

# KEY

1. Bromley Hall
2. Green Roof
3. Proposed Commercial Space
4. Old Poplar Library Commercial Space
5. Live/Work Units
6. Core A
7. Potential Storage Room



## LEASIDE BUSINESS CENTRE FEASIBILITY

FLOOR 02

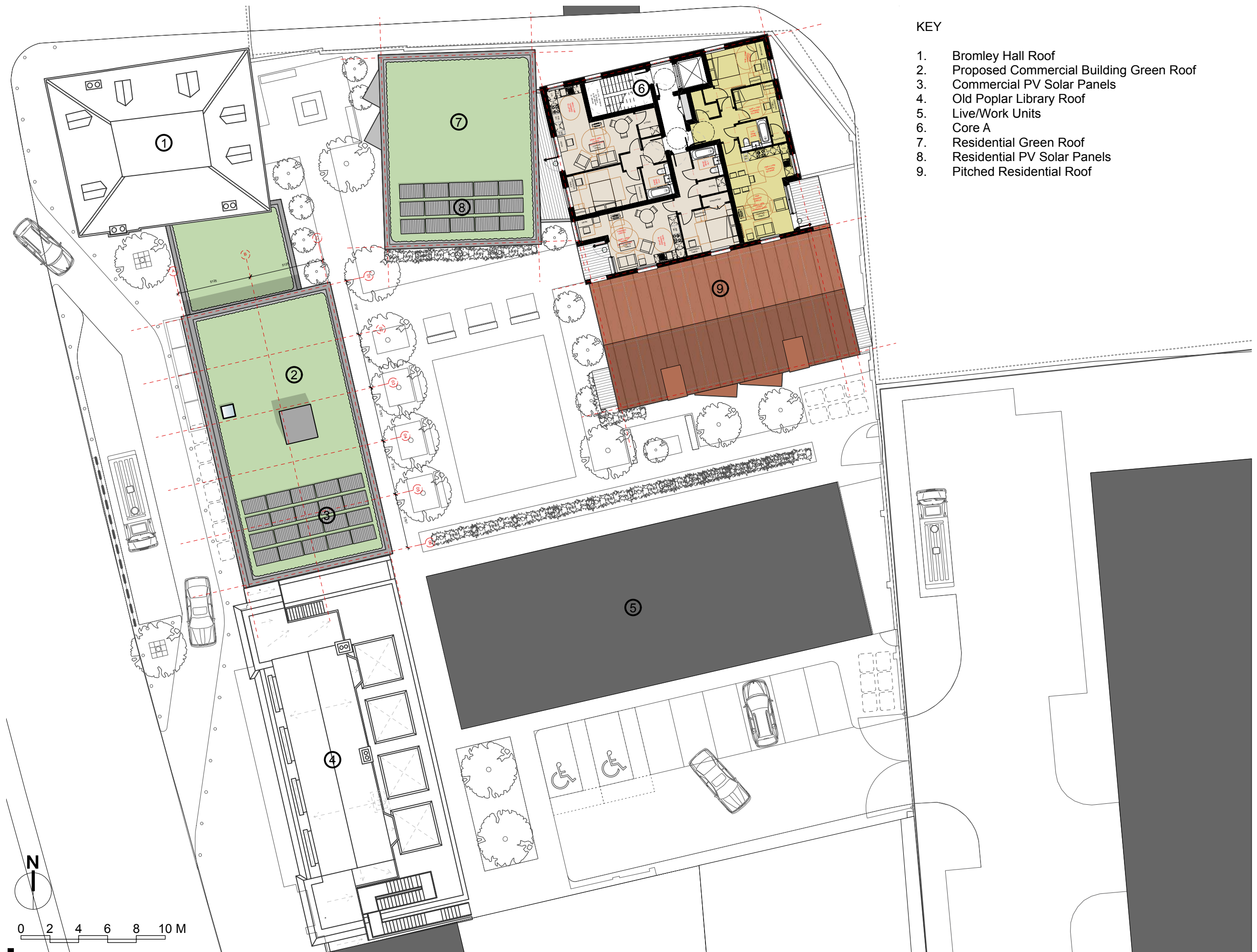
**stock  
wool**

The Pump House 19 Hooper Street London E18BU 0207 264 8600 info@stockwool.co.uk © STOCKWOOL

SK103 | 1:250 @ A3 | 17.05.19

# KEY

1. Bromley Hall Roof
2. Proposed Commercial Building Green Roof
3. Commercial PV Solar Panels
4. Old Poplar Library Roof
5. Live/Work Units
6. Core A
7. Residential Green Roof
8. Residential PV Solar Panels
9. Pitched Residential Roof

