TRIUM

Aberfeldy Village Masterplan

Environmental Statement – Statement of Conformity

Prepared for:

The Aberfeldy New Village LLP

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Trium Environmental Consulting LLP
The Whitehouse
Belvedere Road
London
SE1 8GA
+44 (0) 20 3887 7118
hello@triumenv.co.uk
www.triumenvironmental.co.uk

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Introduction

1 In October 2021, Aberfeldy New Village LLP (the 'Applicant') submitted a hybrid planning application (LBTH Ref: PA/21/02377/A1 and GLA Ref: 2023/0300/S3) to the London Borough of Tower Hamlets ('LBTH') for the redevelopment of an 8.14-hectare site into a mixed-use residential scheme of 24 buildings between 2 to 28 storeys. An Environmental Statement (ES) was submitted to accompany the planning application (the 'Submitted ES').

2 Further to the submission of the October 2021 planning application, amendments were made to the Proposed Development and subsequently an ES Addendum was prepared and submitted to the LBTH in April 2022, as an update to the October 2021 ES. This also responded to the Interim Review Report (IRR) undertaken by the Temple Group Ltd on behalf of the LBTH. The changes proposed within and considered throughout the April 2022 ES Addendum included:

- Minor change to the extent of the Phase A boundary west of Plot F (no impact on the overall red line);
- The bike store within H1/2 relocated externally adjacent to the school boundary (two 42.64 m2 bike store spaces) and 108.2 sqm (GIA) internal amenity provided within Plot H1/2;
- The location of Plot F's temporary play provision being moved from Jura House to Kilbrennen House;
- Extension of the application 'red line' boundary to include Jolly's Green to facilitate the delivery of the pedestrianisation of the Abbott Road underpass (extending the overall site area to 9.08 hectares);
- Direct link and connection from the pedestrian and cyclist underpass into Jolly's Green and associated tree removal and level changes;
- Landscaping and works to Jolly's Green (with a specification in line with the proposals at Leven Rd Open Space, Braithwaite Park and Millennium Green); and
- Provision of play space in Jolly's Green.

3 These amendments listed above alongside the Proposed Development as detailed within the October 2021 ES, is herein referred to as the 'Amended Proposed Development' throughout this Environmental Impact Assessment Statement of Conformity (EIA SoC). The October 2021 ES and the April 2022 ES Addendum which was prepared as an update to the October 2021 ES is referred to as the 'Submitted ES' throughout this EIA SoC.

4 Since the April 2022 ES Addendum was submitted, minor changes to the Amended Proposed Development have been made and updated drawings, schedules and reports submitted to the LBTH, including an EIA SoC in January 2023 that considered the minor scheme changes (including the removal of Block A3, reducing the total number of buildings to 23) and confirmed that the conclusions of the Submitted ES remained valid.

5 Following a resolution to refuse planning permission by the LBTH Strategic Development Committee (SDC) in February 2023 and the subsequent direction that the Mayor of London will act as the local planning authority for the purposes of determining the planning application, further amendments have been made to the design of the scheme to accommodate second staircases in all buildings over 18m in height.

6 Further information on the planning application is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated November 2023) and the updated Planning Statement (as prepared by DP9 Ltd, dated November 2023).

7 This EIA SoC presents an update to the January 2023 EIA SoC, so that all of the minor changes to the Amended Proposed Development since the submission of the April 2022 ES Addendum are considered collectively, in relation to EIA matters. This EIA SoC should therefore be read alongside the October 2021 ES and the April 2022 ES Addendum.

8 The purpose of this SoC is to confirm that the impact of the minor changes to the Amended Proposed Development does not change the effects previously assessed and that the conclusions set out in the Submitted ES remain valid.

Summary of the Proposed Amendments

9 The changes (herein referred to as the 'proposed amendments') that have been considered throughout this EIA SoC are:

- Removal of Block A3 (residential and retail[1] space) (in Phase B) and replacement with additional landscaping and open/play space. Reprovision of the units being removed were included within Block B1[2];
- Revisions to the proposed housing tenure and mix across all phases resulting in an increase in the number of affordable homes by 20 and an increase in the proportion of affordable family homes;
- Incorporation of a second staircase across all the Plots above 18m within the Detailed and Outline Proposals and subsequent implications (reductions) on the provision of private residential units and non-residential (specifically workspace and retail) areas; and
- Overall reduction of 63 private units (from the maximum parameter proposals), increase in 20 affordable units, a reduction in 245.2m^2 retail space and a reduction in 265.1m^2 workspace are removed from the Detailed and Outline Proposals due to the changes set out in the bullet points above.

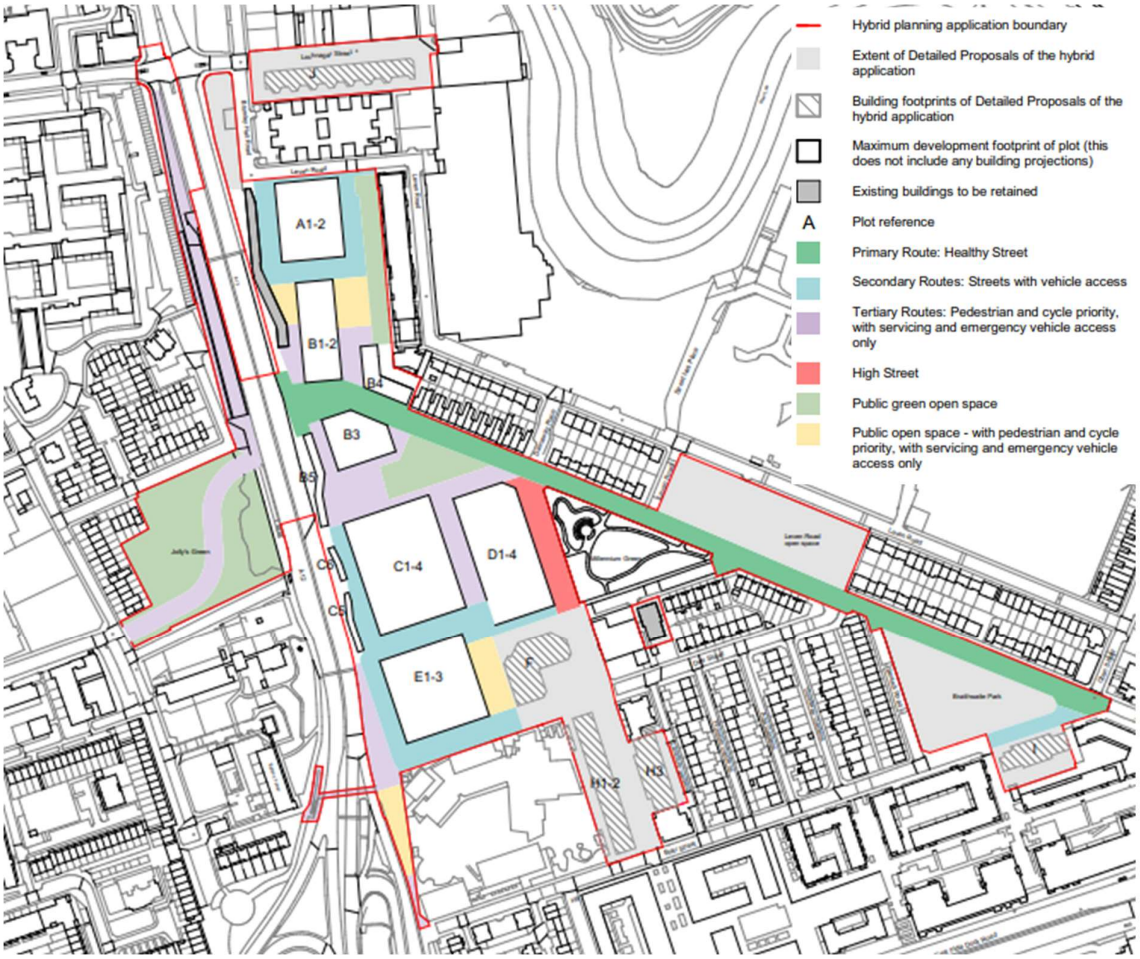
10 The above amendments will not impact the building parameters of the blocks within the Outline Proposals, other than where Block A3 will be removed. The parameter plans have been updated accordingly to reflect the removal of Block A3. In addition, the illustrative landscaping masterplans has been updated to demonstrate how the former Block A3 area can accommodate additional landscaping and open/play space. Updated Urban Greening Factor and Biodiversity Net Gain Calculations are provided with the submission to the GLA (and do not influence the EIA assessments).

11 The updated parameter plans are submitted to the GLA and for context within this EIA SoC, the updated Principle Public Realm Areas parameter plan is shown in Figure 1.

[1] *The workspace that was designated for within Block A3 that was removed as part of the amendments made to the Amended Proposed Development since the Submitted ES was incorrectly not stated as a loss in the subsequent SoC's which were provided to LBTH. Since this EIA SoC is consolidating all the changes made since the Submitted ES, this will now be appropriately considered throughout this EIA SoC.*

[2] Note: Removal of Block A3 was part of the minor amendments made to the Proposed Development prior to the LBTH SDC in February 2023.

Figure 1 Updated Principle Public Relam Areas Parameter Plan



12 The proposed amendments relevant to this EIA SoC (as detailed within paragraph 9) and those details which remain unchanged from the Submitted ES are collectively referred to as the 'Revised Amended Proposed Development'. A Design and Assessment Statement Addendum is also being submitted which provides further details on the Proposed Amendments.

13 Following a resolution to refuse planning permission by the LBTH Strategic Development Committee and the subsequent direction that the Mayor of London will act as the local planning authority for the purposes of determining the planning application further amendments have been made to the design of the scheme to accommodate second staircases in all buildings above 18m in height and some further minor alterations (e.g. to internal arrangements which do not form the basis of any of the EIA assessments) to the wider design as part of this process and ahead of the GLA hearing. These alterations have been considered in the context of the Submitted ES to ascertain whether any new or materially different significant environmental effects are expected as a result of the proposed amendments, and whether any further environmental information needs to be provided in respect of the amendments. This EIA SoC presents the results of this review.

14 In summary, the detailed review confirms that the findings and conclusions of the Submitted ES remain valid.

15 For clarity, the updated description of development that will appear on the planning application is as follows:

"*Hybrid application seeking detailed planning permission for Phase A and Outline planning permission for future phases, comprising:*

Outline planning permission (all matters reserved) for the demolition of all existing structures and redevelopment to include a number of buildings (up to 100m AOD) and up to 140,591 (GEA) of floorspace comprising the following mix of uses: Residential (Class C3); Retail, workspace, food and drink uses (Class E); Car and cycle parking; Formation of new pedestrian route through the conversion and repurposing of the Abbott Road vehicular underpass for pedestrians and cyclists connecting to Jolly's Green; Landscaping including open spaces and public realm; and New means of access, associated infrastructure and highway works.

In Full, for residential (Class C3), retail, food and drink uses and a temporary marketing suite (Class E and Sui Generis), together with access, car and cycle parking, associated landscaping and new public realm, and open space. This application is accompanied by an Environmental Statement."

Updated Area and Accommodation Schedules

16 Taking into account the proposed amendments, updated area and accommodation schedules are provided in the Tables below. The green figures illustrate the latest amended figures which have been considered as part of this EIA SoC (updated areas reflecting the Revised Amended Proposed Development) and the figures in brackets indicating what was previously considered within the Submitted ES (Amended Proposed Development)[3]:

- Table 1 provides the updated maximum amount of development by land use being sought for approval within the Revised Amended Proposed Development. This is an update to Table 4.2 of the October 2021 ES.
- 0 provides the proposed land uses and amount of development for the Detailed Proposals only (i.e. Phase A). This is an update to Table 4.3 of the October 2021 ES.
- 0 provides the proposed land uses and maximum amount of development for the Outline Proposals only (Phases B, C and D). This is an update to Table 4.4 of the October 2021 ES.
- 0 provides the Detailed Proposals residential unit mix (i.e. Phase A). This is an update to Table 4.5 of the October 2021 ES.
- Table 5 provides the maximum parameter residential unit mix for the Outline Proposals (i.e. Phases B, C and D). This is an update to Table 4.6 of the April 2022 ES Addendum.
- Table 6 provides the illustrative housing mix for the Detailed and Outline Proposals (i.e. Phase A, B, C and D).
- Table 7 provides the updated housing mix of the maximum parameters of the Outline Proposals (Phases B, C and D) plus the Detailed Proposals (Phase A).

Table 1 Maximum Amount of Development (by Land Use) for the Revised Amended Proposed Development - Outline plus Detailed Proposals

Land Use	GIA (m^2)	GEA (m^2)
Residential	151,271.7 (150,606.5)	167,112.2 (166,703.2)
Workspace	2,104 (2,702.3)	2,601.8 (3,199.4)
Retail	2,120.9 (2,366.2)	2,440.6 (2,585.7)
Marketing	294.9 (295)	317.3 (317)
TOTAL	**155,791.5 (155,970)**	**172,471.9 (172,805.3)**

[3] *The base comparison for these schedules is the April 2022 ES Addendum.*

Table 2 Proposed Land Uses and Amount of Development – Detailed Proposals

Use Class	Detailed Part GEA (m^2)
Residential	**30,238.9** (30,133)
Retail	**1,324.3** (1,341)
Marketing	**317.3** (317)
TOTAL	**31,880.5 (31,791)**

Table 3 Proposed Land Uses and Maximum Amount of Development – Outline Proposals

Use Class	Outline Part GEA (m^2)
Residential	**133,027.7** (132,413.6)
Residents' Hub	**1,248.7** (1,557.6)
Car Park (podium)	**2,596.9** (2,599)
Workspace	**2,601.8** (3,199.4)
Retail	**1,116.3** (1,244.7)
TOTAL	**140,591.4 (141,014.30)**

Table 4 Updated Housing Mix of the Detailed Proposals

Unit Type	No. of Private	No. of Socially Rented	No. of Intermediate	Total
Studio	32 (12)	0 (-)	0 (-)	**32 (12)**
1 Bedroom	63 (70)	10 (10)	1 (1)	**74 (81)**
2 Bedroom	77 (90)	26 (24)	10 (10)	**113 (124)**
3 Bedroom	9 (9)	30 (30)	0 (-)	**39 (39)**
4 Bedroom	0 (-)	15 (17)	0 (-)	**15 (17)**
5 Bedroom	0 (-)	0 (-)	0 (-)	**0 (-)**
6 Bedroom	0 (-)	4 (4)	0 (-)	**4 (4)**
TOTAL	**181 (181)**	**85 (85)**	**11 (11)**	**277 (277)**

Table 5 Updated Housing Mix of the Maximum Parameters of the Outline Proposals (Phases B, C and D) [4]

Unit Type	No. of Private	No. of Socially Rented	No. of Intermediate	Total
Studio	95 (102)	0 (-)	0 (-)	**95 (102)**
1 Bedroom	364 (406)	66 (81)	47 (44)	**477 (531)**
2 Bedroom	459 (494)	64 (66)	21 (26)	**544 (586)**
3 Bedroom	15 (13)	116 (106)	0 (-)	**131 (119)**
4 Bedroom	0 (-)	41 (12)	0 (-)	**41 (12)**
5 Bedroom	0 (-)	0 (-)	0 (-)	**0 (0)**
6 Bedroom	0 (-)	0 (1)	0 (-)	**0 (1)**
TOTAL	**Up to 933 (1015)**	**Up to 287 (226)**	**Up to 68 (70)**	**Up to 1,288 (1,351)**

[4] *The housing mix of the Outline Proposals are indicative and will be subject to finalisation for each Phase through the RMAs.*

Table 6 Updated Housing Mix of the Illustrative Scheme for Phases B, C and D, Plus the Detailed Proposals (Phase A)

Unit Type	No. of Private	No. of Socially Rented	No. of Intermediate	Total
Studio	140 (117)	0 (-)	0 (-)	**140 (117)**
1 Bedroom	408 (446)	73 (72)	46 (40)	**527 (558)**
2 Bedroom	526 (582)	88 (109)	31 (37)	**645 (728)**
3 Bedroom	25 (29)	144 (130)	0 (-)	**169 (159)**
4 Bedroom	0 (-)	54 (29)	0 (-)	**54 (29)**
5 Bedroom	0 (-)	0 (-)	0 (-)	**0 (-)**
6 Bedroom	0 (-)	4 (4)	0 (-)	**4 (4)**
TOTAL	**1099 (1,174)**	**363 (344)**	**77 (77)**	**1,539 (1,595)**

Table 7 Updated Housing Mix of the Maximum Parameters of the Outline Proposals (Phases B, C and D) [5] plus the Detailed Proposals (Phase A)

Unit Type	No. of Private	No. of Socially Rented	No. of Intermediate	Total
Studio	127 (114)	0	0	**127 (114)**
1 Bedroom	427 (476)	76 (91)	48 (45)	**551 (612)**
2 Bedroom	536 (584)	90 (90)	31 (36)	**657 (710)**
3 Bedroom	24 (22)	146 (136)	0 (-)	**170 (158)**
4 Bedroom	0 (-)	56 (29)	0 (-)	**56 (29)**
5 Bedroom	0 (-)	0 (-)	0 (-)	**0 (-)**
6 Bedroom	0 (-)	4 (5)	0 (-)	**4 (5)**
TOTAL	**1,114 (1,196)**	**372 (351)**	**79 (81)**	**1,565 (1,628)**

17 The updated Planning Statement and addendums to the Design and Access Statement encapsulate all the changes which have been made since the original planning application was submitted and include an updated description of development which takes into account these changes. The description of development broadly remains the same and as such the assessment undertaken as part of the Submitted ES is considered to remain valid. The proposed amendments that are being sought for within this application have been considered in the below section '*Review of Environmental Effects Report in the Submitted ES*'.

Delivery of Affordable Housing

18 For completeness, and whilst they don't constitute physical changes to the scheme and nor do they alter the outcome of any of the assessments undertaken as part of the EIA, it is proposed that the S106 agreement will contain a provision relating to the programme for the delivery of the affordable housing provision, to provide a minimum of 38.8% affordable housing by habitable room overall and on a rolling minimum cumulatively across the Amended Proposed Development.

[5] *The housing mix of the Outline Proposals are indicative and will be subject to finalisation for each Phase through the RMAs.*

Construction Programme

19 The indicative construction programme has been updated to reflect the delay in works starting on site (due to the resolution by the London Borough of Tower Hamlets Planning Committee to refuse the planning application) and also the requirements of the Building Safety Act which require gateways at the start and end of each Phase (which has lengthened the overall construction programme).

20 The duration and sequencing of the demolition and construction works remain as previously assessed in the Submitted ES and the basis of the assessments of impacts of the demolition and construction work is therefore unchanged from that presented in the Submitted ES. The only change to the sequencing is within Phase A, where Plot J was previously due to be the first plot to be built out and occupied within that phase, this is now Plot I (at the southern end of the site) with Plot J now being constructed towards the end of the phase.

21 Due to the elongation of the overall programme (from 10 years 8 months to 11 years and 11 months) due to the factors referred to above, the Phase A first year of occupation is now 2027 (rather than 2026 as previously considered) and the final year of opening (of the overall Proposed development) is now 2037 (rather than 2033 as previously considered). The assessments in the Submitted ES represent a worse case based on an earlier assessment year (on the basis that cars become 'cleaner' and quieter in the future). Therefore, the delay to the start and completion of the demolition and construction works will not present any worse effects than those already identified within the Submitted ES.

UGF and BNG

22 As a result of landscaping improvements (planting typologies), the urban greening factor (UGF) for the Amended Proposed Development has increased to 0.4 and the biodiversity net gain (BNG) has increased to 30.47%).

Review of Updated Policy and Guidance Since the Submitted ES

National Planning Policy Guidance (NPPF) 2023

23 The revised NPPF does not change the basis of any of the assessments in the Submitted ES. No further consideration of the 2023 NPPF is necessary in relation to EIA matters.

Health

24 In 2022, the Institute of Environmental Management and Assessment (IEMA) produced guidance over effective scoping[6] and determining significance[7] in Health Impact Assessments ("HIA"). The approach to scoping out health as a standalone chapter from the ES was agreed via the scoping process with LBTH, ahead of the October 2021 planning application submission. Relevant and potentially significant health related effects such as air quality and noise and vibration are covered within the April 2022 ES Addendum as these topics formed part of the scope of the Submitted ES. It is therefore not considered necessary to reconsider the scope of the EIA and therefore, health remains scoped out.

25 It is determined that the October 2021 HIA approach to significance is in line with the new guidance; sensitivity is informed by baseline data and professional judgement, and magnitude of impact is informed by other technical documents and professional judgement.

[6] *IEMA, 2022. 'Effective Scoping of Human Health in Environmental Impact Assessment'*
[7] *IEMA, 2022. 'Determining Significance For Human Health In Environmental Impact Assessment'*

26 As such, the updated guidance to the consideration to health remains unaffected and no changes to the approach of assessment need to be made.

Air Quality Neutral

27 The Revised Amended Proposed Development has been considered in the context of the Mayor of London's new guidance on Air Quality Neutral[8]. The Revised Amended Proposed Development is 'car-free' (aside from the provision of blue badge parking and provision of spaces for returning existing residents) and will be provided with heat and hot water via all-electric sources (Air Source Heat Pumps (ASHP), Water Source Heat Pumps (WSHP)). The guidance states in Paragraph 4.1.2 that *"Where major developments meet the definition of 'car-free', they can be assumed to meet the Transport Emissions Benchmark..."*. ASHP and WSHP do not have any on-site emissions, and Paragraph 3.3.1 of the guidance states that *"Backup plants installed for emergency and life safety power supply, such as diesel generators, may be excluded from the calculation of predicted building emissions."*

28 The new guidance does not therefore alter the findings of ES Volume 1, Chapter 8: Air Quality of the Submitted ES and the Revised Amended Proposed Development is considered to be air quality neutral in accordance with London Plan Policy SI.

IEMA 'Guidelines to Assessment of Road Traffic' 2023

29 Further consideration has been given to the release of the IEMA Traffic and Movement Guidance in July 2023, superseding the 1993 guidance used within the Submitted ES for the transport assessment. Overall, the new guidance maintains the general approach and methodology as to the previous IEMA guidance. As such, the new guidance is not considered to materially alter the methodology of the assessment undertaken, or those conclusions and effects presented and as such the approach to the transport assessment within the Submitted ES is considered to remain robust and in line with the new guidance.

Approved Document O – Noise and Vibration

30 The Approved Document O was released by the Government in June 2022. An updated Energy Assessment report is submitted to the GLA which includes updates to the overheating modelling to reflect the night-time noise limit set by the Document, based on the overheating risk categories for each façade of the development plots set out in the October 2021 ES (Volume 3 - Appendix: Noise and Vibration).

LBTH Code of Construction Practice 2023

31 The LBTH released an updated Code of Construction Practice (CoCP) in April 2023[9] which includes updates to working hours. Based on the updated CoCP, section 71 applications may be required for the demolition and construction of the Revised Amended Proposed Development to allow for Saturday morning working. The guidance set out in the updated CoCP does not have a material impact on the basis of the environmental impact assessments.

Review of Environmental Effects Reported in the Submitted ES

32 Given the proposed amendments are mainly referring to the completed phase of the Proposed Development and that these proposed amendments are not considered to have a material impact on

[8] *Mayor of London. London Plan Guidance. 'Air Quality Neutral. February 2023. Available at: Air Quality Neutral LPG (london.gov.uk).*

[9] *London Borough of Tower Hamlets (2023), Code of Construction Practice*

the length of construction period or associated activities, the review of the proposed amendments relates to the technical Completed Development assessments only.

33 Each of the technical topic areas included within the Submitted ES and how the proposed amendments may or may not impact these assessments has been discussed in Table 8 below. Where it is considered that the proposed changes could alter any of the technical assessments, additional information is provided throughout this EIA SoC.

