FOUL WATER DRAINAGE STRATEGY

FOR

RESIDENTIAL REDEVELOPMENT
HOWSON TERRACE, RICHMOND HILL, RICHMOND UPON THAMES
ON BEHALF OF
HOUSING 21

SEPTEMBER 2021

[ISSUE 3]

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TRANSPORT PLANNING ~ WATER MANAGEMENT ~ CIVIL ENGINEERING

BRISTOL & SWINDON

Incorporated in UK as Cole Easdon Consultants Ltd No. 0202 7005

COLE EASDON CONSULTANTS (CEC)

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Document Check	S. Seed BA (Hons)	S. Seed BA (Hons)	S. Seed BA (Hons	

CONTENTS

APPENDICES

1.0 INTRODUCTION

1.1 This *Foul Water Drainage Strategy* has been prepared by Cole Easdon Consultants Limited (CEC) on behalf of Housing 21 to support a planning application for the proposed residential redevelopment at Howson Terrace, Richmond Hill, Richmond upon Thames. The site is located off Richmond Hill. Refer to CEC Figure 7488/500/Figure1 [*Site Location Plan*] in Appendix 1.

Development Proposals

1.2 The development proposal comprises the demolition of the existing buildings and erection of a new 5 storey block accommodating 28 No. affordable apartments for over 55s. Access to the site will be from Richmond Hill as per current arrangement. Refer to the proposed site plans prepared by Hunters in Appendix 2.

Need for Study

1.3 This Study discusses how foul water runoff for the development can be managed in a sustainable manner in line with the *National Planning Policy Framework (NPPF)* and its associated *Planning Practice Guidance (PPG)*, and to the requirements of the Lead Local Flood Authority (London Borough of Richmond upon Thames) and Local Sewerage Authority (Thames Water).

2.0 FOUL DRAINAGE PROPOSALS

2.1 This Section details how foul water flows arising from the development site will be managed in line with related national and local guidance, and to the requirements of Thames Water and the Lead Local Flood Authority (LLFA).

Existing Drainage Arrangements

2.2 Thames Water sewer records (in Appendix 3) indicate a 225mm surface water sewer and a 225/300mm foul water sewer running beneath Richmond Hill. A 300mm surface water sewer is also located beneath Petersham Road to the west. A foul sewer is also located beneath Petersham Road.

2.3 The topographical survey included in CEC Plan 4788/501 [*Proposed Drainage Strategy*] in Appendix 1 shows that there is a separate system of foul and storm water drains serving the current site. Both foul and surface water drains enter the site from the Bromwich House premises from the north, and run southerly through the site picking foul and storm flows before continuing in a westerly direction, presumably connecting to public sewers in Petersham Road.

Foul Drainage Proposal

2.4 The redeveloped site will discharge foul flows into the existing 150mm foul drain running through the site at existing manholes. This 150mm foul drain appears to serve properties beyond the site, and will require to be retained. Redundant drainage across the development site will be removed. Refer to CEC Plan 7488/501 [*Proposed Drainage Strategy*] in Appendix 1.

2.5 The proposed development, with 28 No. retirement units, will likely generate foul flow as below based on BS EN752-4:

Domestic Peak Design Flow Rate = 6 x Domestic Flow Rate + 10%

Domestic Flow Rate	= 150 - 300 litres/occupant/day
Therefore, average Domestic Flow Rate adopted	= 225 l/p/d
Assumed Number of Occupants per unit (max)	= 2
Number of Flats on site	= 28
Therefore, Domestic Flow Rate	= 225 x 2 x 28
	= 12600l/day

	= 0.15l/s
Domestic Peak Design Flow Rate	= ***6 x 0.16 + 10%***
	= 0.96 l/s

2.6 The site, with 24 No. 1-bed sheltered units, currently generates peak foul flow of 0.75l/s (calculated based on same approach), slightly less than the developed site. However, given the discharge rates are minimal, it is anticipated that this will not cause any capacity concern within the existing foul sewerage system with no concern.

2.7 Thames Water in response to a pre-development capacity enquiry have confirmed that there will be sufficient sewerage capacity in the adjacent TW foul sewer network to serve foul discharges from the development via a gravity connection. Refer to TW correspondence in Appendix 3.

2.8 A CCTV drainage survey is recommended to confirm the condition of the existing drainage system to be retained.

3.0 DISCUSSION AND CONCLUSIONS

3.1 This Report discusses foul drainage proposal associated with the proposed residential redevelopment of Howson Terrace, Richmond Hill, Richmond upon Thames in line with the requirements of the local sewerage authority and Lead Local Flood Authority.

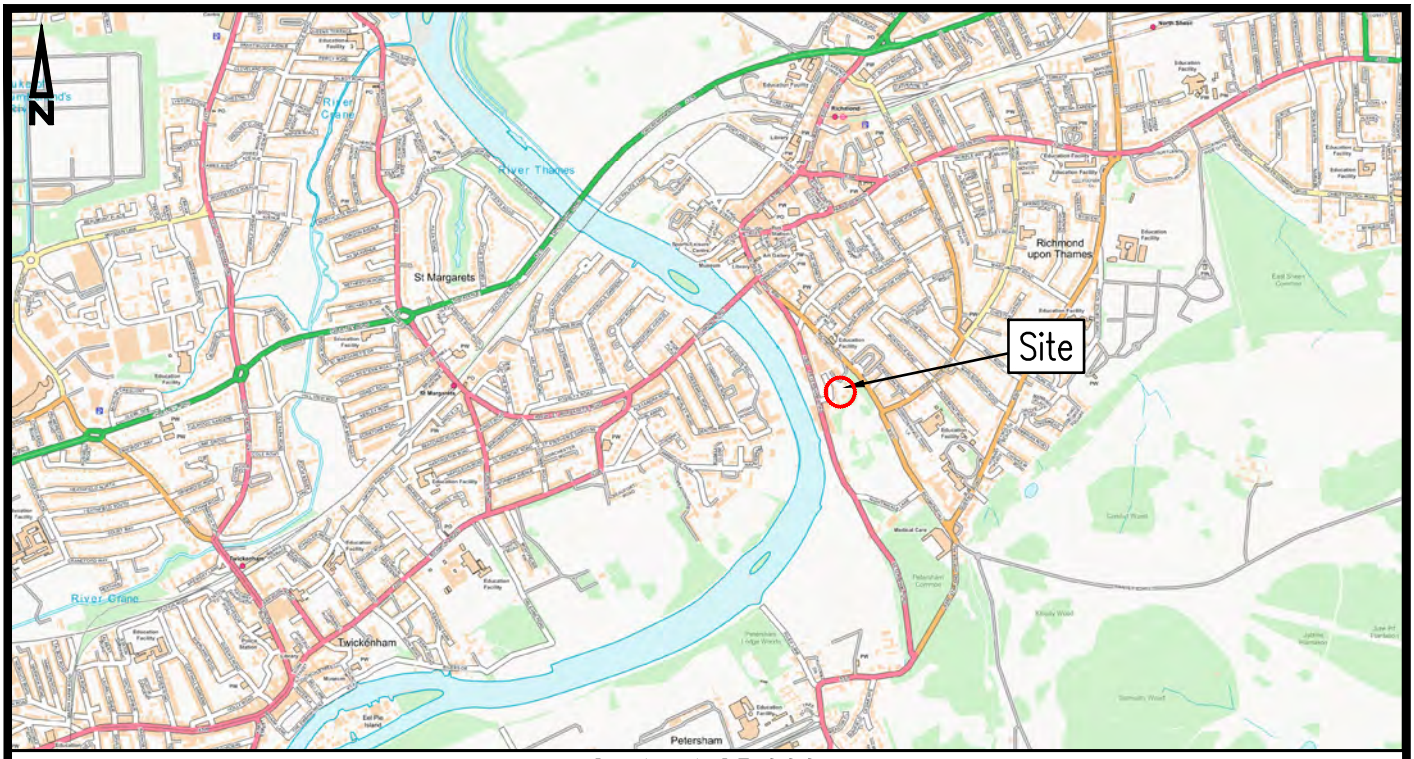
3.2 The proposal, with 28 retirement units, will discharge into the existing 150mm foul drain running through the site at existing manholes. The existing drainage system to be retained will need a CCTV drainage survey undertaken to confirm their condition for re-use.