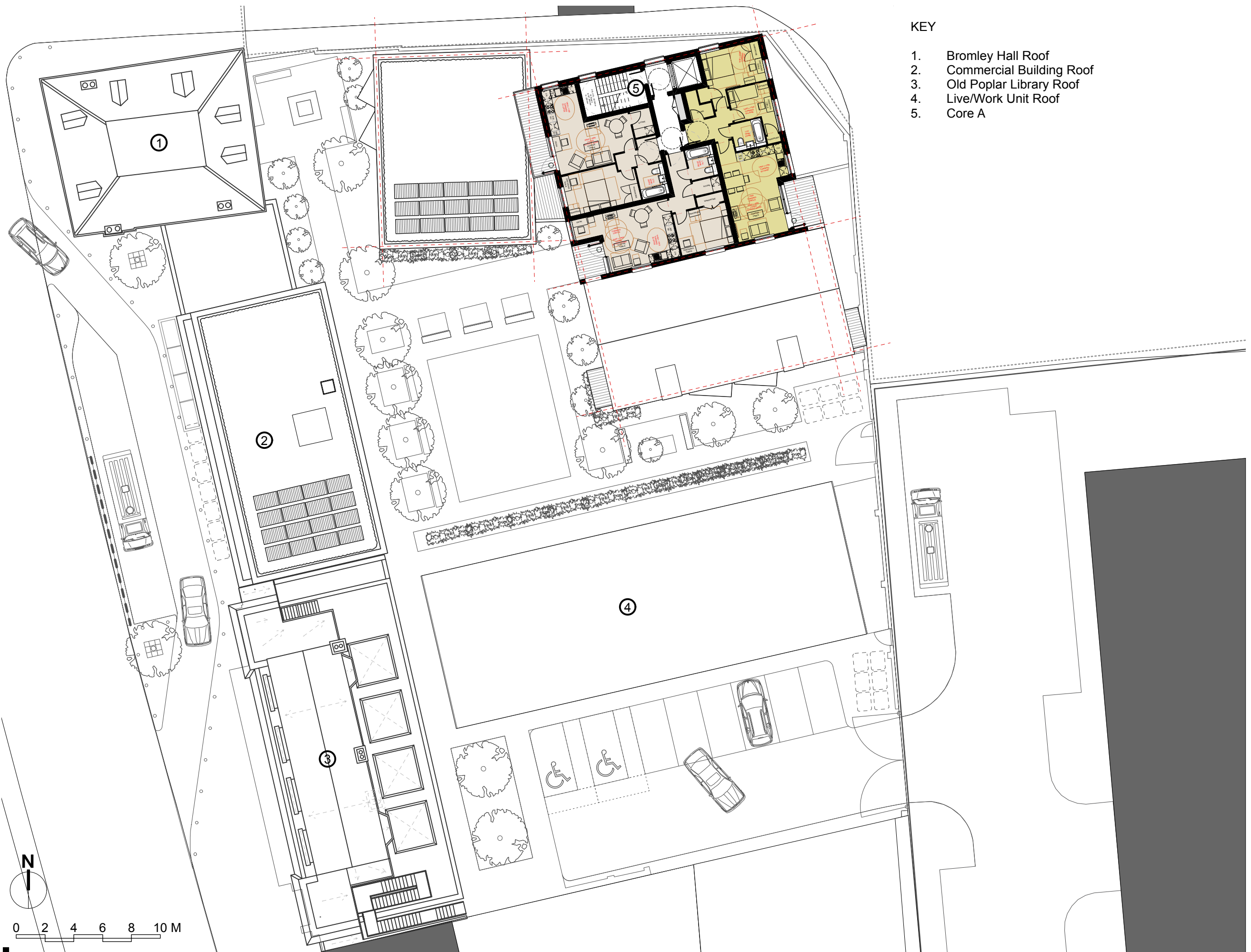


## LEASIDE BUSINESS CENTRE FEASIBILITY

FLOOR 03

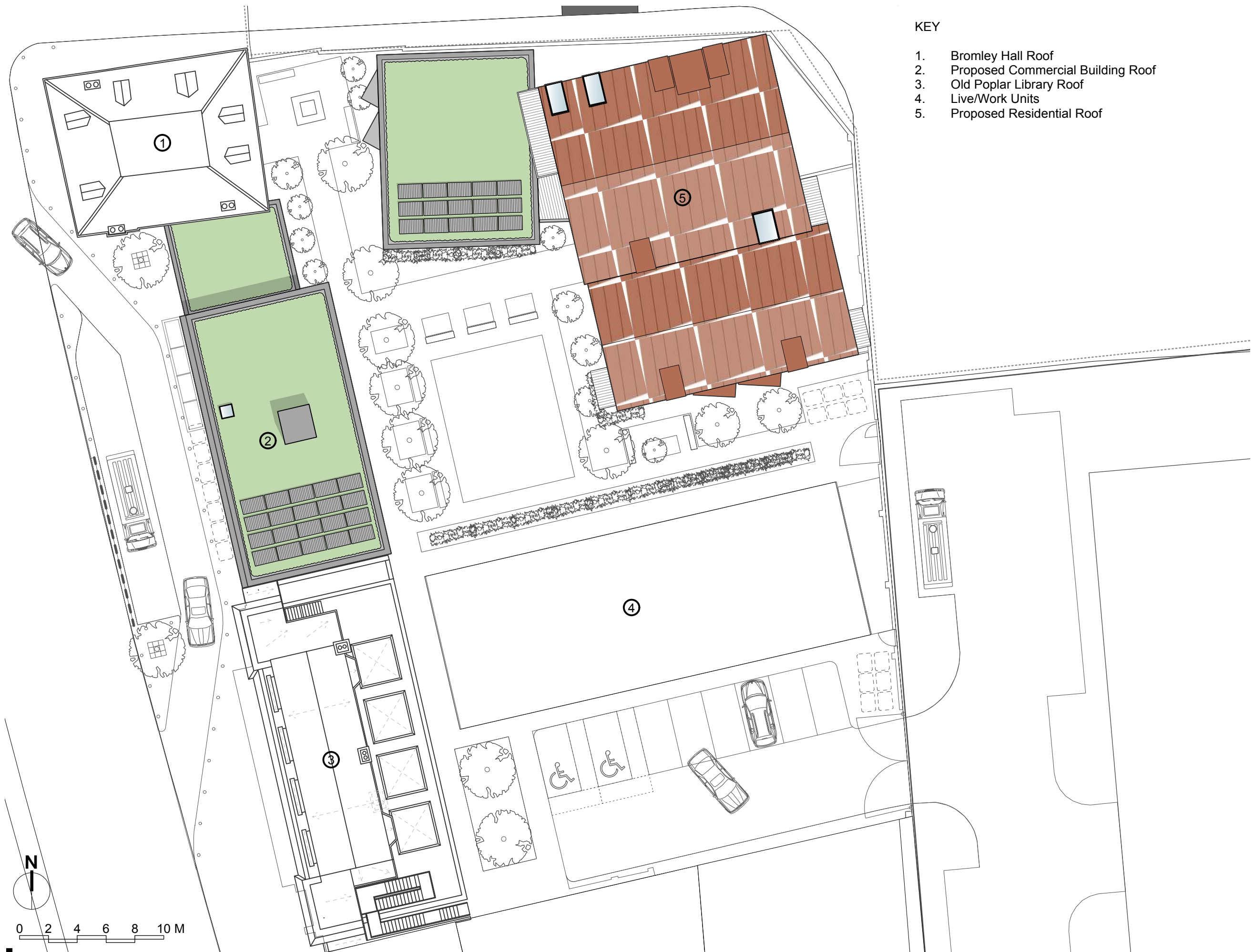
SK104 | 1:250 @ A3 | 17.05.19





KEY

- 1. Bromley Hall Roof
- 2. Commercial Building Roof
- 3. Old Poplar Library Roof
- 4. Live/Work Unit Roof
- 5. Core A



# KEY

1. Bromley Hall Roof
2. Proposed Commercial Building Roof
3. Old Poplar Library Roof
4. Live/Work Units
5. Proposed Residential Roof

## Appendix G: Proposed drainage strategy layout



Proposed paved areas within site boundary to be in permeable paving with underdrainage (Type C - no infiltration due to high ground water levels and potential contamination). Provides 21m<sup>3</sup> storage in 350mm permeable sub-base

Existing 150φ combined outfall from site. Believed to connect to TW chamber 1917

Proposed foul and surface water drainage systems discharging to existing combined site outfall

Footway within highway boundary to drain to highway drainage system

Existing drainage on site at rear of Old Library building with 2m depth to invert - assumed to connect to combined sewers in road indicating that the proposed development can drain by gravity

Existing combined local sewer - depth unknown

Existing highway surface water drain - depth unknown

Existing combined trunk sewer - depth unknown

Existing Bromley Hall building in use as offices - to be refurbished  
Roof and foul drainage to remain as existing with minor diversions to suit building works

Proposed link office and residential buildings with blue-green roofs providing 40m<sup>3</sup> attenuation storage and water quality benefits

Proposed surface water system on site taking roof/ paved areas via attenuation tank and discharge via flow control device to existing combined site outfall. Discharge limited to 2.0l/s for all storms up to 1:100 year plus 40% climate change allowance