Table 8 Initial Consideration of the Proposed Changes (by Topic)

Topic of the Submitted ES	Consideration of the Proposed Amendments
Socio-economics	Further consideration of the proposed amendments against the socio-economics assessment undertaken in the Submitted ES has been provided below. In summary, the proposed changes are not considered to have a material impact on the effects presented within the Submitted ES and that the assessment presents a worst-case scenario given that it was based off a higher number of proposed residential units / resident population for some aspects of the socio-economics assessment. A review of those effects which are affected by a loss of provision of housing / population such as the local economy and the loss of retail and workspace such as employment generation impacts have been discussed in further detail within the '*Socio-Economics'* section of this EIA SoC.
Traffic and Transport	Given there is a reduction in 63no. units and that the assessment was undertaken against a larger quantum of development, the Submitted ES reports effects based on a larger development coming forward. The reduction in the number of units means a decrease in demand for cycle parking spaces and accordingly this has been reduced to 2,888 spaces. The car parking numbers remain unchanged. The methodology for assessing the trip generation of the Proposed Development has been agreed upon previously with both LBTH and TfL. The trip rates used are based on the overall quantum of dwellings and do not take account of the unit mix. The increase in child yield does not influence the trip generation. As such a change in unit mix does not impact the trip generation. The reduction in the quantum of development is not considered to materially affect the conclusions and reported effects, as stated within the Submitted ES, and are therefore considered to remain robust and valid. As the proposed amendments do not alter the basis of the Traffic and Transport assessments presented in the Submitted ES and therefore the proposed mitigation and residual effects on traffic and transport remain as presented in the Submitted ES and no further information on this topic needs to be provided.
Air Quality	As set out above, the traffic data that informed the air quality assessment of the Submitted ES remains valid. The proposed mitigation and residual effects on air quality remain as presented in the Submitted ES and no further information on this topic needs to be provided. The changes to Air Quality Neutral Guidance which was released in February 2023 have been considered in *'Review of Updated Policy and Guidance Since the Submitted ES'* section above.
Climate Change	None of the proposed amendments are considered to affect the climate change assessment presented in the Submitted ES. This assessment included Block A3 which has now been removed during subsequent scheme amendments and therefore represents a worse case. Updates to standalone reports such as Whole-Life Carbon and Circular Economy Statement accompany this submission to the GLA in light of revised guidance and the re-classification of carbon associated with operational energy. Although there have been changes to the amount of carbon associated with the operational Proposed Development, this is not considered to alter the significance previously reported within the Submitted ES. Further discussion is provided below.
Noise and Vibration	As set out above under 'Traffic and Transport', the traffic data that informed the noise and vibration assessment of the Submitted ES remains the same. The proposed mitigation and residual effects on noise and vibration remain as presented in the Submitted ES and no further information on this topic needs to be provided.
Archaeology	The proposed amendments will not result in any additional below ground works such as excavation. The removal of Block A (with landscaping and open/play space in it's place) will mean that the ground in this area will be less disturbed than previously considered, but this will not alter the assessment presented in the Submitted ES and no further mitigation is required. The residual effects on archaeology remain as presented in the Submitted ES and no further information on this topic needs to be provided.
Water Resources, Drainage and Flood Risk	The proposed changes will not result in any additional ground works and the removal of Block A (with landscaping and open/play space in it's place) will result in an increase in the amount of permeable ground which will improve surface water drainage and flood risk issues. The removal of Block A3 will also marginally reduce the potable water demand of the Proposed Development.

Topic of the Submitted ES	Consideration of the Proposed Amendments
	It is therefore considered that the assessment presented in the Submitted ES represents a worse-case assessment and the conclusions of that assessment remain valid. An updated Drainage Strategy has been prepared and is provided in Appendix A.
Wind Microclimate	A qualitative review of the removal of Block A3 has been undertaken with further information provided in the '*Review of Environmental Effects*' section of this EIA SoC.
Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare	The removal of Block A3 has the potential to alter the daylight and sunlight to the closest neighbouring properties (Atelier Court and Leven Road Phase 3) as assessed in the April 2022 ES Addendum. Further consideration of this is provided below. A separate Addendum to the Internal Daylight and Sunlight report is also submitted to the GLA which considers the overshadowing/sun on ground of the newly created open space at the location of the former Block A3 and revised internal configurations as a result of the proposed amendments.
Townscape, Visual Impacts and Built Heritage	The removal of Block A3 has the potential to change viewpoints 6 and 8 and setting of townscape/built heritage as assessed in the Submitted ES. Further consideration of this is provided below.
Health	The review of the approach for the consideration of heath across the EIA process has been considered. As discussed, the revised IEMA guidance does not alter the approach to the consideration of health across the Submitted ES. Health has been appropriately considered within the Submitted ES within the Air Quality and Noise and Vibration assessments, with a standalone Health Impact Assessment provided as a separate document to the Submitted ES. No further consideration has been made to health throughout this EIA SoC.

Socio-economics

Overview

34 A detailed review has been undertaken by Trium Environmental Consulting LLP (the Applicant's Appointed EIA Consultant) who has been involved and who led the production of the Submitted ES since the original planning application, to consider the potential for changes to the significance and scale of effects identified in Chapter 6: Socio Economics of the Submitted ES, as a result of the proposed amendments to the Proposed Development.

35 The proposed amendments include a change to the overall tenure mix and a resultant minor change to the overall number of units together with a change to the provision of open/amenity and play space. There is a minor reduction in the retail space and workspace. There are no other design changes of relevance to the Socio-Economic Assessment.

36 The same methodology to assess the impacts as set out in the Submitted ES has been applied to assess any potential changes as a result of the proposed amendments to housing numbers, population and child yield and provision of open/amenity and play space, and the resulting implications for demand for social and community infrastructure and the local economy. A summary of the review of these effects is provided below.

Contribution to Housing Targets

37 Although there is a minor reduction in housing units (-63 units) being delivered across the Revised Amended Proposed Development, the overall provision is still considered to provide net additional housing provisions against LBTH's housing supply and is considered to still represent a delivery of 4% of the LBTH housing target over the next 10 years. As a result, there are no material changes to the assessment and the effect on housing targets remains as stated in Chapter 6: Socio-economics of the Submitted ES.

Population Yield

38 The overall population yield generated in respect of the Revised Amended Proposed Development is expected to decrease from 3,285 additional residents to 3,190 additional residents (-95), a decrease of

2.9% in comparison to the numbers reported in the Submitted ES. As a result, there are no material changes to the assessment of effects on the population and labour market, demand for primary health care services, demand for open space and demand for leisure and community services and all associated effects remain as stated in Chapter 6: Socio-economics of the Submitted ES. For the Detailed Proposals (Phase A) the population yield is expected to decrease from 655 to 602 (-53).

39 There are no material changes to the assessment of the effect on the population and labour market, demand for primary health care services, demand for open space and demand for leisure and community services and all associated effects remain as stated in Chapter 6: Socio-economics of the Submitted ES for the Detailed Proposals (Phase A).

Child Yield

40 The estimated gross child yield generated in respect of the Revised Amended Proposed Development will increase across all age groups as set out in Table 9 below.

41 School capacity in the area and the associated mitigation (i.e. Community Infrastructure Levy payment) as set out in the Original ES remains applicable and as a result, there will be no material changes to the assessment and the significance of effect on demand for early years, primary school and secondary school places remain as stated in Chapter 6: Socio-economics of the Submitted ES.

42 For the Detailed Proposals (Phase A) only, the child yield is expected to decrease marginally from the figures stated in the Chapter 6: Socio-economics of the Submitted ES and the significance of effect on demand for early years, primary school and secondary school places remains as stated.

Table 9 Updated Child Yield

Age Band	Child Yield Reported in the Submitted ES	Updated Child Yield	Difference
0-4 years old	248	267	+19
5-10 years old	201	225	+24
11-18 years old	190	232	+42
Total	**639**	**724**	**+85**

Play Space

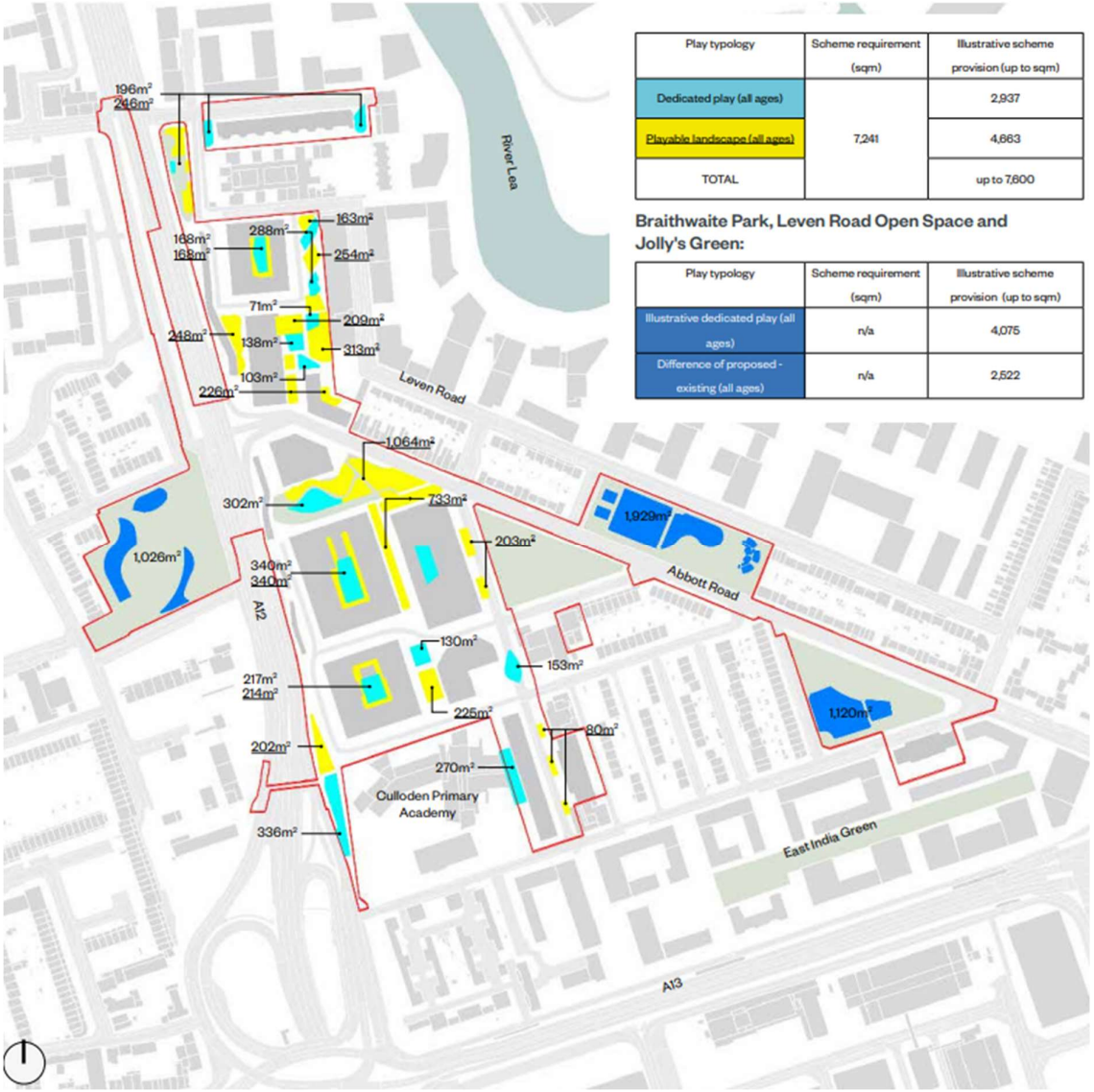
43 The overall gross child yield of children under the age of 18 has increased (+85), however the provision of play space on-site has also increased (with the incorporation of additional play space in the area where Block A3 has been removed) and the Proposed Illustrative Play and Open Space Provision set out in the Addendum to the Design and Access Statement demonstrates how it will be possible to meet the requirements of the LBTH within the Site for the Illustrative Scheme. This is through the direct provision of new play space within the site and also improved play provision within Jolly's Green, Leven Road Open Space and Braithwaite Park.

44 As set out in the Submitted ES, play space provision for the under 5s and 5-11 year-olds will be provided on-site and the final provision for each Phase of the Outline Proposals will be determined by the final mix of the residential units (by size and tenure) applied for at each RMA stage (the Illustrative Scheme demonstrates how this can be achieved). As a result, there will be no material changes to the assessment and the significance of effect on demand for play space remains stated in Chapter 6: Socio-economics of the Submitted ES.

45 The illustrative dedicated play and playable landscape (also showing the quantum of each space that could be provided) is shown below in Figure 2 (as shown in the Design and Access Statement Addendum).

46 As the child yield for the Detailed Proposals (Phase A) is expected to marginally decrease, the assessment of play space demand will be as set out in the Submitted ES.

Figure 2 Illustrative Dedicated Play and Playable Landscape



Play typology	Scheme requirement (sqm)	Illustrative scheme provision (up to sqm)
Dedicated play (all ages)	7,241	2,937
Playable landscape (all ages)		4,663
TOTAL		up to 7,600

Braithwaite Park, Leven Road Open Space and Jolly's Green:

Play typology	Scheme requirement (sqm)	Illustrative scheme provision (up to sqm)
Illustrative dedicated play (all ages)	n/a	4,075
Difference of proposed - existing (all ages)	n/a	2,522

On-site Employment

47 There is a minor reduction in the retail space of 265.2m^2 gross internal area (GIA) and a reduction of 245.2m^2 GIA of workspace within the Illustrative Scheme which formed the basis of the minimum quantum of development tested as part of the previous socio-economic assessment including within the Submitted ES.

48 The revised gross employment calculations are provided in Table 10. The reduction to the retail space and workspace areas would not materially alter the range of gross jobs created.

Table 10 Estimated (Low-High) Gross Employment Supported by the Revised Amended Proposed Development

Proposed Uses	Proposed Use Class[10]	Floorspace (GIA/NIA m^2)	Area per FTE	Jobs Range
Workspace	B1a	1,683 (2,369.1)	10m^2 /FTE	168 (201)
Retail	A1	1,696[11] (2,661.2[12])	15-20m^2/ FTE	85-113 (113-151)
Residential Hub[13]	C3	1,220 (1,374)	-	5
Total				**253-281 (319-357)**

Note: XXm^2 indicates the revised floorspace areas (GIA/NIA) used from the Revised Amended Proposed Development to assess gross employment in line with the HCA Guidance 2015. XXm^2 represent previous floorspace (GIA) area used within the socio-economic assessment of the Submitted ES.

49 The Submitted ES also considered any deadweight to existing jobs provided from within the site. To enable a worst-case assessment, these were presumed to be lost, however, are in reality likely to be displaced to another location. The additionality adjustments to estimate net on-site employment across the Local Impact Area and LBTH level are provided in the table when considering the Revised Amended Proposed Development.

Table 11 Revised Proposed Development Additionality Adjustments to Estimate Net On-Site Employment

Additionality Measure	LIA/LBTH Level(s)	Justification
(1) Gross on-site jobs	253-281 (319-357 FTE jobs)	-
(2) Leakage	0%	New jobs created will be contained within the site and will note 'leak' to locations outside the Proposed Development
(3) Displacement	25%	Overall displacement of jobs created is expected to be very low
(4) Deadweight	46-63 FTE jobs	It is assumed that the current employment supported on-Site will be displaced to other locations within London, but (under the worst-case scenario) outside the Borough (LBTH)
Net additional FTEs	127-165 FTE jobs (177-234 FTE jobs)	-

Note: XX indicates the revised full time equivalent/net additional full time equivalent jobs generated from the Revised Amended Proposed Development. XX represent revised full time equivalent/net additional full time equivalent jobs presented within the socio-economic assessment of the Submitted ES.

50 Based on the definitions presented in Volume 1, Chapter 6 of the October 2021 ES, the sensitivity of the receptor (the Local Impact Area as defined in the Submitted ES) remains low and the slight decrease in provision of workspace and retail is not considered to change the magnitude of impact previously identified (being low). The resultant effect of on-site employment on the Local Impact Area remains Minor Beneficial (not significant) and Negligible (not significant) at the Borough Level.

Local Economy

51 Based on updated weekly average spend from the Office for National Statistics which is based on the latest 2021 census data, with an average spend of £300.70, the Revised Amended Proposed

[10] *Land uses classes based on those used in the HCA's Employment Density Guide (2015)*
[11] *The socio-economic assessment of the Submitted ES used GIA to assess the gross number of jobs created by the Proposed Development. In line with Housing and Communities Agency Guidance 2015, the Net Internal Area of the Revised Amended Proposed Development has been provided for this EIA SoC.*
[12] *Including marketing suite floorspace which will be converted into a retail unit at a later stage*
[13] *Assumption that residential hub would include reception/concierge & gym/communal area and therefore will not support more than 5FTE employees on-site*

Development is estimated to generate gross household expenditure of £24 million on retail, goods and services. It is noted that this is a reduction in the amount reported within the Submitted ES however, the average spend factor at the time of writing the Submitted ES was significantly more (£460.30) and the revised figure remains a considerable amount of additional spend in the local area and the impact is considered to remain low and resultant effect Minor Beneficial (not significant), as reported in the Submitted ES.

52 The proposed amendments do not result in any changes that will affect the following receptors:

- Loss of existing residential units;
- Loss of existing floorspace;
- Temporary employment;
- Crime and social cohesion; or
- Deprivation.

53 The significance of effects on the above receptors therefore remains as stated in Chapter 6 Socio-economics of the Submitted ES.

54 In summary, all mitigation measures and likely residual effects of the Completed Development Scenarios remain as stated in the Chapter 6 Socio-economics of the Submitted ES.

Cumulative Effects

55 A review has been undertaken since the Submitted ES which has not identified any new cumulative schemes that would be required to be included within a cumulative effects assessment by virtue of their scale, nature and/or location. Some of the previously considered cumulative schemes have undergone amendments which have been reviewed and do not alter the findings of the cumulative impact assessments as reported in the Submitted ES.

56 Given that the Revised Amended Proposed Development does not alter the conclusions and effects reported in the Submitted ES (as discussed above) the, the cumulative effects reported in the Submitted ES remain valid.

Wind Microclimate

57 RWDI have reviewed the proposed amendments and provided a qualitative assessment of likely wind conditions using professional judgement informed by the previous wind microclimate assessment for the Submitted ES. A technical note is provided in Appendix B of this report.

58 The removal of Block A3 may reduce the amount of blockage to the wind which is being channelled between Blocks A1/A2 and B1, therefore may lead to a slight increase in acceleration of winds in these areas. However, the introduction of dense landscaping in the form of trees and hedging to the west of this channel (in place of Block A3) would also act as a form of blockage, and therefore is likely to have a similar effect.

59 At the reserved matters application (RMA) stages when the detailed design (including the landscaping proposals) is developed, further wind tunnel testing will be undertaken (as set out in the Submitted ES) and will inform the landscaping design to be incorporated within the scheme. At this stage, it is considered that the following specification of planting will result in suitable wind conditions being met:

- The height of trees to the west should range between 4m and 7m in height, and that planters or hedges should be included at ground level to reduce the effective length of the clear stem of the trees.
- Evergreen varieties or species with large dense crowns are also recommended.

60 It is expected with these measures in place, wind conditions would be materially the same as reported in the Submitted ES and this will be confirmed at the RMA stage through further wind tunnel testing.

61 The introduction of the amenity spaces instead of Block A3 introduces new spaces from those assessed within the Submitted ES. None of the amenity spaces are being proposed as bistro seating, therefore wind conditions would be required to be suitable for sitting use at seating areas and standing use at active amenity areas (as defined by the Lawson Comfort Criteria). These spaces are generally well sheltered to the west by trees and hedging, in particular the play area and northernmost picnic area.

62 The northern allotments and seating area should also be well sheltered by the landscaping and Blocks A1/B1. The southern picnic area should receive shelter from Block B1 as well as the trees located to the north-west and south-west. However, this space would receive less direct shelter in comparison to the other spaces, therefore may benefit from a hedge or planter of 1m total height located at the west of the picnic area. It is expected with the proposed landscaping and additional landscaping suggestions wind conditions would be suitable for the intended amenity uses, however, this will be confirmed at the RMA stage through further wind tunnel testing.

63 In summary, it is expected that with the proposed landscaping in situ wind conditions around Block A3 would not materially change from that presented in the Submitted ES. The new amenity spaces which would replace Block A3 would be expected to have wind conditions suitable for the intended uses with the inclusion of the proposed landscaping and additional recommended landscaping suggestions. As set out in the Submitted ES, wind conditions in the Outline Proposals will be confirmed at the RMA stage through further wind tunnel testing and input into the detailed design and landscaping proposals.

Daylight, Sunlight, Overshadowing, Light Pollution and Solar Glare

64 The Daylight, Sunlight, Overshadowing, Solar Glare and Light Pollution Chapter of the April 2022 ES Addendum has been reviewed by GIA in the context of the amended Proposed Development to determine if the conclusions of this assessment remain valid.

65 This Addendum is supported by the following Annexes provided in Appendix C of this report:

- Annex 1: Updated Scenario Overviews
- Annex 2: Updated Daylight and Sunlight Results
- Annex 3: Updated Overshadowing Results

Implications of the Proposed Amendments

66 In relation to daylight, sunlight, overshadowing, solar glare and light pollution, only changes of the amended Proposed Development relating to massing or façade detailing are of relevance to effects at surrounding sensitive receptors. As such, the removal of Block A3 for the amended Proposed Development has been considered in the context of daylight, sunlight, overshadowing, solar glare and light pollution effects to surrounding receptors.

67 Given the high sensitivity and proximity to the area of Block A3 of the adjoining residential receptors of Atelier Court and Leven Road Phase 3, an updated assessment has been undertaken to determine any change in daylight and sunlight impacts from the changes to the Proposed Development compared to the results set out in the April 2022 ES Addendum.

68 All other existing or consented sensitive buildings assessed in the April 2022 ES Addendum would see no change in effect as a result of the changes to the Proposed Development in terms of daylight and sunlight. This is because they are too far from the removal of Block A3 or because they would not have a view of the Proposed Development. Therefore, all other surrounding sensitive buildings have not been reassessed.

69 In terms of overshadowing, the technical assessment has been updated (see Appendix C, Annex 3), however, none of the receptors would be affected by the changes to the Proposed Development and so no further commentary is required. The proposed mitigation and residual effects for overshadowing impacts as reported in the April 2022 ES Addendum remain valid.

70 The Revised Amended Proposed Development would not result in any relevant changes to the solar glare and light pollution assessments previously undertaken and reported in the April 2022 ES Addendum, and so these have not required updating. The proposed mitigation and residual effects for solar glare and light pollution impacts as reported in the April 2022 ES Addendum remain valid.

Potential Effects

Daylight

71 As noted above, only two surrounding sensitive properties have been considered in the context of the amended Proposed Development. Therefore, reference should be made to the April 2022 ES Addendum for the discussion and significance of daylight effect for all other sensitive receptors.

72 The daylight assessment of Atelier Court and Leven Road Phase 3 for the Revised Amended Proposed Development can be found within Appendix C and is summarised below in Table 12. The results and discussion for these two properties supersedes that which is presented in the April 2022 ES Addendum.

Table 12 Proposed Development Daylight Summary

Address	Vertical Sky Component (VSC)						No Sky Line (NSL)					
	Windows						Rooms					
	Total Windows	Total Windows Passing	20.1-29.9%	30-39.9%	40+%	Total	Total Rooms	Total Rooms Passing	20.1-29.9%	30-39.9%	40+%	Total
Atelier Court	117	14	**3**	**9**	**91**	**103**	97	35	**13**	**13**	**36**	**62**
Leven Road Phase Three	73	26	**4**	**2**	**41**	**47**	62	28	**2**	**3**	**29**	**34**
Totals	**190**	**40**	**7**	**11**	**132**	**150**	**159**	**63**	**15**	**16**	**65**	**96**

Atelier Court

73 This block is located east of the Site. The west facing elevation, which reaches seven storeys above ground at the northern portion and three storeys above ground across the southern portion, is defined by recessed balconies. Windows and rooms on the west elevations overlooking the Revised Amended Proposed Development are considered for assessment. Windows on the north facing façade are also considered, as these serve rooms seeing alterations as a result of the Revised Amended Proposed Development. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can be expected to occur as a result of massing coming forward.

74 A total of 117 windows serving 97 rooms were assessed for daylight within this building. Of these 97 rooms, 10 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

75 For VSC, 14 of the 117 (12%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

76 Of the 103 affected windows, three would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and nine would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 91 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

77 Approximately half (55) of the windows affected serve bedrooms, which may be considered less sensitive to daylight alteration. These windows retain 4.2-25% VSC, with the lower levels of retain light occurring to bedrooms windows situated beneath recessed balconies. Compared to the Proposed Development assessed and reported on in the Submitted ES, 19 bedrooms windows would see no change in the retained levels of VSC, with the remaining 36 seeing improvements compared to the previous iteration of the Proposed Development ranging from 0.1-6% absolute VSC.

78 A further seven windows affected serve kitchens. Six of these seven would retain VSC levels between 22.2-26% VSC, and so are considered to remain well daylit. Three of these six windows would see improvements from 1.3-5.8% VSC, with the other three seeing no change. The remaining kitchen window is at ground level and would achieve 14.3% VSC with the Revised Amended Proposed Development in situ. This window would see an improvement of 3.5% VSC compared to the previous iteration of the Proposed Development.