3.3 Given the minimal discharge rate, it should be easily accommodated within the existing sewerage network without causing any capacity concern. This has been confirmed by Thames Water.

3.4 The above demonstrates that there is a suitable means to dispose foul discharge from the development. The site as a result of the redevelopment will not cause any capacity concern within the local sewerage network.

Cole Easdon Consultants Limited
September 2021

Appendix 1



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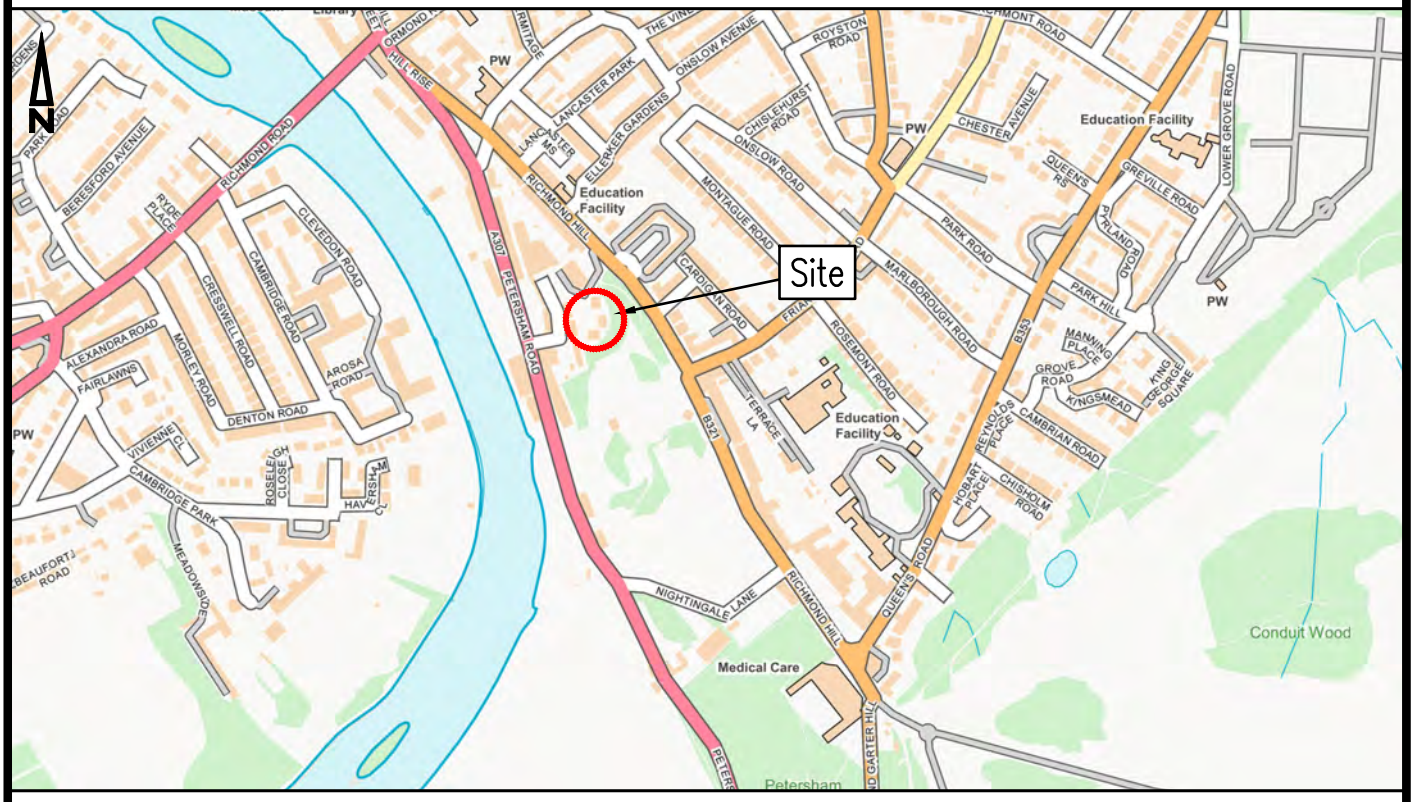

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No.	By	Date	Revision Details

COLE EASDON CONSULTANTS

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Job Title:
Howson Terrace
Richmond Hill
Richmond upon Thames

Client:
Housing 21

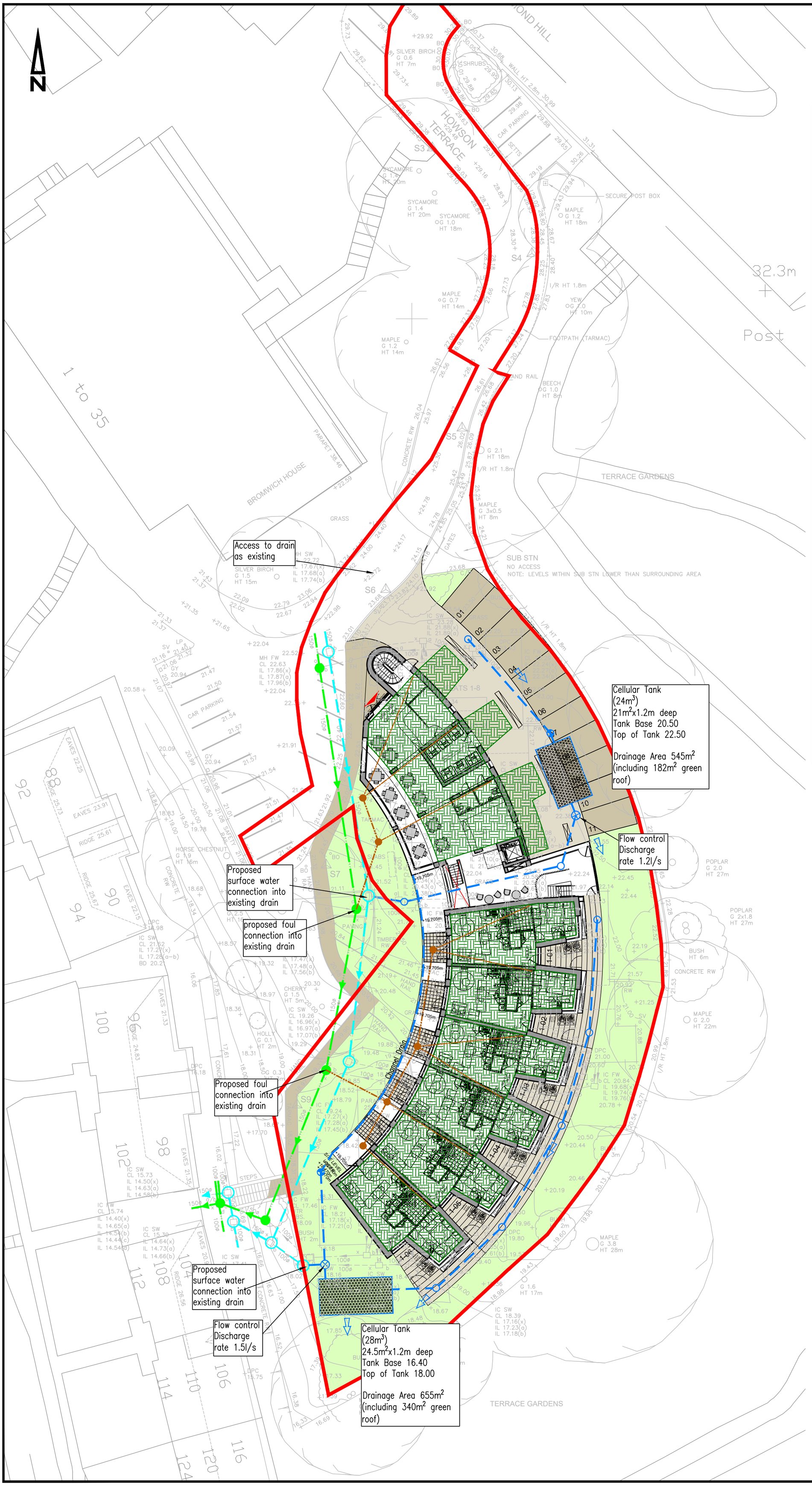
Drawing Status:

CONSTRUCTION AT CLIENT AND/OR CONTRACTOR RISK		
	FOR COMMENT	
	FOR PLANNING	X
	FOR TENDER	
	FOR APPROVAL	
	FOR CONSTRUCTION	
	AS BUILT	

Drawing Title:
Site Location Plan

Drawn By	Date Drawn	Scale
NP	Oct 2020	As Shown @ A4

Checked By	Drawing No.	Revision
RB	7488/500/Figure1	-



REFERENCE DRAWINGS:				
Drawing No.	Drawing Title	Revision	Date	Company
M8764 ASK 007	Proposed Ground Plan	–	May 19	Clark & Maslin
22926	Topographical Survey	1	Sept 2016	MK Surveys

KEY

- Application Boundary
- Existing Surface Water Drain to be retained
- Existing Foul Water Drain to be retained
- +20.79 Existing Levels
- Proposed Surface Water Drain and Manhole
- Proposed Foul Water Drain and Manhole
- Cellular Tank
- Green Roof
- Channel Drain
- Catch Pit
- Flow Control
- Flood Flow Route

Drainage Notes:

1. Surface water runoff to discharge into the existing surface water drain utilising existing connections.
2. Discharge to be limited to the equivalent 100yr greenfield rate of 2.7l/s from the site.
3. Storage to be provided for up to the 1:100 yaer within green roof and cellular tanks.
4. Foul water to discharge into the existing foul drains using existing connections.

Site area	2300m²
Existing hard area to be removed	670m²
Proposed hard area	1200m²

Existing brownfield rates

1:1yr	6l/s
1:30yr	16l/s
1:100yr	20l/s

Equivalent 100yr greenfield rate	2.7l/s
Storage required at greenfield rate	52m³

No.	By	Date	Revision Details

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Job Title: Howson Terrace, Richmond Hill, Richmond upon Thames

Drawing Title: Proposed Drainage Strategy

Drawing Status:

FOR COMMENT	FOR PLANNING	FOR TENDER	FOR APPROVAL	FOR CONSTRUCTION	AS BUILT
	X				

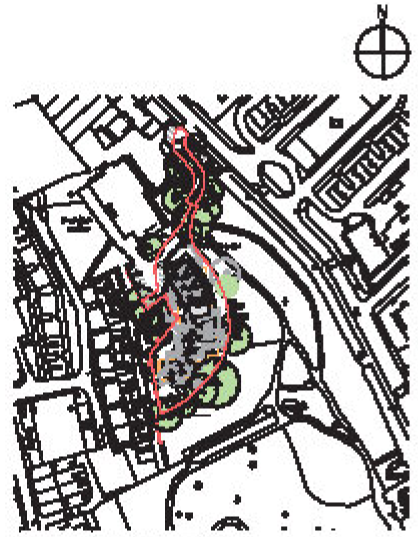
CONSTRUCTION AT CLIENT / CONTRACTOR RISK

Designed by:	Drawn by:	Checked by:
NP	NP	RB

Date	Scale
Oct 2020	1:250 (A2)

Drg. No.	Rev.
7488/501	-

Appendix 2



SITE LOCATION PLAN
scale 1:1250@A0

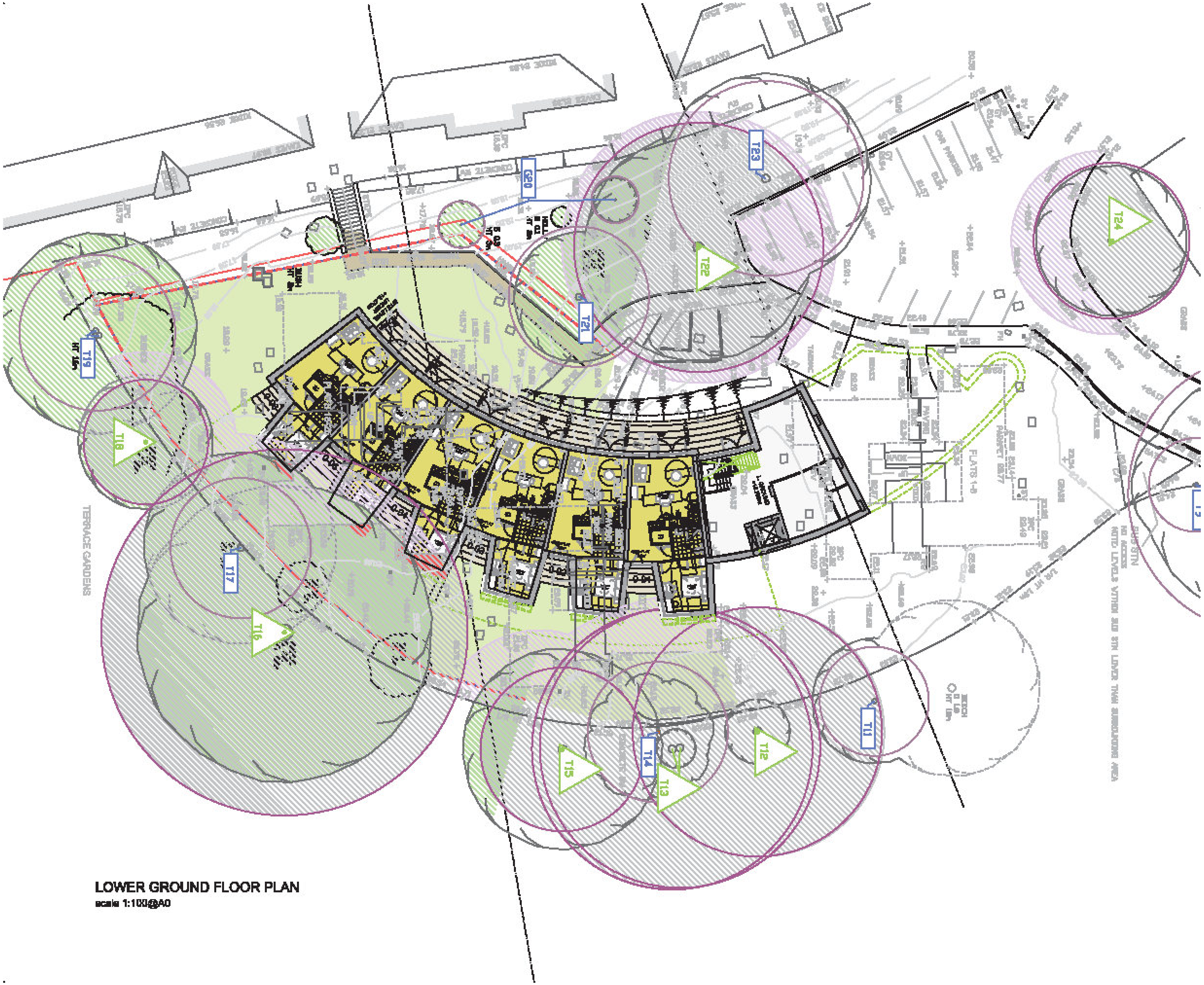
SCHEDULE OF ACCOMMODATION			
Floor	[illegible]	[illegible]	GIA
Lower Ground	06*	–	[illegible]
Ground Floor	08	–	[illegible]
First Floor	07	01	[illegible]
Second Floor	04	[illegible]	[illegible]
Third Floor	02	01	[illegible]
TOTAL No Apt	[illegible]	[illegible]	[illegible] Apts
Parking:	11 car spaces in undercroft		
Notes:	[illegible]		
TOTAL GIA:			[illegible]
SITE AREA:			[illegible]

