mnp
mason navarro pledge

Orchard Lane / East Molesey

Foul & Surface Water Drainage Strategy Report

November 2022 I A3711

CONTENTS

APPENDICES

Report prepared by:

Tom Murray
HNC
Civil Engineer

1. INTRODUCTION

1.1. Mason Navarro Pledge Ltd have been commissioned by Lifestyle Residential to develop a surface & foul water drainage strategy for a proposed redevelopment to a site that currently consists of residential care and housing. The site is located at The Molesey Venture, Orchard Lane, East Molesey, Surrey, KT8 0BN.

1.2. The proposed scheme consists of demolition (or partial demolition) of all existing buildings and the erection of 3 buildings comprising 74 residential units (15 x 1 bed, 48 x 2 bed and 11 x 3 bed) and ancillary facilities for residents, underground and surface level car and cycle parking, mechanical plant, soft and hard landscaping and associated diversion of existing Thames Water pipe.

1.3. The purpose of this report is to demonstrate that a viable and sustainable strategy for the management and disposal of surface water runoff for the development can be achieved whilst simultaneously achieving a viable solution for foul water disposal.

1.4. This report has been prepared using the following data/information from various sources including:

British Geological Survey Viewer;

DEFRA Magic Maps Application;

Thames Water Sewer Asset Plan;

Elmbridge Borough Council Core Strategy Document, July 2011;

Elmbridge Borough Council Development Management Plan, April 2015;

Proposed Plans by Assael Architecture;

NPPF: Flood Risk Assessment by KRS Environmental, October 2022;

GEA Borehole Logs, July 2022;

1.5. This report has been prepared by Tom Murray.

2. SITE CONDITIONS

SITE LOCATION & USE

2.1. The Molesey Venture Centre, Orchard Lane, East Molesey, KT8 0BN site is currently used for residential care and housing. The area of the site is 0.75Ha. The site is bound by existing gardens from properties to the east, Orchard Lane to the south, the River Ember which runs to the west, and existing greenfield to the north.

2.2. Please refer to Figure 1 below for the site location.

FIGURE 1: SITE LOCATION PLAN

SITE GEOLOGY

2.3. The conditions at the site are detailed below in Table 1 and are based on the findings noted on the British Geological Survey (BGS) Viewer. The focus of a study on geology is to examine the potential movement of water through the local geology.

2.4. The British Geological Survey (BGS) viewer indicates that the underlying superficial geology in the northern 60% of the site consists of Alluvium whereas the southern 40% consists of Langley Silt Member details can be seen in Table 1 below.

TABLE 1: GEOLOGICAL GROUND CONDITIONS

Formation	Description
Superficial Deposits (Drift Deposits)	Alluvium - Clay, silt, sand and peat. Sedimentary superficial deposit. Langley Silt Member - Clay and silt. Sedimentary superficial deposit.
Bedrock	London Clay Formation - Clay and silt. Sedimentary bedrock.

2.5. The noted underlying geology algins with that, that is noted in the 'NPPF: Flood Risk Assessment' carried out by KRS Environmental dated October 2022.

SITE HYDROGEOLOGY

2.6. The hydrogeological features of the site are provided in summary in Table 2. Hydrogeological features of the site have been identified from the DEFRA Magic Map application.

TABLE 2: HYDROGEOLOGICAL GROUND CONDITIONS

Map Dataset	Designation	Comment
Groundwater Vulnerability Zone	Unproductive-Low	This describes the vulnerability of the underlying groundwater body from activities carried out on the surface. Unproductive: areas comprised of rocks that have negligible significance for water supply or baseflow to rivers, lakes and wetlands. They consist of bedrock or superficial deposits with a low permeability that naturally offer protection to any aquifers that may be present beneath. Low: areas that provide the greatest protection to groundwater from pollution. They are likely to be characterised by low-leaching soils and/or the presence of low-permeability superficial deposits.
Aquifer Maps: Bedrock Deposits Designation	Unproductive	This identifies the type of aquifer present in the solid bedrock formation. Unproductive: These are rock layers or drift deposits with low permeability that have negligible significance for water supply or river base flow.
Aquifer Maps: Superficial Deposits Designation	Secondary (undifferentiated)	This identifies the type of aquifer present in the permeable unconsolidated (loose) deposits. Secondary (undifferentiated): Has been assigned in cases where it has not been possible to attribute either category A or B to a rock type. In most cases this means that the layer in question has previously been designated as both minor and non-aquifer in different locations due to the variable characteristics off the rock type.
Groundwater Source Protection Zone	None	Defined as the area around a source within which all groundwater recharge is presumed to be discharged at the source. The closer the activity, the greater the risk of contamination. No designation means: no groundwater source zone is present.

2.7. The GEA Ground Investigation borehole logs (Appendix A) record the resting water level as approximately 2.5 metres below existing ground level.

3. PROPOSED DEVELOPMENT

3.1. The proposal for the existing site at Orchard Lane includes the following:

3.1.1. The proposed scheme consists of demolition (or partial demolition) of all existing buildings and the erection of 3 buildings comprising 74 residential units (15 x 1 bed, 48 x 2 bed and 11 x 3 bed) and ancillary facilities for residents, underground and surface level car and cycle parking, mechanical plant, soft and hard landscaping and associated diversion of existing Thames Water pipe.

3.2. Refer to Appendix B for a copy of the Proposed Architects Plans.

4. PROPOSED SURFACE WATER DRAINAGE STRATEGY

EXISTING DRAINAGE INFRASTRUCTURE

4.1. With reference to the sewer asset plan, there are existing Thames Water assets located within Orchard Lane and a public foul water pump chamber within the site. Orchard Lane has a separate 150mm dia. surface water sewer running east to west and a 225mm dia. foul water sewer running west to east. The depths of these chambers can be determined within Appendix C.

4.2. The site wide CCTV drainage survey shows that the site is served by a separate foul and surface water drainage network. The surface water network discharges freely to the western side of the site into the River Ember. Whereas the foul water network discharges to an onsite pump chamber presumedly routing to the public foul sewer within Orchard Lane. Please refer to Appendix D.

EXISTING RUN-OFF RATES

4.3. In Table 3 below, is a summary of the approximate greenfield run off rates for the entire developable site (0.75Ha). Refer to Appendix E for calculations.

TABLE 3: GREENFIELD RUN OFF RATES

Event	Greenfield Run Off Rate
QBar	1.2 l/s
1 in 1 year	1.0 l/s
1 in 30 year	2.6 l/s
1 in 100 year	3.7 l/s

4.4. As the site is already developed (brownfield) the greenfield runoff rates above do not give a true representation of the current surface water discharge rates from the site.

4.5. With reference to the existing topographical survey (Appendix F) the site has elements of existing buildings and hard landscaping resulting in a positively drained impermeable area of 0.3Ha which fully contributes to the surface water runoff rate. The modified rational method can be adopted in line with Section 24.6.2 of the CIRIA "The SuDS Manual", in order to determine an estimate for the existing surface water runoff rate from the site. Table 4 below outlines the existing run off rates for a number of events. The average intensities are based on FSR rainfall data and a winter rainfall profile for a duration of 15 minutes, please refer to Appendix E for Micro Drainage rainfall intensities.

TABLE 4: EXISTING BROWNFIELD RUN OFF RATES

Event	Average intensity (i) 15min Winter Event	Calculation	Brownfield Discharge Rate
1 in 1 year	28.110mm/hr	Q= 3.61 x 1.00 x 28.110 x 0.3	30.44l/s
1 in 30 year	68.836mm/hr	Q= 3.61 x 1.00 x 68.836 x 0.3	74.55l/s
1 in 100 year	89.024mm/hr	Q= 3.61 x 1.00 x 89.024 x 0.3	96.41l/s

LOCAL CONSTRAINTS & PLANNING POLICIES

4.6. With reference to the Elmbridge Borough Council Core Strategy Document, July 2011. The following policies are applicable to flood risk and surface water management. Please note the list below is not exhaustive and for further details please refer to the Elmbridge Borough Council Core Strategy Document.

Core Strategy Document - Policy CS26 Surface Water Flooding

"New developments will need to contain SuDS, in line with the Council's Climate Neutral Development Checklist. All developments within flood zones 2 or 3 will require surface water runoff to be controlled, as near to its source as possible, and at greenfield rates. Where SuDS have not been used in these areas the application".

4.7. The DEFRA recommends an allowance of 20%-40% to be made to account for the increase in rainfall intensity. An additional allowance of 40% will be applied.

TABLE 5: PEAK RAINFALL INTENSITY CLIMATE CHANGE ALLOWANCE

Applies across all of England	Total potential change anticipated for the '2020s' (2015 to 2039)	Total potential change anticipated for the '2050s' (2040 to 2069)	Total potential change anticipated for the '2080s' (2070 to 2115)
Upper End	10%	20%	40%
Central	5%	10%	20%

4.8. The drainage assessment in this report will ensure that any proposals for additional drainage are assessed and mitigated, against flood risk, and incorporate good SuDS practices where possible.

PROPOSED SURFACE WATER DRAINAGE

4.9. With reference to Section 4.1 - 4.2, the site disposes of surface water freely under gravity to the adjacent river. This has been confirmed via the CCTV survey of the sites existing drainage arrangement.

4.10. As part of the sites redevelopment, the proposed drainage strategy utilises sustainable drainage systems (SuDs) to attenuate surface water at source and reduce

the risk of downstream flooding, with reference being made to the SuDs hierarchy of surface water solutions below;

1. Store rainwater for later use.
2. Use infiltration techniques, such as porous surface in non-clay areas.
3. Attenuate rainwater in ponds or open water features for gradual release.
4. Attenuate rainwater by storing in tanks or sealed water features for gradual release.
5. Discharge rainwater direct to a watercourse.
6. Discharge rainwater to a surface water sewer/drain.
7. Discharge rainwater to a combined sewer.

4.11. As the development involves the construction of a basement that extends over a large proportion of the site area and the site is underlain by London Clay the use of infiltration drainage is not viable.

4.12. As a result, the drainage strategy utilises points 4 & 5 within the SuDs hierarchy where the surface water network will discharge into the River Ember, utilising the existing outfall for the new development.

4.13. Given the very low greenfield runoff rates for the site, it is not proposed to restrict down to greenfield rate, as these rates are unattainable. Given the existing site is a brownfield site, and that it discharges freely in to the river, a proposed rate of 5.0l/s for all events up to and including the 1 in 100 year + 40% climate change. This provides a significant betterment when compared to the existing discharge rates.

4.14. It is proposed to control the discharge rate upstream via a surface water pump chamber which will restrict discharges to a maximum rate of 5.0l/s.

4.15. With reference to Appendix G, it has been determined via surface water modelling within Micro Drainage that 108m^3 of surface water attenuation is required for the site to ensure it can cater for all events up to and including the 1 in 100 year +40% climate change event.

4.16. In order to attenuate flows the proposed scheme includes the following SuDs features:

Below Ground Attenuation Tank - 108m^3
Green Roof: 250m^2
Swale: 66m^2
Lined permeable paving: 790m^2

4.17. Please refer to Appendix I for the below ground drainage arrangement.

5. PROPOSED FOUL WATER DRAINAGE STRATEGY

5.1. As the site is already developed, there is an existing below ground foul water network that serves the existing site, which drains under gravity to an onsite public foul water pump facility.

5.2. It is proposed to convey all foul flows that are collected via stacks in a below ground gravity fed network. The gravity network will feed around the proposed development to the main access road of the site where the onsite pump chamber is located. A connection will then be made to the existing public sewer pump chamber is assumed to run to the public foul water sewer within Orchard Lane.

5.3. A pre-development enquiry was submitted to the local water authority (Thames Water), where it was confirmed, there is sufficient capacity within the public foul water network at the proposed connection point to cater for the proposed development and flow rates. Please refer to Appendix H.

5.4. Please refer to Appendix I for the below ground drainage arrangement.

6. SUDS MAINTENANCE AND MANAGEMENT

6.1 The responsibility for the enacting of this SuDS Maintenance and Management Plan will be the responsibility of the property owner.

GULLIES

6.2 Gullies provide a degree of pollution control in preventing silt and debris passing into the sewer network.

GULLY MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular maintenance	Clean and empty gullies.	Quarterly.

CATCHPITS

6.3 Catchpit chambers and manholes provide a degree of pollution control in preventing silt and debris passing forwards into the drainage network.

6.4 The operation and maintenance requirements are given in the table below:

CATCHPIT MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular maintenance	Clean and empty catchpits.	Quarterly.

BELOW GROUND MANHOLES AND DRAINAGE - GENERAL

6.5 Manholes and Catchpit Inspections should be frequent and regular, depending on local conditions, but at least annually. The drainage system should be cleaned / jetted as necessary.

ATTENUATION STORAGE TANKS

6.6 The operation and maintenance requirements are given in the table below:

ATTENUATION TANK MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then annually.
	Remove debris from the catchment surface (where it may cause risks to performance.	Monthly.
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually.
	Remove sediment from pre-treatment structures and/or internal forebays.	Annually, as required.
Remedial actions	Repair/rehabilitate inlets, outlets, overflows and vents.	As required.
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed.	Annually.
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required.

SWALES

6.7 The swale within the site will convey surface water run-off from part of the building into the below ground surface water sewer network.

6.8 The swale must be maintained to ensure water is conveyed away from the area and into the sewer network and ultimately the soakaway for discharge into the ground.

SWALE MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular maintenance	Remove litter and debris.	Monthly for first year, then as required.
	Cut grass.	As required.
	Manage other vegetation and remove nuisance plants.	As required.
	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly.
	Inspect vegetation coverage.	As required.
	Inspect inlets and facility surfaces for silt accumulation, establish appropriate silt removal frequencies.	Monthly for first year, then half yearly.
Occasional maintenance	Reseed areas of poor vegetation growth, alter plants types to better suit conditions, if required.	As required
Remedial actions	Repair erosion or other damage by re-turfing or reseeding.	As required
	Relevel uneven surfaces and reinstate design levels.	As required.
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface.	As required.