79 The remaining 41 windows affected serve living rooms or LKDs. Nine of these windows are flush with the façade of which eight retain levels of VSC between 14.2-24.8%, which may be considered adequate. The ninth window would retain a marginally lower value of 12.7% VSC, due its location on the third storey beneath an overhang which limits the amount of daylight reaching the window.

80 The final 32 windows LKD and living room windows would retain lower levels of daylight (1-9.6% VSC) owing to their location beneath recessed balconies. Overall, in comparison to the previous iteration of the Proposed Development, 21 living room and LKD windows would see no change in retained values, and 20 windows would see improvements between 0.2-3.6% absolute VSC .

81 For NSL, 35 of the 97 (36.1%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

82 Of the 62 affected rooms, 13 would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and 13 would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 36 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

83 In terms of NSL, 47 rooms affected are bedrooms, where daylight distribution is considered less important (BRE Guidelines paragraph 2.2.10[14]). The remaining 15 affected rooms are LKDs which would retain 29-78% NSL. The living room and LKD windows on the Site facing façade are either located beneath balconies, or relatively narrow, meaning that the daylight distribution is limited to that which is received from across the Site.

84 Overall, compared to the data reported in the Submitted ES, four windows would see a reduction in the magnitude of VSC impacts from Major Adverse to Moderate to VSC. Compared to the previous iteration of the Proposed Development, 36 bedrooms would see improvements ranging from 0.1-6% VSC, four kitchen windows would see improvements ranging from 1.3-5.8% VSC and 20 living room/LKD windows would see improvements between 0.2-3.6% VSC. In terms of NSL, nine additional rooms would meet BRE's criteria. The effect to this building would remain **Major Adverse** (significant), as reported in the Submitted ES.

[14] BRE Guidelines (2022) Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BR209)

Leven Road Phase 3

85 Five storeys of this residential apartment block located east of the Site are considered for assessment. Windows and rooms on the west and south west elevations are considered for assessment. The building is an irregular form with the west facing elevations defined by inset façades and overhangs on the first and second storey. The south west facing façade is defined by balconies. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of daylight. Significant reductions can therefore be expected to occur as a result of massing coming forward.

86 A total of 73 windows serving 62 rooms were assessed for daylight within this building. Of these 62 rooms, 18 would meet BRE's criteria for both VSC and NSL and as such experience a Negligible effect.

87 For VSC, 26 of the 73 (35.6%) windows assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

88 Of the 47 affected windows, four would experience an alteration in VSC between 20-29.9% which is considered a Minor Adverse effect and two would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 41 windows would experience an alteration in excess of 40% which is considered a Major Adverse effect.

89 A total of 30 bedroom windows would be affected, which may be considered less sensitive to daylight alterations. These windows receive uncharacteristically high levels of VSC in the baseline condition due to their unobstructed view across the Site, particularly those on the upper storeys. Due to the constraints of the building own irregular form and location beneath balconies, daylight availability is limited, with 18 bedrooms windows retaining below 13% VSC. The remaining twelve would retain values in the mid teen range which may be considered adequate for a bedroom. These retained values are unchanged from the Submitted ES.

90 Only one kitchen window, located on the north facing flank wall would see a minor adverse impact, retaining 11.8% VSC which is a marginal improvement in of 0.3% compared to the previous iteration of the Proposed Development.

91 The remaining 16 windows serve 12 living rooms and one LKD. Four of these windows would retain 13.9-21.5% VSC, which may be considered adequate. The remaining 12 are situated beneath overhangs or on a setback part of the building, which inherently obstructs daylight availability and resulting in lower retained values. These retained values are unchanged from the Submitted ES.

92 For NSL, 28 of the 62 (45.2%) rooms assessed would meet BRE's criteria and are therefore considered to experience a Negligible effect.

93 Of the 34 affected rooms, two would experience an alteration in NSL between 20-29.9% which is considered a Minor Adverse effect and three would experience an alteration between 30-39.9% which is considered a Moderate Adverse Effect. The remaining 29 rooms would experience an alteration in excess of 40% which is considered a Major Adverse effect.

94 In terms of NSL, 25 rooms affected are bedrooms, where daylight distribution is considered less important (BRE Guidelines paragraph 2.2.10[15]). The remaining nine affected rooms are living rooms and an LKD which would retain 12-70% NSL.

95 Overall, the scale of VSC and NSL effects to this building, and the retain values are not materially different to the Submitted ES and so the effect would remain **Major Adverse** (significant), as reported in the Submitted ES.

[15] BRE Guidelines (2022) Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BR209)

Sunlight

96 The daylight assessment of Atelier Court and Leven Road Phase 3 for the Proposed Development can be found within Appendix C and is summarised in below in Table 13.

Table 13 Proposed Development Sunlight Summary

Address	Windows		Annual PSH			Winter PSH		
	Total Windows	Total Windows Passing[16]	20.1-29.9%	30-39.9%	40+%	20.1-29.9%	30-39.9%	40+%
Atelier Court	110	7	0	0	101	0	0	102
Leven Road Phase Three	44	10	0	1	33	0	0	27
Totals	**154**	**17**	**0**	**1**	**134**	**0**	**0**	**129**

Atelier Court

97 This block is located east of the Site. The west facing elevation, which reaches seven storeys at the northern portion and three storeys across the southern portion, is defined by recessed balconies. Windows and rooms on the west elevations overlooking the Proposed Development are considered for assessment. Windows on the north facing façade have been excluded as they would not receive sunlight and so are not relevant for assessment. It should be noted that this building overlooks low rise existing massing in the baseline condition, receiving uncharacteristically high levels of sunlight. Significant reductions can be expected to occur as a result of massing coming forward.

98 A total of 110 windows were assessed for sunlight within this building of which seven (6.4%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

99 A total of 101 windows would be affected annually, which would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect. A total of 102 windows would be affected in winter and would experience alterations in excess of 40% in Winter PSH, which is considered a Major Adverse effect.

100 The affected windows would retain 1-18% APSH, which is unchanged from the Submitted ES. However, within this range, improvements from 1-8% can be seen to 33 of the affected windows, demonstrating that the removal of Block A3 allows for additional sunlight to reach approximately a third of affected the windows. In terms of WPSH, six windows would see an improvement in the retained levels of 1-2%.

101 Overall, there would be no change to the magnitude of APSH and Winter PSH impacts and so the effect would remain **Major Adverse** (significant), as reported in the Submitted ES.

Leven Road Phase 3

102 A total of 44 windows were assessed for sunlight within this building of which 10 (22.7%) would meet the BRE's criteria for both Annual and Winter PSH and are therefore considered to experience a Negligible effect.

[16] ***Note**: Compared to daylight there are fewer windows assessed for sunlight due to north facing windows being excluded (as they do not receive sunlight and are therefore irrelevant). The sunlight pass rate takes into consideration all windows which pass for both APSH and WPSH. Those windows which fail, can fail for just APSH or just WPSH or both together.*

103 A total of 34 windows would be affected annually, of which one would experience an alteration between 30-39.9%, which is considered a Moderate Adverse effect and 33 would experience alterations in excess of 40% in APSH, which is considered a Major Adverse effect.

104 Twenty seven of these windows would be affected in winter and would experience alterations in excess of 40% in Winter PSH, which is considered a Major Adverse effect.

105 Twenty one of the affected windows serve bedrooms, experiencing significant impacts, however, may be considered less important in relation to sunlight considerations (BRE Guidelines paragraph 3.1.2[17]).

106 The remaining 13 windows serve single aspect living rooms, which are significantly affected. These windows are already shaded in the baseline condition.

107 It should be noted that most of these windows face due west and therefore are only just within 90 degrees of due south and would receive evening sun only. Reductions of this magnitude can be expected, given the low rise existing massing and the Proposed Development stepping forward, as well as the presence of balconies which inherently shade these windows.

108 Overall, there would be no change to the magnitude of APSH and Winter PSH. The retained values would also be unchanged compared to the Submitted ES, and so the effect would remain **Moderate to Major Adverse** (significant), as reported in the Submitted ES.

Cumulative Effects

109 The cumulative effects for the entire buildings are a combination of the results of the Proposed Development Scenario for the windows facing the Proposed Development, and the results of the Cumulative Scenario for the windows and rooms facing the Cumulative Schemes. As the effects from the Proposed Development alone remain unchanged, the cumulative effects remain as reported in the Submitted ES.

Internal Daylight and Sunlight Summary

110 The internal daylight, sunlight and overshadowing within the Proposed Development has been reassessed within a standalone report that is submitted to the GLA.

111 In terms of daylight and sunlight within proposed residential units of the Proposed Development, the overall conclusions summarised in the Submitted ES would remain similar.

112 The conclusions of the overshadowing to internal amenity areas would also remain similar. There is an instance of improvement to the public amenity space created through the removal of Block A3, which allows for greater levels of sunlight to reach the area and remains compliant with BRE recommendation overall.

Mitigation, Residual Effects and Likely Significant Effects

113 Whilst Atelier Court and Leven Road Phase 3 have been reassessed for daylight and sunlight, and these results supersede those presented in the Submitted ES, there would be no change to the proposed mitigation or classification of the residual effects to these buildings and therefore the findings of the Submitted ES remain valid.

Townscape, Visual Impacts and Built Heritage

114 The Townscape, Visual Impacts and Built Heritage Assessment of the Submitted ES has been reviewed by The Townscape Consultancy in the context of the Revised Amended Proposed Development to

[17] BRE Guidelines (2022) Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (BR209)

determine if the conclusions of this assessment remain valid. Two updated viewpoints (for viewpoints 6 and 8) are provided in Appendix D.

Visual Impact Assessment

115 The proposed amendments would be visible, though not particularly noticeable, in the following views assessed in the Townscape, Visual Impacts and Built Heritage Assessment of the Submitted ES:

- View 6 – A12, junction with Zetland Street; and
- View 8 – Bow Creek / River Lea Bridge.

116 View 6 and View 8 have been updated to illustrate the visual effects of the proposed amendments and these views are presented in Appendix D. Building A3 sat within Phase B of the masterplan, applied for in Outline. It was indicated by a purple wireline where visible in the views presented.

117 It is clear from inspection of the updated 'as proposed' views that the appearance of the amended scheme would not differ to any significant degree from assessed within the Submitted ES. There would be no change to the assessment of significance in respect of any of the views assessed.

118 In those instances where the Proposed Development was previously was found to have a beneficial effect or neutral on a view, this would remain the case as a result of the proposed amendments.

Townscape Assessment

119 The effect of the proposed amendments on townscape has been considered. There would be no change to the assessment of effects on the townscape character areas previously considered. As reported in the Submitted ES, the proposed amendments would enhance the surrounding townscape and would form a high quality development within the evolving townscape context.

Built Heritage Assessment

120 The effect of the proposed amendments on built heritage has been considered. The assessment carried out and reported in the Submitted ES would remain valid in the context of the proposed amendments.

121 In summary, the conclusions of the Submitted ES remain valid.

Cumulative Effects

122 The cumulative effects remain as reported in the Submitted ES.

Greenhouse Gas / Climate Change

123 The greenhouse gas emissions have been recalculated for the Revised Amended Proposed Development and a summary note of the findings of the assessment comparing against that of the Submitted ES is provided in Appendix E. Although the levels of carbon associated with the construction have marginally increased, they remain within the magnitudes of change as reported in the Submitted ES and the conclusions of the climate change assessment in the Submitted ES therefore remains valid.

Conclusions

124 It is considered that the proposed amendments do not identify any new significant effects when compared to the assessments or conclusions identified within the Submitted ES, and the findings of the Submitted ES **remain valid** in the context of the proposed amendments. It is therefore considered that the likely significant effects associated with the revised Amended Proposed Development (as altered

by the proposed amendments set out on Page 1) are entirely understood and are fully assessed within the Submitted ES.

125 The information provided within this ES Statement of Conformity is not directly relevant to reaching a reasoned conclusion on the likely significant effect of the Proposed Development (as the Submitted ES remains valid) and therefore this document does not constitute 'further information' under Regulation 25 of the EIA Regulations 2017.

126 The January 2023 Non Technical Summary (submitted as part of the January EIA Statement of Conformity period to the LBTH SDC) presents the correct effects and does therefore not require updating as it remains valid.

Appendix A: Drainage Strategy

Aberfeldy Village, London

Masterplan, Below Ground Drainage Strategy

Stage 2+ Planning Issue

Issue P10 – 24 October 2022

Prepared For:

EcoWorld AND Poplar HARCA

Meinhardt

ABERFELDY VILLAGE, LONDON

BELOW GROUND DRAINAGE STRATEGY

ISSUED FOR PLANNING

Quality Assurance Page

Issue	Date	Prepared By	Checked By	Approved By	Remarks
DRAFT	18/12/2020	Mrs. M. Burca	Mr. C. Ryan	Mr. C. Ryan	Draft Issue
P01	17/09/2021	Mr. L. Hornblow	Mr. L. Boustead	Mr. C. Marchant	Draft Stage 2+ Planning Issue
P02	06/10/21	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Draft Stage 2+ Planning Issue
P03	12/10/21	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Stage 2+ Planning Issue
P04	22/10/21	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Stage 2+ Planning Issue
P05	26/10/21	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Updated to address ES comments.
P06	08/03/22	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Draft revised planning issue
P07	01/04/22	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Revised planning issue
P08	06/04/22	Mr. L. Boustead	Mr. C. Marchant	Mr. G. Bansal	Revised planning issue
P09	20/10/22	Mr. L. Boustead	Mr. G. Bansal	Mr. G. Bansal	Revised planning issue
P10	24/10/22	Mr. L. Boustead	Mr. G. Bansal	Mr. G. Bansal	Updated Appendix C drawing

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Executive Summary

Meinhardt UK Ltd has been appointed by Ecoworld International to undertake the foul and surface water below ground drainage design for the proposed construction of Aberfeldy Village. The scheme consists of approximately 1500 units proposed across multiple Phases. The proposals comprise of a number of blocks including podiums and some towers up to 29 stories in height. The Site is located within the London Borough of Tower Hamlets in an area known as Poplar Riverside, Aberfeldy Village, E14, London.

The proposed surface water drainage strategy for each phase has been developed to utilise sustainable drainage techniques (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network in the local area. A scheme has been developed that utilises blue, green and podium deck attenuation roof structures along with below ground cellular attenuation tanks designed for the 1:100 year plus 40% climate change storm event.

The developments QBAR greenfield runoff rate has been calculated to be 22.4/s. It is proposed that the entire site will discharge at this rate as agreed with the London Borough of Tower Hamlets. Each building and associated hardstanding being proposed to discharge at a proportion of this flow rate, this has been split between 13 separate connections across the site receiving the total 22.4/s. Each buildings associated storm water drainage is conveyed by a traditional gravity run system to the nearest Thames Water Asset, with all connection discharging into the Thames Water combined water Sewer network.

As the development must ensure that private and public drainage areas remain separate, due to ownership and future maintenance as well as adoption requirements the total site area considered for the drainage strategy is based on the private areas, and not the entire site area of 9.1ha. The site area is circa 5.92ha, which excludes council adopted roads and green areas, as such the total hardstanding (impermeable area) is circa 3.2ha.

The option of infiltrating has been dismissed due to the requirement to ensure an exclusion zone of 5m is provided from each soakaway structure to either buildings or public highway, as such no space is available to allow for an full infiltration strategy, additionally although it is feasible to drain into the River Terrace Deposits (gravels) it would not be recommended as it can cause flooding of existing basements given the impermeable London Clay cap below.

The proposed foul water drainage strategy for the site involves the MEP engineer's coordination of the superstructure drainage up until it exits the buildings and enters the below ground drainage network. A below ground drainage network of pipes and manholes will collect the foul water discharge from the buildings and convey to a demarcation chamber, before discharging via gravity to the existing Thames Water combined water sewers within the site or surrounding the site. This will be coordinated during detailed design.

A pre planning enquiry has been submitted to Thames Water stating the proposed foul and surface water discharge rates from the new development. Thames Water had responded giving approval for both however, new plans have been submitted since and flow rate applied from the scheme has reduced from that agreed in the pre planning, it is therefore assumed this is still accepted.

The Thames Water asset records for the site highlighted potential foul and surface water connection points however further CCTV survey works will need to be undergone before any detailed design.

Refer to drainage drawings 2812-MHT-CV-BG-DR-100 and 2812-MHT-CV-RF-DR-101 within the appendix for proposed drainage layout.

1 Introduction

This Drainage Strategy Report has been prepared by a Meinhardt and is submitted in support of a hybrid planning application for the Aberfeldy Village Masterplan. The hybrid planning application is made in relation to the north of East India Dock Road (A13), east of the Blackwall Tunnel Northern Approach Road (A12) and to the southwest of Abbot Road (the “Site”) on behalf of The Aberfeldy New Village LLP’ (“The Applicant”). The hybrid planning application is formed of detailed development proposals in respect of Phase A for which no matters are reserved ("Detailed Proposals"), and outline development proposals for the remainder of the Site, with all matters reserved ("Outline Proposals"). The Detailed Proposals and Outline Proposals together are referred to as the “Proposed Development”.

This report is an update to the version of the Drainage Strategy Report dated April 2022 that was submitted as part of a resubmission to an earlier hybrid planning application submitted to the London Borough of Tower Hamlets (LBTH) in October 2021 (LPA Ref: PA/21/02377/A1). This updated version has been prepared in response to a reduction in the quantum of proposed residential floorspace and residential units proposed, through the removal of Block A3 from the proposed parameter plans. The proposals also seek to provide an increase in the number of affordable units being delivered as part of the development. Further information is set out within the accompanying Covering Letter (as prepared by DP9 Ltd, dated October 2022) and the updated Planning Statement (as prepared by DP9 Ltd, dated October 2022).
The sections of this report that are different from those contained in the resubmission version submitted in April 2022 are:
Section 2.1.3
Section 2.1.4
Section 2.2.3
Appendix C - 2812-MHT-CV-BG-DR-100, 2812-MHT-CV-RF-DR-101, Block A1 A2 Calculation, Block B1 B2 Calculation.

The Proposed Development comprises the comprehensive redevelopment of the Site. The Proposed Development will provide new retail and workspace floorspace along with residential dwellings and the pedestrianisation of the A12 Abbott Road vehicular underpass to create a new east to west route. The Development will also provide significant, high quality public realm, including a new Town Square, a new High Street and a public park.

The purpose of the Drainage Strategy Report is to assist our client and the Local Planning Authority to make an informed decision regarding the drainage strategy for the proposed development in addition to assist the BREEAM assessor with the rewarding of credits under Pol 03.

2 Existing Drainage

1.1 Existing Site

The existing site is located in an area known as Poplar Riverside, Aberfeldy Village, E14, London, within the London Borough of Tower Hamlets.

The existing site is a mixed-use development consisting of residential housing and non-residential floor space, including shops, professional services, food and drink, residential institution, storage, community and cultural uses.

The Site is located in Poplar, within the administrative boundary of the London Borough of Tower Hamlets. The Site is 9.1 hectares (approx. 22 acres) in total and comprises:

- Abbott Road;
- Aberfeldy Street;
- Balmore Close;
- Blairgowrie Court;
- Heather House;
- Jura House;
- Tartan House;
- Thistle House;
- Kilbrennan House;
- Nos. 33-35 Findhorn Street;
- 2a Ettrick Street;
- 384 Abbott Road;
- Lochnagar Street;
- Aberfeldy Neighbourhood Centre;
- Nairn Street Estate; and
- Leven Road Open Space and Braithwaite Park are included for their enhancement.
- Jolly's Green

The total site area is 9.1Ha, and the total drained site area totals circa 5.92ha which excludes council adopted roads and green areas. The total hardstanding (impermeable area) is circa 3.2ha. 3.2ha has been used in the drainage calculations.

The River Lee is located to the east of the site and flows in a generally southerly direction to its confluence with the River Thames. The entire site is noted on the Gov.uk website's Flood map for planning to be wholly within flood zone 3 however benefits from the presence of flood defences.

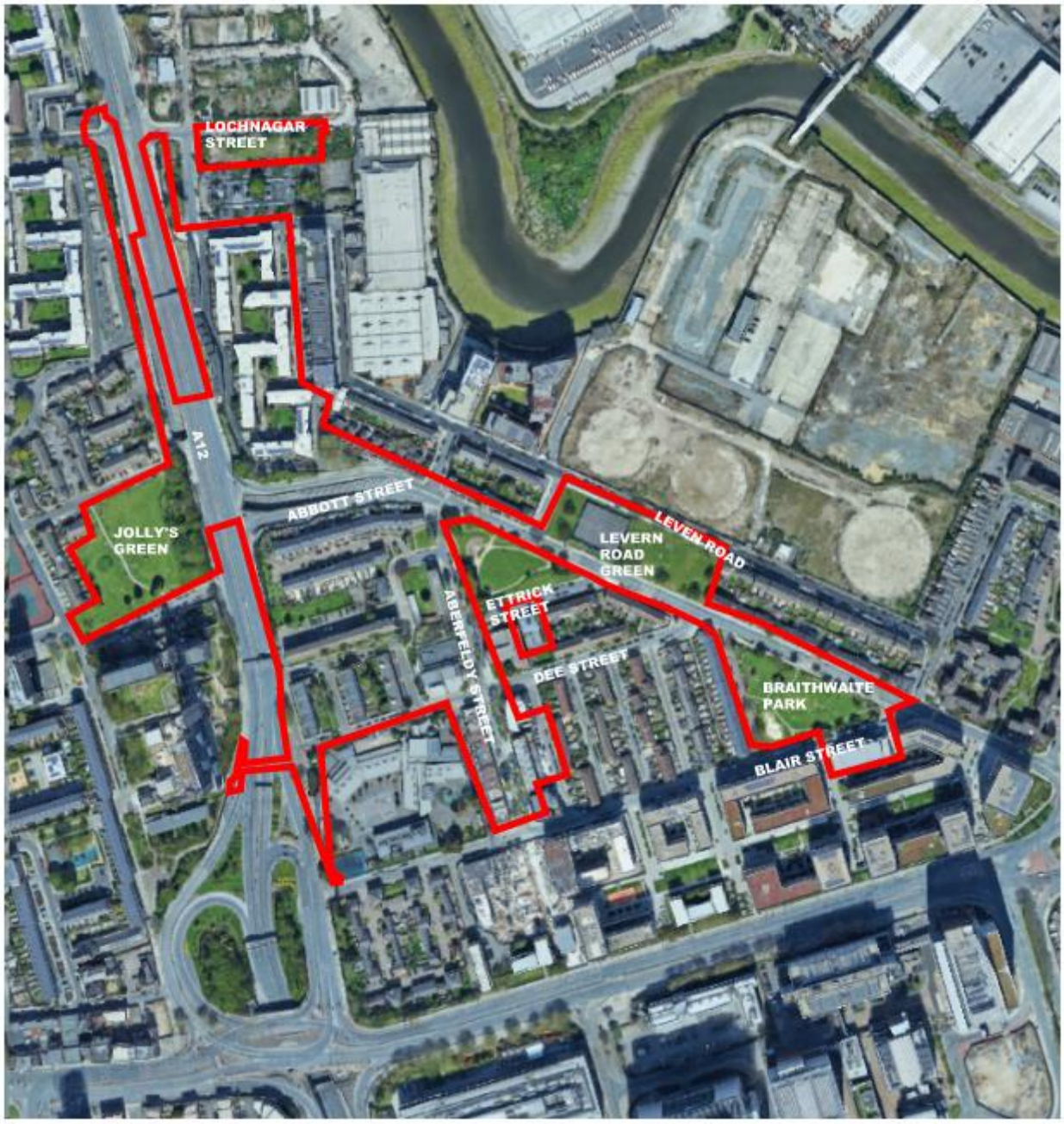


Figure 1: Site Location

1.2 Existing Drainage

1.2.1 Private Onsite Drainage

A topographical survey of the site has been completed by Aworth Survey in December 2009 and a utility survey was carried out for the site by Sumo Services Survey in August 2020.

Based on these surveys the existing private drainage network consists of surface water, foul water and combined water pipes and manholes. All of the existing private drainage has been shown to be draining to the closest Thames Water public sewer via multiple existing connections to the Thames Water surface and combined water sewers crossing through the site.

Figure 2: Topographical Survey

A CCTV survey will be undertaken to confirm the exact line, level, and condition of the connections to the surrounding public sewer network.

A copy of the topographical and utility surveys can be found in the appendices.