COLOUR KEY
- One Bedroom Flat
- Two Bedroom Flat

0 1m 5m 10m 20m

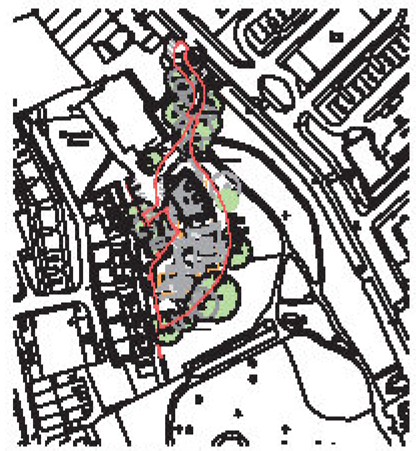
PRELIMINARY

hunters



LOWER GROUND FLOOR PLAN

scale 1:100@A0



SITE LOCATION PLAN

scale 1:1250@A0

SITE BOUNDARY

SCHEDULE OF ACCOMMODATION			
Floor	[illegible]	[illegible]	GIA
Lower Ground:	[illegible]	–	[illegible]
Ground Floor:	[illegible]	–	[illegible]
First Floor:	07	01	[illegible]
Second Floor:	04	[illegible]	[illegible]
Third Floor:	02	01	[illegible]
TOTAL No Apt:	[illegible]	03	[illegible]
Parking:	11 car spaces in [illegible]		
Notes:	[illegible]		
TOTAL GIA:			[illegible]
SITE AREA:			[illegible]

COLOUR KEY

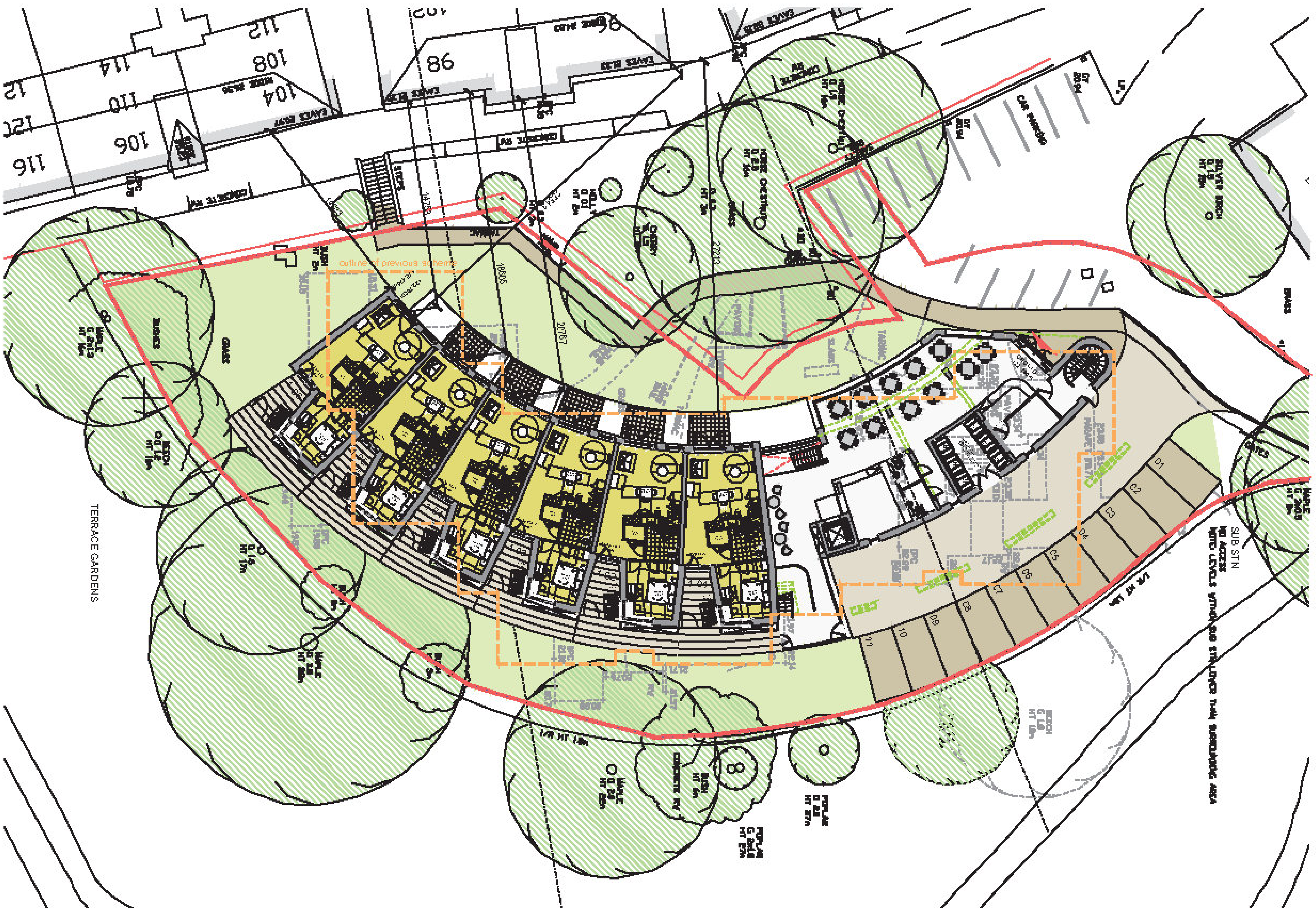
- One Bedroom Flat
- Two Bedroom Flat

scale 1:100@A0

[illegible] TERRACE, RICHMOND

PRELIMINARY

hunters



GROUND FLOOR PLAN
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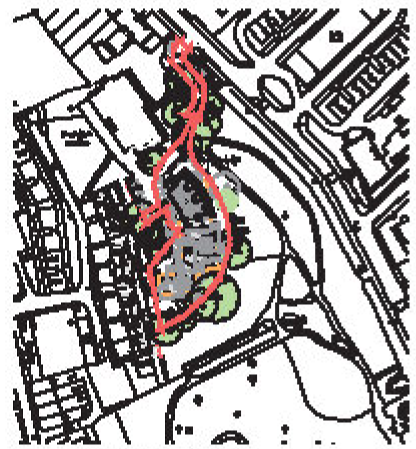