GREEN ROOFS

6.9 The operation and maintenance requirements are given in the table below:

GREEN ROOF MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular Inspections	Inspect all components including soil substrate, vegetation, drains, irrigation systems (if applicable), membranes and roof structure for proper operation, integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff form the drainage layer to the conveyance or roof drainage system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required.
	During establishment replace dead plants as required	Monthly.
	Post establishment replace dead plants as required (where >5% coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting as required - clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to original material, and sources of erosion damage should be identified and controlled.	As required.
	If drain inlet has settled, cracked or moved, investigate and repair as	As required

	appropriate	

PERVIOUS PAVEMENTS

6.10 Permeable block paving allows water to infiltrate through gaps between the blocks into a lined layer of granular material, from which it is collected and discharges into the below ground drainage network.

6.11 The operation and maintenance requirements are given in the table below:

PERVIOUS PAVEMENT MAINTENANCE

MAINTENANCE SCHEDULE	REQUIRED ACTION	RECOMMENDED FREQUENCY
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required - once per year on less frequently used pavements
Remedial actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50mm of the level of 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	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	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 hr after large storms in first six months.
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually

6.12 Over time the ability of the permeable paving to infiltrate and convey surface water run-off may degrade due to clogging of the joints by silt and other sediments.

6.13 All areas of permeable pavement should be regularly inspected by those responsible, preferably during and after heavy rainfall to check effective operation and to identify any areas of ponding.

7. RECOMMENDATIONS AND CONCLUSIONS

7.1. The proposed scheme consists of demolition (or partial demolition) of all existing buildings and the erection of 3 buildings comprising 74 residential units (15 x 1 bed, 48 x 2 bed and 11 x 3 bed) and ancillary facilities for residents, underground and surface level car and cycle parking, mechanical plant, soft and hard landscaping and associated diversion of existing Thames Water pipe.

7.2. The proposed site is not located in a groundwater source protection zone. It is located within a 'Unproductive' aquifer designation for bedrock deposits and a 'Secondary (undifferentiated)' designation for superficial deposits. The site is also located over an unproductive - low groundwater vulnerability zone.

7.3. Thames Water sewer records indicate a separate 150mm dia. surface water sewer and a 225mm dia. foul water sewer in Orchard Lane.

7.4. The site wide CCTV drainage survey shows that the site is served by a separate foul and surface water drainage network. The surface water network discharges freely to the western side of the site into the River Ember. The foul water network discharges to an onsite pump chamber.

7.5. The proposed development surface water discharge will utilise the existing outfall to the River Ember.

7.6. Due to the underlying ground conditions the implementation of infiltration drainage will not be viable.

7.7. It is proposed to control the surface water discharge rate to 5.0l/s via a surface water pump chamber. This will provide a significant betterment over the existing unattenuated brownfield discharge rates from the site.

7.8. In order to attenuate flows to 5.0l/s the proposed scheme includes a combination of below ground attenuation tanks, green roofs, permeable surfaces to roads and paving and swales.

7.9. The drainage has been designed to accommodate all events up to and including the 1 in 100 year + 40% climate change.

7.10. The proposed surface water drainage design principles set out in this document will ensure that the development does not increase the risk of flooding to surrounding area.

7.11. As the site is already developed, there is an existing below ground foul water network that serves the existing site, which drains under gravity to an onsite pump facility which travels to the nearby public sewer- subject to survey.

7.12. It is proposed to convey all foul flows that are collected via stacks in a below ground gravity fed network. The gravity network will feed around the proposed development to the main access road of the site where the onsite pump chamber is located. A connection will then be made to the existing pump chamber which runs to the public foul water sewer within Orchard Lane.

7.13. A pre-development enquiry was submitted to the local water authority (Thames Water), where it was confirmed there is sufficient capacity within the public foul water network at the proposed connection point to cater for the proposed development and flow rates.

7.14. A drainage maintenance strategy has been detailed for the site and is included with this report. The responsibility for the enacting of the SuDS Maintenance and Management Plan will be the responsibility of the property owner.

APPENDICES

APPENDIX A

GEA Borehole Logs

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH1
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	08-07-22	9.31		
Client	Engineer			Sheet
Lifestyle Residences	Mason Navarro Pledge			1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				9.19		0.12	Tarmac	
							MADE GROUND (brick, tarmac and concrete rubble)	
0.50	D					(0.98)		
		1,0/1,1,1,1 N60 = 6		8.21		1.10	Soft becoming firm brown mottled orange-brown very sandy gravelly CLAY	
1.50	D			7.61		(0.60)		
		1,1/1,5,6,6 N60 = 26				1.70	Medium dense brown gravelly SAND with pockets of sandy clay	
2.50	D		▼					
		2,2/3,2,2,2 N60 = 13						
3.50	D					(3.75)		
		1,4/5,5,6,5 N60 = 30						
4.50	D						4.50 ... becoming sandy gravel	
		4,4/3,5,5,6 N60 = 27		3.86		5.45		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative

All dimensions in metres Scale 1:62.5	Method/ Plant Used Opendrive sampling rig	Logged By GC

Report ID: CABLE PERCUSSION || Project: J22195 - MOLESEY VENTURE.GPJ || Library: GEA LIBRARY.GLB || Date: 02 August 2022

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH2
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	08-07-22	8.90		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				8.30		(0.60) 0.60	MADE GROUND (dark brown gravelly sand with fragments of brick, concrete and clinker, roots up to 5mm and rootlets)	
0.50	D							
0.90	D	2,2/2,3,2,4		7.60		(0.70) 1.30	Stiff brown, desiccated, friable, very sandy gravelly CLAY	
1.20	D	N60 = 16						
1.70	D						Medium dense yellowish brown becoming orange-brown gravelly SAND with pockets of sandy clay	
2.20	D	2,2/2,3,7,5 N60 = 24	1			(2.15)		
2.70	D							
		5,6/17,12,14,18 N60 = 86		5.45		3.45	3.00 ... becoming very dense	

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Borehole terminated at 3.00 m due to refusal in dense sand

All dimensions in metres Scale 1:62.5	Method/ Plant Used Opendrive sampling rig	Logged By GC

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH3
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	08-07-22	9.21		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				9.01		0.20	Tarmac over concrete	
0.40	D			8.21		(0.80) 1.00	MADE GROUND (dark brown sandy gravelly clay with fragments of brick, flint and clinker) - with pockets of dark grey staining and a faint diesel odour	
1.30	D	1,2/1,2,3,3 N60 = 13		7.61		(0.60) 1.60	Soft orange-brown mottled grey very sandy slightly gravelly CLAY - occasional dark grey staining and diesel odour	
2.00	D	4,6/7,7,7,7 N60 = 40		7.01		(0.60) 2.20	Dark grey very clayey silty SAND with pockets of sandy clay - distinct diesel odour	
2.30	D		▼1				Dense brown gravelly SAND with pockets of sandy clay	
3.30	D	3,4/5,7,6,7 N60 = 35				(3.25)	2.80 - 3.10 Locally stained black of faint diesel odour	
4.30	D	3,2/1,1,2,3 N60 = 10					4.00 ... becoming medium dense	
		4,5/4,4,4,5 N60 = 24		3.76		5.45		

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative

All dimensions in metres Scale 1:62.5	Method/ Plant Used Opendrive sampling rig	Logged By GC

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH4
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	08-07-22	8.82		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				7.92		(0.90) 0.90	MADE GROUND (dark brown sandy gravelly clay with fragments of brick and concrete)	
		1,1/2,2,1,2 N60 = 10		7.02		(0.90) 1.80	Soft becoming firm brown mottled orange-brown sandy gravelly CLAY	
1.50	D							
		1,0/1,0,3,4 N60 = 11					Medium dense brown gravelly SAND with pockets of sandy clay	
2.50	D		1				2.50 ... becoming sandy gravel	
		2,2/2,1,2,2 N60 = 10					2.80 ... locally stained dark grey	
3.50	D					(3.10)		
		1,2/2,2,2,3 N60 = 13						
				3.92		4.90		
		3,3/2,4,4,4 N60 = 20		3.37		(0.55) 5.45	Stiff fissured dark brown silty CLAY with fine mica	

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative

All dimensions in metres Scale 1:62.5	Method/ Plant Used Opendrive sampling rig	Logged By GC

Report ID: CABLE PERCUSSION || Project: J22195 - MOLESEY VENTURE.GPJ || Library: GEA LIBRARY.GLB || Date: 02 August 2022

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH5
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	08-07-22	9.38		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		1 of 1

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				8.98		0.40	MADE GROUND (aggregate and concrete rubble)	
0.60	D			8.28		(0.70) 1.10	MADE GROUND (dark brown sandy gravelly clay with fragments of brick and clinker)	
1.20	D	1,0/1,1,2,2 N60 = 9		7.88		1.50	Firm brown sandy gravelly CLAY	
2.20	D	6,6/6,7,7,7 N60 = 38	▼1			(2.95)	Dense brown gravelly SAND with pockets of sandy clay	
3.20	D	3,5/5,6,8,12 N60 = 44						
		4,7/12,15,15,17 N60 = 84		4.93		4.45	4.00 ... becoming very dense	

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Borehole terminated at 4.00 m due to refusal in dense sand

All dimensions in metres Scale 1:62.5	Method/ Plant Used Opendrive sampling rig	Logged By GC

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH6
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	25-07-22 26-07-22	9.45		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		1 of 4

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				9.05		0.40	Tarmac over concrete	
				8.65		0.80	MADE GROUND (brick rubble)	
1.20	D	2,3/3,3,4,4 N60 = 14				(1.20)	Soft brownish grey silty sandy CLAY	
1.75	D			7.45		2.00		
2.00	D	25/50 N = 50/75 mm					Very dense brown gravelly SAND	
2.75	D							
3.00	B	25/50 N = 50/75 mm				(2.00)		
3.75	D			5.45		4.00		
4.00	B	3,5/7,7,8,12 N60 = 35		4.95		(0.50) 4.50	Soft brown silty sandy slightly gravelly CLAY	
4.75	D						Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones	
5.00	D	2,3/3,4,4,6 N60 = 17						
6.00	D							
6.50-6.95	U	24 blows						
7.50	D							
8.00	D	3,4/5,5,6,6 N60 = 22						
9.00	D							
9.50-9.95	U	28 blows						

Boring Progress and Water Observations

Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
2.00	25-07-22	10.00			Wtr
3.20	25-07-22	11.00	3.00	150	Added
4.00	25-07-22	12.00	3.80	150	Wtr
10.00	25-07-22	16.00	5.00	150	Added
10.00	26-07-22	08.00	5.00	150	Wtr Added DRY 9.8

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
Chiseling from 3.20 m to 3.80 m for 1 hour 30 minutes in dense sands
3 hours spent clearing spoil, hosing down borehole location and moving rig, equipment and fencing to next location

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH6
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	25-07-22 26-07-22	9.45		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		2 of 4

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones(continued)	
10.50	D							
11.00	D	3,5/5,6,8,10 N60 = 29						
12.00	D							
12.50- 12.95	U	30 blows						
13.50	D							
14.00	D	3,4/5,6,7,9 N60 = 27						
15.00	D							
15.50- 15.95	U	32 blows						
16.50	D							
17.00	D	4,4/5,7,9,11 N60 = 33				(25.95)		
18.00	D							
18.50- 18.95	U	34 blows						
19.50	D							

Boring Progress and Water Observations

Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
20.00	26-07-22	14.00	5.00	150	DRY

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
Chiseling from 3.20 m to 3.80 m for 1 hour 30 minutes in dense sands
3 hours spent clearing spoil, hosing down borehole location and moving rig, equipment and fencing to next location

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH6
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	25-07-22 26-07-22	9.45		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		3 of 4

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
20.00	D	5,5/6,8,8,11 N60 = 34					Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones(continued)	
21.00	D							
21.50- 21.95	U	38 blows						
22.50	D							
23.00	D	5,6/7,8,10,12 N60 = 38						
24.00	D							
24.50- 24.95	U	40 blows						
25.50	D							
26.00	D	5,6/8,8,11,14 N60 = 42						
27.00	D							
27.50- 27.95	U	43 blows						
28.50	D							
29.00	D	6,6/8,10,14,16 N60 = 49						

Boring Progress and Water Observations

Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
Chiseling from 3.20 m to 3.80 m for 1 hour 30 minutes in dense sands
3 hours spent clearing spoil, hosing down borehole location and moving rig, equipment and fencing to next location

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH6
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	25-07-22 26-07-22	9.45		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		4 of 4

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
30.00-30.45	U	50 blows		-21.00		30.45	Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones(continued)	

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
Chiseling from 3.20 m to 3.80 m for 1 hour 30 minutes in dense sands
3 hours spent clearing spoil, hosing down borehole location and moving rig, equipment and fencing to next location

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH7
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	27-07-22	9.01		
Client	Engineer			Sheet
Lifestyle Residences	Mason Navarro Pledge			1 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
				8.51		(0.50) 0.50	MADE GROUND (hardcore rubble)	
							Soft brownish grey silty sandy CLAY	
1.20	D	1,2/2,2,1,2				(1.30)		
1.25	D	N60 = 7		7.21		1.80		
2.00	B	5,7/9,11,13,15 N60 = 49					Dense brown gravelly SAND	
2.75	D							
3.00	B	7,9/11,15,18,23 N60 = 68				(2.70)	3.00 ... locally very dense	
3.75	D							
4.00	B	3,5/7,8,9,9 N60 = 34		4.51		4.50		
4.75	D			4.01		(0.50) 5.00	Soft brown silty sandy slightly gravelly CLAY	
5.00-5.45	U	20 blows					Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones	
6.00	D							
6.50	D	2,3/3,4,4,6 N60 = 17						
7.50	D							
8.00-8.45	U	25 blows						
9.00	D							
9.50	D	3,4/4,5,6,8 N60 = 23						

Boring Progress and Water Observations

Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
4.50	27-07-22	12.00	4.20	150	Wtr Added