1.2.2 Public Sewers

Asset records obtained in November 2020 from Thames Water have revealed public surface and combined water sewers crossing through the proposed Aberfeldy Village site. The arrangement of the network is summarised below:

Thames Water Surface Water Sewers

The surface water sewers crossing the proposed site are located within:

- Abbott Road (B125) within the proposed site boundary (From MH Ref: 3406 – 3403 to 3402). The diameter of the surface water sewer is 225mm;
- Abbott Road (B125) within the proposed site boundary (From MH Ref: 2420 – 3403 to 3402). The diameter of the surface water sewer is 225mm. It is assumed to be a Thames Water pumping station for the road fly under. A CCTV survey will be required to establish what it serves.

These two sewers are assumed to be picking up Abbott Roads highway drainage and will therefore be abandoned along with the road itself as dictated by the scheme.

Thames Water Combined Water Sewers

The combined water sewers crossing the proposed site are located within:

- Lochnagar Street to the north of the site (the public combined water sewer is running west within Lochnagar Street to MH Ref: 2704). The diameter of the combined water sewer is 305mm and changes to 381mm just before connecting into Thames Water manhole 2704;
- Bromley Hall Road to the north west of the site (From MH Ref: 2630 to 2705). The diameter of the combined water sewer is 225mm and changes to 305mm just before connects to Thames Water manhole 2705;
- Leven Road to the east of the site (the public combined water sewer is running south within Leven Road: from MH Ref: 3605 to 5403). The diameter of the combined water sewer starts at 225mm and increases in size to 300mm sewer. The combined water sewer then changes into a 600mm before entering the proposed site and connecting into Thames Water combined manhole 5403;
- Leven Road to the east of the site (the public combined water sewer is running north within Leven Road: from MH Ref: 7403 to 5405). The diameter of the combined water sewer starts at 305mm, changes in size to 300mm sewer and then to 225 before connecting into Thames Water combined manhole 5405;
- Darnaway Place to the east of the site (the public combined water sewer is running south within Darnaway Place: from MH Ref: 4511 to 4407). The diameter of the combined water sewer is 229mm;
- Blair Street to the south of the site and running north through the proposed site boundary (From MH Ref: 7303 to 6302). The diameter of the combined water sewer is 305mm and changes to 457mm after the junction with Thames Water combined sewer which is running north to the combined Thames Water manhole 6302;
- Blair Street to the south of the site (the public combined water sewer is running east within Blair Street from: MH Ref: unknown-4203 to 5205). The diameter of the combined water sewer is 305mm and changes to 457 before connecting into Thames Water combined manhole 5205;
- Aberfeldy Street within the proposed site boundary (the public combined water sewer entering through the south of the site and is running north within Aberfeldy Street: from MH Ref: 5205 to 4407). The diameter of the combined water sewer starts at 457mm and changes to 533mm before connecting into Thames Water combined water manhole 4301A. The combined water sewer exiting Thames Water manhole 4301A is 610mm and changes to 686mm after Thames Water combined manhole 4420, before connecting into Thames Water combined manhole 4407;

- Dee Street within the proposed site boundary (the public combined water sewer is running east within Dee Street from MH Ref: 3222 to 4312). The diameter of the combined water sewer is 305mm;
- Ettrick Street within the proposed site boundary (the public combined water sewer is running east from MH Ref: 3316 to 4301A). The diameter of the combined water sewer is 300mm and changes to 305 before connecting into Thames Water combined manhole 4301A;
- Abbott Road (B125) within the proposed site boundary (From MH Ref: 8301 to the combined trunk running north within Joshua Street). The diameter of the combined water sewer is 914mm and changes to 991mm just before connects to the combined trunk in Joshua Street;
- Abbott Road (B125) within the proposed site boundary (From MH Ref: 4407 to the combined trunk running north within Joshua Street). The diameter of the combined water sewer is 991mm.
- Jolly's Green; there is a 1524 x 1227mm combined sewer running underneath Jolly's Green. This large trunk sewer has connecting sewers that run under the roads adjacent to the green space prior to discharging to the trunk, these roads being Andrew Street and Joshua Street.

There is a combined water trunk sewer located to the west of the site within the proposed site boundary running north. The diameter of the combined water sewer is 2250mm.

Refer to the Appendix B for the complete Thames Water Asset Records.

Meinhardt has overlaid the existing sewer information from the Thames Water Asset Records and the proposed architectural masterplan on a sketch to determine whether there are any areas where proposed structure will sit over the existing Thames Water assets. The sketch has highlighted a number of the proposed buildings are located directly above the existing Thames Water sewers and manholes. Where this occurs either a build over agreement or a sewer diversion will be required with Thames Water to proceed with the current site layout.

Based on the Thames Water Assets Records all of the existing private drainage has been shown to be draining to the north of the site where there are multiple existing connections to the Thames Water surface and combined water sewers crossing through the site.

Refer to the sketch 2812-MHT-CV-BG-DR-050 in the appendices for details of the existing Thames Water sewers crossing the site.

2 Drainage Strategy

2.1 Surface Water Drainage

2.1.1 Drainage Design Parameters

The industry standards along with the Environment Agency and Sewers for Adoption 7th Edition dictate for below ground surface water drainage that:

- There will be no surcharging of the drainage system for a 1 in 2-year storm;
- The drainage can be surcharged with no flooding for a 1 in 30-year storm; and
- The drainage can flood on-site for a 1 in a 100-year storm with a 40% climate change allowance provided the flood water remains on site and does not flood habitable areas or affect safe ingress and egress to the site for occupiers.

All surface water drainage options outlined in this report adhere to these principles.

Hydraulic calculations have been carried out using the Micro Drainage hydraulic modelling software unless otherwise specified. Refer to Appendix C for calculations.

2.1.2 Initial Consultations

2.1.2.1 Local Authority/Planning Authority – Tower Hamlets Council

Tower Hamlets Council were contacted on 01/09/21 to discuss the proposed drainage strategy prior to planning submissions, however, no response has been received at the time of writing.

2.1.2.2 Thames Water

A predevelopment enquiry has been submitted to Thames Water to confirm if there is sufficient capacity within the Thames Water public sewer network to accommodate the proposed development. Thames Water have confirmed there is sufficient capacity in the surrounding public sewers to accept the flows from the proposed development.

2.1.3 Proposed Surface Water Drainage Strategy

The proposed site will discharge at the equivalent QBAR greenfield rate of 22.4/s. Hydraulic calculations indicate that the attenuation volume required for the development to discharge at the proposed discharge rate of 22.4/s for a 1 in 100 year + 40% climate change storm event is approximately 3662m^3, to be confirmed during detail design. This strategy should also include measures to improve run-off quality whilst maximising bio-diversity, amenity and other multifunctional benefits to provide a sustainable drainage system as noted in PPG.

Table 2-1: Discharge Opportunities

London Sustainable Drainage Hierarchy	Site Specific Application
Store rainwater for later use	There are limited opportunities for rainwater harvesting on this project due to the proposed usage of the building and limited external space that requires irrigation. It has therefore been discounted.

Use infiltration techniques, such as porous surfaces in non-clay areas	Due to the underlying geology of the site being London Clay and poor infiltration rates, infiltration devices are not used on this site. Furthermore, there are limited locations that comply with the requirement of Building Regulations to be more than 5m from a highway or structure. The use of infiltration techniques has therefore been discounted including infiltration basins/ponds.
Attenuate rainwater in ponds or open water features for gradual release	Due to the constrained nature of the site, there is little opportunity for above ground storage structures like ponds. Although green spaces are provided in the proposals, the areas are not suitable to be used for controlled flooding due to the proposed nature of the areas i.e. ponds. Furthermore, the existing levels across the site do not offer any suitable locations where controlled flooding may occur.
Attenuate rainwater by storing in tanks or sealed water features for gradual release	Excess surface water flows during high intensity rainfall events are proposed to be stored using a combination of podium/blue roofs, green roofs bio-retention/SuDS planters and below ground geo-cellular storage crates.
Discharge rainwater direct to a water course	Not possible because there are no watercourses in area surrounding site
Discharge rainwater to a surface water sewer/drain	Not possible because there are no surface water drains in area surrounding site, nearby public sewers are combined.
Discharge rainwater to a combined sewer	Discharge to a combined system at the restricted rate equivalent to QBAR greenfield rates.

The proposed surface water strategy for the site will be developed to utilise sustainable drainage techniques (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding. Due to the limited areas of landscaping available on the site there are constraints to which SuDS can be incorporated into the development. SuDS with large land take such as detention basins or ponds are not suitable for an urban development therefore not applicable for development. It is also found that the use of infiltration SuDS will not be feasible for the site due to the existing ground conditions. The proposed drainage strategy for the development has therefore been made sustainable through the use of blue roofs, high level podiums attenuation and below ground attenuation tanks.

Due to the segregation of parcels, due to ensuring private drainage is separate to public highway drainage its not possible to integrate or provide a holistic surface water design whereby one parcel is potentially using an area in another parcel for attenuation, including any open green space that is proposed aspart of the wider strategy, as this would require a new public TW sewer network to be placed within an existing built environment which is unviable given the context of the scheme.

It is proposed that each phase will have a separate drainage network.

Phase A Strategy – Detailed Planning Application

Based on the above, the only feasible surface water discharge location is the public sewers surrounding the site. Phase A is divided into 3 different locations therefore it is proposed that Blocks I1, J1, F1, H1&H2 and H3 to drain separately into the closest Thames Water sewer. Therefore the strategy is outlined below.

Block I1:

The proposed surface water drainage strategy for Building I1 has been made sustainable through the use of a blue roof and a below ground attenuation tank. The approximate volume of attenuation for this building is 69m^3. Of which 34.2m^3 attenuation is provided by cellular attenuation crates and 35m^3 is provided by the blue/green roof.

The surface water drainage network will drain via gravity to the northwest of Building I1 into a demarcation chamber restricting the discharge rate to 1l/s which is to be controlled via a hydrobrake, prior to discharging to the Thames Water sewer network. It is proposed that controls will be used on the blue roof to ensure that all attenuation is fully utilised. It is proposed that a new connection will be made to the northwest corner of the building into the Thames Water combined water network in Blair Street (TWMH7303). The Thames Water sewer asset records have no cover level or Invert level information for the manhole THMH7303 therefore a survey is required for the existing combined water sewer running along Blair Street.

Block J1:

The proposed surface water drainage strategy for Building J1 has been made sustainable through the use of a below ground attenuation tank. It is proposed to discharge surface water from Building J1 via gravity into Thames Water combined water sewer in Leven Road (TWMH3602) via a new connection. Surface water discharge from the building is to be restricted to 1.25l/s which is to be controlled via a hydrobrake on a demarcation manhole prior to discharging into Thames Water combined water sewer. The approximate required storage for building J1 is 346m^3 this is to be provided through the proposed cellular attenuation crates.

Block F1:

To attenuate surface water at source and reduce the risk of downstream flooding it is proposed that Building F1 will use of blue roofs, high level podium attenuation and a below ground attenuation tank. The approximate volume of attenuation is 185m^3. It is proposed that controls will be used on the blue roofs and high level podium to ensure that all attenuation is fully utilised. The surface water drainage network will drain via gravity to the northeast of the building into a demarcation chamber restricting the discharge rate to 1.25l/s which is to be controlled via a hydrobrake, prior to discharging to the Thames Water combined sewer. It is proposed that a new connection will be made to the southeast corner of the building, branching into the Thames Water combined water sewer in Aberfeldy Street between manholes TWMH4313 & TWMH4312.

Block H1/H2 & H3:

The proposed surface water drainage strategy for the buildings H1&H2 and H3 has been made sustainable through the use of two below ground attenuation tanks (one attenuation tank serving buildings H1&H2 and one attenuation tank serving building H3) and blue/green roof areas to attenuate surface water at source and reduce the risk of downstream flooding.

The proposed surface water drainage network for buildings H1&H2 will drain via gravity to the east of the buildings into a demarcation chamber restricting the discharge rate to 1.5l/s which is to be controlled via a hydrobrake, prior to discharging to the Thames Water combined sewer. The approximate volume of attenuation for buildings H1&H2 is 161m^3, of which 49m^3 is provided through the blue roof and 112m^3 is provided through the below ground cellular attenuation crates.

The same strategy is applied to Building H3 which will discharge surface water via gravity to the west of the building into a demarcation chamber restricting the discharge rate to 1.25l/s which is to be controlled via a hydrobrake, prior to discharging to the Thames Water combined sewer. The approximate volume of attenuation for building H3 is 135m^3, of which 24m^3 is provided through the blue roof and 111.2m^3 is provided through the below ground cellular attenuation crates.

Buildings H1&H2 and H3 will discharge surface water via two new separate connections into Thames Water combined sewer in Aberfeldy Street (TWMH4215).

The proposed new connections are subject to a CCTV survey which will survey the line, level and condition of the existing sewers. If this survey identifies any available existing connections in those locations there may be an opportunity to reuse. This will be explored during detailed design.

To achieve the proposed discharge rates 6.25l/s it is required to attenuate an approximate volume of 896m^3.

Phase B Strategy – Outline Planning Application

The proposed surface water strategy for the phase B has been developed to utilise sustainable drainage systems (SuDS) to attenuate surface water at source and reduce the risk of downstream flooding of the Thames Water sewer network. The scheme that has been developed to utilise a combination of blue roofs, high level podium attenuation and attenuation tanks.

The proposed strategy includes a total of three new connections to the existing Thames Water combined sewer network. These are outlined below:

- One connection to the Thames Water combined sewer network in Leven Road (TWMH3605), through a new connection serving the adjacent Block A1/A2 receiving a restricted discharge rate of 2.5l/s.
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3517 to TWMH2536), through a new connection serving B1/B2 & B4 receiving a total restricted discharge rate of 3.5l/s.
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3516), through a new connection serving Blocks B3 and B5 receiving a total restricted discharge rate of 2.3l/s.

The proposed new connections are subject to a CCTV survey which will survey the line, level and condition of the existing sewers. If this survey identifies any available existing connections in those locations there may be an opportunity to reuse. This will be explored during detailed design.

To achieve the proposed discharge rates 7.3l/s it is required to attenuate an approximate volume of 862m^3

The Jolly's Green area will be delivered as part of Phase B. The area is proposed to be public realm and is proposed to discharge surface water at a restricted rate equivalent to the QBAR greenfield for all storms up to and including the 1 in 100 year +40% climate change storm. This rate has been calculated to be 3.9l/s and approximately 100m^3 of surface water attenuation will be required to facilitate this. This will be provided through the use of permeable paving.

Phase C Strategy – Outline Planning Application

The proposed drainage strategy for Phase C is similar to that of Phase B. It is proposed that surface water will be attenuated through the use of SuDS to minimise the likelihood of downstream flooding. It is proposed that the primary source of attenuation for Phase C will be below ground attenuation tanks with further attenuation to be provided via blue roofs and high levels podium attenuation.

It is proposed that surface water from the Phase C will flow via gravity to the east of this phase where a new connection to the Thames Water network in Ettrick Street (TWMH4303), will be made. This is subject to a CCTV survey which will survey the line, level and condition of the existing sewer. If this survey identifies any available existing connections in this location there may be an opportunity to reuse. This will be explored during detailed design.

Each block shall attenuate and restrict flows separately before connecting into TWMH4303, the below summaries the proposed discharge rates and required attenuation for each block within phase C;

- Block C1/C2/C3/C4 shall restrict discharge rate to 1.5l/s requiring a total 651m^3 attenuation of which 425m^3 is to be provided through below ground cellular attenuation crates and 238m^3 provided via blue roofs and high levels podium attenuation.

- Block C5 & C6 have been designed to have a shared flow control structure limiting discharge to 1l/s with attenuation however split both buildings to receive 10m^3 attenuation provided through below ground cellular attenuation crates. Flows from Blocks C5 and C6 are to be conveyed into a combined running along Ettrick Street to the east before discharging into TWMH4303.

- Block E1/E2/E3 is to restrict discharge rate to 1.5l/s requiring a total 563m^3 attenuation of which 400.4m^3 is to be provided via below ground cellular attenuation crates and 162m^3 provided via blue roofs and high levels podium attenuation.

The Phase C development shall therefore discharge at a maximum 4.0l/s for the 1:100 year plus 40% climate change event, this flow is all conveyed into the Thames Water Manhole TWMH4303 in Ettrick Street. The total amount of attenuation to be provided for this phase is 1233m^3.

Phase D Strategy – Outline Planning Application

The proposed surface water drainage strategy for the building Phase D has been made sustainable through the use of a below ground attenuation tank and blue roofs and high levels podium attenuation

The proposed surface water strategy for the building Phase D is to discharge surface water via gravity to the southeast of Phase D into Thames Water combined water sewer in Ettrick Street (TWMH4302) via a new connection. This is subject to a CCTV survey which will survey the line, level and condition of the existing sewer. If this survey identifies any available existing connections in this location there may be an opportunity to reuse. This will be explored during detailed design.

Surface water discharge from the site is to be restricted to 1.5l/s which is to be controlled via a hydrobrake on a demarcation manhole prior to discharging into Thames Water combined water sewer. The approximate volume of attenuation for Phase D is 576m^3, of which 490m^3 is to be provided via below ground attenuation crates and 87m^3 provided via and blue roof attenuation.

For full drainage strategy drawings refer to the Appendix C, including exceedance flow routes. Summary of the drainage strategy can be found in the Tower Hamlets SUDS proforma in Appendix D.

2.1.4 Proposed Discharge Rates Summary

The table below shows the volume of surface water attenuation required to suit a 1 in 100-year storm event + 40% climate change. A breakdown of the proposed discharge rates and required attenuation volumes is shown in Table 1.

	Storm Event	Proposed Discharge Rate	Required Surface Water Attenuation
Phase A Blocks I1, J1, F1, H1&H2 and H3	1 in 100 year + 40% CC	6.0 l/s	896m³
Phase B	1 in 100 year + 40% CC	10.9 l/s	898m³
Phase C	1 in 100 year + 40% CC	4.0 l/s	1231m³
Phase D	1 in 100 year + 40% CC	1.5 l/s	576m³
Total	1 in 100 year + 40% CC	22.4 l/s	3601m³

Table2-2: Proposed Surface Water Discharge Rates

2.1.5 Water Quality

The proposed drainage strategy manages pollution risk for the site based on a simple qualitative method as defined in the CIRIA SuDS Manual C753, consisting of an assessment of likely pollution hazard levels for the site and SuDS performance capacities:

Pollution hazard indices for different land use classifications

Land use	Pollution hazard level	Total suspended solids (TSS)	Metals	Hydro-carbons
Residential roofs	Very low	0.2	0.2	0.05
Other roofs (typically commercial/ industrial roofs)	Low	0.3	0.2 (up to 0.8 where there is potential for metals to leach from the roof)	0.05
Individual property driveways, residential car parks, low traffic roads (eg cul de sacs, homezones and general access roads) and non-residential car parking with infrequent change (eg schools, offices) ie < 300 traffic movements/day	Low	0.5	0.4	0.4
Commercial yard and delivery areas, non-residential car parking with frequent change (eg hospitals, retail), all roads except low traffic roads and trunk roads/motorways[1]	Medium	0.7	0.6	0.7
Sites with heavy pollution (eg haulage yards, lorry parks, highly frequented lorry approaches to industrial estates, waste sites), sites where chemicals and fuels (other than domestic fuel oil) are to be delivered, handled, stored, used or manufactured; industrial sites; trunk roads and motorways[1]	High	0.8[2]	0.8[2]	0.9[2]

Figure 2-3: Extract from CIRIA C753: Pollution Hazard Indicines

The site is predominantly roof areas and pedestrian walkways and as such, the site has a Low Pollution hazard level. Surface water run-off will be managed using a range of SuDS detailed previously that will offer water quality benefits.

The car parking a ground level is covered and therefore will be discharged to the foul network.

SuDS bio-retention planters and green roofs will provide pollution control as they assit with removing heavy metals and hydrocarbons from surface water run-off.

2.1.6 Amenity, Bio-diversity and Multi-functional benefits

The proposed drainage strategy offers a number of multifaceted benefits across amenity, biodiversity and other areas. Blue/green roofs provide a positive impact on amenity for the site and green roofs and SuDS bio-retention areas help to improve and increase bio-diversity. As discussed in the section above, the SuDS bio-retention planters and green roofs in particular in addition to other SuDS features help to improve water quality from the site.

2.2 Foul Water Drainage

2.2.1 Drainage Design Parameters

The below-ground foul drainage system will be designed to Sewers for Adoption 8th Edition, BS EN 752 Parts 3 and 4, and the Building Regulations Document H where appropriate.

2.2.2 Proposed Foul Water Drainage Strategy

Due to size and phasing of the development, it is proposed that foul drainage from the site will be split into 10 individual outfalls into the Thames Water combined network. Splitting the foul discharge from the site is important due to the potential increase in flow, reducing the impact on the existing Thames Water combined drainage network.

The proposed foul water drainage strategy for the site involves the MEP engineer's coordination of the superstructure drainage up until it exits the building and enters the below ground drainage network. A below ground drainage network of pipes and manholes will collect the foul water discharge from the buildings and convey to a demarcation chamber, before discharging via gravity to the existing Thames Water combined water sewers within the site or surrounding the site. This will be coordinated during detailed design.

The proposed strategy includes various connections to the existing Thames Water combined sewer network. These are outlined below.

As phase A is divided into 3 different locations it is proposed that Blocks I1, J1, F1, H1&H2 and H3 to drain separately into the closest Thames Water combined water sewer network. Therefore five connections to the Thames Water combined water sewer network are proposed for phase A:

- For the building I1 it is proposed that a new connection will be made to the northwest corner of the building into the Thames Water combined water network in Blair Street (TWMH7303);
- It is proposed that building J1 to discharge foul water into Thames Water combined water sewer in Leven Road (TWMH3602) via a new connection;
- It is proposed that a new connection will be made to the southeast corner of the building F1 into the Thames Water combined water sewer in Aberfeldy Street (TWMH4313-TWMH4312); and
- Buildings H1&H2 and H3 will discharge foul water via two new separate connections into Thames Water combined sewer in Aberfeldy Street (TWMH4215).

The proposed strategy for phase B includes a total of three connections to the existing Thames Water combined sewer network. These are outlined below:

- One connection to the Thames Water combined sewer network in Leven Road (TWMH3605), through a new connection serving building A1/A2;
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3517 to TWMH2536), through a new connection serving buildings B1/B2 and B4;
- One connection to the Thames Water combined sewer network in Abbott Road (TWMH3516), through a new connection serving building B3/B5.

It is proposed that foul water from the Phase C will flow via gravity to the east of this phase where a new connection to the Thames Water network in Ettrick Street (TWMH4303) will be made. This will be serving the buildings C1/C2/C3/C4, C5, C6 & E1/E2/E3.

The proposed foul water strategy for the building Phase D is to discharge foul water via gravity to the southeast of the phase D into Thames Water combined water sewer in Ettrick Street (TWMH4302) via a new connection.

The proposed new connections are subject to a CCTV survey which will survey the line, level and condition of the existing sewers. If this survey identifies any available existing connections in those locations there may be an opportunity to reuse. This will be explored during detailed design.

The discharge locations and foul water strategy will be confirmed during detailed design and a Section 106 drainage connection application for each connection will be submitted at the construction stage to Thames Water for formal approval of the proposed connections arrangement.

2.2.3 Proposed Foul Water Discharge Rates

Based on the most recent accommodation schedule (as at 17.09.21), the peak foul water discharge rate from the site will be in the region of 75l/s. This proposed discharge rate has been calculated in accordance with BS EN 12056-2, however, this will be confirmed by Meinhardt's MEP engineer during detailed design.

Thames Water have been contacted and have confirmed they have sufficient capacity in their network to accept the proposed flows from the development (surface water and foul water).

2.3 Proposed Combined Water Flow Rates

The proposed combined water discharge rates for the site are outlined in Table 1.

Contributing Area (ha) – Hardstanding areas	Proposed Surface Water Discharge Rate [1 in 100 year storm + 40% CC] (l/s)	Proposed Peak Foul Water Discharge Rate (l/s)	Proposed Combined Peak Discharge Rate (l/s)	Reduction compared to Existing Combined Discharge Rate
3.2	22.4	75.58	97.98	67%

Table 1: Proposed Combined Water Discharge Rates

The proposed discharge rates will be confirmed during detailed design.

2.4 Site Wide Foul Water Drainage Coordination

The proposed foul water drainage strategy for the site involve coordination with Meinhardts MEP engineer's to coordination the superstructure drainage up until it enters the below ground drainage network. A below ground drainage network of pipes and manholes will collect the foul water discharge from the buildings before discharging via gravity into the Thames Water combined sewer located in the surrounding roads.