Proposed residential blocks - total 22 units

Attenuation tank providing 104m<sup>3</sup> storage

Pedestrian paved areas drained via tree pits, rain gardens and soft landscape areas to attenuated surface water system. tree pits and rain gardens provide treatment and detention

Existing combined trunk sewer 2.55m diameter - approx 14.1m depth to invert at site

Redline planning boundary

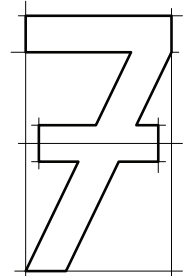
Existing old library building in use as offices - to be refurbished  
Roof and foul drainage to remain as existing with minor diversions to suit building works

1. Not for construction  
2. Based on Stock Wool site plans SK111 rev 00 dated 17.05.19

#### Drainage Key

- Existing sewers
- Trunk sewer (combined)
- Local sewer (combined)
- Highway drainage
- Proposed drainage
- Foul drainage
- Surface water drainage
- Combined drainage
- Attenuation tank
- Green roof
- Flow control chamber

0m 50m

|   |   |          |
|---|---|----------|
|  | Leaside Business Centre<br>Gillender St E14 6RN             |          |
|   | Foul and surface water<br>Drainage Strategy<br>Layout       |          |
|   | 07132/SK 02   | May 2019 |
|   | tony.goff@7-engineering.co.uk<br>Mobile: +44(0)7803 120 963 |          |

## Appendix H: Preliminary surface water calculations

Calculated by:

Site name:

Site location:

## Site coordinates

Latitude:

Longitude:

This is an estimation of the storage volume requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Preliminary rainfall runoff management for developments", W5-074/A/TR1/1 rev. E (2012) and the SuDS Manual, C753 (Ciria, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the drainage scheme.