SITE LOCATION PLAN
scale 1:1250@A0

SCHEDULE OF ACCOMMODATION			
Floor	1b2p 55.5m²	2b3p 67.6m²	GIA
Lower Ground	06*	–	445.6m²
Ground Floor	06	–	564.0m²
First Floor	07	01	542.7m²
Second Floor	04	01	356.0m²
Third Floor	02	01	259.0m²
TOTAL No.Apts	25	03	28 Apts
Parking:	11 carspaces hardstanding		
Notes:	*Flat 0-01 may not be available unless it will have a poor outlook. Potential plant storage		
TOTAL GIA:			2167.5m²
SITE AREA:			2101m²

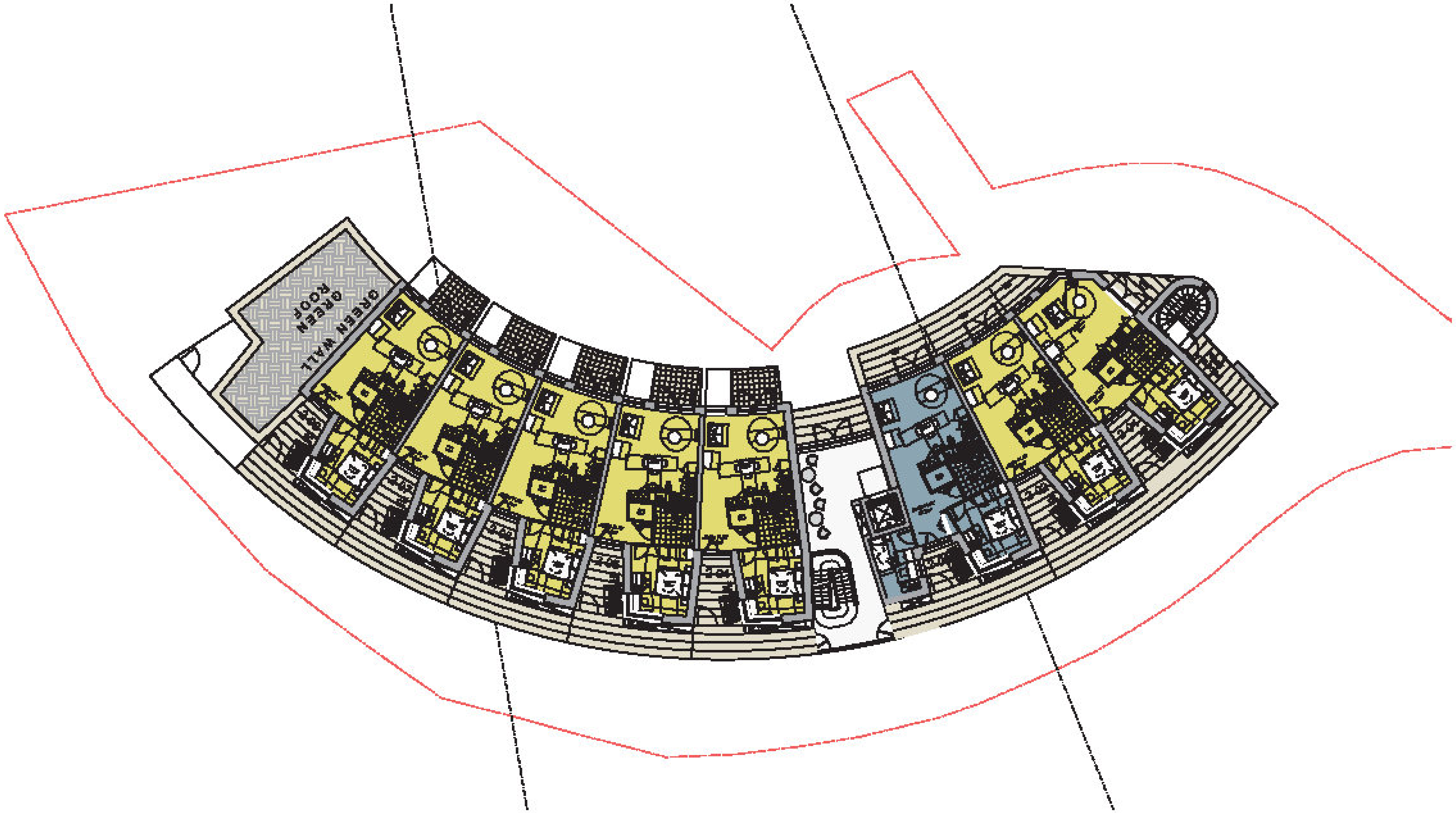
COLOUR KEY

- One Bedroom Flat
- Two Bedroom Flat

Scale 1:100@A0

HOWSON TERRACE, RICHMOND

PRELIMINARY



FIRST FLOOR PLAN
scale 1:100@A0

SITE LOCATION PLAN
scale 1:1250@A0

SCHEDULE OF ACCOMMODATION			
Floor	[illegible]	[illegible]	GIA
Lower Ground:	[illegible]	–	[illegible]
Ground Floor:	[illegible]	–	[illegible]
First Floor:	[illegible]	01	[illegible]
Second Floor:	04	[illegible]	[illegible]
Third Floor:	02	01	[illegible]
TOTAL No Apt:	[illegible]	03	[illegible] Apts
Parking:	[illegible]		
Notes:	[illegible]		
TOTAL GIA:			[illegible]
SITE AREA:			[illegible]