Any ground floor or basement level foul water drainage that can't be drained by gravity will be routed to private basement foul water pump chambers which will lift foul water from the basements into the internal drainage network before draining via gravity into the external below ground drainage network.

2.5 Operations and Maintenance

2.5.1 Pipes (Including Oversized)

2.5.1.1 Location and Description

Pipes are proprietary products and the materials can vary across the site and as such where used the manufacturer's recommendations should be followed. Regardless of the product used, the pipes will be fully compliant with the Meinhardt drainage specification.

2.5.1.2 Operation

They are intended to be dry except for during rainfall events. These have been designed to be self-cleansing for smaller diameter pipes, and for larger diameters the risk is reduced due to the overall pipe size.

Access for maintenance is provided through access chambers, manholes, rodding plates and rodding eyes.

2.5.1.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important to identify areas which may have been obstructed/clogged and may not be draining correctly thus exposing the development to a greater level of flood risk. Maintenance responsibility for the pipes should be placed with Ecoworld.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, as run-off is taken from potentially contaminated areas such as car parks/service yards.

Maintenance Schedule	Required Action	Frequency
Monitoring (to be undertaken more regularly within the first year of operation and adjusted as required)	Initial inspection should be provided as post construction CCTV survey.	N/A
	Inspect for evidence of poor operation via water level in chambers. If required, take remedial action.	3-monthly, 48 hours after large storms.
Occasional maintenance	Check and remove large vegetation growth near pipe runs.	6 monthly
Remedial actions	Rod through poorly performing runs as initial remediation.	As required.
	If continued poor performance jet and CCTV survey poorly performing runs.	As required.
	Seek advice as to remediation techniques suitable for the type of performance issue and location.	As required If above does not improve performance.

2.5.2 Green/Blue Roofs, Location and Description

A green/blue roof specialist will be required at later design stages.

2.5.2.1 Inspection and Maintenance Regime

Regular inspection and maintenance is important to identify areas which may have been obstructed/clogged and may not be draining correctly thus exposing the development to a greater level of flood risk. Maintenance responsibility for the pipes should be placed with Ecoworld.

Maintenance Schedule	Required Action	Typical 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 and sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	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 (ie. Year one), replace dead plans as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where >5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly and annually or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly and annually or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required - clippings should be removed and not allowed to accumulate	Six monthly and annually or as required
Remedial Actions	If erosion channels are evident, these should be stabilised with extra soil substrate similar to the 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 appropriate	As required

2.5.3 Bioretention Systems

2.5.3.1 Location and Description

Bio-retention systems (including rain gardens) are shallow landscaped depressions can reduce runoff rates and volumes, and treat pollution through the use of engineered soils and vegetation. They are particularly effective in delivering interception and can also provide:

- Attractive landscape features that are self-irrigating and fertilizing
- Habitat and biodiversity
- Cooling of the local microclimate due to evapotranspiration.

Bio-retention systems have been specified to be used in various privately managed public spaces throughout the site.

2.5.3.2 Operation

It has been concluded in literature (Dalrymple, 2013) that bio-retention systems will typically require approximately 2.5 times more maintenance than typical landscaped designs.

Maintenance schedule	Required Action	Typical Frequency
Regular inspections	Inspect infiltration surfaces for silting and ponding, record de-watering time of the facility and assess standing water levels in underdrain (if appropriate) to determine if maintenance is necessary)	Quarterly
	Check operation of underdrains by inspection of flows after rain	Annually
	Assess plants for disease infection, poor growth, invasive species etc and replace if necessary	Quarterly
	Inspect inlets and outlets for blockage	Quarterly
Regular maintenance	Remove litter and surface debris and weeds	Quarterly (or more frequently for tidiness or aesthetic reasons)
	Replace and plants to maintain planning density	As required
	Remove sediment, litter and debris build-up from around inlets or from forebays	Quarterly or biannually
Occasional maintenance	Infill nay holes or scour in filter medium, improve erosion protection of required	As required
	Repair minor accumulations of silt by raking away surface mulch	As required
Remedial actions	Remove and replace filter medium and vegetation above	As required but likely to be > 20 years

2.5.4 Geocellular units

2.5.4.1 Location and Description

Geocellular units are proprietary products and therefore manufacturer's specific recommendations should also be taken into consideration above what has been prepared in this document. Additionally, different manufacturers may have different connection types and arrangements which will need to be taken in to consideration.

2.5.4.2 Operation

The geocellular units, along with permeable paving, are intended to attenuate the discharge from the site up to and including the 1 in 100 year plus 40% climate change event.

Access for maintenance has been provided through inspection chambers.

2.5.4.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important for the effective operation of geocellular units as designed. As the feature is buried a regularly inspection regime is very important to ensure the correct functionality of the surface water drainage network. Maintenance responsibility for the geocellular units and their surrounding areas should be placed with Ecoworld.

Sediment\material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols; especially where run-off is taken from potentially contaminated areas such as car parks/service yards.

Maintenance Schedule	Required Action	Frequency
Monitoring (to be undertaken more regularly within the first year of operation and adjusted as required)	Inspect inlets, outlets and overflows for blockages, and clear if required. If faults persist jetting and CCTV survey may be required.	Monthly and after large storms.
	Check penstocks and other mechanical devices (if present).	Half yearly.
	Inspect ventilation cowl (if present)	Monthly and after large storms.
Regular maintenance\inspection	Inspect and identify any areas that are not operating correctly. If required, take remedial action.	Monthly for 3 months, then six monthly
	Debris removal from catchment surface (where may cause risks to performance)	Monthly
	Where rainfall infiltrates into blocks from above, check surface of filter for blockage by silt, algae or other matter. Remove and replace surface infiltration medium as necessary.	Monthly (and after large storms)
	Remove sediment from pre-treatment structures	Annually (or as required after heavy rainfall events)
Remedial actions	Repair/rehabilitation of inlets, outlet, overflows and vents.	As required.

2.5.5 Permeable Pavements

2.5.5.1 Location and Description

The permeable pavement is located at the Jolly's Green area of the development.

The permeable pavement has been designed in accordance with CIRIA C753.

Permeable pavements contain proprietary products and as such, the manufacturer's recommendations should be followed where used.

2.5.5.2 Operation

Permeable pavements are an efficient mean of managing surface water runoff close to its source – intercepting runoff, reducing the volume and frequency of runoff, and providing a treatment medium.

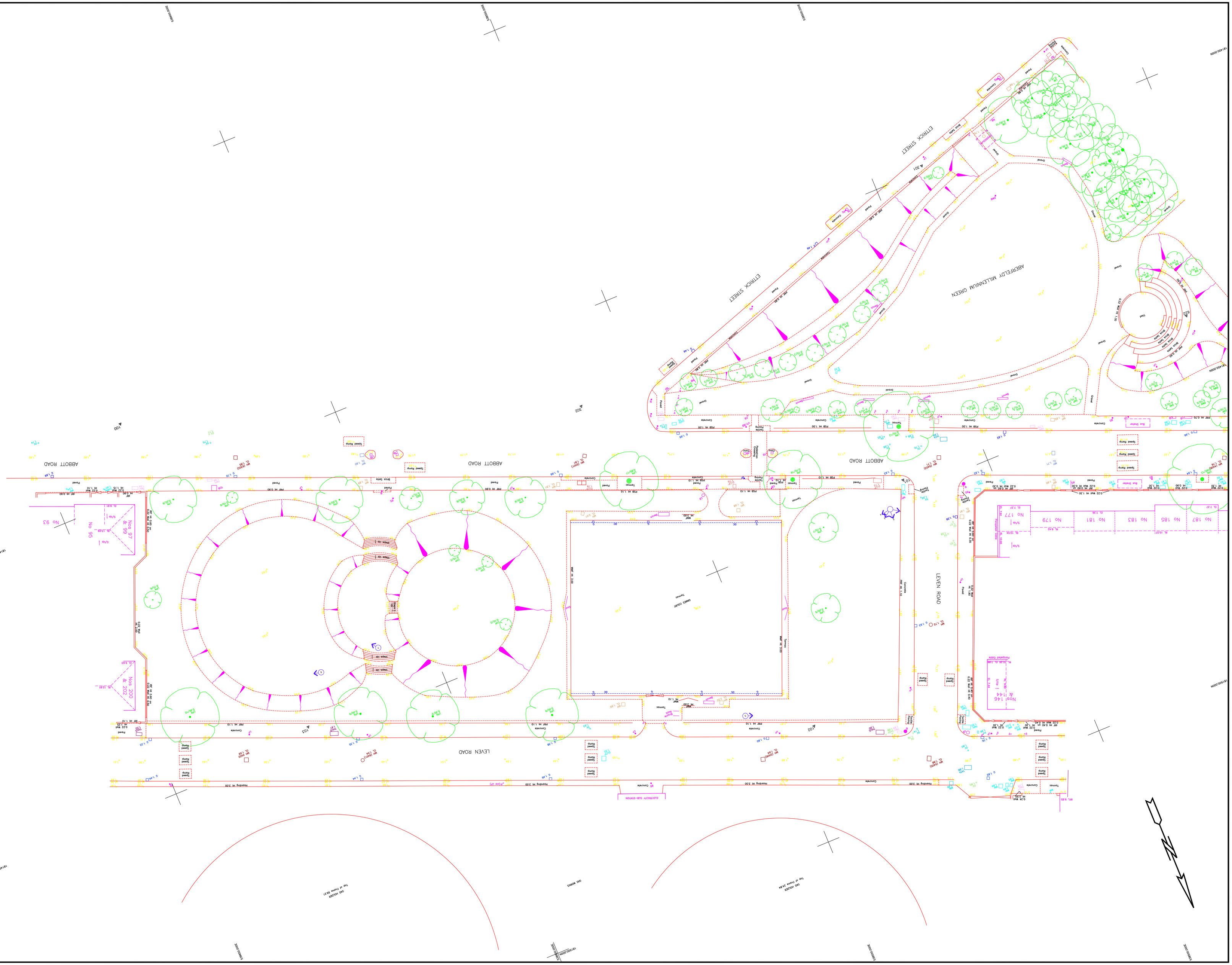
The surface has been designed to be porous or to contain gaps where rain can flow through the upper construction layers into the voided stone which makes up the sub-base.

2.5.5.3 Inspection and Maintenance Regime

Regular inspection and maintenance is important for the effective operation of the pervious pavement. Maintenance responsibility for the pavement and its surrounding area should be placed with Ecoworld.

Sediment/material removal should be undertaken in consultation with the environmental regulator to confirm appropriate protocols, as run-off is taken from potentially contaminated areas such as car parks/service yards.

Appendix A – Topographical & Utility Surveys



LEGEND

AIR CONDITIONING UNIT	ACU	▭
ADVERTISING BOARD	AB	● ▭
AIR VALVE	AV	○
BOLLARD	B	●
BELISHA BEACON	BB	●
BOREHOLE	BH	⊕
BASEMENT LIGHT	BLT	⬚
BOUNDARY POST/PEG	BP	●
BUS STOP	BS	●
CABLE TELEVISION PIT	CATV	▭
COAL HOLE	CH	○
CONTROL BOX	CB	▭
DOG WASTE BIN	DWB	●
DOWN PIPE	DP	○
EARTHING ROD	ER	●
ELECTRICITY CABLE PIT	ELCP	▭
ELECTRICITY CONTROL BOX	CBE	□
ELECTRICITY INSPECTION COVER	ELIC	□
ELECTRICITY POLE	EP	●
ELECTRICITY PYLON	EL PYLON	☒
FIRE HYDRANT	FH	▭
FLAG STAFF	FS	●
FLOODLIGHT	FLT	●
FLOWER BED	FB	⬚
FOOTPATH	FP	
GAS VALVE	GV	○
GUIDE POST	GP	●
GULLY	G	○ □
INSPECTION COVER	IC	○ □
INSPECTION COVER (UNKNOWN)	ICU	○ □
KERB OUTLET	KO	□
LAMP HOLE	LH	○
LAMP POST	LP	●
LIGHTED BOLLARD	LTB	●
LITTER BIN	LB	○
MANHOLE	MH	○ □
MILESTONE	MS	●
NAME PLATE	NP	—
NOTICE BOARD	NB	—
PARKING METER	PM	●
POST	P	●
POST BOX	PB	○
RAIN WATER PIPE	RWP	○
REFLECTOR POST	RP	●
ROAD SIGN	RS	●
RODDING EYE	RE	○
SERVICE MARKER POST	SMP	●
SIGN POST	SP	●
SLUICE VALVE	SV	○ □
SOIL & VENT PIPE	SVP	○
SPOTLIGHT (GROUND)	SPLG	●
SPOTLIGHT (TOWER)	SPLT	●
STOP COCK	SC	○
TELECOM CONTROL BOX	CBT	▭
TELECOM INSPECTION CHAMBER	TIC	▭
TELECOM MANHOLE	TMH	▭
TELECOM PILLAR	TLP	●
TELEGRAPH POLE	TP	●
TELEPHONE CALL BOX	TCB	□
TICKET MACHINE	TM	□
TL CABLE INSPECTION COVER	TLIC	▭
TRAFFIC LIGHT	TL	●
TRAFFIC LIGHT CONTROL BOX	CBTL	▭
TRAFFIC LIGHT CONTROL POST	CPTL	●
VENT PIPE	VP	○
WATER METER	WM	○
WASH OUT	WO	○
WATER CONTROL PILLAR	WCP	●
WATER TAP	Tap	●
WATER TROUGH	WT	▭

LEVELS

SPOT LEVEL(+Indicates pos.)	+ 127.13
BASEMENT LEVEL	BTL
BED LEVEL	BL
COVER LEVEL	CL
EAVES LEVEL	EL
FLOOR LEVEL	FL
INVERT LEVEL	IL
ROOF LEVEL	RFL
RIDGE LEVEL	RL
SOFFIT LEVEL	SFL
SPRING LEVEL	SPL
THRESHOLD LEVEL	THL
TOP OF WALL LEVEL	ToW
WATER LEVEL	WL

FENCE DESCRIPTIONS

BARBED WIRE FENCE	BWF
CHAIN LINK FENCE	CLF
CHESTNUT PALING FENCE	CPF
CLOSE BOARD FENCE	CBF
CONCRETE SLAB FENCE	CSF
CORRUGATED IRON FENCE	CIF
CRASH BARRIER	CBR
IRON RAILINGS	IRF
INTERWOVEN FENCE	IWF
LARCH LAP FENCE	LLF
MISCELLANEOUS FENCE	Misc F
OPEN BOARD FENCE	OBF
PALING FENCE	PLF
PALISADE FENCE	PAL
PEDESTRIAN SAFETY BARRIER	PSB
POST AND CHAIN FENCE	PCF
POST AND MESH FENCE	PMF
POST AND RAIL FENCE	PRF
POST AND WIRE FENCE	PWF
TRELLIS	TLS
WIRE MESH FENCE	WMF
AVERAGE	Ave
HEIGHT	Ht

DRAINAGE

SURFACE WATER PIPE	0.15 → SW
FOUL WATER PIPE	0.15 → FW
NO VISIBLE CONNECTION	NVC
UNABLE TO LIFT	UTL
UNABLE TO SURVEY	UTS
TAKEN FROM RECORDS	TFR
DRAINAGE CHANNEL (OPEN)	DC
DRAINAGE CHANNEL (COVERED)	DC
OVERHEAD WIRE	O/H W
BANKING	
EXTENT OF VEGETATION	
HEDGES	
MARSH	
GATE	SINGLE DOUBLE
RETAINING WALL	RTW
SLOPING MASONRY	
STILE	
WALL (Width drawn to scale)	
BUILDING	
OPEN SIDED/ BUILDING OVERHEAD	
CANOPY	
GLASS ROOFED	
ARCHWAY	
CONTOURS	25.50
ORDNANCE SURVEY BENCH MARK	OSBM Value 12.47
TEMPORARY BENCH MARK	TBM Value 50.00
SURVEY STATION	

TREE LEGEND

ALDER	ALD	MAPLE	MPL
ASH	ASH	OAK	OAK
ASPEN	ASP	PINE	PNE
BEECH	BCH	POPLAR	POP
CEDAR	CED	PRUNUS	PRU
CHERRY	CHY	RHODODENDRONS	RDN
CONIFEROUS	CON	ROWAN	RWN
CYPRESS	CYP	SALLOW	SLW
DECIDUOUS	DEC	SAPLING	SAP
DEAD	DED	SWEET CHESTNUT	SCH
ELDERBERRY	ELD	SILVER BIRCH	SIB
ELM	ELM	SPRUCE	SPR
EUCALYPTUS	EUC	SPECIES UNKNOWN	SPU
FIR	FIR	SYCAMORE	SYC
FRUIT	FRT	TREE OF HEAVEN	TOH
HAWTHORN	HAW	WELLINGTONIA	WEL
HAZEL	HZL	WHITEBEAM	WBM
HORNBEAM	HBM	WILLOW	WLW
HORSE CHESTNUT	HCH	WALNUT	WNT
HOLLY	HLY	YEW	YEW
INDIAN BEAN TREE	IBT		
LARCH	LAR	MULTI–TRUNK	MT
LABURNUM	LBM		
LOCUST	LCS	0.2 / 6 / 3T	
LIME	LIM	Dia of Bole / Tree Height / No of Trunks	
LONDON PLANE	LPN		
MAGNOLIA	MAG		

SIZES AND SPECIES ARE INDICATIVE ONLY, WITH THE MEAN SPREAD DRAWN TO SCALE.

Coordinate Table

Aworth
SURVEY CONSULTANTS

STATION	DESCRIPTION	EASTING	NORTHING	LEVEL
100	PN	538634.795	181387.889	1.889
101	PKN	538514.670	181447.628	1.737
102	PKN	538544.730	181480.753	1.873
103	PKN	538624.766	181447.996	1.674
300	??	538463.462	181378.864	1.771
301	PN	538491.308	181399.170	1.700
302	PKN	538560.752	181415.049	1.811
622	PN	538459.194	181440.085	3.221
C1	PN	538663.947	181376.651	1.940
C2	PN	538687.952	181279.286	1.783
C3	PKN	538506.884	181219.790	1.829
C4	PN	538429.831	181475.704	1.957

HN – Hilti® Nail
PM – Punch Mark
PKN – Parker Kalon® Nail
PN – Pipe Nail
PGM – Permanent Ground Marker
W – Washer (used with PKN and PN)

SHEET LAYOUT

2 1

NOTE:

PHOTO POSITIONS SHOWN THUS: ← ①

FOR PHOTO'S REFER TO DRAWING 3553–7 SHEET 3.

NOTES

LEVELLING THE SURVEY LEVELS ARE BASED ON OS NEWLYN DATUM BY GPS USING OSGM02.

GRID THE SURVEY IS ON A PLANE LOCAL GRID RELATED TO OS NATIONAL GRID BY GPS USING OSTN02. THE LOCAL GRID ORIGIN IS STN C1, CO–ORDINATES 538663.947E, 181376.651N.

LLOYD'S REGISTER QUALITY ASSURANCE CERTIFICATED COMPANY

THE SURVEY ASSOCIATION

Aworth
SURVEY CONSULTANTS
LRQA Certificated Office
Norfolk House, Norfolk Way, Uckfield, TN22 1EP
Tel:– 01825 768319 Fax:– 01825 768310
www.aworth.co.uk als@aworth.co.uk
The Lansdowne Building, 2 Lansdowne Road
Croydon, CR9 2ER
Tel:– 020 8263 6046 Fax:– 020 8263 6146

Drawing No	Sheet	Revision
3553–7	1	
	Scale 1:200	@ A0

Surveyed	NW/CS
Drawn	TP
Checked	PE
Date	18/12/09

Project

ABERFELDY VILLAGE
POPLAR
PHASE 7

Client

POPLAR HARCA
UNIT 3, QUEBEC WHARF
14 THOMAS ROAD
LONDON E14 7AF

LEGEND

UTILITY LINETYP/ES

British Telecom	BT	Gas	G
Cable Television	CATV	Heating PiP/Es	HP
Closed Circuit Television	CCTV	HV Cables	HV
Communications	C	Multiple Services Route	MSR
Drainage	DR	Oil	OIL
Drainage - Combined Water	CW	Oxygen	OXY
Drainage - Foul Water	FW	Street Lighting	SL
Drainage - Storm Water	SW	Traffic Signal Loop	TSL
Empty Duct	ED	Unknown found by GPR	GPR— U
Electric	E	Unknown	U
Fire Hydrant Main	FH	Unknown Cable	UC
Fibre Optic	FO	Unknown PiP/Eline	UPL
Fuel	FUEL	Water	W

Assumed Service Route - See GENERAL NOTES
(Using abbreviation of service and colour as above) ASR—XXX —ASR—XXX

UTILITY SURVEY INFORMATION

Area of Concern	AOC	Unable to Survey	UTS
Contracted Survey Area	SVY AREA	Unable to Lift (cover)	UTL
Previous Survey Area	PREVIOUS	Unable to Trace	⊃
Extent of (Post processed) GPR	GPR Survey	Unable to Trace (due to blockage)	B
Depth to Top of Service (metres)	(0.60d)	Unable to Trace Further	F
		End of Trace	E

ABREVIATIONS used on a PAS 128 Survey

(0.65d B2P) 0.65d = Depth in metres, B2 = Quality Level, P = Post processed GPR

TOPOGRAPHIC & UTILITY DETAILS

Barrier (symbol - sized)		PiP/E into Ground (symbol)	⊕
Belisha Beacon (symbol)	● BB	Post (symbol)	○ PO
Bollard (symbol)	● B	Rain Water PiP/E (symbol)	● RWP
Borehole (symbol)	⌖	Road Sign (symbol)	○ RS
British Telecoms IC (sized)	☐ BTIC	Rodding Eye (symbol)	◇ RE
Building (incomplete detail)		Sapling (symbol)	S
Cable into Ground (symbol)	⊗	Sign Post (symbol)	○ SP
Cable TV Box (symbol)	☐ CTV	Spot Light (symbol)	● SL
CCTV Camera (symbol)	▣	Spot Height	50.00 +
Cover Level in metres	CL 50.00	Stop Cock (symbol)	☐ SC
Direction of Flow (Drainage)	>	Stop Valve (symbol)	☐ SV
Distribution Board (symbol)	☐ DB	Survey Station (symbol)	△
Earth Rod (symbol)	☐ ER	Telephone Pole (symbol)	● TP
Electric Cabinet (sized)	☐ EC	Traffic Bollard (symbol)	■ B
Electric Pole (symbol)	● EP	Tree (dimensions in metres - e.g.) Diameter at 1mh: (bole) Height: Spread: SP/Ecies:	Dia: 0.3 Sp: 7.5 Ht: 10.2 Maple
Electric Sign (symbol)	● ES	Traffic Light (symbol)	● TL
Embankment	Bottom Top	Unknown Valve (symbol)	☐ UV
Feeder Pillar (sized)	☐ FP	Vent PiP/E (symbol)	● VP
Fire Hydrant (sized)	☐ FH	Wall	▭
Flag Pole (symbol)	● FP	Waste PiP/E (symbol)	● WP
Flat Roof Level in metres	FRL 50.00	Water Meter (symbol)	☐ WM
Flood Light (symbol)	● FL	Water Valve (symbol)	☐ WV
Gas Valve (symbol)	● GV Single Double		
Ground Level in metres	GL 50.00	Building Canopy	
Gulley (sized)	☐ GU	Crash Barrier	
InsP/Ection Cover (sized)	☐ IC	Drainage Channel	Drainage Channel
Invert Level in metres	IL 50.00	Drop Kerb (level in metres)	50.00
Junction Box - BT (sized)	☐ JB BT	Edge Detail (level in metres)	50.00
Junction Box - Comms (sized)	☐ JB COM	Footpath (level in metres)	50.00
Junction Box - Elec (sized)	☐ JB	Fence	
Lamp Post (symbol)	● LP	Heras Fence	
Light Bollard (symbol)	● LB	Kerb channel (level in metres)	50.00
Light in ground (symbol)	● LIG	Kerb top (level in metres)	50.00Tk
Manhole (sized)	☐ MH	Overhead Service Line	OHS
Manhole CapP/Ed Port	]○	P/Edestrian Railing	
ParaP/Et Level in metres	PL 50.00		
PiP/E Diameter in millimetres	Ø100		

GENERAL NOTES

IrresP/Ective of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE Guidelines - HSG47 Avoiding Danger from Underground Services

Only sub-surface utility information is provided. Above ground utility information may be shown where it assists with positional referencing.