Reference:

Date:

## Methodology

IH124

## Site characteristics

|  |       |
|--|-------|
| Total site area (ha)   | .222  |
| Significant public open space (ha)                           | 0     |
| Area positively drained (ha)                                 | 0.222 |
| Pervious area contribution (%)                               | 30    |
| Impermeable area (ha)  | 0.183 |
| Percentage of drained area that is impermeable (%)           | 82    |
| Impervious area drained via infiltration (ha)                | 0     |
| Return period for infiltration system design (year)          | 10    |
| Impervious area drained to rainwater harvesting systems (ha) | 0     |
| Return period for rainwater harvesting system design (year)  | 10    |
| Compliance factor for rainwater harvesting system design (%) | 66    |
| Net site area for storage volume design (ha)                 | 0.22  |
| Net impermeable area for storage volume design (ha)          | 0.19  |

\* Where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50 % of the 'area positively drained', the 'net site area' and the estimates of Qbar and other flow rates will have been reduced accordingly.

## Design criteria

Volume control approach

|                                  | Default | Edited |
|----------------------------------|---------|--------|
| Climate change allowance factor  | 1.4     | 1.4    |
| Urban creep allowance factor     | 1.1     | 1.1    |
| Interception rainfall depth (mm) | 5       | 5      |
| Minimum flow rate (l/s)          | 2       | 2      |

|                        |                             |
|------------------------|-----------------------------|
| Qbar estimation method | Calculate from SPR and SAAR |
| SPR estimation method  | Calculate from SOIL type    |

|                            | Default | Edited |
|----------------------------|---------|--------|
| Qbar total site area (l/s) | 0.86    | --     |
| SOIL type                  | 4       | 4      |
| HOST class                 | N/A     | N/A    |
| SPR                        | 0.47    | 0.47   |

## Hydrology

|                               | Default | Edited |
|-------------------------------|---------|--------|
| SAAR (mm)                     | 580     | 580    |
| M5-60 Rainfall Depth (mm)     | 20      | 20     |
| 'r' Ratio M5-60/M5-2 day      | 0.4     | 0.4    |
| Rainfall 100 yrs 6 hrs        | 63      |        |
| Rainfall 100 yrs 12 hrs       | 102.41  |        |
| FEH/FSR conversion factor     | 1.33    | 1.33   |
| Hydrological region           | 6       |        |
| Growth curve factor: 1 year   | 0.85    | 0.85   |
| Growth curve factor: 10 year  | 1.62    | 1.62   |
| Growth curve factor: 30 year  | 2.3     | 2.3    |
| Growth curve factor: 100 year | 3.19    | 3.19   |

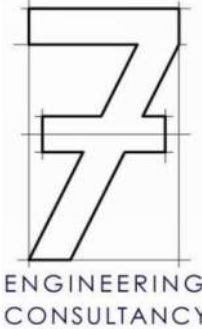
## Site discharge rates

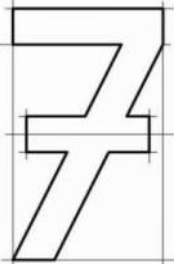
|                            | Default | Edited |
|----------------------------|---------|--------|
| Qbar total site area (l/s) | 0.86    | 0.86   |
| Qbar net site area (l/s)   | 0.86    | 0.86   |
| 1 in 1 year (l/s)          | 2       | 2      |
| 1 in 30 years (l/s)        | 2       | 2      |
| 1 in 100 years (l/s)       | 2       | 2      |

## Estimated storage volumes

|  | Default | Edited |
|--|---------|--------|
| Interception storage (m³)                | 7       | 7      |
| Attenuation storage (m³)                 | 158     | 158    |
| Long term storage (m³)                   | 0       | 0      |
| Treatment storage (m³)                   | 22      | 22     |
| Total storage (excluding treatment) (m³) | 165     | 165    |