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
30 minutes spent clearing spoil and dismantling fencing

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH7
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	27-07-22	9.01		
Client	Engineer			Sheet
Lifestyle Residences	Mason Navarro Pledge			2 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
							Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones(continued)	
10.50	D							
11.00-11.45	U	25 blows						
12.00	D							
12.50	D	3,4/5,7,8,10 N60 = 31				(15.45)		
13.50	D							
14.00-14.45	U	30 blows						
15.00	D							
15.50	D	4,5/7,9,10,12 N60 = 39						
16.50	D							
17.00-17.45	U	33 blows						
18.00	D	4,5/6,8,10,13 N60 = 38						
18.50	D							
19.50	D							

Boring Progress and Water Observations

Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth
20.00	27-07-22	16.00	5.00	150	DRY

GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
30 minutes spent clearing spoil and dismantling fencing

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

Project				BOREHOLE No
Molesey Venture, Orchard Lane, East Molesey, Surrey KT8 0BN				BH7
Job No	Date	Ground Level (m OD)	Co-Ordinates ()	
J22195	27-07-22	9.01		
Client		Engineer		Sheet
Lifestyle Residences		Mason Navarro Pledge		3 of 3

SAMPLES & TESTS			Water	STRATA				Instrument / Backfill
Depth	Type No	Test Result		Reduced Level	Legend	Depth (Thick-ness)	DESCRIPTION	
20.00-20.45	U	38 blows		-11.44		20.45	Firm becoming stiff fissured dark brownish grey silty CLAY with occasional claystones(continued)	

Boring Progress and Water Observations					
Depth	Date	Time	Casing Depth	Casing Dia. mm	Water Depth

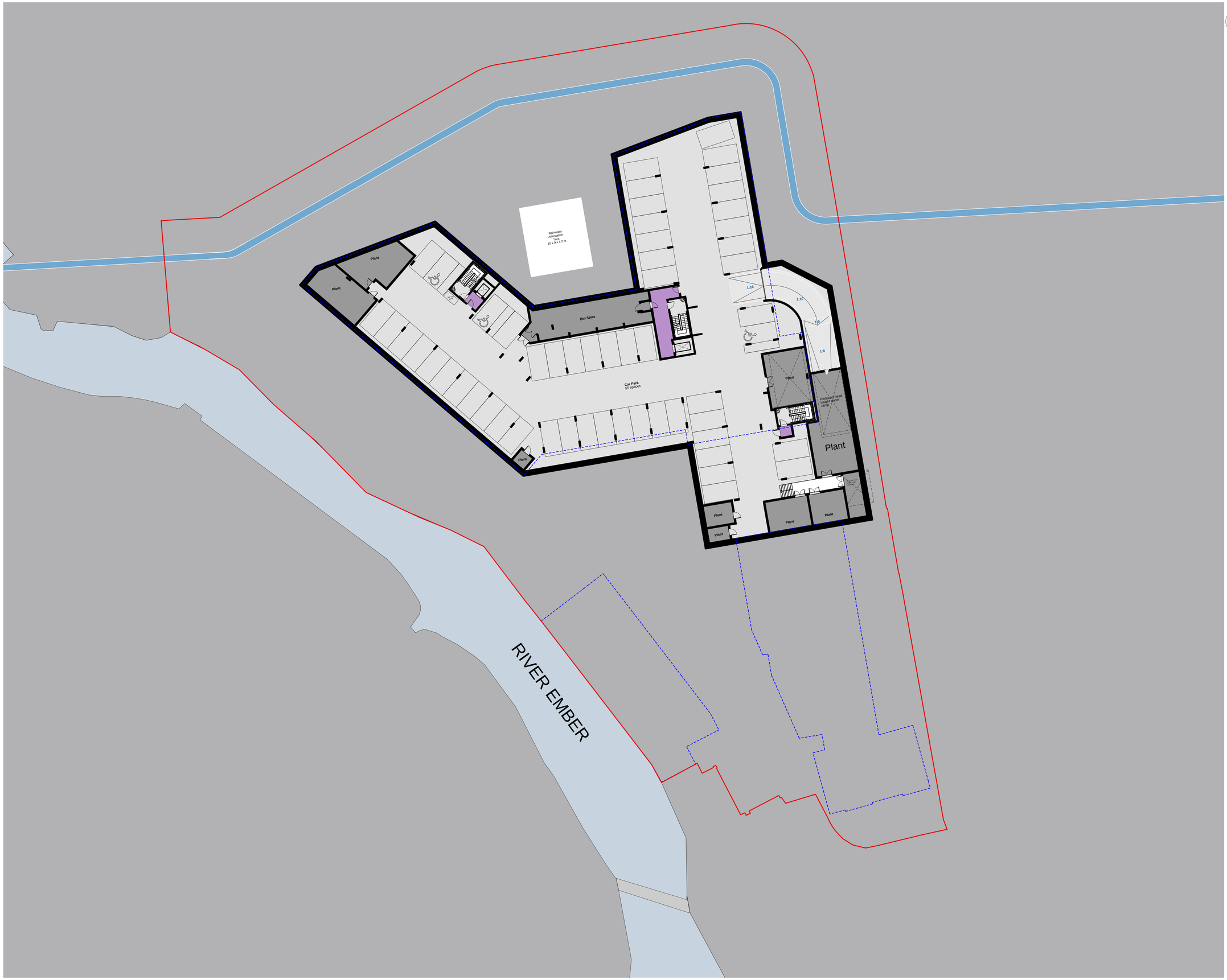
GENERAL REMARKS

Inspection pit dug to 1.20 m
Borehole advanced under supervision from UXO operative
Water added to aid drilling through granular soils, likely to have masked a water strike
30 minutes spent clearing spoil and dismantling fencing

All dimensions in metres Scale 1:62.5	Method/ Plant Used Cable percussion rig	Logged By Prelim

APPENDIX B

Proposed Architects Plans



N

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn	Check
30	For Planning	11/10/22	AS	ES

KEY

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main

Key

LIFESTYLE RESIDENCES

Client

Lifestyle Residences Ltd

Project title

A3711 Orchard Lane, East Molesey

Drawing title

Proposed Site Wide Basement Plan

Scale @ A1 | Issue date

1:250 | **11/10/22**

Drawing number

A3711-ASA-ZZ-B1-DR-A-0209

Proposed status | Revision

for Planning | **P30**

Assael

Architecture

Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans R2.vwx

Rev	Revision note	Date	Drawn	Check
32	For planning	11/10/22	AS	ES

KEY

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main

Key

Client

Lifestyle Residences Ltd

Project title

A3711 Orchard Lane, East Molesey

Drawing title

Proposed Site Wide Ground Floor Plan

Scale @ A1: **1:250**

Issue date: **11/10/22**

Drawing number

A3711-ASA-ZZ-00-DR-A-0210

Proposed status: **for Planning**

Revision: **P32**

Assael

Architecture

Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk

N

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn	Check
23	For Planning	11/10/22	AS	ES

KEY

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main

Key

LIFESTYLE RESIDENCES

Client

Lifestyle Residences Ltd

Project title

**A3711 Orchard Lane,
East Molesey**

Drawing title

**Proposed Site Wide
First Floor Plan**

Scale @ A1	Issue date
1:250	**11/10/22**

Drawing number

A3711-ASA-ZZ-01-DR-A-0211

Proposed status	Revision
for Planning	**P23**

Assael

Architecture

Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk

N

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn	Check
22	For Planning	11/10/22	AS	ES

KEY

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main

Key

LIFESTYLE RESIDENCES

Client

Lifestyle Residences Ltd

Project title

**A3711 Orchard Lane,
East Molesey**

Drawing title

**Proposed Site Wide
Second Floor Plan**

Scale @ A1	Issue date
1:250	**11/10/22**

Drawing number

A3711-ASA-ZZ-02-DR-A-0212

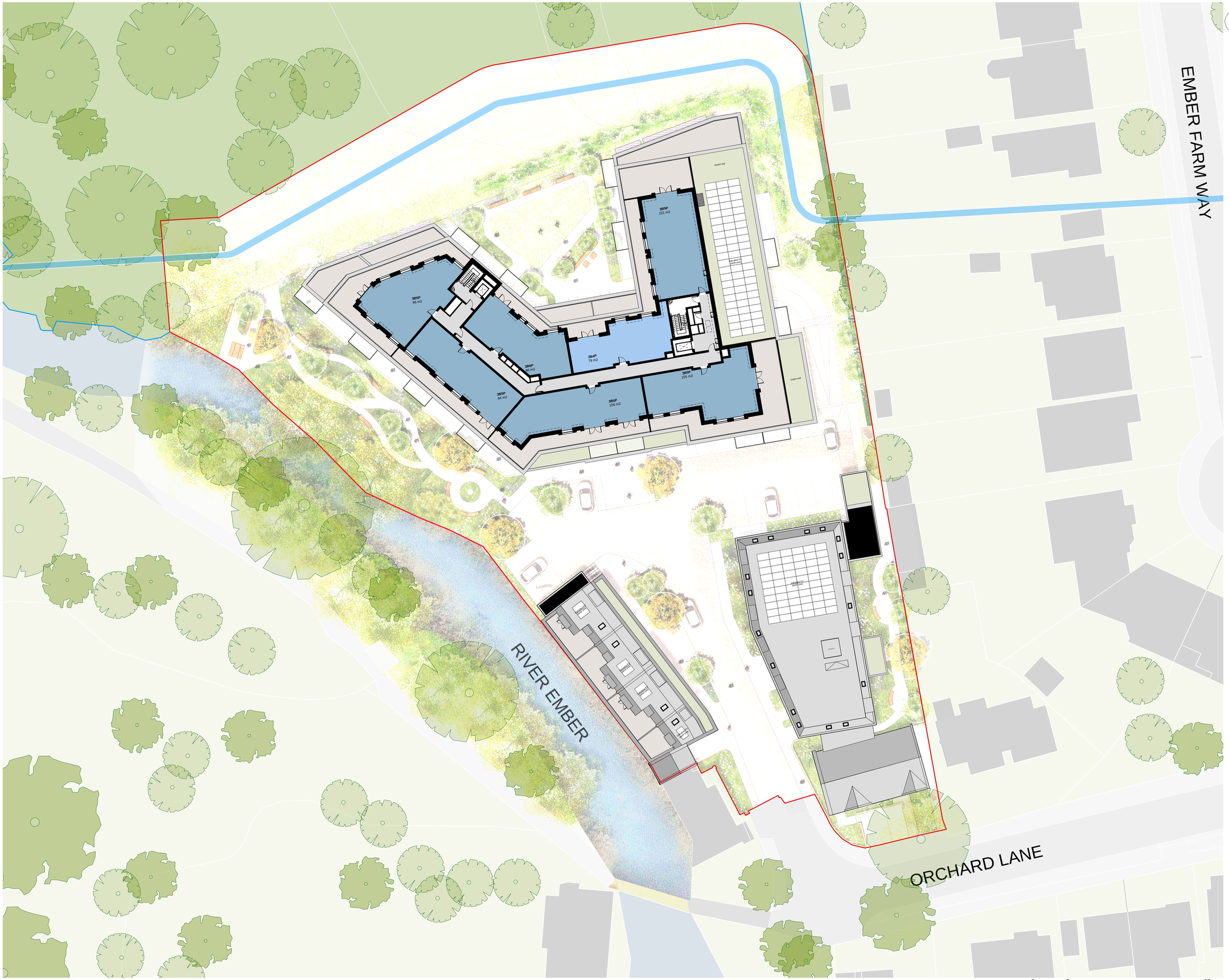
Proposed status	Revision
for Planning	**P22**

Assael

Architecture

Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk



N

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans.vwx

Rev	Revision note	Date	Drawn	Check
22	For Planning	11/10/22	AS	ES

KEY

- 1 Bed
- 2 Bed
- 3 Bed
- Amenity
- Residential Lobby
- Back of House
- Diverted Thames Water main

Key

LIFESTYLE RESIDENCES

Client

Lifestyle Residences Ltd

Project title

**A3711 Orchard Lane,
East Molesey**

Drawing title

**Proposed Site Wide
Third floor plan**

Scale @ A1	Issue date
1:250	**11/10/22**

Drawing number

A3711-ASA-ZZ-03-DR-A-0213

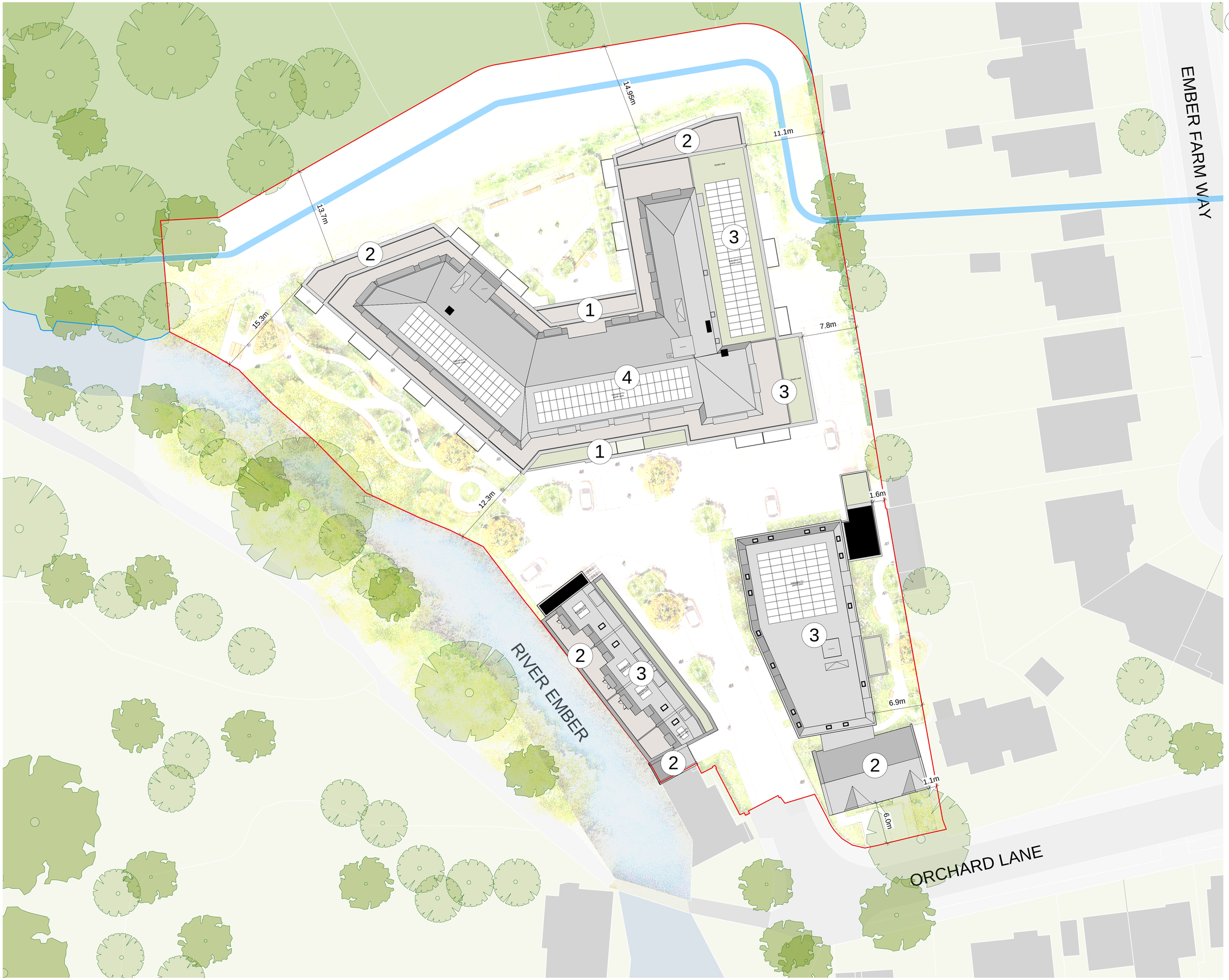
Proposed status	Revision
for Planning	**P22**