Utilities may continue outside of the survey area. Any paint marks outside of the area are for investigative purposes only and may not represent the full extent of the sub-surface utilities.

Where logic indicates a utility exists but which cannot be positively confirmed with the technology, an assumed route (ASR) is recorded. All assumed service routes (ASR) have been highlighted with a background yellow colour for visual enhancement.

Sewer and manhole details shown on this drawing have been obtained by observation and measurement from the surface and as such cannot be guaranteed

Vertical & Horizontal Position - Vertical position (depth) is indicative to the top of the utility/feature and is recorded as (x.xxd) i.e. (1.25d) - (depth to top of service) and should not be taken as exact, as this could be the surround to the service rather than the service itself. Where depth information from the technology is unclear, depth is not shown. Drains and piP/Es/ducts may have been detected using threading and the depth indicated could be between the top (soffit) and the bottom (invert). Horizontal position is indicative to the centre of the utility/feature and should not be taken as exact.

Warranty - Biodegradable paints are used to mark-out the position of the utilities. Markings may become illegible quickly deP/Ending on ground, weather and traffic conditions. No warranty is given in resP/Ect of the durability of the paint markings and that they are a complete representation of the sub-surface utilities, therefore, this drawing should be used as the primary reference for the survey results.

This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only and the P/Erformance can be adversely affected by ground, weather and site conditions outside of SUMO's control, therefore, some utilities may be undetectable. While SUMO uses reasonable endeavours to detect all utilities, it does not warrant that 100% detection will be achieved and that approximate depth P/Enetration of the technologies SUMO uses will not be greater than two metres.

SHEET LAYOUT

Sheet 01
Sheet 02
Sheet 03

Rev	Notes	Drawn	Date

Notes:

Survey is referenced to OS Grid and Level Datum.

Previous Sumo Survey "SOR016539.dwg" has been inserted into this model for reference.

SUMO SERVICES Ltd
8 HAYWARD BUSINESS CENTRE
NEW LANE
HAVANT
HAMPSHIRE
PO9 2NL
TEL: 0845 456 1104
www.sumoservices.com

Title:
Utility Mapping

Client:
Aberfeldy New Village LLP

Project:
Aberfeldy Village, Tower Hamlets, London

Date Completed:	15/08/2020	Post Code:	E14 0ND

Surveyed:	DW, JHG, CE	Scale:
Drawn:	DM	1/200 (A0 Sheet)
Checked:	DW, JHG, CE	

Job No:	Dwg No:	Rev:
SOR017679	01	

LEGEND

UTILITY LINETYP/ES

British Telecom	BT	Gas	G
Cable Television	CATV	Heating PiP/Es	HP
Closed Circuit Television	CCTV	HV Cables	HV
Communications	C	Multiple Services Route	MSR
Drainage	DR	Oil	OIL
Drainage - Combined Water	CW	Oxygen	OXY
Drainage - Foul Water	FW	Street Lighting	SL
Drainage - Storm Water	SW	Traffic Signal Loop	TSL
Empty Duct	ED	Unknown found by GPR	GPR— U
Electric	E	Unknown	U
Fire Hydrant Main	FH	Unknown Cable	UC
Fibre Optic	FO	Unknown PiP/Eline	UPL
Fuel	FUEL	Water	W

Assumed Service Route - See GENERAL NOTES
(Using abbreviation of service and colour as above) ——ASR——XXX ——ASR——XXX ——

UTILITY SURVEY INFORMATION

Area of Concern	AOC	Unable to Survey	UTS
Contracted Survey Area	SVY AREA	Unable to Lift (cover)	UTL
Previous Survey Area	PREVIOUS	Unable to Trace	U
Extent of (Post processed) GPR	GPR Survey	Unable to Trace (due to blockage)	B
Depth to Top of Service (metres)	(O.60d)	Unable to Trace Further	F
		End of Trace	E

ABREVIATIONS used on a PAS 128 Survey

(O.65d B2P) 0.65d = Depth in metres, B2 = Quality Level, P = Post processed GPR

TOPOGRAPHIC & UTILITY DETAILS

Barrier (symbol - sized)	▬	PiP/E into Ground (symbol)	⊕
Belisha Beacon (symbol)	● BB	Post (symbol)	○ PO
Bollard (symbol)	● B	Rain Water PiP/E (symbol)	● RWP
Borehole (symbol)	⊕	Road Sign (symbol)	○ RS
British Telecoms IC (sized)	☐ BTIC	Rodding Eye (symbol)	◇ RE
Building (incomplete detail)	▨	Sapling (symbol)	S
Cable into Ground (symbol)	⊗	Sign Post (symbol)	○ SP
Cable TV Box (symbol)	☐ CTV	Spot Light (symbol)	● SL
CCTV Camera (symbol)	▣	Spot Height	50.00 +
Cover Level in metres	CL 50.00	Stop Cock (symbol)	☐ SC
Direction of Flow (Drainage)	>	Stop Valve (symbol)	☐ SV
Distribution Board (symbol)	☐ DB	Survey Station (symbol)	△
Earth Rod (symbol)	☐ ER	Telephone Pole (symbol)	● TP
Electric Cabinet (sized)	☐ EC	Traffic Bollard (symbol)	■ B
Electric Pole (symbol)	● EP	Tree (dimensions in metres - e.g.)	●
Electric Sign (symbol)	● ES	Diameter at 1mh: (bole) Height: Spread: SP/Ecies:	Dia: 0.3 Sp: 7.5 Ht: 10.2 Maple
Embankment	Bottom Top		
Feeder Pillar (sized)	☐ FP	Traffic Light (symbol)	● TL
Fire Hydrant (sized)	☐ FH	Unknown Valve (symbol)	☐ UV
Flag Pole (symbol)	● FP	Vent PiP/E (symbol)	● VP
Flat Roof Level in metres	FRL 50.00	Wall	▭
Flood Light (symbol)	● FL	Waste PiP/E (symbol)	● WP
Gas Valve (symbol)	● GV	Water Meter (symbol)	☐ WM
	Single Double	Water Valve (symbol)	☐ WV
Ground Level in metres	GL 50.00		
Gulley (sized)	☐ GU	Building Canopy	
InsP/Ection Cover (sized)	☐ IC	Crash Barrier	
Invert Level in metres	IL 50.00	Drainage Channel	Drainage Channel
Junction Box - BT (sized)	☐ JB BT	Drop Kerb (level in metres)	50.00
Junction Box - Comms (sized)	☐ JB COM	Edge Detail (level in metres)	50.00
Junction Box - Elec (sized)	☐ JB	Footpath (level in metres)	50.00
Lamp Post (symbol)	● LP	Fence	
Light Bollard (symbol)	● LB	Heras Fence	
Light in ground (symbol)	● LIG	Kerb channel (level in metres)	50.00
Manhole (sized)	☐ MH	Kerb top (level in metres)	50.00Tk
Manhole CapP/Ed Port	]○	Overhead Service Line	OHS
ParaP/Et Level in metres	PL 50.00	P/Edestrian Railing	
PiP/E Diameter in millimetres	Ø100		

GENERAL NOTES

IrresP/Ective of the information provided by a utility survey and statutory plans, excavation work should be undertaken with extreme caution and in accordance with HSE Guidelines - HSG47 Avoiding Danger from Underground Services

Only sub-surface utility information is provided. Above ground utility information may be shown where it assists with positional referencing.

Utilities may continue outside of the survey area. Any paint marks outside of the area are for investigative purposes only and may not represent the full extent of the sub-surface utilities.

Where logic indicates a utility exists but which cannot be positively confirmed with the technology, an assumed route (ASR) is recorded. All assumed service routes (ASR) have been highlighted with a background yellow colour for visual enhancement.

Sewer and manhole details shown on this drawing have been obtained by observation and measurement from the surface and as such cannot be guaranteed

Vertical & Horizontal Position - Vertical position (depth) is indicative to the top of the utility/feature and is recorded as (x.xxd) i.e. (1.25d) - (depth to top of service) and should not be taken as exact, as this could be the surround to the service rather than the service itself. Where depth information from the technology is unclear, depth is not shown. Drains and piP/Es/ducts may have been detected using threading and the depth indicated could be between the top (soffit) and the bottom (invert). Horizontal position is indicative to the centre of the utility/feature and should not be taken as exact.

Warranty - Biodegradable paints are used to mark-out the position of the utilities. Markings may become illegible quickly deP/Ending on ground, weather and traffic conditions. No warranty is given in resP/Ect of the durability of the paint markings and that they are a complete representation of the sub-surface utilities, therefore, this drawing should be used as the primary reference for the survey results.

This drawing does not provide an absolute representation of the sub-surface. Utilities have been detected using non-invasive technologies only and the P/Erformance can be adversely affected by ground, weather and site conditions outside of SUMO's control, therefore, some utilities may be undetectable. While SUMO uses reasonable endeavours to detect all utilities, it does not warrant that 100% detection will be achieved and that approximate depth P/Enetration of the technologies SUMO uses will not be greater than two metres.

SHEET LAYOUT

Rev	Notes	Drawn	Date

Notes:

Survey is referenced to OS Grid and Level Datum.

Previous Sumo Survey "SOR016539.dwg" has been inserted into this model for reference.

SUMO SERVICES Ltd
8 HAYWARD BUSINESS CENTRE
NEW LANE
HAVANT
HAMPSHIRE
PO9 2NL
TEL: 0845 456 1104
www.sumoservices.com

Title:
Utility Mapping

Client:
Aberfeldy New Village LLP

Project:
Aberfeldy Village, Tower Hamlets, London

Date Completed:	15/08/2020	Post Code:	E14 0ND
Surveyed:	DW, JHG, MW, CE	Scale:	1/200 (A0 Sheet)
Drawn:	DM		
Checked:	DW, JHG, MW, CE		
Job No:	SOR017679	Dwg No:	Rev:
		02	

LEGEND

UTILITY LINETYP/ES

British Telecom	BT	Gas	G
Cable Television	CATV	Heating PiP/Es	HP
Closed Circuit Television	CCTV	HV Cables	HV
Communications	C	Multiple Services Route	MSR
Drainage	DR	Oil	OIL
Drainage - Combined Water	CW	Oxygen	OXY
Drainage - Foul Water	FW	Street Lighting	SL
Drainage - Storm Water	SW	Traffic Signal Loop	TSL
Empty Duct	ED	Unknown found by GPR	GPR— U
Electric	E	Unknown	U
Fire Hydrant Main	FH	Unknown Cable	UC
Fibre Optic	FO	Unknown PiP/Eline	UPL
Fuel	FUEL	Water	W

Assumed Service Route - See GENERAL NOTES (Using abbreviation of service and colour as above) ——ASR——XXX ——ASR——XXX ——

UTILITY SURVEY INFORMATION

Area of Concern	AOC	Unable to Survey	UTS
Contracted Survey Area	SVY AREA	Unable to Lift (cover)	UTL
Previous Survey Area	PREVIOUS	Unable to Trace	U
Extent of (Post processed) GPR	GPR Survey	Unable to Trace (due to blockage)	B
Depth to Top of Service (metres)	(O.60d)	Unable to Trace Further	F
		End of Trace	E

ABREVIATIONS used on a PAS 128 Survey

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TOPOGRAPHIC & UTILITY DETAILS

Barrier (symbol - sized)	▬	PiP/E into Ground (symbol)	⊕
Belisha Beacon (symbol)	● BB	Post (symbol)	○ PO
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Borehole (symbol)	⊕	Road Sign (symbol)	○ RS
British Telecoms IC (sized)	☐ BTIC	Rodding Eye (symbol)	◇ RE
Building (incomplete detail)	▨	Sapling (symbol)	S
Cable into Ground (symbol)	⊗	Sign Post (symbol)	○ SP
Cable TV Box (symbol)	☐ CTV	Spot Light (symbol)	● SL
CCTV Camera (symbol)	▣	Spot Height	50.00 +
Cover Level in metres	CL 50.00	Stop Cock (symbol)	☐ SC
Direction of Flow (Drainage)	>	Stop Valve (symbol)	☐ SV
Distribution Board (symbol)	☐ DB	Survey Station (symbol)	△
Earth Rod (symbol)	☐ ER	Telephone Pole (symbol)	● TP
Electric Cabinet (sized)	☐ EC	Traffic Bollard (symbol)	■ B
Electric Pole (symbol)	● EP	Tree (dimensions in metres - e.g.) Diameter at 1mh: (bole) Height: Spread: SP/Ecies:	Dia: 0.3 Sp: 7.5 Ht: 10.2 Maple
Electric Sign (symbol)	● ES		
Embankment	Bottom Top		
Feeder Pillar (sized)	☐ FP	Traffic Light (symbol)	● TL
Fire Hydrant (sized)	☐ FH	Unknown Valve (symbol)	☐ UV
Flag Pole (symbol)	● FP	Vent PiP/E (symbol)	● VP
Flat Roof Level in metres	FRL 50.00	Wall	▬
Flood Light (symbol)	● FL	Waste PiP/E (symbol)	● WP
Gas Valve (symbol)	● GV	Water Meter (symbol)	☐ WM
	Single Double	Water Valve (symbol)	☐ WV
Ground Level in metres	GL 50.00		
Gulley (sized)	☐ GU	Building Canopy	—
InsP/Ection Cover (sized)	☐ IC	Crash Barrier	—
Invert Level in metres	IL 50.00	Drainage Channel	Drainage Channel
Junction Box - BT (sized)	☐ JB BT	Drop Kerb (level in metres)	50.00
Junction Box - Comms (sized)	☐ JB COM	Edge Detail (level in metres)	50.00
Junction Box - Elec (sized)	☐ JB	Footpath (level in metres)	50.00
Lamp Post (symbol)	● LP	Fence	—
Light Bollard (symbol)	● LB	Heras Fence	—
Light in ground (symbol)	● LIG	Kerb channel (level in metres)	50.00
Manhole (sized)	☐ MH	Kerb top (level in metres)	50.00Tk
Manhole CapP/Ed Port	]O	Overhead Service Line	OHS
ParaP/Et Level in metres	PL 50.00	P/Edestrian Railing	—
PiP/E Diameter in millimetres	∅100		

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SHEET LAYOUT

Rev	Notes	Drawn	Date

Notes:

Survey is referenced to OS Grid and Level Datum.

Previous Sumo Survey "SOR016539.dwg" has been inserted into this model for reference.

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Title:
Utility Mapping

Client:
Aberfeldy New Village LLP

Project:
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Date Completed:	15/08/2020	Post Code:	E14 0ND
Surveyed:	DW, JHG, MW, CE	Scale:	1/200 (A0 Sheet)
Drawn:	DM		
Checked:	DW, JHG, MW, CE		
Job No:	SOR017679	Dwg No:	03
		Rev:	

LEGEND

AIR CONDITIONING UNIT	ACU		**FENCE DESCRIPTIONS**		
ADVERTISING BOARD	AB		BARBED WIRE FENCE		BWF
AIR VALVE	AV		CHAIN LINK FENCE		CLF
BOLLARD	B		CHESTNUT PALING FENCE		CPF
BELISHA BEACON	BB		CLOSE BOARD FENCE		CBF
BOREHOLE	BH		CONCRETE SLAB FENCE		CSF
BOLLARD/DWARF LIGHT	BL		DECORATIVE IRON FENCE		DIF
BENCHMARK POST/PEG	BP		CRASH BARRIER		CBR
BUS STOP	BS		IRON RAILINGS		IRF
CABLE TELEVISION PIT	CATV		INTERWOVEN FENCE		IWF
COAL HOLE	CH		LARCH LAP FENCE		LLF
CONTROL BOX	CB		MISCELLANEOUS FENCE		Misc F
DOG WASTE BIN	DWB		OPEN BOARD FENCE		OBF
DOWN PIPE	DP		PALING FENCE		PAL
EARTHING ROD	ER		PALISADE FENCE		PLF
ELECTRICITY CABLE PIT	ELCP		PEDESTRIAN SAFETY BARRIER		PSB
ELECTRICITY CONTROL BOX	CBE		POST AND CHAIN FENCE		PCF
ELECTRICITY INSPECTION COVER	ELIC		POST AND MESH FENCE		PMF
ELECTRICITY POLE	EP		POST AND RAIL FENCE		PRF
ELECTRICITY PYLON	EL PYLON		POST AND WIRE FENCE		PWF
FIRE HYDRANT	FH		TRELLIS		TLS
FLOOD LIGHT	FL		WIRE MESH FENCE		WMF
FLOWER BED	FB		AVERAGE		Ave
FOOTPATH	FP		HEIGHT		Ht
GAS VALVE	GV		**DRAINAGE**		
GUIDE POST	GP		SURFACE WATER PIPE		0.15 SW
GULLY	G		FOUL WATER PIPE		0.15 FW
INSPECTION COVER	IC		NO VISIBLE CONNECTION		NVC
INSPECTION COVER (UNKNOWN)	ICU		UNABLE TO LIFT		UTL
KERB OUTLET	KO		UNABLE TO SURVEY		UTS
LAMP HOLE	LH		TAKEN FROM RECORDS		TFR
LAMP POST	LP		DRAINAGE CHANNEL (OPEN)		DC
LIMITED BOLLARD	LTB		DRAINAGE CHANNEL (COVERED)		DC
LITTER BIN	LB				
MANHOLE	MH		OVERHEAD WIRE		O/H W
MILESTONE	MS				
NAME PLATE	NP		BANKING		
NOTICE BOARD	NB				
PARKING METER	PM		EXTENT OF VEGETATION		
POST	P				
POST BOX	PB		HEDGES		
RAIN WATER PIPE	RWP				
REFLECTION POST	RP		MARSH		
ROAD SIGN	RS				
RODDING EYE	RE		GATE		SINGLE DOUBLE
SERVICE MARKER POST	SMP				
SIGN POST	SP		RETAINING WALL		RTW
SLUICE VALVE	SV				
SOIL & VENT PIPE	SVP		SLOPING MASONRY		
SPOTLIGHT (GROUND)	SPLG				
SPOTLIGHT (TOWER)	SPLT		STILE		
STOP COCK	SC				
TELECOM CONTROL BOX	TBT		WALL (Width drawn to scale)		
TELECOM INSPECTION CHAMBER	TCH				
TELECOM MANHOLE	TMH		BUILDING		
TELECOM PILLAR	TLP				
TELEGRAPH POLE	TP		OPEN SIDED/		
TELEPHONE CALL BOX	TCB		BUILDING OVERHEAD		
TICKET MACHINE	TM				
TL CABLE INSPECTION COVER	TLIC		CANOPY		
TRAFFIC LIGHT	TL				
TRAFFIC LIGHT CONTROL BOX	CBTL		GLASS ROOFED		
TRAFFIC LIGHT CONTROL POST	TLP				
VENT PIPE	VP		ARCHWAY		
WATER METER	WM				
WASH OUT	WO		CONTOURS		25.50
WATER CONTROL PILLAR	WCP				
WATER TAP	Tap		ORDNANCE SURVEY	OSBM	
WATER TROUGH	WT		BENCH MARK	Value 12.47	
LEVELS			TEMPORARY	TBM	
SPOT LEVEL(+indicates pos.)	+ 127.13		BENCH MARK	Value 50.00	
BASEMENT LEVEL	BTL		SURVEY STATION		
BED LEVEL	BL				
COVER LEVEL	CL				
EAVES LEVEL	EL				
FLOOR LEVEL	FL				
INVERT LEVEL	IL				
ROOF LEVEL	RFL				
KERB LEVEL	KL				
SOFFIT LEVEL	SFL				
SPRING LEVEL	SPL				
THRESHOLD LEVEL	THL				
TOP OF WALL LEVEL	ToW				
WATER LEVEL	WL				

TREE LEGEND

ALDER	ALD	MAPLE	MPL
ASH	ASH	OAK	OAK
ASPEN	ASP	PINE	PNE
BEECH	BCH	POPLAR	POP
CEDAR	CED	PRUNUS	PRU
CHERRY	CHY	RHODODENDRONS	RDN
CONIFEROUS	CON	ROWAN	RWN
CYPRESS	CYP	SALLOW	SLW
DECIDUOUS	DEC	SAPLING	SAP
DEAD	DED	SWEET CHESTNUT	SCH
ELDERBERRY	ELD	SILVER BIRCH	SBR
ELM	ELM	SPRUCE	SPR
EUCALYPTUS	EUC	SYCAMORE	SYC
FIR	FIR	SPECIES UNKNOWN	UNK
FRUIT	FRT	TREE OF HEAVEN	TOH
HAWTHORN	HAW	WELLINGTONIA	WEL
HAZEL	HZL	WHITEBEAM	WBM
HORNBEAM	HBM	WILLOW	WLW
HORSE CHESTNUT	HCH	WALNUT	WNT
HOLLY	HLY	YEW	YEW
INDIAN BEAN TREE	IBT	MULTI-TRUNK	MT
LARCH	LAR		
LABURNUM	LBM	0.2 / 6 / 3T	
LOCUST	LCS	Dia of / Tree / No of	
LIME	LIM	Bole / Height / Trunks	
LONDON PLANE	LPN		
MAGNOLIA	MAG		

SIZES AND SPECIES ARE INDICATIVE ONLY, WITH THE MEAN SPREAD DRAWN TO SCALE.

Coordinate Table

Aworth SURVEY CONSULTANTS

STATION	DESCRIPTION	EASTING	NORTHING	LEVEL
7	PN	538480.864	181222.252	1.571
100	–	538634.795	181387.889	1.889
104	PNW	538456.201	181318.168	1.791
105	PNW	538471.710	181322.503	1.767
106	PKN	538480.626	181295.154	1.724
107	PNW	538502.572	181262.266	1.788
108	PN	538542.985	181243.685	1.646
109	PKN	538529.685	181282.973	1.849
110	PKN	538513.558	181338.185	1.587
C2	PN	538687.952	181279.286	1.783
C3	PKN	538506.884	181219.790	1.829

HN – HIRN Nail PKN – Parker Kalon® Nail PGM – Permanent Ground Marker
PM – Punch Mark PN – Pipe Nail W – Washer (used with PKN and PN)

NOTE:
PHOTO POSITIONS SHOWN THUS: 1

FOR PHOTO'S REFER TO DRAWING 3553–2 SHEET 2.

NOTES

GRID — THE SURVEY IS ON A PLANE LOCAL GRID RELATED TO OS NATIONAL GRID BY GPS USING OSTN02. THE LOCAL GRID ORIGIN IS STN C1, CO–ORDINATES 538663.947E, 181376.651N.

LEVELLING — THE SURVEY LEVELS ARE BASED ON OS NEWLYN DATUM BY GPS USING OSGM02.

LLOYD'S REGISTER QUALITY ASSURANCE CERTIFICATED COMPANY

THE SURVEY ASSOCIATION

Aworth SURVEY CONSULTANTS
LRQA Certificated Office
Norfolk House, Norfolk Way, Uckfield, TN22 1EP
Tel:– 01825 768319 Fax:– 01825 768310
www.aworth.co.uk als@aworth.co.uk
The Lansdowne Building, 2 Lansdowne Road
Croydon, CR9 2ER
Tel:– 020 8263 6046 Fax:– 020 8263 6146

Drawing No	Sheet	Revision		
3553–2	1		Surveyed	NW
			Drawn	DRF/TP
Scale 1:200 @ A1			Checked	PDE
			Date	18/12/09

Project

ABERFELDY VILLAGE
POPLAR
PHASE 2

Client

POPLAR HARCA
UNIT 3, QUEBEC WHARF
14 THOMAS ROAD
LONDON E14 7AF

Coordinate Table

STATION	DESCRIPTION	EASTING	NORTHING	LEVEL
50	PN	538723.408	181302.555	1.783
51	PN	538743.187	181255.906	1.653
52	PNW	538752.765	181230.150	1.729
53	PN	538777.386	181218.539	1.788
54	PN	538768.285	181195.695	4.223
55	PN	538823.444	181216.378	4.266
56	PN	538862.514	181229.780	4.289
57	PN	538889.518	181250.146	4.314
58	PN	538898.100	181276.217	3.382
59	PKN	538883.382	181285.090	2.634
60		538801.399	181318.471	1.922
61	PKN	538771.406	181319.327	1.852
62	PN	538777.714	181288.671	1.808
63	PKN	538848.013	181273.050	1.636
65	PNW	538783.642	181236.459	1.944
66	PEG	538811.387	181291.715	1.744
C1	PN	538663.947	181376.651	1.940
C2	PN	538687.952	181279.286	1.783

HN – Hilti® Nail PM – Punch Mark PKN – Parker Kalon® Nail PN – Pipe Nail PGM – Permanent Ground Marker W – Washer (used with PKN and PN)

NOTE:

PHOTO POSITIONS SHOWN THUS:

FOR PHOTO'S REFER TO DRAWING 3553–5 SHEET 2.

