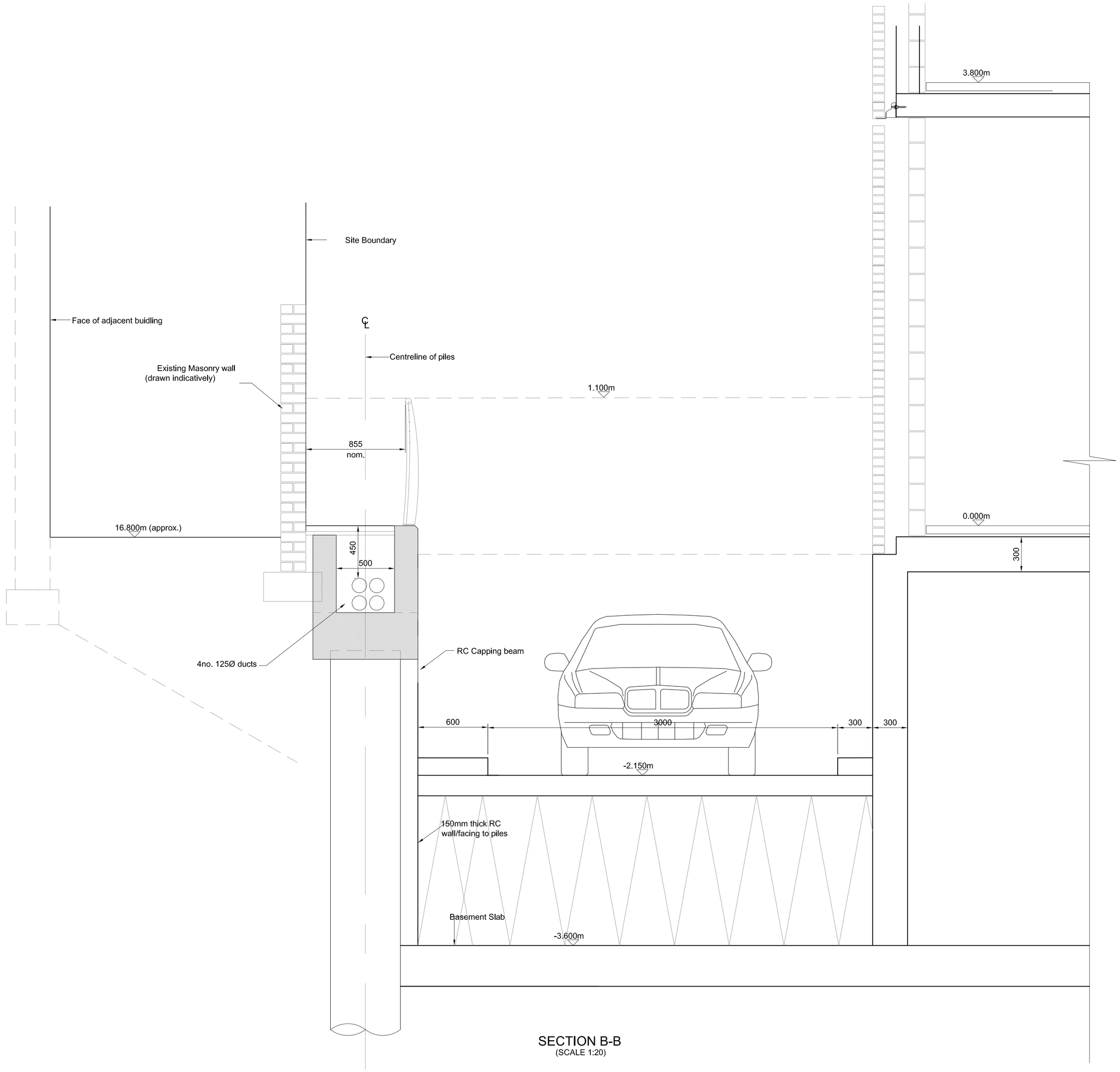
DRAWING TITLE
SECTION A-A

DRAWN	EP	DATE	SEPT 2016
PROJECT ENGINEER	EP		
CHECKED	SS	SCALE	AS SHOWN @ A1
APPROVED	EP		

DRAWING NUMBER	REVISION
SL05030.107	

DO NOT SCALE - IF IN DOUBT ASK



SECTION B-B
(SCALE 1:20)

0 10 20 30 40 50 60 70 80 90 100
MILLIMETRES AT ORIGINAL DRAWING SIZE

A1

NOTES

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1)
2)
3)
etc

Cleaning / Maintenance:
1)
2)
3)
etc

Demolition:
1)
2)
3)
etc

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DESCRIPTION	REV	DATE	BY	CHKD	APPR
Drawing revised	A	23.09.16	EP	SS	PW