|   |   |  |         |   |         |                                |         |        |
|---|---|--|---------|---|---------|--------------------------------|---------|--------|
| <br>ENGINEERING<br>CONSULTANCY | Project:<br>Leaside business centre redevelopment |  |         |   |         | Project No:<br>07132           |         |        |
|   | Surface Water                                     |  |         |   |         | Made by: TJG<br>Date: May 2019 |         |        |
|   | Existing Peak flows rates<br>Planning stage       |  |         |   |         | Revision 00                    |         |        |
|   |   |  |         |   |         | Page                           | 1 of 1  |        |
| Calculation of Existing Peak flow rate using Modified Rational Method   |   |  |         |   |         |                                |         |        |
| Existing site area 0.222ha (2220m2)   |   |  |         |   |         |                                |         |        |
| Impermeable area (extg) = 0.120ha (1200m2) Ignore contribution from compacted hardcore parking                  |   |  |         |   |         |                                |         |        |
| <b>Runoff from impermeable paving</b>   |   |  |         |   |         |                                |         |        |
| Q = 2.78 CiA  |   | Where  |         |   |         |                                |         |        |
|   |   | Q = flow rate (l/s)  |         |   |         |                                |         |        |
|   |   | A = Area (Ha)  |         |   |         |                                |         |        |
|   |   | i = Avg intensity during time of concentration (mm/hr)           |         |   |         |                                |         |        |
|   |   | C is coefficient of runoff, say 0.975 from advice in Wallingford |         |   |         |                                |         |        |
| Time of concentration $t_c = t_e + t_f$   |   |  |         |   |         |                                |         |        |
| $t_e$ , Time of entry - 3 to 6 minutes. For combination of roof drainage and paving, take as 5 minutes          |   |  |         |   |         |                                |         |        |
| $t_f$ , Time of flow in pipe system - discharge sewer is close to site, allow 5 minutes                         |   |  |         |   |         |                                |         |        |
| Therefore $t_c = 10\text{min}$  |   |  |         |   |         |                                |         |        |
| Intensity i   |   |  |         |   |         |                                |         |        |
| From Wallingford Procedure Vol 4  |   |  |         | Fig A1, M5-60 = 20mm                      |         |                                |         |        |
| For Poplar  |   |  |         | Fig A2, r = 0.4                           |         |                                |         |        |
|   |   |  |         | Fig A3, Z1, 10min storm, Z1 = 0.54        |         |                                |         |        |
|   |   |  |         | For D = 10min, M5-10 = 20 x 0.54 = 10.8mm |         |                                |         |        |
| Existing - no climate change allowance  |   |  |         |   |         | M5-10 =                        |         | 10.8mm |
| 10 minute storm   |   |  |         |   |         |                                |         |        |
| Return Period   |   | 1 yr   | 2 yr    | 5yr                                       | 10yr    | 30yr                           | 100yr   |        |
| Z2, Table A1  |   | 0.61   | 0.79    | 1.03                                      | 1.22    | 1.495                          | 1.92    |        |
| MT-10   | (mm)  | 6.6  | 8.5     | 11.1                                      | 13.2    | 16.1                           | 20.7    |        |
| i   | (mm/hr)   | 79.1   | 102.4   | 133.5                                     | 158.1   | 193.8                          | 248.8   |        |
| Area = 1200m2 paved areas   |   |  |         | Area = 0.120ha                            |         |                                |         |        |
|   |   |  |         | Q = 2.78 CiA l/s                          |         |                                |         |        |
| Discharge extg roof and paved areas   |   |  |         |   |         |                                |         |        |
|   |   | 25.7l/s  | 33.3l/s | 43.4l/s                                   | 51.4l/s | 63.0l/s                        | 80.9l/s |        |

|  |  |                                 |   |              |
|--|--|---------------------------------|---|--------------|
| <br>ENGINEERING<br>CONSULTANCY  | Project:<br>Leaside Business Centre                  |                                 | Project No:<br>07132  |              |
|  | Surface Water  |                                 | Made by: TJG<br>Date: May2019                                       |              |
|  | Development runoff volumes<br>Outline Planning stage |                                 | Revision 00   |              |
|  |  |                                 | Page  | 1 of 1       |
| Development runoff volumes in 1;100 year 6 hour event  |  |                                 |   |              |
| Using the Wallingford method and calculating the M100-360 rainfall depth from the M5-60 rainfall depth gives a rainfall depth of 59.9mm in the 1:100 Year 6 hour storm   |  |                                 |   |              |
| Total existing building, hard paved areas and compacted hardcore =   |  |                                 | 2200m2  |              |
| Total volume of rain falling onto the existing areas =   |  |                                 |   | 132m3        |
| Assuming 90% runoff during long return period event gives discharge of   |  |                                 |   | <b>119m3</b> |
| Using the Wallingford method and calculating the M100-360 rainfall depth from the M5-60 rainfall depth and including a 40% climate change allowance gives a rainfall depth of 79.7mm in the 1:100 Year 6 hour storm including 40% climate change allowance |  |                                 |   |              |
| Discharge from site  |  |                                 | = Area x urban creep x rainfall (79.7/1000) x discharge coefficient |              |
| Existing buildings.  | 445m2  | No urban creep, 100% discharge  | 35.5m3  |              |
| Proposed hard roofed buildings   |  |                                 |   |              |
|  | 412m2  | 10% urban creep, 100% discharge | 36.1m3  |              |
| Proposed porous pavements. Ciria SUDS manual advises that a minimum of 5mm depth is retained therefore discharge based on 79.7mm - 5mm = 74.7mm depth of rainfall  |  |                                 |   |              |
|  | 248m2  | 10% urban creep, 100% discharge | 20.4m3  |              |
| Proposed green roofs - Ciria C644 suggests green roofs discharge approximately 60% of the rain falling in the 1:100year 6 hour event is discharged   |  |                                 |   |              |
|  | 400m2  | No urban creep, 60% discharge   | 19.1m3  |              |
| Pedestrian paved areas - discharge via tree pits, Ciria advice suggests approx 60% of the rain falling in the 1:100 year 6 hour event is discharged  |  |                                 |   |              |
|  | 328  | 10% urban creep, 60% discharge  | 17.3m3  |              |
| Total volume discharged from the 1:100 year event + 40% climate change   |  |                                 | <b>128.3m3</b>  |              |
| The additional volume is discharged at a low rate as required by DEFRA non-statutory standard S6   |  |                                 |   |              |