NOTES

GRID THE SURVEY IS ON A PLANE LOCAL GRID RELATED TO OS NATIONAL GRID BY GPS USING OSTN02. THE LOCAL GRID ORIGIN IS STN C1 E538663.947, N81376.651

LEVELLING THE SURVEY LEVELS ARE BASED ON OS NEWLYN DATUM BY GPS USING OSGM02.

LLOYD'S REGISTER QUALITY ASSURANCE CERTIFICATED COMPANY

THE SURVEY ASSOCIATION

Aworth
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www.aworth.co.uk als@aworth.co.uk
The Lansdowne Building, 2 Lansdowne Road
Croydon, CR9 2ER
Tel:– 020 8263 6046 Fax:– 020 8263 6146

Drawing No	Sheet	Revision
3553–5	1	
	Scale 1:200	@ A0

Surveyed	CS
Drawn	JBW
Checked	PDE
Date	18/12/09

Project

ABERFELDY VILLAGE
POPLAR
PHASE 5

Client

POPLAR HARCA
UNIT 3, QUEBEC WHARF
14 THOMAS ROAD
LONDON E14 7AF

LEGEND

AIR CONDITIONING UNIT	ACU	▭
ADVERTISING BOARD	AB	● ▭
AIR VALVE	AV	○
BOLLARD	B	●
BELISHA BEACON	BB	●
BOREHOLE	BH	⊕
BASEMENT LIGHT	BLT	▭
BOUNDARY POST/PEG	BP	●
BUS STOP	BS	●
CABLE TELEVISION PIT	CATV	▭
COAL HOLE	CH	○
CONTROL BOX	CB	▭
DOG WASTE BIN	DWB	●
DOWN PIPE	DP	○
EARTHING ROD	ER	●
ELECTRICITY CABLE PIT	ELCP	▭
ELECTRICITY CONTROL BOX	CBE	□
ELECTRICITY INSPECTION COVER	ELIC	□
ELECTRICITY POLE	EP	●
ELECTRICITY PYLON	EL PYLON	☒
FIRE HYDRANT	FH	▭
FLAG STAFF	FS	●
FLOODLIGHT	FLT	●
FLOWER BED	FB	▭
FOOTPATH	FP	
GAS VALVE	GV	○
GUIDE POST	GP	●
GULLY	G	○ □
INSPECTION COVER	IC	○ □
INSPECTION COVER (UNKNOWN)	ICU	○ □
KERB OUTLET	KO	□
LAMP HOLE	LH	○
LAMP POST	LP	●
LIGHTED BOLLARD	LTB	●
LITTER BIN	LB	○
MANHOLE	MH	○ □
MILESTONE	MS	●
NAME PLATE	NP	—
NOTICE BOARD	NB	—
PARKING METER	PM	●
POST	P	●
POST BOX	PB	○
RAIN WATER PIPE	RWP	○
REFLECTOR POST	RP	●
ROAD SIGN	RS	●
RODDING EYE	RE	○
SERVICE MARKER POST	SMP	●
SIGN POST	SP	●
SLUICE VALVE	SV	○ □
SOIL & VENT PIPE	SVP	○
SPOTLIGHT (GROUND)	SPLG	●
SPOTLIGHT (TOWER)	SPLT	●
STOP COCK	SC	○
TELECOM CONTROL BOX	CBT	▭
TELECOM INSPECTION CHAMBER	TIC	▭
TELECOM MANHOLE	TMH	▭
TELECOM PILLAR	TLP	●
TELEGRAPH POLE	TP	●
TELEPHONE CALL BOX	TCB	□
TICKET MACHINE	TM	□
TL CABLE INSPECTION COVER	TLIC	▭
TRAFFIC LIGHT	TL	●
TRAFFIC LIGHT CONTROL BOX	CBTL	▭
TRAFFIC LIGHT CONTROL POST	CPTL	●
VENT PIPE	VP	○
WATER METER	WM	○
WASH OUT	WO	○
WATER CONTROL PILLAR	WCP	●
WATER TAP	Tap	●
WATER TROUGH	WT	▭

LEVELS

SPOT LEVEL(+Indicates pos.)	+ 127.13
BASEMENT LEVEL	BTL
BED LEVEL	BL
COVER LEVEL	CL
EAVES LEVEL	EL
FLOOR LEVEL	FL
INVERT LEVEL	IL
ROOF LEVEL	RFL
RIDGE LEVEL	RL
SOFFIT LEVEL	SFL
SPRING LEVEL	SPL
THRESHOLD LEVEL	THL
TOP OF WALL LEVEL	ToW
WATER LEVEL	WL

FENCE DESCRIPTIONS

BARBED WIRE FENCE	BWF
CHAIN LINK FENCE	CLF
CHESTNUT PALING FENCE	CPF
CLOSE BOARD FENCE	CBF
CONCRETE SLAB FENCE	CSF
CORRUGATED IRON FENCE	CIF
CRASH BARRIER	CBR
IRON RAILINGS	IRF
INTERWOVEN FENCE	IWF
LARCH LAP FENCE	LLF
MISCELLANEOUS FENCE	Misc F
OPEN BOARD FENCE	OBF
PALING FENCE	PLF
PALISADE FENCE	PAL
PEDESTRIAN SAFETY BARRIER	PSB
POST AND CHAIN FENCE	PCF
POST AND MESH FENCE	PMF
POST AND RAIL FENCE	PRF
POST AND WIRE FENCE	PWF
TRELLIS	TLS
WIRE MESH FENCE	WMF
AVERAGE	Ave
HEIGHT	Ht

DRAINAGE

SURFACE WATER PIPE	0.15 SW
FOUL WATER PIPE	0.15 FW
NO VISIBLE CONNECTION	NVC
UNABLE TO LIFT	UTL
UNABLE TO SURVEY	UTS
TAKEN FROM RECORDS	TFR
DRAINAGE CHANNEL (OPEN)	DC
DRAINAGE CHANNEL (COVERED)	DC
OVERHEAD WIRE	O/H W
BANKING	
EXTENT OF VEGETATION	
HEDGES	
MARSH	
GATE	SINGLE DOUBLE
RETAINING WALL	RTW
SLOPING MASONRY	
STILE	
WALL (Width drawn to scale)	
BUILDING	
OPEN SIDED/ BUILDING OVERHEAD	
CANOPY	
GLASS ROOFED	
ARCHWAY	
CONTOURS	25.50
ORDNANCE SURVEY BENCH MARK	OSBM Value 12.47
TEMPORARY BENCH MARK	TBM Value 50.00
SURVEY STATION	△

TREE LEGEND

ALDER	ALD	MAPLE	MPL
ASH	ASH	OAK	OAK
ASPEN	ASP	PINE	PNE
BEECH	BCH	POPLAR	POP
CEDAR	CED	PRUNUS	PRU
CHERRY	CHY	RHODODENDRONS	RDN
CONIFEROUS	CON	ROWAN	RWN
CYPRESS	CYP	SALLOW	SLW
DECIDUOUS	DEC	SAPLING	SAP
DEAD	DED	SWEET CHESTNUT	SCH
ELDERBERRY	ELD	SILVER BIRCH	SIB
ELM	ELM	SPRUCE	SPR
EUCALYPTUS	EUC	SPECIES UNKNOWN	SPU
FIR	FIR	SYCAMORE	SYC
FRUIT	FRT	TREE OF HEAVEN	TOH
HAWTHORN	HAW	WELLINGTONIA	WEL
HAZEL	HZL	WHITEBEAM	WBM
HORNBEAM	HBM	WILLOW	WLW
HORSE CHESTNUT	HCH	WALNUT	WNT
HOLLY	HLY	YEW	YEW
INDIAN BEAN TREE	IBT		
LARCH	LAR	MULTI–TRUNK	MT
LABURNUM	LBM		
LOCUST	LCS	0.2 / 6 / 3T	
LIME	LIM	Dia of Bole / Tree Height / No of Trunks	
LONDON PLANE	LPN		
MAGNOLIA	MAG		

SIZES AND SPECIES ARE INDICATIVE ONLY, WITH THE MEAN SPREAD DRAWN TO SCALE.

Coordinate Table

STATION	DESCRIPTION	EASTING	NORTHING	LEVEL
100	PN	538634.795	181387.889	1.889
101	PKN	538514.670	181447.628	1.737
105	PNW	538471.710	181322.503	1.767
110	PKN	538513.558	181338.185	1.587
300	PKN	538463.462	181378.864	1.771
301	PN	538491.308	181399.170	1.700
302	PKN	538560.752	181415.049	1.811
303	PKN	538584.861	181360.978	1.582
600	PKN	538427.513	181308.490	1.990
601	PN	538391.334	181297.567	2.139
602	PN	538373.212	181302.329	2.239
603	PKN	538353.673	181294.721	2.329
604	HN	538339.098	181280.636	2.476
605	PN	538334.163	181259.767	2.593
606	HN	538321.900	181325.555	2.415
607	PN	538315.708	181356.368	2.973
608	PKN	538307.935	181397.113	3.182
609	PN	538297.372	181442.215	3.063
610	PN	538340.316	181458.161	2.433
611	PN	538387.155	181468.694	1.590
612	PN	538429.773	181450.741	1.801
613	PN	538402.553	181424.181	1.756
614	PN	538405.993	181397.949	1.873
615	PN	538355.834	181378.805	1.592
616	PN	538419.161	181368.113	1.830
617	PN	538385.738	181353.977	1.855
618	PKN	538378.350	181338.972	2.196
619	PKN	538346.946	181350.869	1.948
620	PN	538440.400	181424.358	1.632
C4	PNW	538429.831	181475.704	1.957

HN – Hilti® Nail
PM – Punch Mark
PKN – Parker Kalon® Nail
PN – Pipe Nail
PGM – Permanent Ground Marker
W – Washer (used with PKN and PN)

SHEET LAYOUT

	1	
	2	3

NOTE:

PHOTO POSITIONS SHOWN THUS: ← ①

FOR PHOTO'S REFER TO DRAWING 3553–6 SHEET 4.

NOTES

GRID THE SURVEY IS ON A PLANE LOCAL GRID RELATED TO OS NATIONAL GRID BY GPS USING OSTN02. THE LOCAL GRID ORIGIN IS STN C1, CO–ORDINATES 538663.947E, 181376.651N.

LEVELLING THE SURVEY LEVELS ARE BASED ON OS NEWLYN DATUM BY GPS USING OSGM02.

LLOYD'S REGISTER
QUALITY ASSURANCE
CERTIFICATED COMPANY

THE SURVEY ASSOCIATION

Aworth
SURVEY CONSULTANTS
LRQA Certificated Office
Norfolk House, Norfolk Way, Uckfield, TN22 1EP
Tel:– 01825 768319 Fax:– 01825 768310
www.aworth.co.uk als@aworth.co.uk
The Lansdowne Building, 2 Lansdowne Road
Croydon, CR9 2ER
Tel:– 020 8263 6046 Fax:– 020 8263 6146

Drawing No	Sheet	Revision
3553–6	2	
	Scale 1:200	@ A0

Surveyed	DR/CS
Drawn	TP
Checked	PDE
Date	18/12/09

Project

ABERFELDY VILLAGE
POPLAR
PHASE 6

Client

POPLAR HARCA
UNIT 3, QUEBEC WHARF
14 THOMAS ROAD
LONDON E14 7AF

Appendix B – Thames Water Asset Records and Pre Development Enquiry Response

Mrs Maria Magdalena Burca
Ecoworld and Poplar Harca C/O Meinhardt (UK) Ltd
10 Aldersgate Street
London
EC1A 4HJ

Wastewater pre-planning
Our ref DS6080631

24 March 2021

Pre-planning enquiry: Confirmation of sufficient capacity

Dear Mrs Burca,

Thank you for providing information on your development:

Aberfeldy Village, Area known as Poplar Riverside, London, E14 0HT.

Existing: 297 dwellings, primary school and commercial space (2,217sqm).

Proposed: Demolition of existing site. Phase A – 250 residential units. Foul water discharging by gravity. 50 units to MH7303, 23 units to MH3605, 75 units to MH4301A, 102 units to MH4215. Surface water discharging by gravity attenuated to 8.59l/s to manholes 7303, 3605, 4301A and 4215.

Phase B – 573 residential units, 920.3sqm of workspace, 1,894.9sqm of residential hub, 344,8sqm of estate management space and 443.3sqm of retail space. Foul water discharging by gravity. 79 units to MH3605, 222 units to MH3517 and MH2536, 160 units to MH3516. Surface water discharging by gravity attenuated to 8l/s to manholes 3605, 3517, 2536 and 3516.

Phase C – 622 residential units and 4,816.7sqm workspace. Foul water discharging by gravity to manhole 4303. Surface water discharging by gravity attenuated to 6l/s to manhole 4303.

Phase D – Primary school. Foul water discharging by gravity to manhole 4302. Surface water discharging by gravity attenuated to 3l/s to manhole 4302.

Phase E – 427 residential units and 2,808.3sqm of workspace. Foul water discharging by gravity. 220 units to the manhole upstream of MH4203 in Blair Street, 151 units to MH4202 and 78 units to MH4216.

Overall surface water discharge rates for the development will be restricted to 33.59l/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 combined 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

Please note that discharging surface water to the public sewer network should only be considered after all other methods of disposal have been investigated and proven to not be viable. In accordance with the Building Act 2000 Clause H3.3, positive connection 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. The disposal hierarchy being: 1st Soakaways; 2nd Watercourses; 3rd Sewers.

Only when it can be proven that soakage into the ground or a connection into an adjacent watercourse is not possible would we consider a restricted discharge into the public combined sewer network.

If the peak surface water run-off discharge is then restricted to Greenfield run-off rates/a maximum of 33.59l/s as your drainage strategy indicates, then we would have no objections to the proposals.

Thames Water Planning team would ask to see why it is not practicable on the site to restrict to Greenfield run-off rates if they are consulted as part of any planning application.

In considering your surface water needs, we support the use of sustainable drainage on development sites. You'll need to show the local authority and/or lead local flood authority how you've taken into account the surface water hierarchy that we've included.

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've any further questions, please contact me on 0203 577 9811.

Yours sincerely

Siva Rajaratnam - Adoptions Engineer

Thames Water

Asset location search

Property Searches

Meinhardt (UK) Ltd
10

LONDON
EC1A 4HJ

Search address supplied	Aberfeldy Village Aberfeldy Street London London UK
Your reference	Aberfeldy Street Aberfeldy Village E14 0NU
Our reference	ALS/ALS Standard/2020_4292429
Search date	5 November 2020

Knowledge of features below the surface is essential for every development

The benefits of this knowledge not only include ensuring due diligence and avoiding risk, but also being able to ascertain the feasibility of any development.

Did you know that Thames Water Property Searches can also provide a variety of utility searches including a more comprehensive view of utility providers' assets (across up to 35-45 different providers), as well as more focused searches relating to specific major utility companies such as National Grid (gas and electric).

Contact us to find out more.

Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13

searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk

0845 070 9148

Search address supplied: Aberfeldy Village, Aberfeldy Street, London, London, UK,

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This searchprovides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk
Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

The following quartiles have been printed as they fall within Thames' sewerage area:

TQ3881NE
TQ3881SW
TQ3881NW
TQ3881SE

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an ‘as constructed’ record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

The following quartiles have been printed as they fall within Thames' water area:

TQ3881NE
TQ3881SW

TQ3881NW
TQ3881SE

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

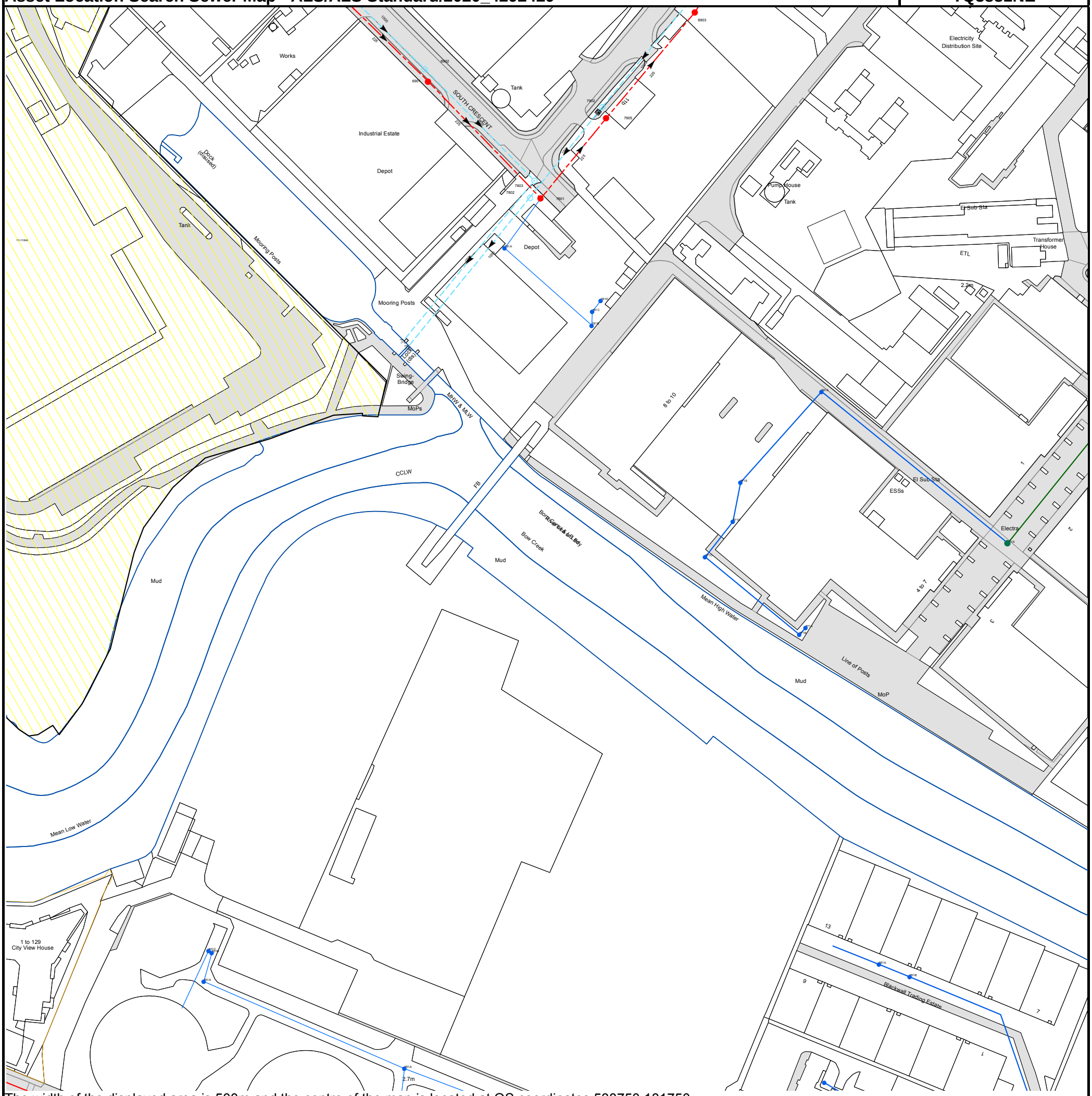
Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4292429

TQ3881NE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538750,181750

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
85AB	n/a	n/a
85AC	n/a	n/a
951A	n/a	n/a
951B	n/a	n/a
8904	n/a	n/a
8903	n/a	n/a
781A	n/a	n/a
7802	n/a	n/a
7803	n/a	n/a
7801	n/a	n/a
781B	n/a	n/a
781C	n/a	n/a
781D	n/a	n/a
871C	n/a	n/a
871D	n/a	n/a
871E	n/a	n/a
871B	n/a	n/a
871A	n/a	n/a
881A	n/a	n/a
971A	n/a	n/a
651A	n/a	n/a
6902	n/a	n/a
6901	n/a	n/a
7902	n/a	n/a
7905	n/a	n/a
551A	n/a	n/a
551C	n/a	n/a
551B	n/a	n/a

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.

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4292429 | TQ3881SW

The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538250,181250

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
3407	2.25	.86
3402	1.92	-3.79
3403	1.94	-.54
2417	3	1.5
141A	n/a	n/a
2424	2.32	n/a
141G	n/a	n/a
411H	n/a	n/a
4203	1.7	-.48
4204	1.79	-.7
4202	1.71	-.9
4201	1.7	-.94
42DH	n/a	n/a
42DI	n/a	n/a
42DJ	n/a	n/a
42EA	n/a	n/a
4216	1.57	-1.33
42EE	n/a	n/a
4215	1.61	-2.24
42EG	n/a	n/a
42ED	n/a	n/a
43DB	n/a	n/a
33CH	n/a	n/a
4301A	1.77	-2.82
43DE	n/a	n/a
431E	n/a	n/a
43DD	n/a	n/a
43DF	n/a	n/a
4319	1.76	-1.28
43DG	n/a	n/a
44DB	n/a	n/a
44DA	n/a	n/a
44CI	n/a	n/a
44DC	n/a	n/a
44DD	n/a	n/a
44CH	n/a	n/a
44CJ	n/a	n/a
3432	1.68	-1.72
4420	1.59	-3.16
4419	1.7	-3.27
4408	1.75	-3.45
3405	1.72	.13
4407	1.97	-3.55
4401	1.76	-.05
3404	1.67	-.33
3222	2.36	.55
32CG	n/a	n/a
42EC	n/a	n/a
33EE	n/a	n/a
4313	2.04	-1.04
43DI	n/a	n/a
33ED	n/a	n/a
33EC	n/a	n/a
33EB	n/a	n/a
4312	1.73	-2.54
33EA	n/a	n/a
33DJ	n/a	n/a
431D	n/a	n/a
431C	n/a	n/a
33CE	n/a	n/a
4303	n/a	n/a
4302	n/a	n/a
431B	n/a	n/a
33DB	n/a	n/a
33DC	n/a	n/a
431A	n/a	n/a
33DD	n/a	n/a
3016	4.41	-1.42
3015	4.08	-1.55
3014	3.45	-1.74
3010	n/a	n/a
3023	4.25	1.24
3005	n/a	n/a
3009	3.98	1.27
3008	4.06	2.68
3007	4.16	-1.23
3006	6.19	2.89
2422	2.26	-4.27
2406	2.7	1.83
2409	2.99	2.3
2408	n/a	n/a
2304	2.49	1.07
2420	3.36	1.54
2303	2.35	.8
2305	2.66	1.02
2301	2.38	.73
3306	2.49	1.72
3310	2.57	.74
3406	2.76	1.11
3401	3.04	-8.94