Assael

Architecture

Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk



N

General notes

This drawing must not be scaled. This drawing must not be used for land transfer purposes. This drawing must be read in conjunction with all other relevant drawings, specification clauses and current design risk register. Areas are measured and calculated generally in accordance with the Nationally Described Space Standard and/or RICS Property Management, 2nd Edition (2018) and have been calculated in metric units. All setting out, dimensions and levels must be checked on site. Levels refer to Ordnance Datum Newlyn, unless stated otherwise. This drawing must not be used on site unless issued for construction. Refer to Information Plan for definition of drawing status.

Drawing revision prefix (not applied to sketches) :
P = Pre-Contract
C = Contract

Electronic file reference

A3711 Orchard Lane SHEETS 200 Proposed Plans R2.vwx

Rev	Revision note	Date	Drawn	Check
23	For Planning	11/10/22	AS	ES

Key

LIFESTYLE RESIDENCES

Client

Lifestyle Residences Ltd

Project title

**A3711 Orchard Lane,
East Molesey**

Drawing title

**Proposed Site Wide
Roof Plan**

Scale @ A1	Issue date
1:250	**11/10/22**

Drawing number

A3711-ASA-ZZ-RP-DR-A-0215

Proposed status	Revision
for Planning	**P23**

Assael

Architecture

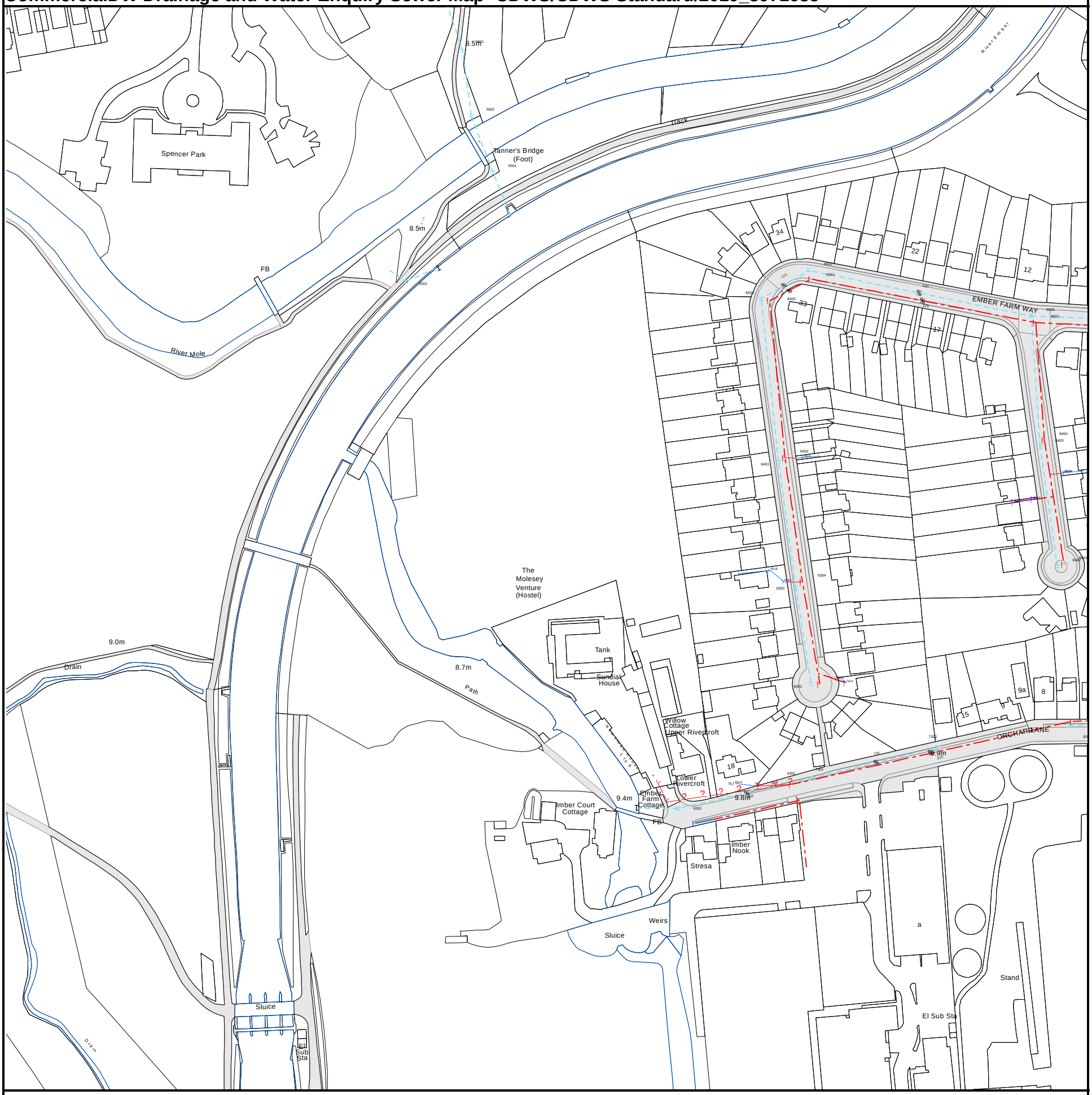
Assael Architecture Ltd
123 Upper Richmond Road
London SW15 2TL

+44 (0)207 736 7744
info@assael.co.uk
www.assael.co.uk

APPENDIX C

Public Sewer Asset Plan

CommercialDW Drainage and Water Enquiry Sewer Map- CDWS/CDWS Standard/2019_3971685



The width of the displayed area is 500m

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no survey information is available.

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7303	9.59	8.52
6302	9.59	8.81
731A	n/a	n/a
6303	9.23	8.48
631C	n/a	n/a
6304	9.24	8.22
631B	n/a	n/a
6401	8.62	7.53
6402	8.64	7.24
641A	n/a	n/a
6504	8.43	7.51
6503	8.43	7.23
6502	8.25	7.42
6501	8.26	7.11
62NH	n/a	n/a
6201	9.58	7.45
62NE	n/a	n/a
6301	9.93	8.53
631A	n/a	n/a
7301	9.65	8.01
5502	8.45	6.24

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

APPENDIX D

CCTV Survey

JOB No. 12381

LEGEND

FW MH/IC

SW MH/IC

INTERCEPTOR

FW GULLY

SW GULLLY

ST/VP:STACK

RWP

SW:SURFACE WATER

SURFACE WATER ROUTE

FW:FOUL WATER

FOUL WATER ROUTE

BUILDING OUTLINE

OVERHEAD BUILDING LINE

BOUNDARY LINE

ROAD

PROPOSED

BANK

BANK SYMBOL

UTS: Unable to Survey

UTL: Unable to Lift

TREE

W/C

NOT TO SCALE

Drawing Notes

Rev.	Date	Description	By

EXPRESS SOLUTIONS GROUP

CHAS Accredited · N.A.D.C. · RoSPA Member · ISO 9001 · ISO 14001

Head Office:
152-154 Commercial Road
Staines-Upon-Thames
Surrey
TW18 2QW
Tel 020 8979 5444
VAT 851970604
Company No 04935559

Client	CIRC Construction Management Ltd
Site Address	Sundial, Orchard Lane East Mosely Greater London KT8 0BN
Drawing title	Plan
Scales	NOT TO SCALE
Surveyor	LM
Drawn By	LD
Date	20.05.2022