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Nottinghamshire
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63-71 HIGH STREET
HAMPTON HILL

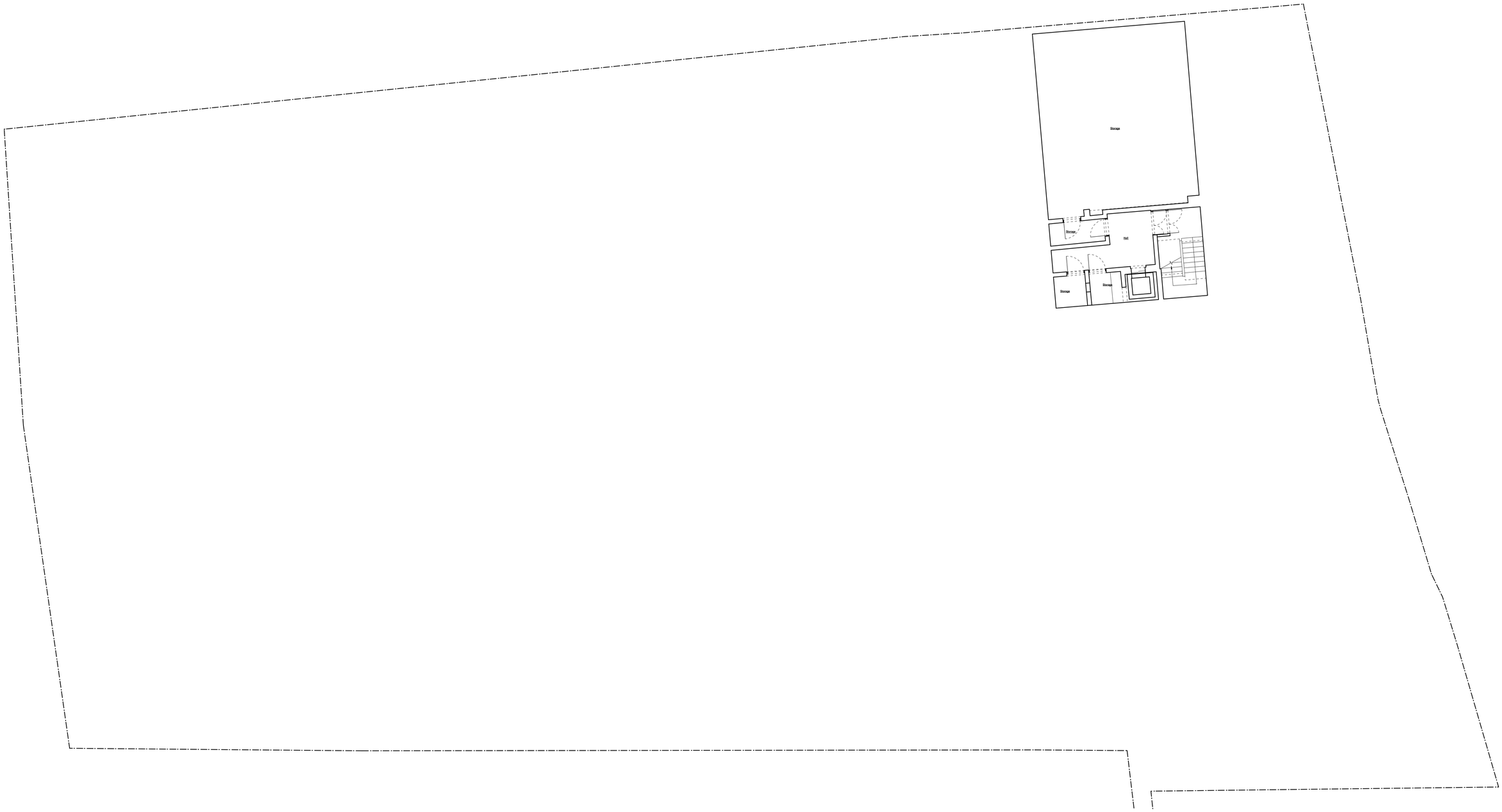
DRAWING TITLE
SECTION B-B

DRAWN	EP	DATE	SEPT 2016
PROJECT ENGINEER	EP		
CHECKED	SS	SCALE	AS SHOWN @ A1
APPROVED	EP		

DRAWING NUMBER	REVISION
SL05030.108	A

Appendix D

Existing Site Layout Drawings



Planning

0 m 2.0 m 4.0 m 6.0 m 8.0 m

Rev:	Date:	Description:
-	19.08.2016	Issued for Comments

Project: **63 - 71 High Street Hampton Hill**

Dwg no: **1525 / PL.01**

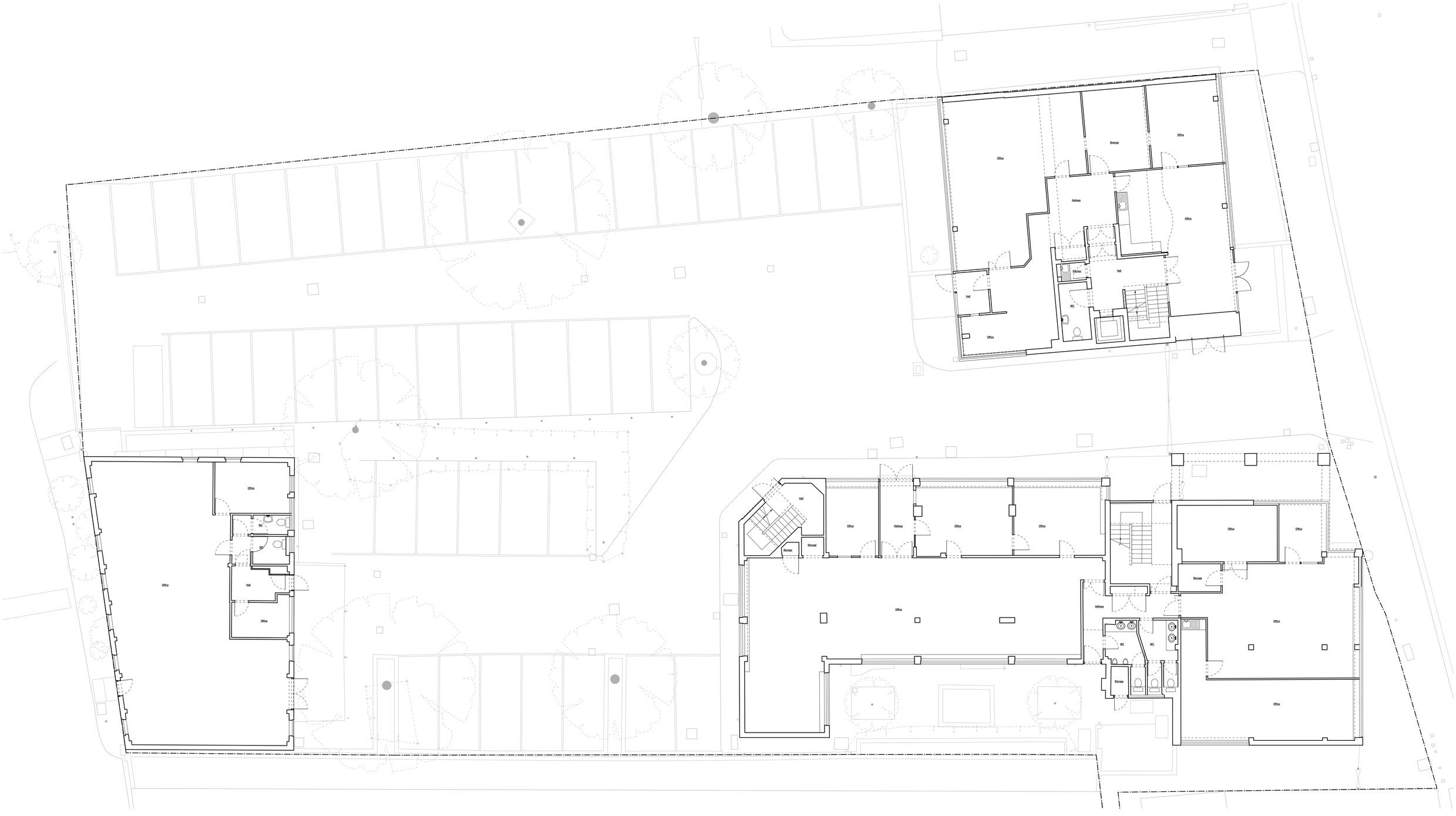
Drawing: **Existing Basement Plan**

3s architects and designers

Date: August 2016
Scale: 1:100 @ A1

C	D	Rev:	*
RS	EC		

T +44 (0)20 8332 99 -66 **F** -91 **W** www.3s-ad.com **E** info@3s-ad.com
17A Princes Road, Richmond upon Thames, Surrey TW10 6DQ



Planning

0 m 2.0 m 4.0 m 6.0 m 8.0 m

Rev:	Date:	Description:
-	19.08.2016	Issued for Comments

Project: **63 - 71 High Street Hampton Hill**

Dwg no: **1525 / PL.02**

Drawing: **Existing Ground Floor Plan**

Date: August 2016 | Scale: 1:100 @ A1 | C RS | D EC | Rev: * |

3s architects and designers

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