**DATUM NOTES**  
GRID ORIGIN IS BASED UPON SURVEY STATION 8 FIXED TO THE DRAINAGE SURVEY NATIONAL GRID BY BRICK MASONRY GPS NETWORK. A SCALE FACTOR OF 1 APPLIES TO THIS DRAWING.  
IN MEASURED DISTANCES ON THE GROUND WITHOUT GPS WILL BE THE SAME AS THOSE MEASURED ON THIS DRAWING.  
LEVELS ARE RELATED TO:  
DRAINAGE SURVEY GPS ACTIVE NETWORK AND TRANSFORMED USING THE COORDINATE SYSTEMS.  
SITE BENCH MARK ESTABLISHED IS LOCATED AT:  
STATION 8  
VALUE GIVEN AS 3.755m (NEWLYN DATUM)  
SURVEY CONTROL STATIONS SHOWN

| ABBREVIATIONS (where applicable) |                             |
|----------------------------------|-----------------------------|
| AV Air Valve                     | MH Manhole Cover            |
| BK Brick                         | MK Marker                   |
| BL Bollard                       | MS Milestone                |
| BS Bus Stop                      | MT Meter                    |
| BT British Telecom               | MY Mercury                  |
| CB Control Box                   | OH Overhead                 |
| CIB Close Boarded                | PAV Paving                  |
| CL Cover Level                   | PS Post Box                 |
| CLK Chainlink                    | PE Pipe                     |
| CO Column                        | PM Parking Meter            |
| Conc Concrete                    | PR Post and Rail            |
| CP Catch Pit                     | PT Post                     |
| CPS Concrete Paving Slabs        | PW Post and Wire            |
| CATV Cable Television            | RE Rodding Eye              |
| DC Drainage Channel              | RET Retaining               |
| DP Drain Pipe                    | RS Road Sign                |
| EC Electricity Cover             | RSJ Rolled Steel Joint      |
| ER Earthing Rod                  | SC Stop Cook                |
| FB Flower Bed                    | SK Skewer                   |
| FE Fence                         | SP Signpost                 |
| FH Fire Hydrant                  | ST Silt Trap                |
| FL Floor Level                   | SV Stop Valve               |
| FP Flag Pole                     | SVC Security Video Camera   |
| GP Gate Post                     | TGB Telephone Call Box      |
| GV Gas Valve                     | TH Threshold Level          |
| GY Gully                         | TK Tank                     |
| HT Height                        | TL Traffic Light            |
| IC Inspection Cover              | TP Telegraph Pole           |
| IL Invert Level                  | UG Underground              |
| IN Interceptor                   | UTF Unable To Trace Further |
| IR Iron Railings                 | UTL Unable To Lift          |
| KO Kerb Offset                   | VP Vent Pipe                |
| LB Litter Bin                    | WL Water Level              |
| LP Lamp Post                     | WM Water Meter              |
| TH Threshold Level               |                             |
| CW Combined Water                |                             |
| SW Storm Water                   |                             |
| WL Water Level                   |                             |