JOB No. 12381

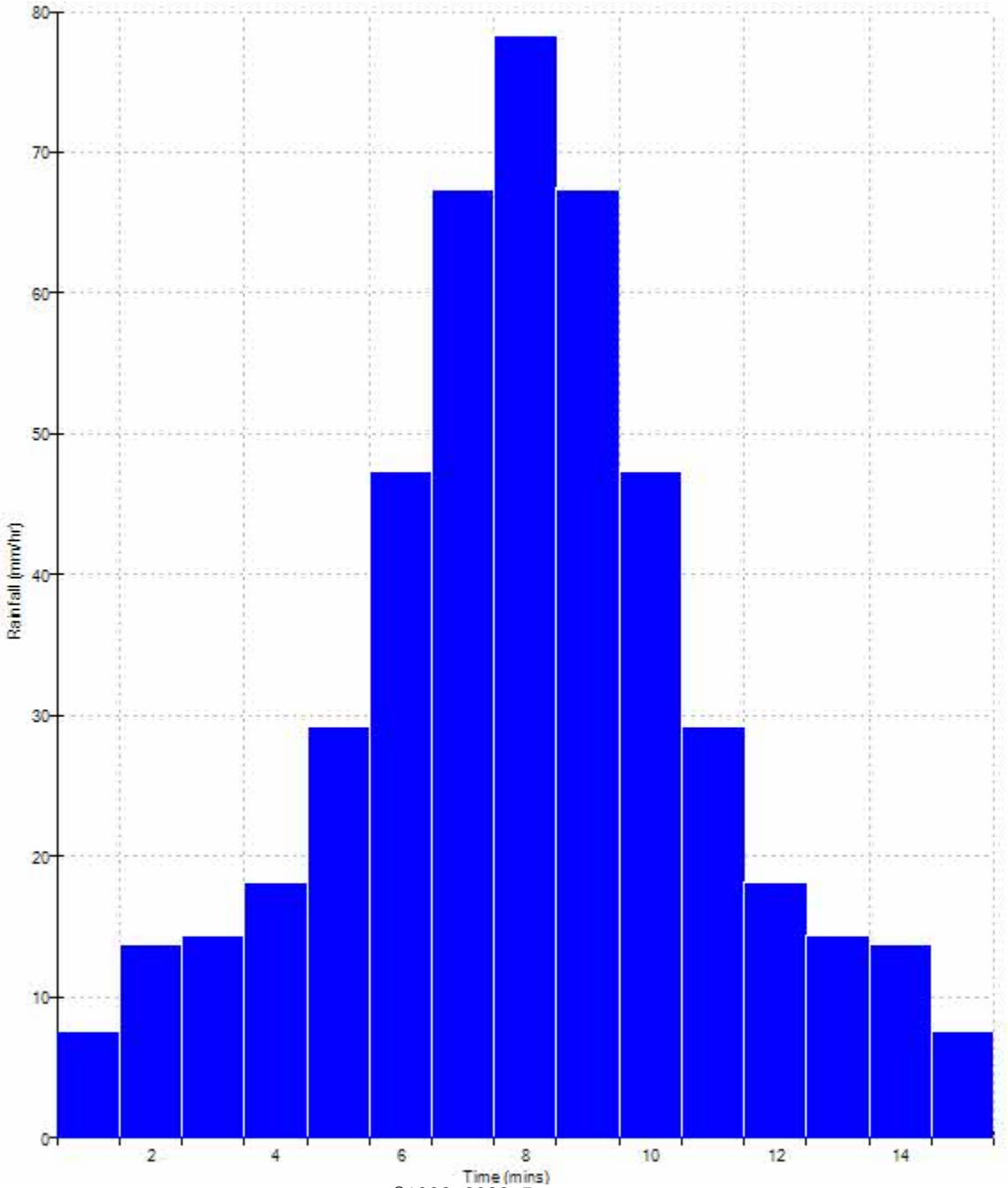
APPENDIX E

Micro Drainage Intensity Values

Rainfall profile

Storm duration (mins) 15

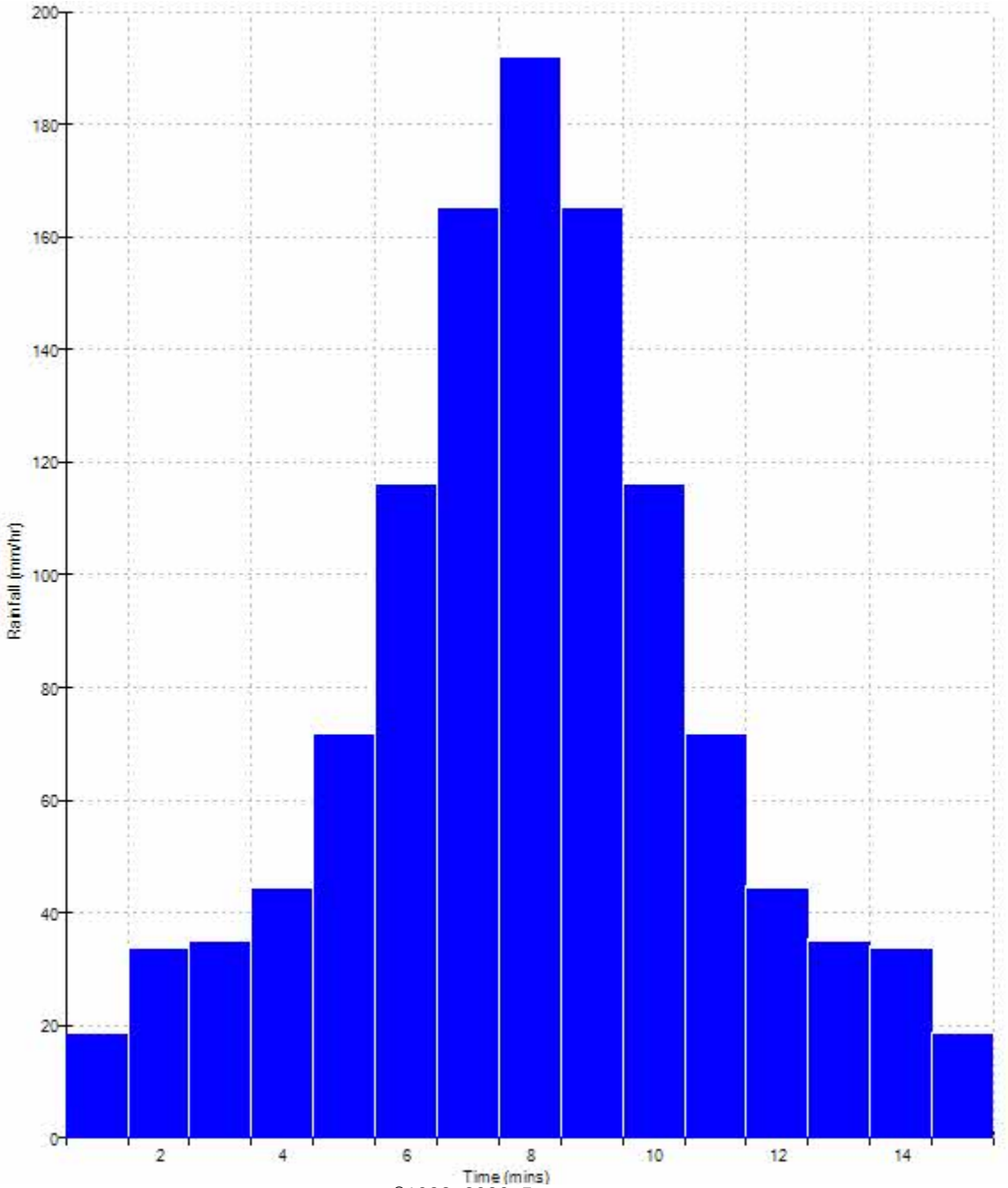
FSR Data	
Region	England and Wales
M5-60(mm)	20.000
Ratio R	0.421
Peak Intensity (mm/hr)	78.173
Ave. Intensity (mm/hr)	31.522
Return Period (years)	1.0



Rainfall profile

Storm duration (mins) 15

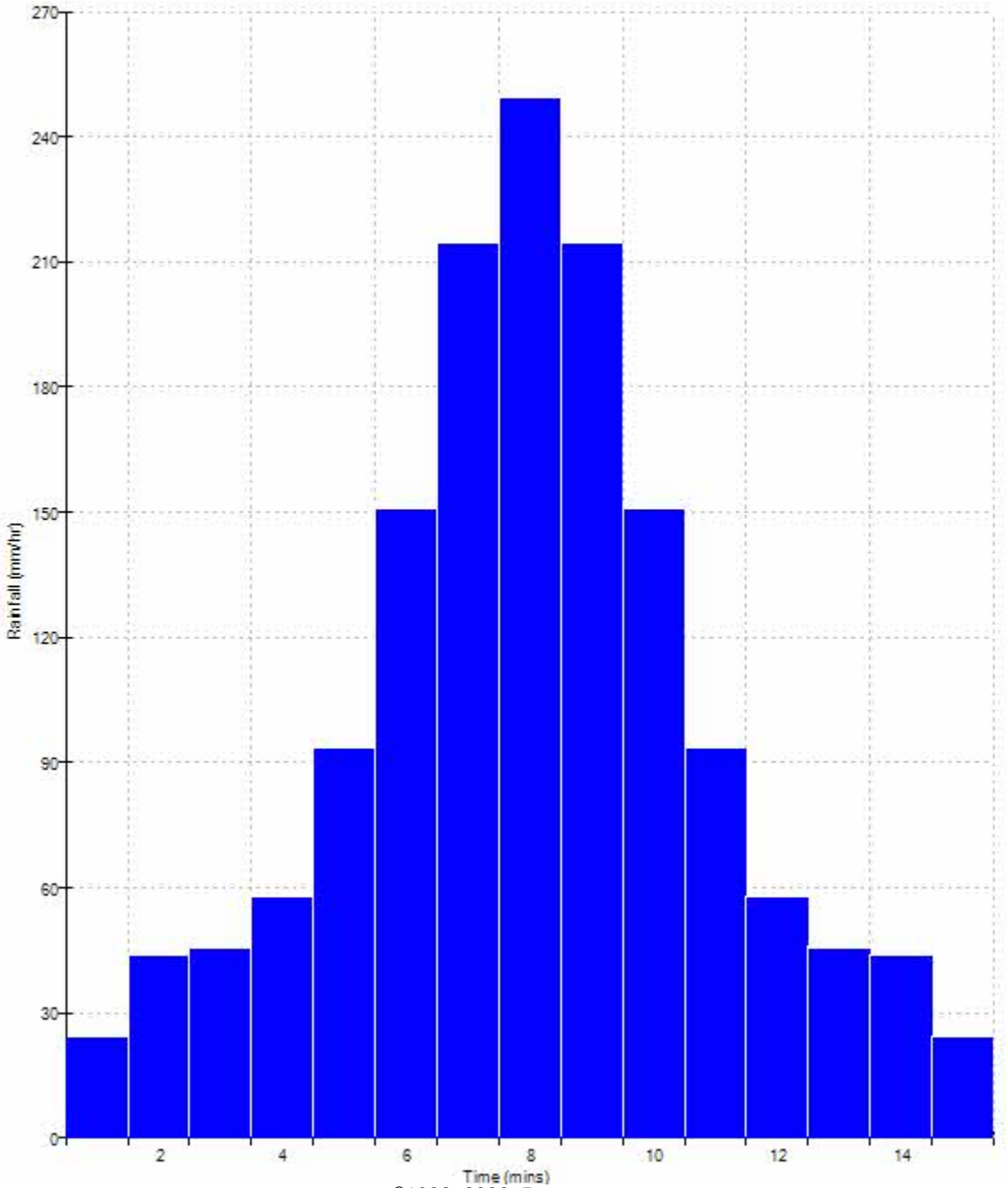
FSR Data	
Region	England and Wales
M5-60(mm)	20.000
Ratio R	0.421
Peak Intensity (mm/hr)	191.849
Ave. Intensity (mm/hr)	77.359
Return Period (years)	30.0



Rainfall profile

Storm duration (mins) 15

FSR Data	
Region	England and Wales
M5-60(mm)	20.000
Ratio R	0.421
Peak Intensity (mm/hr)	249.140
Ave. Intensity (mm/hr)	100.461
Return Period (years)	100.0



APPENDIX F

Topographical Survey

SITE PLAN
1:1000 Scale

Note:
Areas drawn indicatively noted and indicated by grey dashed line as line below

LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDIATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT (SPECTRA SP60). PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-514613.097,	N-167367.800,	HT - 9.309m
STN 02-	E-514613.333,	N-167364.116,	HT - 9.320m
STN 03-	E-514613.590,	N-167360.415,	HT - 9.310m
STN 04-	E-514605.106,	N-167365.862,	HT - 9.198m
STN 05-	E-514632.200,	N-167296.194,	HT - 9.753m
STN 06-	E-514633.288,	N-167286.289,	HT - 9.734m
STN 07-	E-514640.539,	N-167295.300,	HT - 9.811m
STN 08-	E-514637.636,	N-167300.119,	HT - 9.692m
STN 09-	E-514455.230,	N-167405.090,	HT - 9.439m
STN 10-	E-514456.122,	N-167408.178,	HT - 9.431m
STN 11-	E-514449.236,	N-167410.310,	HT - 9.414m
STN 12-	E-514448.346,	N-167406.898,	HT - 9.421

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS

CL	-	COVER LEVEL
IL	-	INVERT LEVEL
L	-	LEVEL
HT	-	HEIGHT
STN	-	SURVEY STATION
BM	-	BEAM
CE	-	CEILING
J	-	JOISTS
RA	-	RAFTERS
E	-	EAVES
F	-	FENCE
U/S	-	UNDERSIDE OF
RL	-	RIDGE LINE
FR	-	FLAT ROOF
HL	-	HIP LINE
VL	-	VALLEY LINE
PW	-	PARAPET WALL
SL	-	SLAB
SF	-	SOFFIT
T	-	TREE
THR	-	THRESHOLD
To	-	TOP OF
W	-	WALL
HH	-	HEAD HEIGHT
OH	-	OPENING HEIGHT
SH	-	SILL HEIGHT

GENERAL NOTES

AB	-	ADVERTISING BOARD
AC	-	AIR CONDITIONING UNIT
AHU	-	AIR HANDLING UNIT
AP	-	INTRUDER ALARM PANEL
B	-	BOLLARD
BA	-	BARRIER
BE	-	BENCH
BS	-	BUS STOP
BLR	-	BOILER
BXO	-	BOXING OUT
CAH	-	CEILING ACCESS HATCH
CHY	-	CHIMNEY
CPD	-	CUPBOARD
DB	-	DOG WASTE BIN
DW	-	DWARF WALL
DK	-	DROP KERB
EDB	-	ELECTRICAL DISTRIBUTION BOARD
EG	-	EXTRACT GRILLE
EM	-	ELECTRIC METER
FB	-	FUSE BOX
FP	-	FIREPLACE
FU	-	FLUE
FAP	-	FIRE ALARM PANEL
GR	-	GRASS
GU	-	GUARDING
GM	-	GAS METER
HWC	-	HOT WATER CYLINDER
LB	-	LITTER BIN
LP	-	LAMP POST
PC	-	PELICAN CROSSING
PS	-	PAVING SLABS
PL	-	PAVEMENT LIGHT
PLT	-	PLANTING
PB	-	POST BOX
RG	-	RAILING
RS	-	ROAD SIGN
RFL	-	ROOF LIGHT
SB	-	SPEED BUMP
SG	-	SIGNAGE
SN	-	STREET NAME SIGN
SWR	-	SHOWER
SHV	-	SHELVING
TB	-	TELEPHONE BOX
TL	-	TRAFFIC LIGHT
TM	-	TICKET MACHINE
TP	-	TELEGRAPH POLE
VE	-	VEGETATION
WA	-	WATER
WD	-	WARDROBE
WH	-	WATER HEATER
ZC	-	ZEBRA CROSSING

SERVICES

BT	-	BRITISH TELECOMS
CATV	-	CABLE TELEVISION
ER	-	EARTHING ROD
ES	-	ELECTRICAL SUPPLY
FH	-	FIRE HYDRANT
GAS	-	GAS SUPPLY
PO	-	POST OFFICE TELEPHONE
SV	-	STOP VALVE
TSSU	-	TRAFFIC LIGHT SIGNALS

DRAINAGE

DC	-	DRAINAGE CHANNEL
G	-	GULLY
I/C	-	INSPECTION CHAMBER
MH	-	MANHOLE
RE	-	RODDING EYE
RWP	-	RAIN WATER PIPE
UTL	-	UNABLE TO LIFT
S+VP	-	SOIL & VENT PIPE
ST	-	STOP TAP
WM	-	WATER METER

TYPICAL DRAWING SYMBOLS

SPOT LEVEL × 96.256

SPOT HEIGHT ToW 99.034

SURVEY STATION STN.01 E. 232193.251 N. 515743.694 HT. 95.142

MANHOLE / INSPECTION CHAMBER I/C CL=96.256 IL=94.614

SURVEY HEIGHT HH.256

WINDOW TAG WINDOW 015 HH=1.360 OH=0.767 SH=1.215

DOOR TAG DOOR 020 OH=1.020

RADIATOR TAG RADIATOR 005 TH=0.238 LH=0.600 BH=0.200

TOP & BOTTOM OF KERB × 34.500 34.350

TOPOGRAPHICAL SYMBOLS

OVERHEAD ELECTRICAL

OVERHEAD TELEPHONE

FENCE LINE

VEGETATION OUTLINE

SINGLE GATE

DOUBLE GATE

TREE

CONTOURS 92.000m

SLOPING DIRECTION LINE

REV	DATE	AMENDMENTS

MOBILE CAD
Surveying Solutions
www.mobcad.co.uk surveys@mobcad.co.uk
Pontefract Head Office:
Unit 10 & 11
2 Harropwell Lane
Pontefract
West Yorkshire
WF8 3QY
☎01977 525 076
London Office:
Kemp House
152 - 160 City Road
London
EC2V 2NX
☎020 3198 1197

PROJECT:	TOPOGRAPHICAL SURVEY
ADDRESS:	SUNDIAL HOUSE, ORCHARD LANE, MOLESEY, EAST MOLESEY, KT8 0BN.
DWG NO.:	3340 - 01
DWG TITLE:	SITE PLAN
DWG DATE:	JANUARY 2022
DWG SIZE:	SCALE AS SHOWN @ A1

DRAWN:	CHECKED:	ISSUE
MW	JW	

Note:
Areas drawn indicatively noted and indicated by grey dashed line as line below