COLOUR KEY

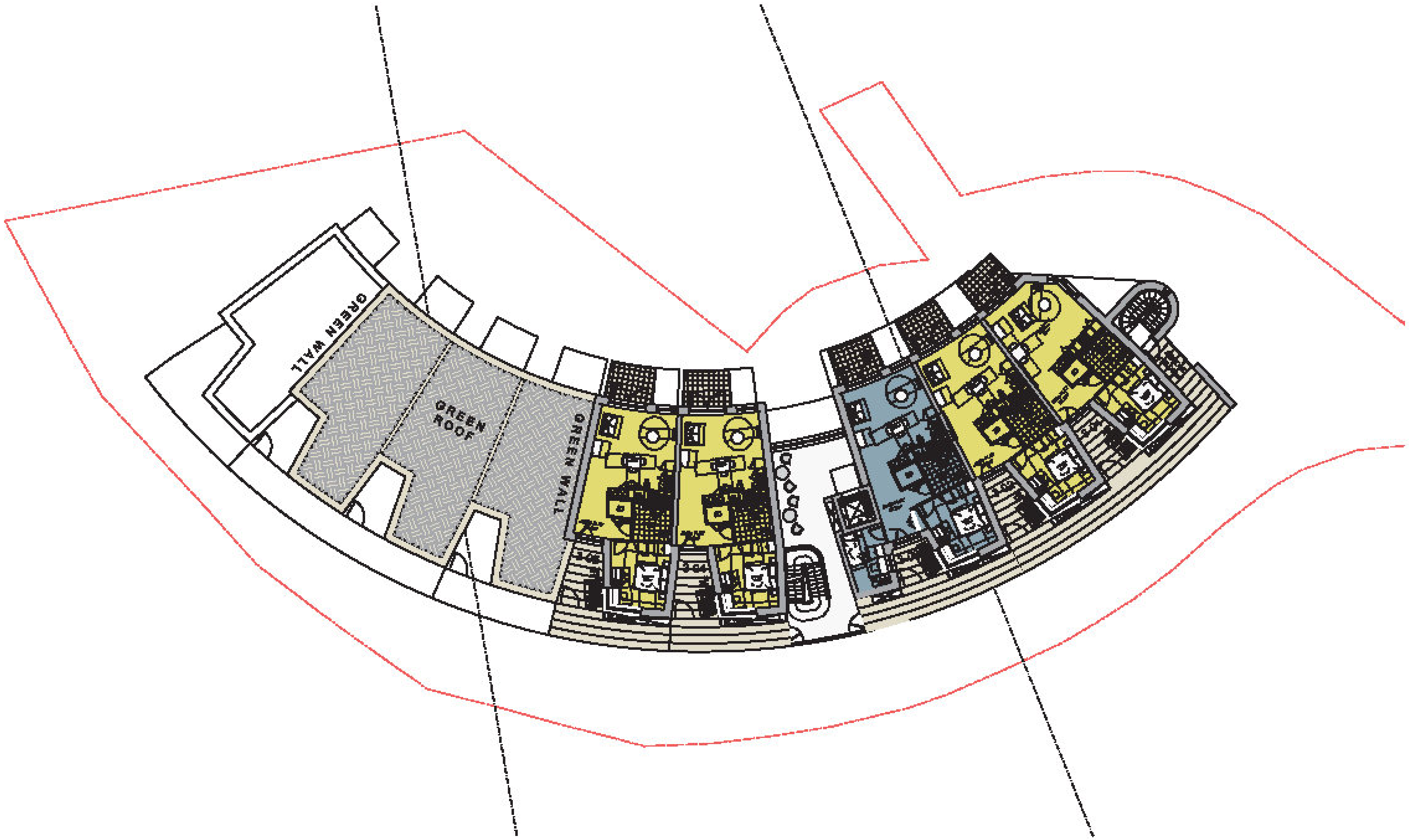
- One Bedroom Flat
- Two Bedroom Flat

Scale 1:100@A0

[illegible] TERRACE, RICHMOND

PRELIMINARY

hunters



SECOND FLOOR PLAN
scale 1:100@A0

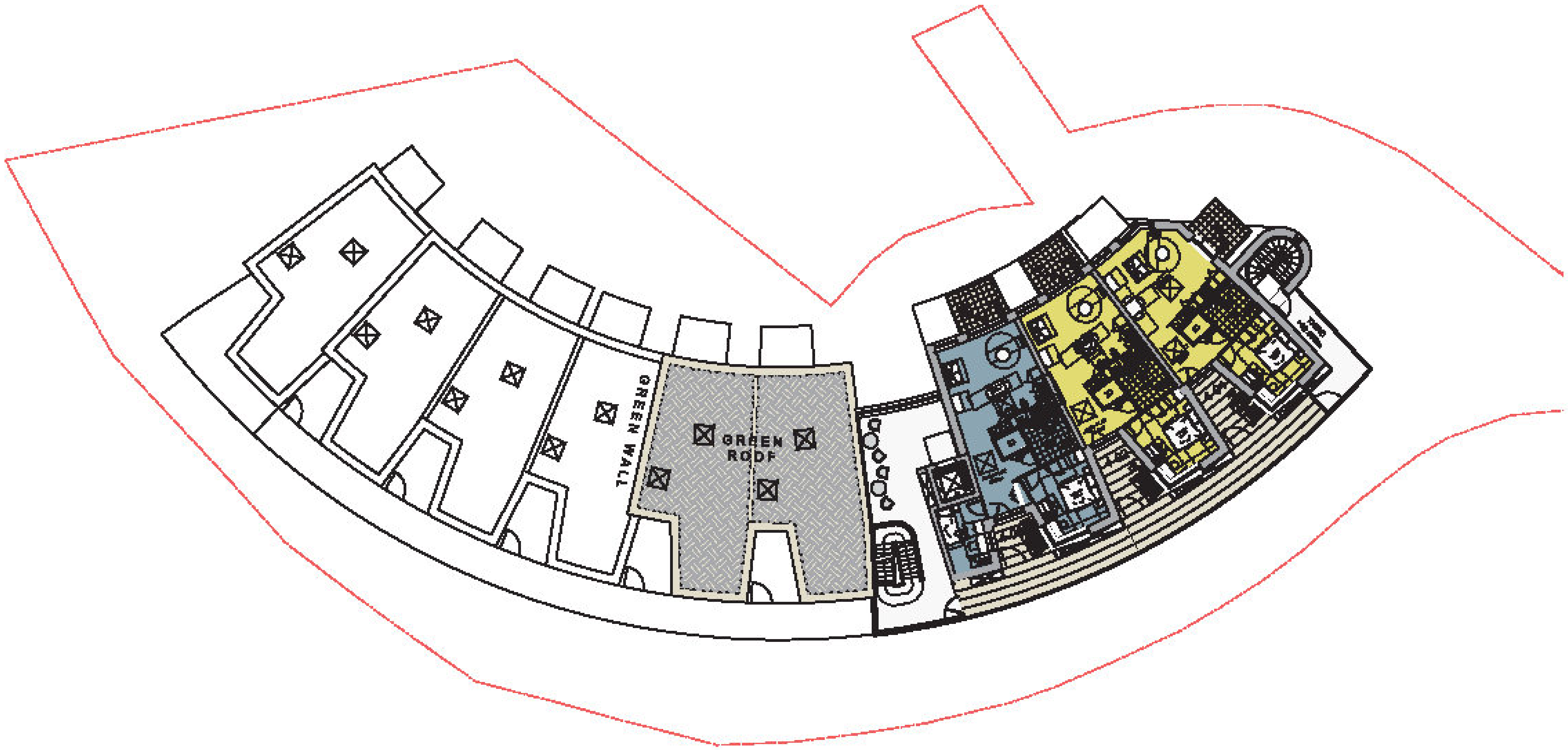
SITE LOCATION PLAN
scale 1:1250@A0

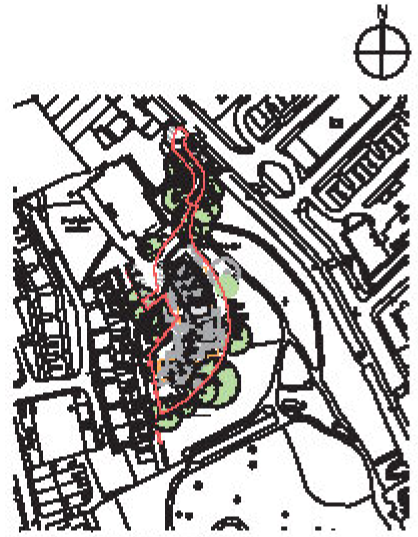
SCHEDULE OF ACCOMMODATION			
Floor	[illegible]	[illegible]	GIA
Lower Ground:	[illegible]	–	[illegible]
Ground Floor:	[illegible]	–	[illegible]
First Floor:	07	01	[illegible]
Second Floor:	04	[illegible]	[illegible]
Third Floor:	02	01	[illegible]
TOTAL No Apt:	[illegible]	03	[illegible]
Parking:	11 car spaces in undercroft		
Notes:	[illegible]		
TOTAL GIA:			[illegible]
SITE AREA:			[illegible]