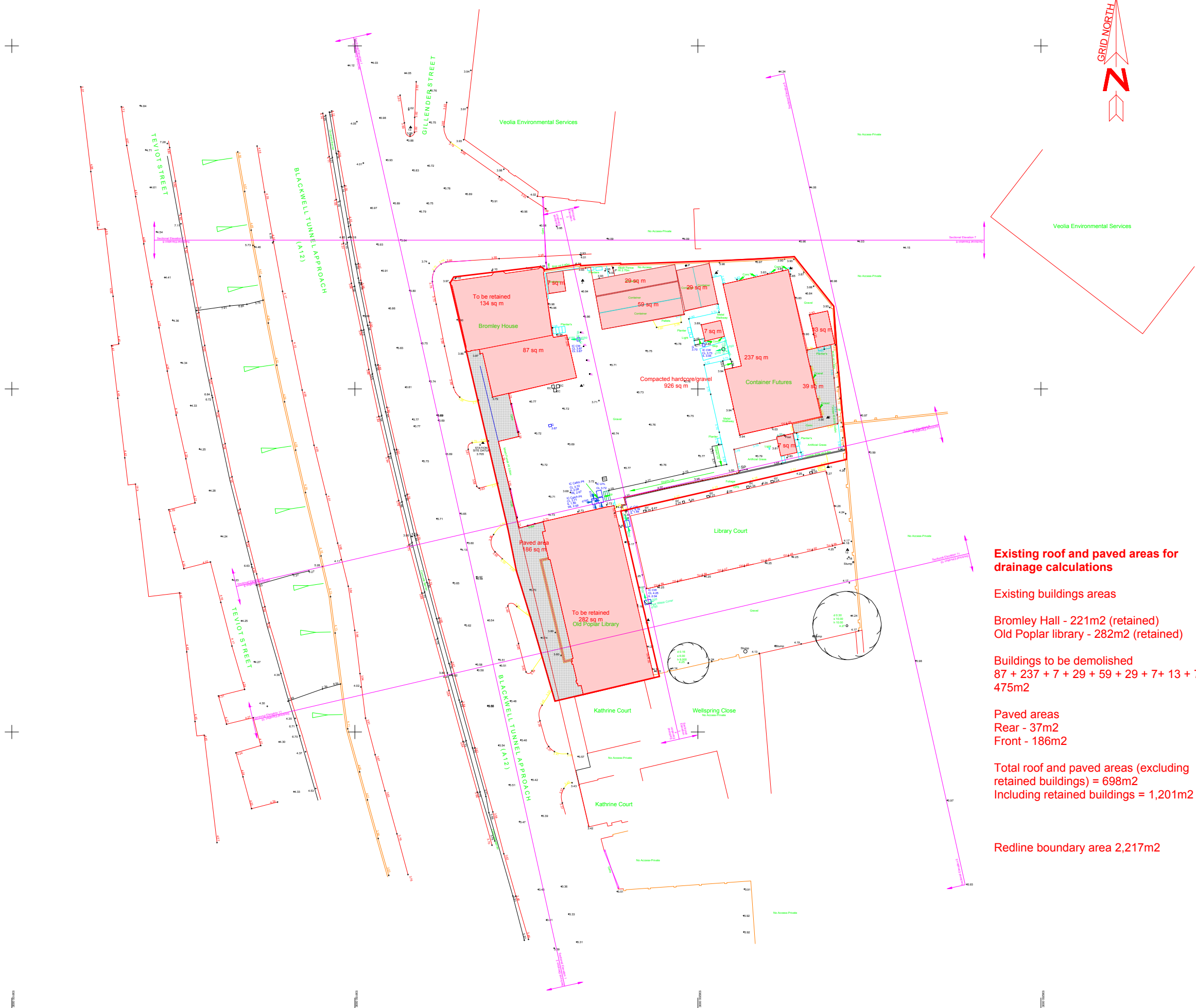
**NOTES**  
\* Drainage pipe sizes (where shown) have been gauged from the surface for safety reasons and should be regarded as approximate only.  
\* Tree species (where shown) should be treated with caution and expert identification is advised.  
\* Although this is a digital survey the accuracy and amount of detail shown is only commensurate with the graphical scale of mapping as specified. Care should be exercised when working to larger scales.  
\* Visible features in the vicinity of the boundaries as shown above, may not represent the extent of legally conveyed ownership.  
\* Whilst every effort has been made to achieve accuracy on this plan, CRUCIAL clearance dimensions, levels and invert levels should be checked prior to design and construction.  
\* Kerb levels have been taken in the bottom of the channel.  
\* Areas of dense undergrowth cannot be surveyed in detail, these areas will be shown in outline only and marked as 'dense undergrowth' on the plan.

**SHEET LAYOUT**  
NOT TO SCALE

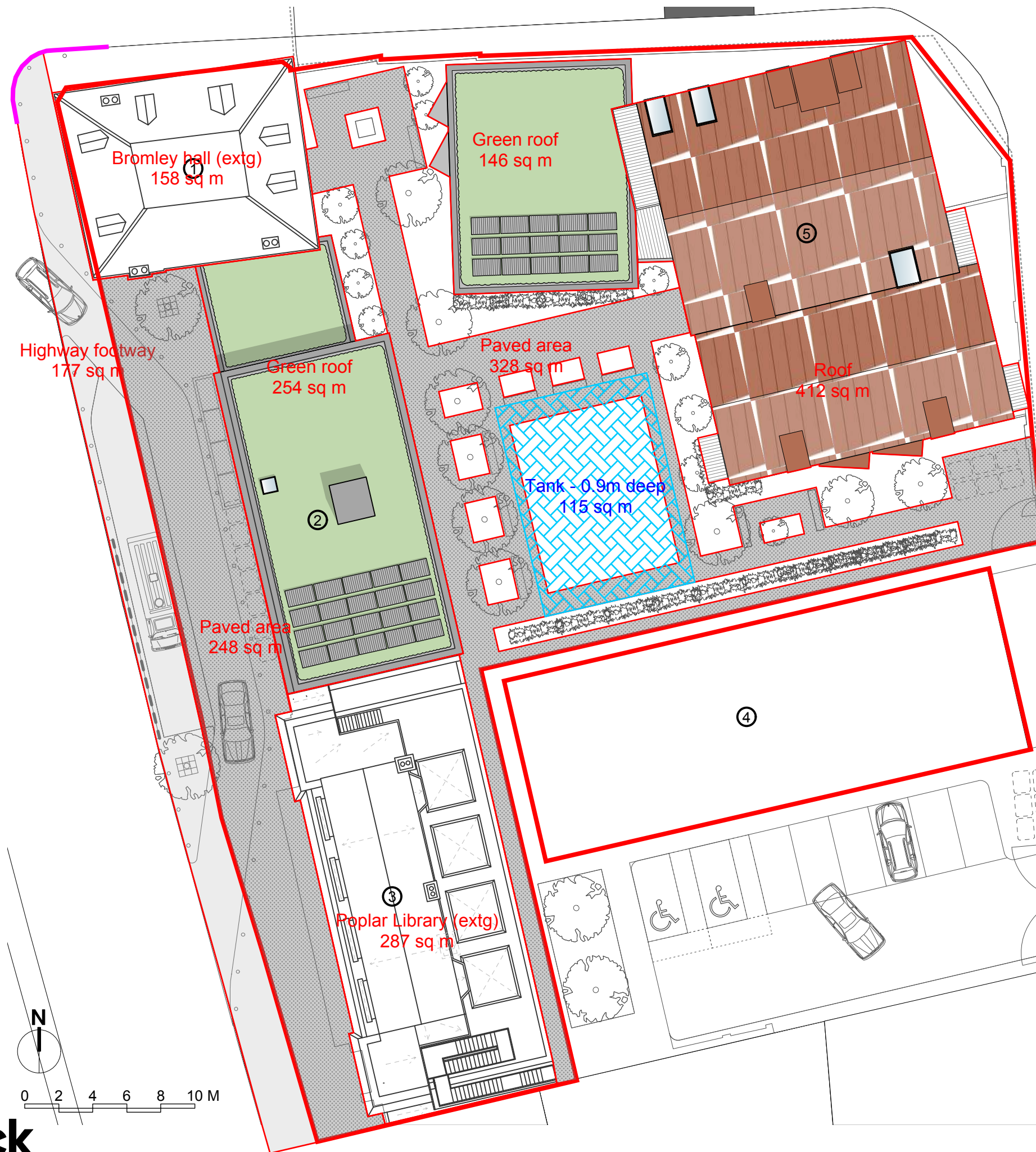
**LEASIDE BUSINESS CENTRE**  
**GILLESDE STREET**  
**LONDON**  
**E14 6RN**  
**TOPOGRAPHICAL SURVEY**