SOUTH SITE - SITE PLAN

1:500 Scale

LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDIATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT (SPECTRA SP60). PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-514613.097,	N-167367.800,	HT - 9.309m
STN 02-	E-514613.333,	N-167364.116,	HT - 9.320m
STN 03-	E-514613.590,	N-167360.415,	HT - 9.310m
STN 04-	E-514605.106,	N-167365.862,	HT - 9.198m
STN 05-	E-514632.200,	N-167296.194,	HT - 9.753m
STN 06-	E-514633.288,	N-167286.289,	HT - 9.734m
STN 07-	E-514640.539,	N-167295.300,	HT - 9.811m
STN 08-	E-514637.636,	N-167300.119,	HT - 9.692m
STN 09-	E-514455.230,	N-167405.090,	HT - 9.439m
STN 10-	E-514456.122,	N-167408.178,	HT - 9.431m
STN 11-	E-514449.236,	N-167410.310,	HT - 9.414m
STN 12-	E-514448.346,	N-167406.898,	HT - 9.421

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS
CL - COVER LEVEL
IL - INVERT LEVEL
L - LEVEL
HT - HEIGHT
STN - SURVEY STATION
BM - BEAM
CE - CEILING
J - JOISTS
RA - RAFTERS
E - EAVES
F - FENCE
U/S - UNDERSIDE OF
RL - RIDGE LINE
FR - FLAT ROOF
HL - HIP LINE
VL - VALLEY LINE
PW - PARAPET WALL
SL - SLAB
SF - SOFFIT
T - TREE
THR - THRESHOLD
To - TOP OF
W - WALL
HH - HEAD HEIGHT
OH - OPENING HEIGHT
SH - SILL HEIGHT

GENERAL NOTES
AB - ADVERTISING BOARD
AC - AIR CONDITIONING UNIT
AHU - AIR HANDLING UNIT
AP - INTRUDER ALARM PANEL
B - BOLLARD
BA - BARRIER
BE - BENCH
BS - BUS STOP
BLR - BOILER
BXO - BOXING OUT
CAH - CEILING ACCESS HATCH
CHY - CHIMNEY
CPD - CUPBOARD
DB - DOG WASTE BIN
DW - DWARF WALL
DK - DROP KERB
EDB - ELECTRICAL DISTRIBUTION BOARD
EG - EXTRACT GRILLE
EM - ELECTRIC METER
FB - FUSE BOX
FP - FIREPLACE
FU - FLUE
FAP - FIRE ALARM PANEL
GR - GRASS
GU - GUARDING
GM - GAS METER
HWC - HOT WATER CYLINDER
LB - LITTER BIN
LP - LAMP POST
PC - PELICAN CROSSING
PS - PAVING SLABS
PL - PAVEMENT LIGHT
PLT - PLANTING
PB - POST BOX
RG - RAILING
RS - ROAD SIGN
RFL - ROOF LIGHT
SB - SPEED BUMP
SG - SIGNAGE
SN - STREET NAME SIGN
SWR - SHOWER
SHV - SHELVING
TB - TELEPHONE BOX
TL - TRAFFIC LIGHT
TM - TICKET MACHINE
TP - TELEGRAPH POLE
VE - VEGETATION
WA - WATER
WD - WARDROBE
WH - WATER HEATER
ZC - ZEBRA CROSSING

SERVICES
BT - BRITISH TELECOMS
CATV - CABLE TELEVISION
ER - EARTHING ROD
ES - ELECTRICAL SUPPLY
FH - FIRE HYDRANT
GAS - GAS SUPPLY
PO - POST OFFICE TELEPHONE
SV - STOP VALVE
TSSU - TRAFFIC LIGHT SIGNALS

DRAINAGE
DC - DRAINAGE CHANNEL
G - GULLY
I/C - INSPECTION CHAMBER
M/H - MANHOLE
RE - RODDING EYE
RWP - RAIN WATER PIPE
UTL - UNABLE TO LIFT
S+VP - SOIL & VENT PIPE
ST - STOP TAP
WM - WATER METER

TYPICAL DRAWING SYMBOLS
SPOT LEVEL — 96.256
SPOT HEIGHT — ToW 99.034
SURVEY STATION — STN 01 E: 232193.251 N: 515743.694 HT: 95.142
MANHOLE / INSPECTION CHAMBER — I/C CL=96.256 IL=94.824
SURVEY HEIGHT — H=2.704
WINDOW TAG — WINDOW 015 HH=1.962 OH=0.747 SH=1.215
DOOR TAG — DOOR 009 OH=1.820
RADIATOR TAG — RADIATOR 005 TH=0.238 RH=0.538 BH=0.200
TOP & BOTTOM OF KERB — 34.500 34.350

TOPOGRAPHICAL SYMBOLS
OVERHEAD ELECTRICAL — ELEC
OVERHEAD TELEPHONE — TELE
FENCE LINE
VEGETATION OUTLINE
SINGLE GATE
DOUBLE GATE
TREE
CONTOURS — 92.000m
SLOPING DIRECTION LINE

REV	DATE	AMENDMENTS
A	06.04.2022	ADDITIONAL AREA ADDED FOLLOWING SITE VISIT

MOBILE CAD Surveying Solutions
www.mobcad.co.uk
surveys@mobcad.co.uk
Pontefract Head Office: Unit 10 & 11, 2 Harropwell Lane, Pontefract, West Yorkshire, WF8 1QY
London Office: Kemp House, 152 - 160 City Road, London, EC2V 2NX
01977 525 076
020 3198 1197

PROJECT: TOPOGRAPHICAL SURVEY
ADDRESS: SUNDIAL HOUSE, ORCHARD LANE, MOLESEY, EAST MOLESEY, KT8 0BN.
DWG NO.: 3340 - 02
DWG TITLE: SOUTH SITE - SITE PLAN
DWG DATE: JANUARY 2022
DWG SIZE: SCALE AS SHOWN @ A1
DRAWN: MW CHECKED: JW ISSUE A

NORTH SITE - SITE PLAN

1:500 Scale

Note:
Areas drawn indicatively noted and indicated by grey dashed line as line below

LEVEL DATUM & ORIENTATION

N

LEVELS & DRAWING ORIENTATION CO-ORDIATED TO WORLD CO-ORDINATES USING GPS EQUIPMENT (SPECTRA SP60). PERMANENT STATIONS LOCATED IN POSITIONS INDICATED ON PLAN AS FOLLOWS:-

STN 01-	E-514613.097,	N-167367.800,	HT - 9.309m
STN 02-	E-514613.333,	N-167364.116,	HT - 9.320m
STN 03-	E-514613.590,	N-167360.415,	HT - 9.310m
STN 04-	E-514605.106,	N-167365.862,	HT - 9.198m
STN 05-	E-514632.200,	N-167296.194,	HT - 9.753m
STN 06-	E-514633.288,	N-167286.289,	HT - 9.734m
STN 07-	E-514640.539,	N-167295.300,	HT - 9.811m
STN 08-	E-514637.636,	N-167300.119,	HT - 9.692m
STN 09-	E-514455.230,	N-167405.090,	HT - 9.439m
STN 10-	E-514456.122,	N-167408.178,	HT - 9.431m
STN 11-	E-514449.236,	N-167410.310,	HT - 9.414m
STN 12-	E-514448.346,	N-167406.898,	HT - 9.421

ABBREVIATIONS & LEGEND:

LEVELS & HEIGHTS

CL	-	COVER LEVEL
IL	-	INVERT LEVEL
L	-	LEVEL
HT	-	HEIGHT
STN	-	SURVEY STATION
BM	-	BEAM
CE	-	CEILING
J	-	JOISTS
RA	-	RAFTERS
E	-	EAVES
F	-	FENCE
U/S	-	UNDERSIDE OF
RL	-	RIDGE LINE
FR	-	FLAT ROOF
HL	-	HIP LINE
VL	-	VALLEY LINE
PW	-	PARAPET WALL
SL	-	SLAB
SF	-	SOFFIT
T	-	TREE
THR	-	THRESHOLD
To	-	TOP OF
W	-	WALL
HH	-	HEAD HEIGHT
OH	-	OPENING HEIGHT
SH	-	SILL HEIGHT

GENERAL NOTES

AB	-	ADVERTISING BOARD
AC	-	AIR CONDITIONING UNIT
AHU	-	AIR HANDLING UNIT
AP	-	INTRUDER ALARM PANEL
B	-	BOLLARD
BA	-	BARRIER
BE	-	BENCH
BS	-	BUS STOP
BLR	-	BOILER
BXO	-	BOXING OUT
CAH	-	CEILING ACCESS HATCH
CHY	-	CHIMNEY
CPD	-	CUPBOARD
DB	-	DOG WASTE BIN
DW	-	DWARF WALL
DK	-	DROP KERB
EDB	-	ELECTRICAL DISTRIBUTION BOARD
EG	-	EXTRACT GRILLE
EM	-	ELECTRIC METER
FB	-	FUSE BOX
FP	-	FIREPLACE
FU	-	FLUE
FAP	-	FIRE ALARM PANEL
GR	-	GRASS
GU	-	GUARDING
GM	-	GAS METER
HWC	-	HOT WATER CYLINDER
LB	-	LITTER BIN
LP	-	LAMP POST
PC	-	PELICAN CROSSING
PS	-	PAVING SLABS
PL	-	PAVEMENT LIGHT
PLT	-	PLANTING
PB	-	POST BOX
RG	-	RAILING
RS	-	ROAD SIGN
RFL	-	ROOF LIGHT
SB	-	SPEED BUMP
SG	-	SIGNAGE
SN	-	STREET NAME SIGN
SWR	-	SHOWER
SHV	-	SHELVING
TB	-	TELEPHONE BOX
TL	-	TRAFFIC LIGHT
TM	-	TICKET MACHINE
TP	-	TELEGRAPH POLE
VE	-	VEGETATION
WA	-	WATER
WD	-	WARDROBE
WH	-	WATER HEATER
ZC	-	ZEBRA CROSSING

SERVICES

BT	-	BRITISH TELECOMS
CATV	-	CABLE TELEVISION
ER	-	EARTHING ROD
ES	-	ELECTRICAL SUPPLY
FH	-	FIRE HYDRANT
GAS	-	GAS SUPPLY
PO	-	POST OFFICE TELEPHONE
SV	-	STOP VALVE
TSSU	-	TRAFFIC LIGHT SIGNALS

DRAINAGE

DC	-	DRAINAGE CHANNEL
G	-	GULLY
I/C	-	INSPECTION CHAMBER
MH	-	MANHOLE
RE	-	RODDING EYE
RWP	-	RAIN WATER PIPE
UTL	-	UNABLE TO LIFT
S+VP	-	SOIL & VENT PIPE
ST	-	STOP TAP
WM	-	WATER METER

TYPICAL DRAWING SYMBOLS

SPOT LEVEL × 96.256

SPOT HEIGHT ToW 99.034

SURVEY STATION STN 01 E 232193.251 N 515743.694 HT: 95.142

MANHOLE / INSPECTION CHAMBER I/C CL=96.256 IL=94.824

SURVEY HEIGHT H=0.704

WINDOW TAG WINDOW 015 WH=0.962 WB=1.200 SH=0.215

DOOR TAG DOOR 009 DH=1.820

RADIATOR TAG RADIATOR 005 RH=0.600 RW=0.536 BH=0.095

TOP & BOTTOM OF KERB × 34.500 34.350

TOPOGRAPHICAL SYMBOLS

OVERHEAD ELECTRICAL

OVERHEAD TELEPHONE TEL TEL TEL

FENCE LINE

VEGETATION OUTLINE

SINGLE GATE

DOUBLE GATE

TREE

CONTOURS 92.000m

SLOPING DIRECTION LINE

REV	DATE	AMENDMENTS
A	06.04.2022	SURVEY AREA ADDED FOLLOWING SITE VISIT

MOBILE CAD Surveying Solutions
www.mobcad.co.uk
surveys@mobcad.co.uk
Pontefract Head Office:
Unit 10 & 11
2 Harropwell Lane
Pontefract
West Yorkshire
WF8 1QY
☎ 01977 525 076
London Office
Kemp House
152 - 160 City Road
London
EC2V 2NX
☎ 020 3198 1197

PROJECT:	TOPOGRAPHICAL SURVEY
ADDRESS:	SUNDIAL HOUSE, ORCHARD LANE, MOLESEY, EAST MOLESEY, KT8 0BN.
DWG NO.:	3340 - 03
DWG TITLE:	NORTH SITE - SITE PLAN
DWG DATE:	JANUARY 2022
DWG SIZE:	SCALE AS SHOWN @ A1
DRAWN:	MW
CHECKED:	JW
ISSUE:	A

APPENDIX G

Micro Drainage Surface Water Calculations

Existing Network Details for Storm

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type
S1.000	7.966	0.080	99.6	0.015	5.00	0.0	0.600	o	225	Pipe/Conduit
S1.001	31.527	0.210	150.1	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
S2.000	11.164	0.165	67.7	0.049	5.00	0.0	0.600	o	225	Pipe/Conduit
S3.000	8.743	0.110	79.5	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
S3.001	14.430	0.190	75.9	0.012	0.00	0.0	0.600	o	150	Pipe/Conduit
S3.002	8.811	0.090	97.9	0.014	0.00	0.0	0.600	o	150	Pipe/Conduit
S1.002	11.264	0.100	112.6	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
S4.000	23.136	0.390	59.3	0.016	5.00	0.0	0.600	o	150	Pipe/Conduit
S1.003	5.374	0.065	82.7	0.016	0.00	0.0	0.600	o	225	Pipe/Conduit
S5.000	6.390	0.875	7.3	0.079	5.00	0.0	0.600	o	150	Pipe/Conduit
S1.004	55.718	0.350	159.2	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit
S1.005	25.357	0.095	266.9	0.028	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.006	13.943	0.095	146.8	0.012	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.007	12.251	0.085	144.1	0.101	0.00	0.0	0.600	o	300	Pipe/Conduit
S1.008	6.105	0.020	305.3	0.000	0.00	0.0	0.600	o	225	Pipe/Conduit