COLOUR KEY
- One Bedroom Flat
- Two Bedroom Flat

scale 1:100@A0

HOWSON TERRACE, RICHMOND
PRELIMINARY
hunters





SITE LOCATION PLAN

SCHEDULE OF ACCOMMODATION			
Floor	[illegible]	[illegible]	GIA
Lower Ground	[illegible]	–	[illegible]
Ground Floor	05	–	[illegible]
First Floor	[illegible]	01	[illegible]
Second Floor	04	[illegible]	[illegible]
Third Floor	02	01	[illegible]
TOTAL No Apt	[illegible]	[illegible]	[illegible] Apts
Parking:	[illegible]		
Notes:	[illegible]		
TOTAL GIA:			[illegible]
SITE AREA:			[illegible]

COLOUR KEY

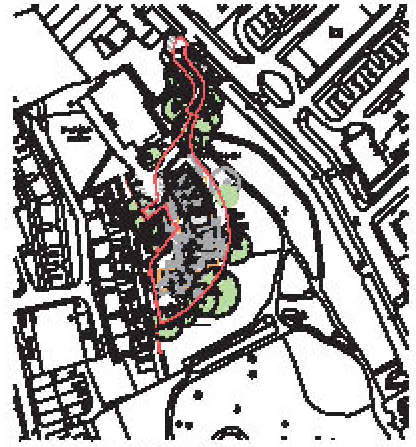
- One Bedroom Flat
- Two Bedroom Flat

THIRD FLOOR PLAN

scale 1:100@A0

PRELIMINARY

hunters



SCHEDULE OF ACCOMMODATION

Floor	[illegible]	[illegible]	GIA
Lower Ground	[illegible]	–	[illegible]
Ground Floor	[illegible]	–	[illegible]
First Floor	[illegible]	01	[illegible]
Second Floor	04	[illegible]	[illegible]
Third Floor	02	01	[illegible]
TOTAL No Apt	[illegible]	[illegible]	[illegible]
Parking	11 car spaces [illegible]		
Notes	[illegible]		
TOTAL GIA			[illegible]
SITE AREA			[illegible]

COLOUR KEY

- One Bedroom Flat
- Two Bedroom Flat

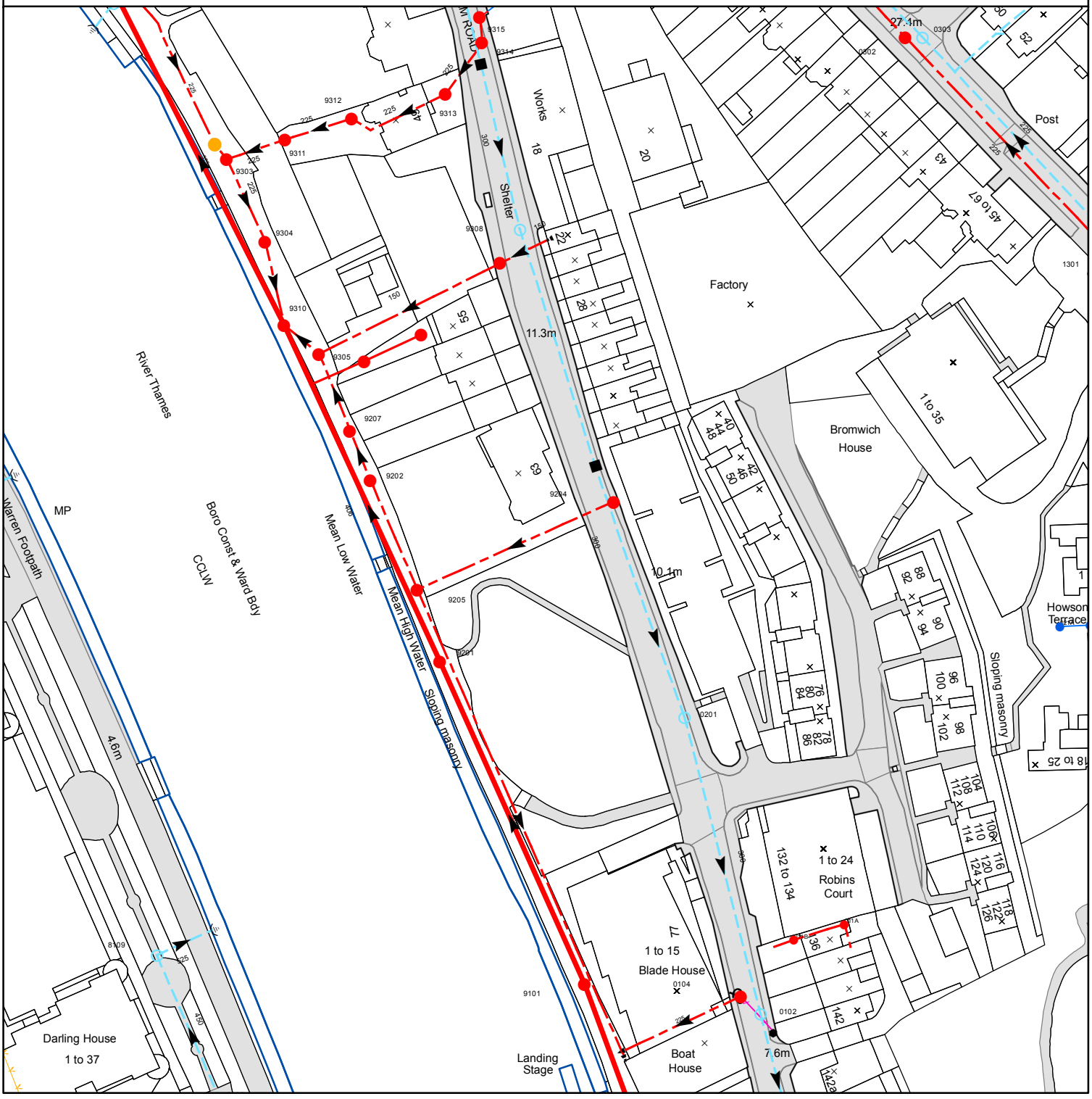
PRELIMINARY

hunters

Appendix 3

Based on the Ordnance Survey Map with the sanction of the Controller of H.M Stationary Office License Number 10019345

ALS/ALS Standard/2020_4274832



0 5 10 20 30 40 Meters

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 before any works are undertaken. Crown copyright Reserved

Scale:	1:1240
Width:	246m
Printed By:	tlove
Print Date:	19/10/2020
Map Centre:	517982,174261
Grid Reference:	TQ1774SE

Comments:

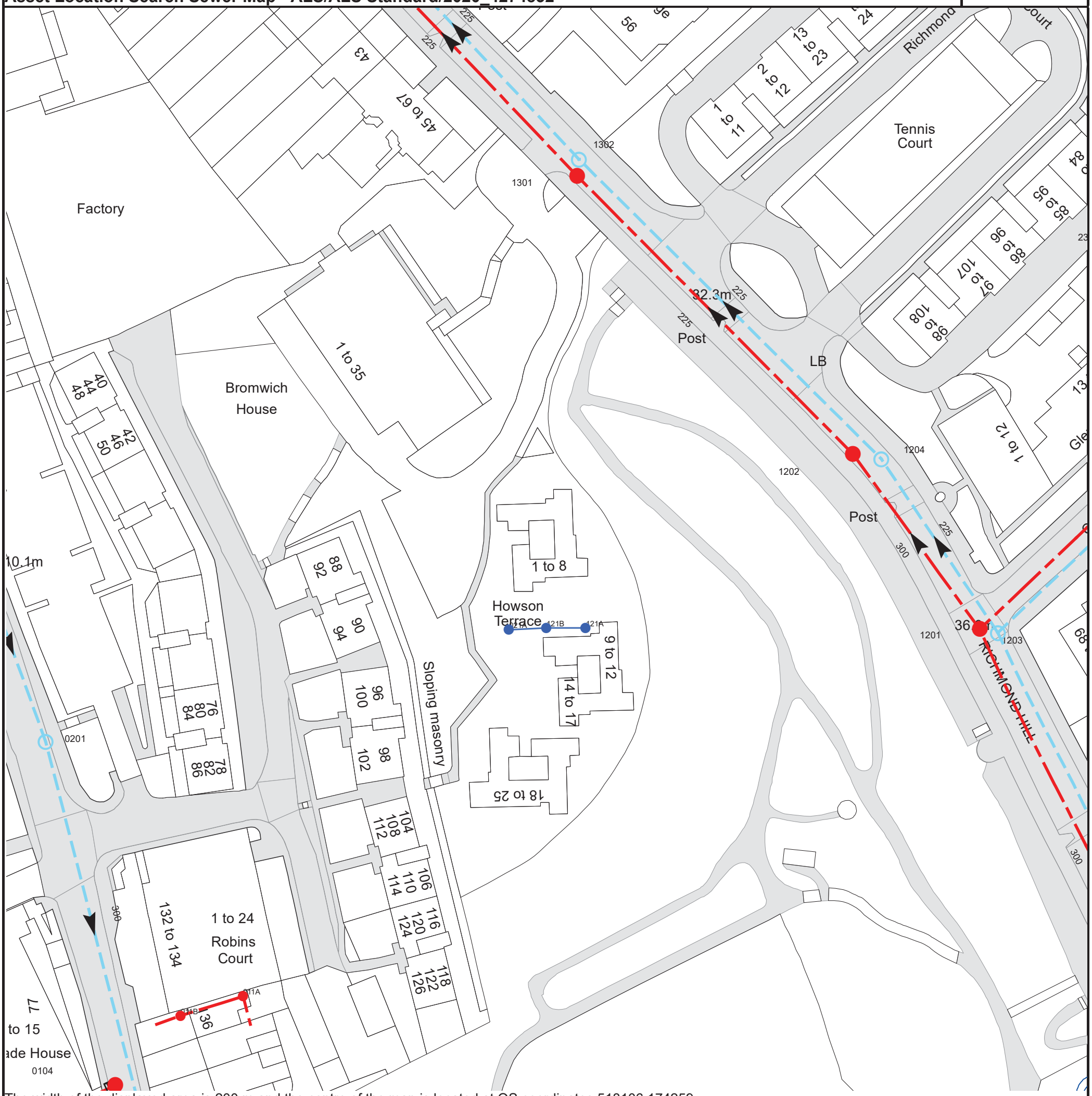
ALS/ALS Standard/2020_4274832

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
9207		
93ZV		
9308		
9314		
9304		
0104	7.94	5.85
9303		
9204	10.52	8.79
021A		
9312		
9310		
9305		
9202		
011A		

REFERENCE	COVER LEVEL	INVERT LEVEL
0201	9.52	5.6
0303	27.25	25.06
9311		
93ZW		
9201		-1.2
8109		2.76
9313		
0302	27.15	23.46
0102	7.92	4.41
9306		
9205		
9315		
9101		-1.09
011B		

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4274832



The width of the displayed area is 200 m and the centre of the map is located at OS coordinates 518106,174259

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 that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
0104	7.94	5.85
011B	n/a	n/a
011A	n/a	n/a
0201	9.52	5.6
021A	n/a	n/a
121B	n/a	n/a
121A	n/a	n/a
1204	34.35	31.61
1202	34.04	31.3
1301	30.56	27.87
1302	30.5	28.21
1203	36.07	32.88
1201	35.99	33.01

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.

ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.

Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.

Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.

- Trunk Surface Water
- Trunk Foul
- Storm Relief
- Trunk Combined
- Vent Pipe
- Bio-solids (Sludge)
- Proposed Thames Surface Water Sewer
- Proposed Thames Water Foul Sewer
- Gallery
- Foul Rising Main
- Surface Water Rising Main
- Combined Rising Main
- Sludge Rising Main
- Proposed Thames Water Rising Main
- Vacuum

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

- Air Valve
- Dam Chase
- Fitting
- Meter
- Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

- Control Valve
- Drop Pipe
- Ancillary
- Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

- Outfall
- Undefined End
- Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

- Public/Private Pumping Station
- Change of characteristic indicator (C.O.C.I.)
- Invert Level
- Summit

Areas

Lines denoting areas of underground surveys, etc.

- Agreement
- Operational Site
- Chamber
- Tunnel
- Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

- Foul Sewer
- Surface Water Sewer
- Combined Sewer
- Gulley
- Culverted Watercourse
- Proposed
- Abandoned Sewer

Notes:

1) All levels associated with the plans are to Ordnance Datum Newlyn.
2) All measurements on the plans are metric.
3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
5) 'na' or '0' on a manhole level indicates that data is unavailable.
6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in milimetres. Text next to a manhole indicates the manhole reference number and should not be taken as a measurement. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0845 070 9148.

Miss L Smith
Cole Easdon Ltd
Unit 2 York House
Edison Park, Dorcan Way
Swindon SN3 3RB

Our ref: DS6078641

0800 009 3921
Monday to Friday, 8am to 5pm

29th Oct 2020

Pre-planning enquiry: Wastewater Capacity check

Dear Miss Smith

Thank you for providing details of your development with the Pre-Planning application dated 28th Oct 20 for development @ Howson Terrace Richmond Hill TW10 6RT

Brownfield site {24 sheltered units} ,developed to {30 units } as per your above application.

We have completed the current assessment of the foul water flows & surface water discharges based on the information submitted in your application with the purpose of assessing sewerage capacity within the existing Thames Water sewer network, in liaison with TW Asset Planners.

Foul

If your proposals progress in line with the details you've provided as above, we're pleased to confirm that there will be sufficient sewerage capacity in the adjacent TW foul sewer network to serve your foul discharges from your development, provided it is by gravity.

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 and has to be investigated again.

Surface Water

When developing a site, policy 5.13 of the London Plan and Policy 3.4 of the Supplementary Planning Guidance (Sustainable Design And Construction) states that every attempt should be made to use flow attenuation and SuDS/Storage to reduce the surface water discharge from the site as much as possible.

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

The disposal hierarchy being:

1. store rainwater for later use.
2. use infiltration techniques where possible.
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.;; *and if above cannot be achieved*
6. discharge rainwater to a surface water sewer/drain.
7. discharge rainwater to the combined sewer.
8. discharge rainwater to the foul sewer

Where connection to the public sewerage network is still required after examining the hierarchy {1-5} 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 around 2.7 l/s to TW surface water sewer network, then TW would not have any objections to the proposal.

Please see the attached 'Planning your wastewater' leaflet for additional information. At the appropriate time, you will have to apply for a S106 connection application to DS Connection team

Source Protection Zone

Please check whether your development falls within a Source Protection Zone for groundwater abstraction. These zones may be at particular risk from polluting activities on or below the land surface. To prevent pollution, the Environment Agency and Thames Water (or other local water undertaker) will use a tiered, risk-based approach to regulate activities that may impact groundwater resources. The applicant is encouraged to read the Environment Agency's approach to groundwater protection (available at https://www.gov.uk/government/publications/ groundwater-protection-position-statements) and may wish to discuss the implications for their development with a suitably qualified environmental consultant.

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.

Please note that you must 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 sewerage capacity.

What happens next?

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

If you've any further questions, please contact me.

Yours sincerely

Sgd: *Siva.sivarajan*

Siva Sivarajan

Developer Services- Wastewater Adoptions Engineer

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