|              |   |          |              |
|--------------|---|----------|--------------|
| SURVEYED FOR | POPULAR HARGA<br>2 MILLION WAY<br>BOW<br>LONDON<br>E3 4BB | SURVEYOR | J.B          |
|              |   | DATE     | JANUARY 2018 |

| NO | DATE | REVISION | DRAWING NO       | L | 8442/1    | REV | 0 |
|----|------|----------|------------------|---|-----------|-----|---|
|    |      |          | SCALE            | 1 | : 200 @A0 |     |   |
|    |      |          | SEE ALSO DWG NOS | L | 8442/ES   |     |   |
|    |      |          | SHEET            | 1 | of 1      |     |   |
|    |      |          | REF NO           | L | 8442      |     |   |







# KEY

1. Bromley Hall Roof
2. Proposed Commercial Building Roof
3. Old Poplar Library Roof
4. Live/Work Units
5. Proposed Residential Roof

## Proposed areas for drainage calculations

Proposed buildings with hard roof  
Residential - 412m<sup>2</sup>

Proposed buildings with blue/green roofs  
146 + 254 = 400m<sup>2</sup>

Existing buildings (retained)  
Bromley Hall = 158m<sup>2</sup>  
Poplar library = 287m<sup>2</sup>

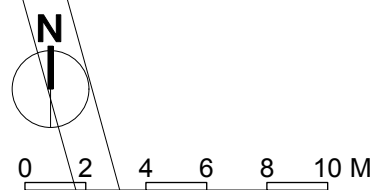
Paved areas  
pedestrian areas at rear - 328m<sup>2</sup>

Pedestrian areas at front (not highway) = 248m<sup>2</sup>

Total roof and paved areas (excluding existing retained buildings) = 1388m<sup>2</sup>  
(1833m<sup>2</sup> including retained buildings)

Highway footway at front - to discharge to highway drainage system unrestricted - 177m<sup>2</sup> (outside redline)

Redline boundary area 2,217m<sup>2</sup>



## **Appendix J: Thames Water Pre-development enquiry response**



Mr Tony Goff  
7 Engineering Consultancy  
19 Kennedy Crescent  
Gosport  
Hampshire  
PO12 2NL



30 May 2019

## Pre-planning enquiry: Confirmation of sufficient capacity

**Site Address: 43-44 Gillender Street, London - E14 6RN**

Dear Mr Goff,

Thank you for providing information on your development for the proposed flats (28 units) and offices (1258m<sup>2</sup>) on previously Brownfield land.

*Proposed foul water discharge via gravity into combined manhole ref. 1917*  
*Proposed surface water discharge via gravity into combined manhole ref. 1917 restricted at 2.0l/s. Total impermeable area: 2875m<sup>2</sup>*

We're pleased to confirm that there will be sufficient foul and surface water capacity in our sewerage 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.**

### Please Note

There are existing public sewers crossing the site. New buildings will need to be kept between 3 and 6.5m away from existing sewer depending on the size and depth of the sewer. Alternatively, it may be possible for sewers to be diverted around the new development. If you wish us to review a diversion proposal please submit this via a Section 185 Diversion application. On some occasions it may be possible to abandon existing public sewers. Please contact us for further information on this process.



### What happens next?

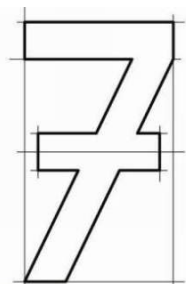
Please make sure you submit your connection application, giving us at least 21 days' notice of the date you wish to make your new connection/s.

If you've any further questions, please contact me on 020 5778 102.

Yours sincerely

Rahim Khan

Thames Water



ENGINEERING  
CONSULTANCY

7 Engineering Consultancy Limited  
19 Kennedy Crescent  
Alverstoke  
PO12 2NL

Tel. 07803 120 963

E. [tony.goff@7-engineering.co.uk](mailto:tony.goff@7-engineering.co.uk)