Network Results Table

PN	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Vel (m/s)	Cap (l/s)
S1.000	9.000	0.015	0.0	1.31	52.1
S1.001	8.845	0.015	0.0	1.06	42.3
S2.000	8.800	0.049	0.0	1.59	63.3
S3.000	9.100	0.016	0.0	1.13	19.9
S3.001	8.990	0.028	0.0	1.15	20.4
S3.002	8.800	0.042	0.0	1.02	17.9
S1.002	8.635	0.106	0.0	1.23	49.0
S4.000	9.000	0.016	0.0	1.31	23.1
S1.003	8.535	0.138	0.0	1.44	57.2
S5.000	9.420	0.079	0.0	3.75	66.3
S1.004	8.470	0.217	0.0	1.03	41.1
S1.005	8.045	0.245	0.0	0.96	67.7
S1.006	7.950	0.256	0.0	1.30	91.6
S1.007	7.855	0.358	0.0	1.31	92.4
S1.008	7.770	0.358	0.0	0.74	29.5

Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level(m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level(m)	Pipes In Diameter (mm)	Backdrop (mm)
S1	10.000	1.000	Open Manhole	1200	S1.000	9.000	225				
S2	10.000	1.155	Open Manhole	1200	S1.001	8.845	225	S1.000	8.920	225	75
S3	10.000	1.200	Open Manhole	1200	S2.000	8.800	225				
S4	10.000	0.900	Open Manhole	1200	S3.000	9.100	150				
S5	10.000	1.010	Open Manhole	1200	S3.001	8.990	150	S3.000	8.990	150	
S6	10.000	1.200	Open Manhole	1200	S3.002	8.800	150	S3.001	8.800	150	
S3	10.000	1.365	Open Manhole	1200	S1.002	8.635	225	S1.001	8.635	225	
								S2.000	8.635	225	
								S3.002	8.710	150	
S5	10.000	1.000	Open Manhole	1200	S4.000	9.000	150				
S5	10.000	1.465	Open Manhole	1200	S1.003	8.535	225	S1.002	8.535	225	
								S4.000	8.610	150	
S6	10.000	0.580	Open Manhole	150	S5.000	9.420	150				
S4	10.000	1.530	Open Manhole	1200	S1.004	8.470	225	S1.003	8.470	225	
								S5.000	8.545	150	
S9	10.000	1.955	Open Manhole	1200	S1.005	8.045	300	S1.004	8.120	225	
S8	10.000	2.050	Open Manhole	1200	S1.006	7.950	300	S1.005	7.950	300	
S8	10.000	2.145	Open Manhole	1200	S1.007	7.855	300	S1.006	7.855	300	
S10	10.000	2.230	Open Manhole	1200	S1.008	7.770	225	S1.007	7.770	300	
S	10.000	2.250	Open Manhole	150		OUTFALL		S1.008	7.750	225	

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S1	514632.582	167306.116	514632.582	167306.116	Required	
S2	514629.280	167313.365	514629.280	167313.365	Required	
S3	514623.803	167350.576	514623.803	167350.576	Required	
S4	514630.296	167320.993	514630.296	167320.993	Required	
S5	514627.275	167329.197	514627.275	167329.197	Required	
S6	514625.172	167343.474	514625.172	167343.474	Required	
S3	514616.459	167342.168	514616.459	167342.168	Required	
S5	514619.407	167322.361	514619.407	167322.361	Required	
S5	514605.292	167340.692	514605.292	167340.692	Required	

Manhole Schedules for Storm

MH Name	Manhole Easting (m)	Manhole Northing (m)	Intersection Easting (m)	Intersection Northing (m)	Manhole Access	Layout (North)
S6	514603.007	167333.881	514603.007	167333.881	Required	
S4	514600.043	167339.541	514600.043	167339.541	Required	
S9	514558.992	167377.215	514558.992	167377.215	Required	
S8	514582.718	167386.162	514582.718	167386.162	Required	
S8	514595.609	167380.850	514595.609	167380.850	Required	
S10	514607.669	167383.009	514607.669	167383.009	Required	
S	514613.683	167384.062			No Entry	

PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM.,L*W (mm)
S1.000	o	225	S1	10.000	9.000	0.775	Open Manhole	1200
S1.001	o	225	S2	10.000	8.845	0.930	Open Manhole	1200
S2.000	o	225	S3	10.000	8.800	0.975	Open Manhole	1200
S3.000	o	150	S4	10.000	9.100	0.750	Open Manhole	1200
S3.001	o	150	S5	10.000	8.990	0.860	Open Manhole	1200
S3.002	o	150	S6	10.000	8.800	1.050	Open Manhole	1200
S1.002	o	225	S3	10.000	8.635	1.140	Open Manhole	1200
S4.000	o	150	S5	10.000	9.000	0.850	Open Manhole	1200
S1.003	o	225	S5	10.000	8.535	1.240	Open Manhole	1200
S5.000	o	150	S6	10.000	9.420	0.430	Open Manhole	150
S1.004	o	225	S4	10.000	8.470	1.305	Open Manhole	1200
S1.005	o	300	S9	10.000	8.045	1.655	Open Manhole	1200
S1.006	o	300	S8	10.000	7.950	1.750	Open Manhole	1200
S1.007	o	300	S8	10.000	7.855	1.845	Open Manhole	1200
S1.008	o	225	S10	10.000	7.770	2.005	Open Manhole	1200

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM.,L*W (mm)
S1.000	7.966	99.6	S2	10.000	8.920	0.855	Open Manhole	1200
S1.001	31.527	150.1	S3	10.000	8.635	1.140	Open Manhole	1200
S2.000	11.164	67.7	S3	10.000	8.635	1.140	Open Manhole	1200
S3.000	8.743	79.5	S5	10.000	8.990	0.860	Open Manhole	1200
S3.001	14.430	75.9	S6	10.000	8.800	1.050	Open Manhole	1200
S3.002	8.811	97.9	S3	10.000	8.710	1.140	Open Manhole	1200
S1.002	11.264	112.6	S5	10.000	8.535	1.240	Open Manhole	1200
S4.000	23.136	59.3	S5	10.000	8.610	1.240	Open Manhole	1200
S1.003	5.374	82.7	S4	10.000	8.470	1.305	Open Manhole	1200
S5.000	6.390	7.3	S4	10.000	8.545	1.305	Open Manhole	1200
S1.004	55.718	159.2	S9	10.000	8.120	1.655	Open Manhole	1200
S1.005	25.357	266.9	S8	10.000	7.950	1.750	Open Manhole	1200
S1.006	13.943	146.8	S8	10.000	7.855	1.845	Open Manhole	1200
S1.007	12.251	144.1	S10	10.000	7.770	1.930	Open Manhole	1200
S1.008	6.105	305.3	S	10.000	7.750	2.025	Open Manhole	150

Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	User	-	100	0.015	0.015	0.015
1.001	-	-	100	0.000	0.000	0.000
2.000	User	-	100	0.049	0.049	0.049
3.000	User	-	100	0.016	0.016	0.016
3.001	User	-	100	0.012	0.012	0.012
3.002	User	-	100	0.014	0.014	0.014
1.002	-	-	100	0.000	0.000	0.000
4.000	User	-	100	0.016	0.016	0.016
1.003	User	-	100	0.016	0.016	0.016
5.000	User	-	100	0.079	0.079	0.079
1.004	-	-	100	0.000	0.000	0.000
1.005	User	-	100	0.028	0.028	0.028
1.006	User	-	100	0.012	0.012	0.012
1.007	User	-	100	0.082	0.082	0.082
	User	-	100	0.019	0.019	0.101
1.008	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				0.358	0.358	0.358

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C.Level (m)	I.Level (m)	Min I.Level (m)	D,L (mm)	W (mm)
S1.008	S	10.000	7.750	0.000	150	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0	Number of Offline Controls 0	Number of Time/Area Diagrams 0
Number of Online Controls 1	Number of Storage Structures 2	Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Storm Duration (mins)	15
Ratio R	0.421		

Online Controls for Storm

Pump Manhole: S10, DS/PN: S1.008, Volume (m³): 3.3

Invert Level (m) 7.770

Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)	Depth (m)	Flow (l/s)
0.200	5.0000	1.400	5.0000	2.600	5.0000	3.800	5.0000	5.000	5.0000
0.400	5.0000	1.600	5.0000	2.800	5.0000	4.000	5.0000	5.200	5.0000
0.600	5.0000	1.800	5.0000	3.000	5.0000	4.200	5.0000	5.400	5.0000
0.800	5.0000	2.000	5.0000	3.200	5.0000	4.400	5.0000	5.600	5.0000
1.000	5.0000	2.200	5.0000	3.400	5.0000	4.600	5.0000	5.800	5.0000
1.200	5.0000	2.400	5.0000	3.600	5.0000	4.800	5.0000	6.000	5.0000

Storage Structures for Storm

Porous Car Park Manhole: S6, DS/PN: S5.000

Infiltration Coefficient Base (m/hr)	0.00000	Width (m)	55.0
Membrane Percolation (mm/hr)	1000	Length (m)	14.0
Max Percolation (l/s)	213.9	Slope (1:X)	100.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	9.570	Membrane Depth (mm)	0

Cellular Storage Manhole: S10, DS/PN: S1.008

Invert Level (m)	7.770	Safety Factor	2.0
Infiltration Coefficient Base (m/hr)	0.00000	Porosity	0.95
Infiltration Coefficient Side (m/hr)	0.00000		

Depth (m)	Area (m²)	Inf.Area (m²)	Depth (m)	Area (m²)	Inf.Area (m²)	Depth (m)	Area (m²)	Inf.Area (m²)
0.000	90.0	90.0	1.200	90.0	135.6	1.201	0.0	135.6

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	20.000
Region	England and Wales	Ratio R	0.421
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	1	+0%	100/15 Summer				9.034	-0.191
S1.001	S2	15 Winter	1	+0%	30/15 Winter				8.879	-0.191
S2.000	S3	15 Winter	1	+0%	30/15 Summer				8.854	-0.171
S3.000	S4	15 Winter	1	+0%	100/15 Summer				9.136	-0.114
S3.001	S5	15 Winter	1	+0%	100/15 Summer				9.036	-0.104
S3.002	S6	15 Winter	1	+0%	30/15 Summer				8.861	-0.089
S1.002	S3	15 Winter	1	+0%	30/15 Summer				8.727	-0.133
S4.000	S5	15 Winter	1	+0%	100/15 Summer				9.032	-0.118
S1.003	S5	15 Winter	1	+0%	30/15 Summer				8.650	-0.110
S5.000	S6	15 Winter	1	+0%	100/15 Summer				9.462	-0.108
S1.004	S4	30 Winter	1	+0%	30/15 Summer				8.593	-0.102
S1.005	S9	15 Winter	1	+0%	30/15 Winter				8.175	-0.170
S1.006	S8	30 Winter	1	+0%	30/15 Winter				8.065	-0.185
S1.007	S8	120 Winter	1	+0%	30/15 Summer				8.046	-0.109
S1.008	S10	120 Winter	1	+0%	1/30 Winter				8.042	0.047

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.05			2.1	OK	
S1.001	S2	0.000	0.05			2.1	OK	
S2.000	S3	0.000	0.13			6.9	OK	
S3.000	S4	0.000	0.13			2.3	OK	
S3.001	S5	0.000	0.20			3.7	OK	
S3.002	S6	0.000	0.35			5.4	OK	
S1.002	S3	0.000	0.35			14.4	OK	
S4.000	S5	0.000	0.10			2.3	OK	
S1.003	S5	0.000	0.52			18.5	OK	
S5.000	S6	0.000	0.13		4	7.0	OK	
S1.004	S4	0.000	0.52			20.6	OK	
S1.005	S9	0.000	0.38			23.0	OK	
S1.006	S8	0.000	0.31			23.6	OK	
S1.007	S8	0.000	0.22			16.0	OK	

1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.008	S10	0.000	0.22		68	5.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.421	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	15 Winter	30	+0%	100/15 Summer				9.088	-0.137
S1.001	S2	15 Winter	30	+0%	30/15 Winter				9.084	0.014
S2.000	S3	15 Winter	30	+0%	30/15 Summer				9.093	0.068
S3.000	S4	15 Winter	30	+0%	100/15 Summer				9.159	-0.091
S3.001	S5	15 Winter	30	+0%	100/15 Summer				9.137	-0.003
S3.002	S6	15 Winter	30	+0%	30/15 Summer				9.109	0.159
S1.002	S3	15 Winter	30	+0%	30/15 Summer				9.075	0.215
S4.000	S5	15 Winter	30	+0%	100/15 Summer				9.057	-0.093
S1.003	S5	15 Winter	30	+0%	30/15 Summer				9.037	0.277
S5.000	S6	15 Winter	30	+0%	100/15 Summer				9.495	-0.075
S1.004	S4	15 Winter	30	+0%	30/15 Summer				8.991	0.296
S1.005	S9	120 Winter	30	+0%	30/15 Winter				8.611	0.266
S1.006	S8	120 Winter	30	+0%	30/15 Winter				8.606	0.356
S1.007	S8	120 Winter	30	+0%	30/15 Summer				8.602	0.447
S1.008	S10	120 Winter	30	+0%	1/30 Winter				8.598	0.603

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.13			5.2	OK	
S1.001	S2	0.000	0.13			5.3	SURCHARGED	
S2.000	S3	0.000	0.29			15.4	SURCHARGED	
S3.000	S4	0.000	0.32			5.6	OK	
S3.001	S5	0.000	0.53			10.0	OK	
S3.002	S6	0.000	0.85			13.4	SURCHARGED	
S1.002	S3	0.000	0.72			29.8	SURCHARGED	
S4.000	S5	0.000	0.25			5.6	OK	
S1.003	S5	0.000	1.01			36.2	SURCHARGED	
S5.000	S6	0.000	0.49		6	27.3	OK	
S1.004	S4	0.000	1.34			53.0	SURCHARGED	

30 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.005	S9	0.000	0.41			24.7	SURCHARGED	
S1.006	S8	0.000	0.32			24.2	SURCHARGED	
S1.007	S8	0.000	0.46			33.8	SURCHARGED	
S1.008	S10	0.000	0.22			5.0	SURCHARGED	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 1 Number of Storage Structures 2 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 20.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.421	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	300.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	OFF
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	1, 30, 100
Climate Change (%)	0, 0, 40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
S1.000	S1	120 Winter	100	+40%	100/15 Summer				9.825	0.600
S1.001	S2	120 Winter	100	+40%	30/15 Winter				9.824	0.754
S2.000	S3	15 Winter	100	+40%	30/15 Summer				9.832	0.807
S3.000	S4	15 Winter	100	+40%	100/15 Summer				9.933	0.683
S3.001	S5	15 Winter	100	+40%	100/15 Summer				9.913	0.773
S3.002	S6	15 Winter	100	+40%	30/15 Summer				9.866	0.916
S1.002	S3	120 Winter	100	+40%	30/15 Summer				9.821	0.961
S4.000	S5	120 Winter	100	+40%	100/15 Summer				9.815	0.665
S1.003	S5	180 Winter	100	+40%	30/15 Summer				9.811	1.051
S5.000	S6	180 Winter	100	+40%	100/15 Summer				9.803	0.233
S1.004	S4	180 Winter	100	+40%	30/15 Summer				9.808	1.113
S1.005	S9	60 Winter	100	+40%	30/15 Winter				9.924	1.579
S1.006	S8	60 Winter	100	+40%	30/15 Winter				9.955	1.705
S1.007	S8	60 Winter	100	+40%	30/15 Summer				9.967	1.812
S1.008	S10	60 Winter	100	+40%	1/30 Winter				9.964	1.969

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.000	S1	0.000	0.07			3.0	FLOOD RISK	
S1.001	S2	0.000	0.07			2.8	FLOOD RISK	
S2.000	S3	0.000	0.44			23.6	FLOOD RISK	
S3.000	S4	0.000	0.43			7.5	FLOOD RISK	
S3.001	S5	0.000	0.64			12.0	FLOOD RISK	
S3.002	S6	0.000	0.88			13.9	FLOOD RISK	
S1.002	S3	0.000	0.43			17.8	FLOOD RISK	
S4.000	S5	0.000	0.15			3.2	FLOOD RISK	
S1.003	S5	0.000	0.48			17.4	FLOOD RISK	
S5.000	S6	0.000	0.21		74	11.5	FLOOD RISK	
S1.004	S4	0.000	0.67			26.7	FLOOD RISK	

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

PN	US/MH Name	Flooded Volume (m^3)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
S1.005	S9	0.000	0.93			56.2	FLOOD RISK	
S1.006	S8	0.000	0.77			58.5	FLOOD RISK	
S1.007	S8	0.000	1.19			87.0	FLOOD RISK	
S1.008	S10	0.000	0.22			5.0	FLOOD RISK	

APPENDIX H

Thames Water Capacity Response Letter

Richard James

Mason Navarro Pledge
Bancroft Court
Baldock, Herts
SG5 1LH

Wastewater pre-planning
Our ref DS6091785

10 February 2022

Pre-planning enquiry: Confirmation of sufficient capacity

Site: Orchard Lane, Molesey, Surrey, KT8 0BN

Dear Richard,

Thank you for providing information on your development.

Demolished Flats (27), Nursing/Care Home (7 beds)
Proposed Flats (80)
Proposed FW discharge by gravity into private network upstream to existing TW pump station TQ14676305
Proposed SW discharge at 5 l/s up to 1 in 100yr +40% CC into SWMH TQ14676201 with impermeable area of 4000m2.
Existing SW runoff 1 in 1 at 43.1 l/s, 1 in 30 at 105.4 l/s, 1 in 100 at 137 l/s, 1 in 100yr +40% CC at 188 l/s

We have completed the assessment of the foul water flows and surface water run-off based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network.

Foul Water

If your proposals progress in line with the details you've provided, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent foul water sewer network to serve your development.

This confirmation is valid for 12 months or for the life of any planning approval that this information is used to support, to a maximum of three years.

You'll need to keep us informed of any changes to your design – for example, an increase in the number or density of homes. Such changes could mean there is no longer sufficient capacity.

Surface Water

In accordance with the Building Act 2000 Clause H3.3, positive connection of surface water to a public sewer will only be consented when it can be demonstrated that the hierarchy of disposal methods have been examined and proven to be impracticable. Before we can consider your surface water needs, you'll need written approval from the lead local flood authority that you have followed the sequential approach to the disposal of surface water and considered all practical means.

When developing a site, policy SI 13 of the London Plan states “Development proposals should aim to achieve greenfield run-off rates and ensure that surface water run-off is managed as close to its source as possible. There should also be a preference for green over grey features, in line with the following drainage hierarchy:”

The disposal hierarchy being:

1. rainwater use as a resource (for example rainwater harvesting, blue roofs for irrigation)
2. rainwater infiltration to ground at or close to source
3. rainwater attenuation in green infrastructure features for gradual release (for example green roofs, rain gardens)
4. rainwater discharge direct to a watercourse (unless not appropriate)
5. controlled rainwater discharge to a surface water sewer or drain
6. controlled rainwater discharge to a combined sewer

Where connection to the public sewerage network is still required to manage surface water flows, we will accept these flows at a discharge rate in line with CIRIA’s best practice guide on SuDS or that stated within the sites planning approval.

If the above surface water hierarchy has been followed and if the flows are restricted to a total of 5.0 l/s, then Thames Water would not have any objections to the proposal.

Please see the attached ‘Planning your wastewater’ leaflet for additional information.

What happens next?

Please make sure you submit your connection application, giving us at least 21 days’ notice of the date you wish to make your new connection/s.

If you have any further questions, please contact me on 0774 764 6498.

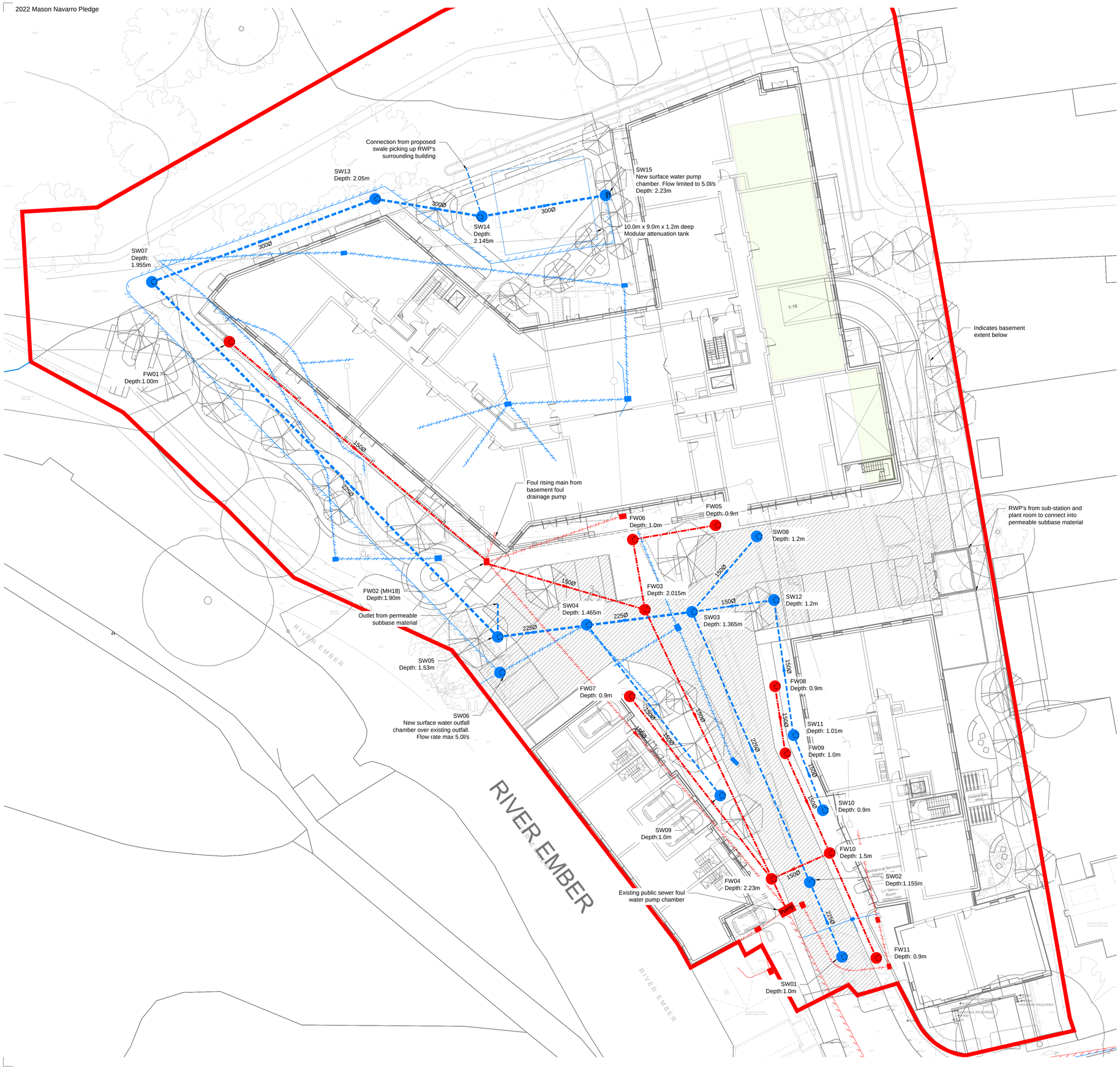
Kind Regards,

[redacted]
Long Tran
Developer Services – Adoptions Engineer, Sewer Adoptions Team
Te[redacted]
Get advice on making your sewer connection correctly at connectright.org.uk
Clearwater Court, Vastern Road, Reading, RG1 8DB
Find us online at developers.thameswater.co.uk

APPENDIX I

Drainage Strategy

2022 Mason Navarro Pledge



General Drainage Specification

1. All private drains shall be constructed and commissioned in accordance with the relevant sections of the Building Regulations Approved Documents and relevant British Standards.
2. All pipework to be 100Ø minimum unless noted otherwise.
3. Private surface water drains shall be laid at a minimum gradient of 1 in 100 or to the gradients and invert levels shown.
4. Private foul water drains shall be laid at a minimum gradient of 1 in 80 or to the gradients and invert levels shown
5. Foul pipework connections to first access point shall be laid at a minimum gradient of 1 in 40 or to the levels shown.
6. All connections to be made soffit to soffit unless noted otherwise.
7. Pipe bedding to be Class 'B' bedding for rigid pipes and Class 'T' bedding for flexible pipes (100 mm granular bed and surround).
8. Where cover to soffit of pipe is less than 600 mm in private areas, the following shall apply:-
   a) Vitrified clay pipes - provide a 100 mm min. thick concrete bed and surround (instead of class 'B' & 'T' bedding) and a 13 mm thick compressible filler at each joint.
   b) uPVC pipes - provide a concrete bridging (in addition to class 'B' or 'T' bedding) in accordance with appendix A15, Building Regulations part 'H'.
9. All concrete indicated in the construction of drainage infrastructure (pipe bedding, bridging, manholes etc) shall be standardised prescribed concrete ST2 and is to conform to BS EN 206-1 and BS 8500-2. The maximum aggregate size shall be 20mm.
10. Foundations adjacent to pipe runs or manholes are to have their formation level set above the invert level no higher than the equivalent of the horizontal distance between the pipe/excavation trench and the foundation, minus 500mm.
11. Excavations for manholes, pipe runs etc located within a 45 degree load distribution splay from any adjoining existing foundations, are to be adequately supported for the duration of the works and pipe runs protected as note 8 above.
12. Where excavations for pipe runs are parallel and in close proximity to each other and/or other service trenches, The Contractor shall ensure that adequate safety measures, including temporary shoring, are provided in line with current health & safety legislation and good practice. Particular attention is to be paid to adjacent trenches of differing invert levels.
13. All existing drainage found on site during the works shall be investigated, its operational status confirmed and the following applied:-
    a) Inoperative drainage shall be cut back and pipe runs filled with concrete grout.
    b) 'Live' drainage shall be advised to the engineer.

General

1.1 This drawing is to be read in conjunction with all Architect's, Engineer's and Services Engineer's drawings and specifications.
1.2 Do not scale from any of the Civils drawings. All dimensions to be verified on site and any discrepancies should be highlighted.
1.3 All materials to comply with the relevant British Standard.

Legend

Surface Water	Description
	Permeable Surfacing (300mm deep subbase material)
	Green Roof
	New surface water drain
	New surface water manhole
	New modular storage tank
	Swale
	Surface water pump chamber
	New surface water rising main
	Existing surface water sewer
	Existing surface water sewer to be abandoned
	Existing surface water manhole

Foul	Description
	New foul water drain
	New foul water manhole
	Existing foul water sewer
	Existing foul sewer to be abandoned
	Existing foul water manhole

REV	COMMENTS	DATE	CHK
P04	Site Boundary updated	12.10.22	RJ
P03	Layout updated	30.09.22	RJ
P02	Drainage design updated	17.08.22	RJ
P01	First Issue	13.06.22	RJ

STATUS

PRELIMINARY

mnp
mason navarro pledge
Consulting Civil and Structural Engineers
LONDON · MANCHESTER · HITCHIN
0203 9265613 0161 8701197 01462 632012
Email: office@mnp.co.uk
www.mnp.co.uk

CLIENT

PROJECT

ORCHARD LANE

DRAWING TITLE

GROUND FLOOR
DRAINAGE GA

SCALE @ A1	DRAWN BY	DATE
1:200	JSE	JUNE 2022

MNP No.	STATUS CODE	REV
221508	**S2**	**P04**

Ref No.

221508-MNP-XX-00-DR-C-1800