Manhole Reference	Manhole Cover Level	Manhole Invert Level
3302	2.7	.54
3301B	2.29	-1.11
33CI	n/a	n/a
3205	2.35	-4.07
33CD	n/a	n/a
3202	n/a	n/a
33CJ	n/a	n/a
33DE	n/a	n/a
33DF	n/a	n/a
33DG	n/a	n/a
33DH	n/a	n/a
33DA	n/a	n/a
33DI	n/a	n/a
3316	n/a	n/a
2102	4.37	1.67
2012	4.38	1.37
2112	4.66	-8.47
3112	n/a	n/a
3101	n/a	n/a
3102	n/a	n/a
3103	n/a	n/a
3106	n/a	n/a
311C	n/a	n/a
311B	n/a	n/a
311A	n/a	n/a
4104	1.72	-.02
411E	n/a	n/a
411A	n/a	n/a
411J	n/a	n/a
411F	n/a	n/a
411B	n/a	n/a
411I	n/a	n/a
411G	n/a	n/a
411C	n/a	n/a
4103	1.85	-.11
411D	n/a	n/a
4011	4.17	1.55
4102	1.93	-.22
4101	1.93	-.49
12BD	n/a	n/a
12BE	n/a	n/a
2208	5.19	2.74
22CE	n/a	n/a
22CD	n/a	n/a
12BF	n/a	n/a
22BH	n/a	n/a
22BI	n/a	n/a
22BJ	n/a	n/a
22CA	n/a	n/a
22CB	n/a	n/a
22CC	n/a	n/a
2207	5.18	2.47
21CE	n/a	n/a
21CD	n/a	n/a
2203	5.2	2.35
21CC	n/a	n/a
2202	3.7	1.85
2204	3.93	2.12
2201	2.97	.77
2212	2.64	1.93
3218	2.85	1.21
3217	2.94	.53
3219	2.74	1.64
3201	2.44	-8.63
3204	2.34	-.83
3203	2.47	-1.25
12EB	n/a	n/a
12EA	n/a	n/a
121I	n/a	n/a
121F	5.7	4.88
121K	5.65	4.88
121T	5.98	3.89
121J	n/a	n/a
121G	5.7	4.55
12DJ	n/a	n/a
121E	n/a	n/a
121H	n/a	n/a
121D	5.7	3.04
121O	6.31	4.9
12DI	n/a	n/a
121C	5.99	3.08
121R	6.17	4.07
12DH	n/a	n/a
12FH	n/a	n/a
12FI	n/a	n/a
12BJ	n/a	n/a
12CA	n/a	n/a
12CB	n/a	n/a
12AI	n/a	n/a
12AJ	n/a	n/a
12BA	n/a	n/a
12BB	n/a	n/a
12BC	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
11ED	n/a	n/a
11EC	n/a	n/a
11EB	n/a	n/a
21BE	n/a	n/a
11CG	n/a	n/a
11EA	n/a	n/a
21CH	n/a	n/a
21BF	n/a	n/a
11CH	n/a	n/a
11DJ	n/a	n/a
11CI	n/a	n/a
11CJ	n/a	n/a
21BG	n/a	n/a
11DA	n/a	n/a
11DB	n/a	n/a
11DI	n/a	n/a
21BH	n/a	n/a
11DC	n/a	n/a
11DH	n/a	n/a
21BI	n/a	n/a
11DF	n/a	n/a
11DG	n/a	n/a
21BJ	n/a	n/a
2110	5.27	3.03
21CA	n/a	n/a
21CB	n/a	n/a
2109	4.66	2.72
10DF	n/a	n/a
20DC	n/a	n/a
101A	n/a	n/a
20CD	n/a	n/a
10CC	n/a	n/a
10CI	n/a	n/a
20CI	n/a	n/a
1017	5.67	2.64
10CD	n/a	n/a
1016	5.23	2.03
10FD	n/a	n/a
20CJ	n/a	n/a
2019	4.77	1.79
10FE	n/a	n/a
11EI	n/a	n/a
11EJ	n/a	n/a
11FA	n/a	n/a
11FB	n/a	n/a
11FC	n/a	n/a
11FE	n/a	n/a
11FH	n/a	n/a
1102B	5.81	2.58
11EG	n/a	n/a
11EF	n/a	n/a
1101A	5.8	2.17
11EE	n/a	n/a
2103	4.5	2.19
02CH	n/a	n/a
12GD	n/a	n/a
12DG	n/a	n/a
12BI	n/a	n/a
12DF	n/a	n/a
12DD	n/a	n/a
12DC	n/a	n/a
12BH	n/a	n/a
12DB	n/a	n/a
12DA	n/a	n/a
12CJ	n/a	n/a
12GF	n/a	n/a
1205	n/a	n/a
12CI	n/a	n/a
12BG	n/a	n/a
12CH	n/a	n/a
12CC	n/a	n/a
13DH	n/a	n/a
13DE	n/a	n/a
13DG	n/a	n/a
13DF	n/a	n/a
13DD	n/a	n/a
13DI	n/a	n/a
13DC	n/a	n/a
13DB	n/a	n/a
1303	n/a	n/a
1301	5.33	3.16
1004	n/a	n/a
1009	n/a	n/a
1003	n/a	n/a
1001A	n/a	n/a
1010	5.03	1.14
2004	5.3	2.58
1013	5.52	1.82
2005	4.86	3.56
2006	4.74	3.75
1011	5.33	1.55
001D	n/a	n/a
10DH	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2011	4.53	1.22
10FA	n/a	n/a
10EJ	n/a	n/a
10DG	n/a	n/a
10DE	n/a	n/a
10DB	n/a	n/a
101B	n/a	n/a
10DD	n/a	n/a
20DB	n/a	n/a
01FD	n/a	n/a
0102A	6.44	3.38
01FG	n/a	n/a
01FH	n/a	n/a
01FI	n/a	n/a
01FJ	n/a	n/a
01FF	n/a	n/a
01GA	n/a	n/a
01GB	n/a	n/a
01GC	n/a	n/a
01BE	n/a	n/a
01BF	n/a	n/a
0003	6.02	2.89
11CB	n/a	n/a
11GI	n/a	n/a
11GA	n/a	n/a
11CC	n/a	n/a
11GB	n/a	n/a
11GC	n/a	n/a
11GD	n/a	n/a
11GE	n/a	n/a
11GF	n/a	n/a
11GG	n/a	n/a
10FC	n/a	n/a
11HC	n/a	n/a
11HA	n/a	n/a
11HD	n/a	n/a
0302	5.99	3.98
0312	n/a	2.95
0402	5.17	2.45
0301	5.75	3.69
0311	5.81	2.78
1410	5.02	1.25
141E	n/a	n/a
1411	5.23	1.47
141D	n/a	n/a
1404	5.25	1.53
141C	n/a	n/a
1312	5.55	3.33
1405	5.47	2.46
1415	n/a	n/a
1311	5.43	2.97
1403	4.55	1.3
1414	n/a	n/a
1310	5.38	3.07
1302	n/a	n/a
141H	n/a	n/a
131A	n/a	n/a
1402	4.17	1.17
141B	n/a	n/a
1401	3.58	1.08
2315	4.46	1.69
2314	3.26	1.25
2403	2.27	-5.19
2407	2.81	2.25
0212	n/a	n/a
0201B	6.49	3.67
02CI	n/a	n/a
0202	6.24	3.38
12FD	n/a	n/a
1103B	5.94	3.13
12FC	n/a	n/a
11CD	n/a	n/a
121S	6.11	5.25
12FB	n/a	n/a
12FA	n/a	n/a
12EJ	n/a	n/a
12EI	n/a	n/a
12EH	n/a	n/a
12EG	n/a	n/a
121L	5.71	4.55
12EF	n/a	n/a
121M	5.73	4.28
121A	5.6	3.17
12EE	n/a	n/a

Asset Location Search Sewer Map - ALS/ALS Standard/2020_4292429

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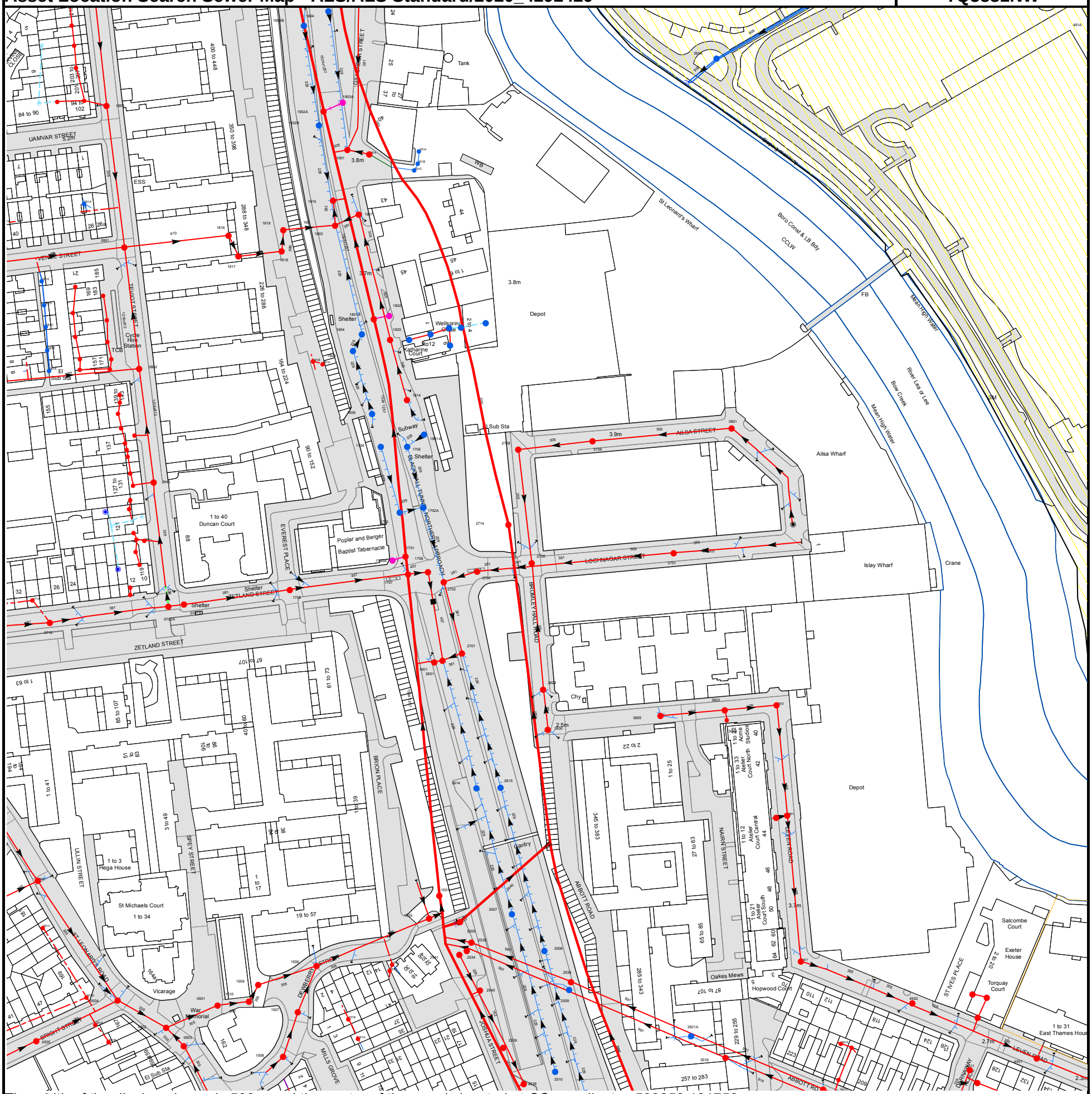

The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538250,181750

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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
3701	n/a	n/a
3501A	n/a	n/a
3603	3.19	1.1
3516	n/a	n/a
3604	3.24	n/a
361A	3.5	.4
3602	3.75	.78
3601	3.55	.29
3507	3.39	n/a
3517	n/a	n/a
35CH	n/a	n/a
351A	n/a	n/a
35CG	n/a	n/a
4502	n/a	n/a
4511	n/a	n/a
45BF	n/a	n/a
45CB	n/a	n/a
45BH	n/a	n/a
45BG	n/a	n/a
4501	n/a	n/a
1705	n/a	n/a
2709	n/a	n/a
1801A	n/a	n/a
3801	n/a	n/a
1806	n/a	n/a
1814	n/a	n/a
181A	n/a	n/a
181B	n/a	n/a
1805	n/a	n/a
28AB	n/a	n/a
18CI	n/a	n/a
1820	n/a	n/a
18CH	n/a	n/a
1804	n/a	n/a
28AC	n/a	n/a
28AE	n/a	n/a
28AD	n/a	n/a
1801B	n/a	n/a
1802	n/a	n/a
1817	n/a	n/a
1818	n/a	n/a
1816	n/a	n/a
1819	n/a	n/a
1803	n/a	n/a
1917	n/a	n/a
1915	n/a	n/a
191C	n/a	n/a
191B	n/a	n/a
1914	n/a	n/a
191A	n/a	n/a
1901	n/a	n/a
1902B	n/a	n/a
1902A	n/a	n/a
1903A	n/a	n/a
391A	n/a	n/a
1903B	n/a	n/a
491A	n/a	n/a
1904	n/a	n/a
391B	n/a	n/a
2538	n/a	n/a
2510	n/a	n/a
1508	n/a	n/a
2539	n/a	n/a
0503	n/a	n/a
151A	n/a	n/a
0502	n/a	n/a
151B	n/a	n/a
1507	n/a	n/a
0501	n/a	n/a
1510	n/a	n/a
2540	n/a	n/a
2509	n/a	n/a
1509	n/a	n/a
2536	n/a	n/a
151D	n/a	n/a
1506	n/a	n/a
151C	n/a	n/a
2541	n/a	n/a
2534	n/a	n/a
2508	n/a	n/a
2535	n/a	n/a
2505	2.25	-8.8
1505	n/a	n/a
2507	n/a	n/a
1501	2.32	-5.24
2614	n/a	n/a
2615	n/a	n/a
2630	n/a	n/a
3605	n/a	n/a
2629	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
1601	n/a	n/a
2601	n/a	n/a
2701	n/a	n/a
0702A	n/a	n/a
0701B	n/a	n/a
1708	n/a	n/a
2702	n/a	n/a
1707	n/a	n/a
1706	n/a	n/a
2704	n/a	n/a
2705	n/a	n/a
1702B	n/a	n/a
1701	n/a	n/a
2714	3.24	-9.46
1703	n/a	n/a
1702A	n/a	n/a
0713	n/a	n/a
2708	n/a	n/a
1704	n/a	n/a
07CH	n/a	n/a
07DB	n/a	n/a
07DD	n/a	n/a
07DE	n/a	n/a
07DJ	n/a	n/a
07EA	n/a	n/a
07EB	n/a	n/a
07DI	n/a	n/a
07DH	n/a	n/a
08BJ	n/a	n/a
08CA	n/a	n/a
08CB	n/a	n/a
08CC	n/a	n/a
08AH	n/a	n/a
081A	n/a	n/a
08EE	n/a	n/a
08DI	n/a	n/a
0802	n/a	n/a
08DH	n/a	n/a
08ED	n/a	n/a
081B	n/a	n/a
08DG	n/a	n/a
08EC	n/a	n/a
081C	n/a	n/a
08DF	n/a	n/a
08EB	n/a	n/a
081D	n/a	n/a
08DE	n/a	n/a
08EA	n/a	n/a
081E	n/a	n/a
0801	n/a	n/a
091A	n/a	n/a
0901	n/a	n/a
09BD	n/a	n/a
09BE	n/a	n/a
09BF	n/a	n/a
09CA	n/a	n/a
09BJ	n/a	n/a
09BC	n/a	n/a
09BI	n/a	n/a
09BH	n/a	n/a
071A	n/a	n/a
0506	n/a	n/a
051C	n/a	n/a
0712	n/a	n/a
051D	n/a	n/a
07CI	n/a	n/a
0504	n/a	n/a
07AH	n/a	n/a
07BJ	n/a	n/a
07CE	n/a	n/a
07CF	n/a	n/a
07CD	n/a	n/a
07CG	n/a	n/a
07CC	n/a	n/a
051B	n/a	n/a
0505	n/a	n/a
051A	n/a	n/a

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Asset Location Search Sewer Map - ALS/ALS Standard/2020_4292429

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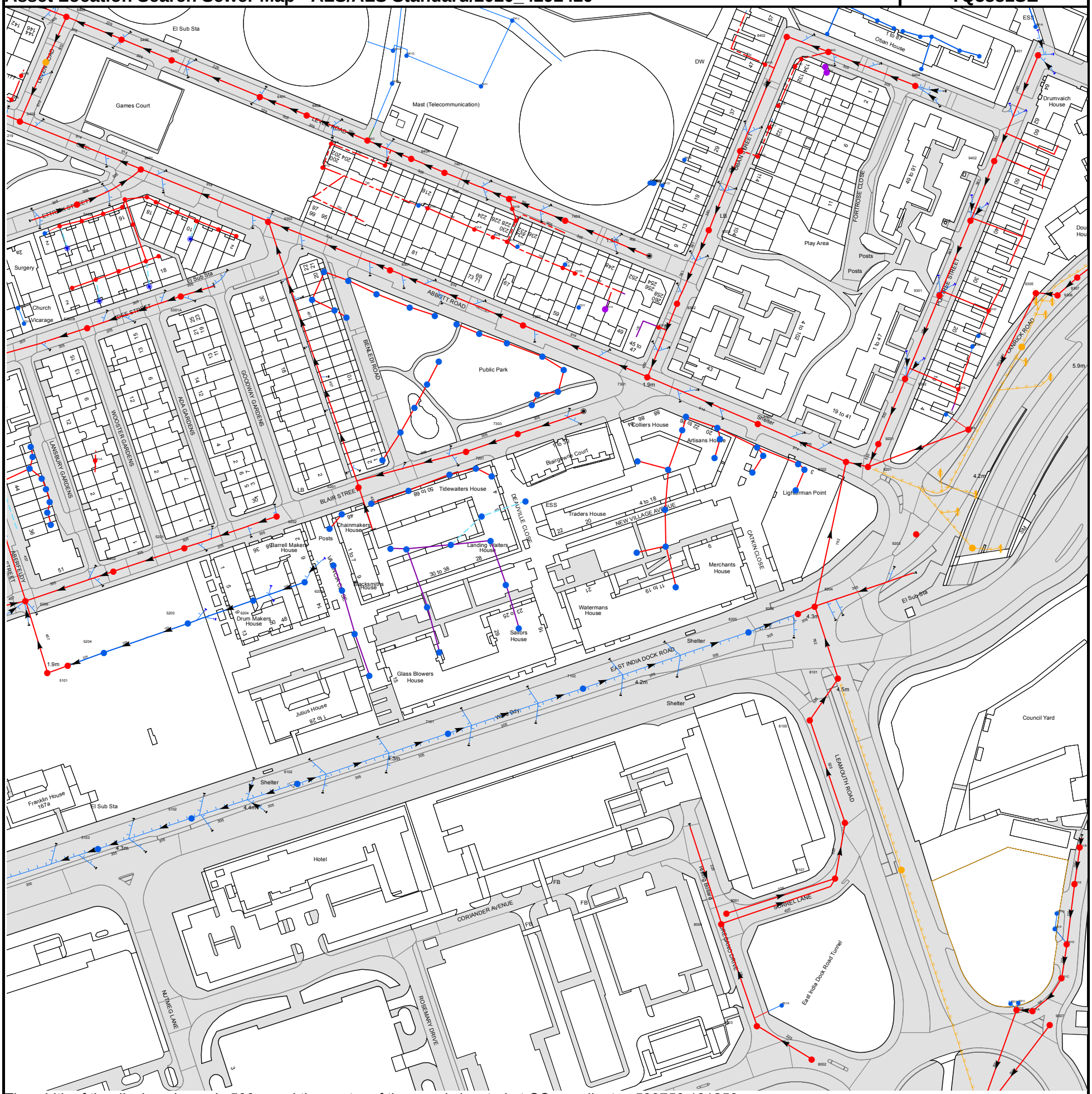


The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538750,181250

The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538750,181250

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
8401	n/a	n/a
841G	n/a	n/a
841A	n/a	n/a
841J	n/a	n/a
841B	n/a	n/a
8402	n/a	n/a
841C	n/a	n/a
841F	n/a	n/a
841H	n/a	n/a
841I	n/a	n/a
84DH	n/a	n/a
8403	n/a	n/a
94CI	n/a	n/a
94CH	n/a	n/a
94CJ	n/a	n/a
9404	n/a	n/a
94DA	n/a	n/a
94DC	n/a	n/a
94DB	n/a	n/a
9402	n/a	n/a
9401	n/a	n/a
7403	n/a	n/a
741A	n/a	n/a
741B	n/a	n/a
641C	n/a	n/a
641E	n/a	n/a
7402	n/a	n/a
841D	n/a	n/a
741E	n/a	n/a
741D	n/a	n/a
741H	n/a	n/a
741C	n/a	n/a
741G	n/a	n/a
741F	n/a	n/a
7401	n/a	n/a
641D	n/a	n/a
641B	n/a	n/a
841E	n/a	n/a
6404	n/a	n/a
641A	n/a	n/a
6403	n/a	n/a
6402	n/a	n/a
741I	n/a	n/a
641F	n/a	n/a
641G	n/a	n/a
641H	n/a	n/a
741J	n/a	n/a
5405	n/a	n/a
9203	n/a	n/a
82CD	n/a	n/a
82CH	n/a	n/a
82CE	n/a	n/a
8201	n/a	n/a
82CF	n/a	n/a
8202	n/a	n/a
82CJ	n/a	n/a
82CI	n/a	n/a
82CG	n/a	n/a
9201	n/a	n/a
83CF	n/a	n/a
9304	n/a	n/a
83CE	n/a	n/a
8301	n/a	n/a
931A	n/a	n/a
931E	n/a	n/a
9302	n/a	n/a
931C	n/a	n/a
931B	n/a	n/a
931D	n/a	n/a
9301	n/a	n/a
9306	n/a	n/a
9305	n/a	n/a
9307	n/a	n/a
9403	n/a	n/a
72AI	n/a	n/a
731B	n/a	n/a
73CI	n/a	n/a
731C	n/a	n/a
731F	n/a	n/a
7303	n/a	n/a
7302	n/a	n/a
72CD	n/a	n/a
73DD	n/a	n/a
73DB	n/a	n/a
73CG	n/a	n/a
73DA	n/a	n/a
731E	n/a	n/a
73CJ	n/a	n/a
731G	n/a	n/a
731D	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
731I	n/a	n/a
731H	n/a	n/a
72AH	n/a	n/a
7301	n/a	n/a
831A	n/a	n/a
82CB	n/a	n/a
82CC	n/a	n/a
8302	n/a	n/a
83CB	n/a	n/a
83CC	n/a	n/a
8303	n/a	n/a
8004	n/a	n/a
8003	n/a	n/a
801A	6.29	5.79
8002	n/a	n/a
9007	n/a	n/a
8001	n/a	n/a
8107	n/a	n/a
8106	n/a	n/a
6102	n/a	n/a
7101	n/a	n/a
8105	n/a	n/a
7102	n/a	n/a
8101	n/a	n/a
61BC	n/a	n/a
62DF	n/a	n/a
62CJ	n/a	n/a
8205	n/a	n/a
72CB	n/a	n/a
8206	n/a	n/a
62DE	n/a	n/a
8204	n/a	n/a
62DA	n/a	n/a
82BJ	n/a	n/a
72CA	n/a	n/a
6203	n/a	n/a
62DB	n/a	n/a
72AG	n/a	n/a
62DD	n/a	n/a
62DC	n/a	n/a
82CA	n/a	n/a
72BJ	n/a	n/a
72BI	n/a	n/a
6202	n/a	n/a
63DI	n/a	n/a
63DJ	n/a	n/a
62CA	n/a	n/a
63EI	n/a	n/a
62CB	n/a	n/a
63FA	n/a	n/a
63EA	n/a	n/a
6201	n/a	n/a
62CE	n/a	n/a
63ED	n/a	n/a
62EF	n/a	n/a
6301	n/a	n/a
63EG	n/a	n/a
62CD	n/a	n/a
63EC	n/a	n/a
63EF	n/a	n/a
63EH	n/a	n/a
63EB	n/a	n/a
63EE	n/a	n/a
72BA	n/a	n/a
73CF	n/a	n/a
7201	n/a	n/a
731A	n/a	n/a
72AJ	n/a	n/a
73CH	n/a	n/a
72CC	n/a	n/a
53AE	n/a	n/a
53BG	n/a	n/a
53BH	n/a	n/a
5402	n/a	n/a
54DI	n/a	n/a
5302B	n/a	n/a
521A	n/a	n/a
53BI	n/a	n/a
54BH	n/a	n/a
53BJ	n/a	n/a
5406	n/a	n/a
54DH	n/a	n/a
54DJ	n/a	n/a
53CC	n/a	n/a
5401	n/a	n/a
53CA	n/a	n/a
54EA	n/a	n/a
54EB	n/a	n/a
53CB	n/a	n/a
5407	n/a	n/a
54EC	n/a	n/a
5301A	n/a	n/a
54ED	n/a	n/a

Manhole Reference	Manhole Cover Level	Manhole Invert Level
53CD	n/a	n/a
63CF	n/a	n/a
6401	n/a	n/a
6302	n/a	n/a
5101	n/a	n/a
511B	n/a	n/a
5204	n/a	n/a
5203	n/a	n/a
5205	n/a	n/a
6204	n/a	n/a
5202	n/a	n/a
5201	n/a	n/a
52CH	n/a	n/a
52CI	n/a	n/a
52CJ	n/a	n/a
52DA	n/a	n/a
52DB	n/a	n/a
5403	n/a	n/a
541A	n/a	n/a
541B	n/a	n/a
52DC	n/a	n/a
52DE	n/a	n/a
52DD	n/a	n/a
531B	n/a	n/a
531A	n/a	n/a
5103	n/a	n/a
5102	n/a	n/a
901H	5.1	4.21
901B	5.1	2.1
901I	5.1	4.39
901A	4.91	2.2
901F	5.59	4.52
901G	5.59	2.97
901C	4.96	2.37
901D	4.82	2.43
901E	4.68	2.58
911B	4.6	3.15
94DF	n/a	n/a
94DE	n/a	n/a
941A	n/a	n/a

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

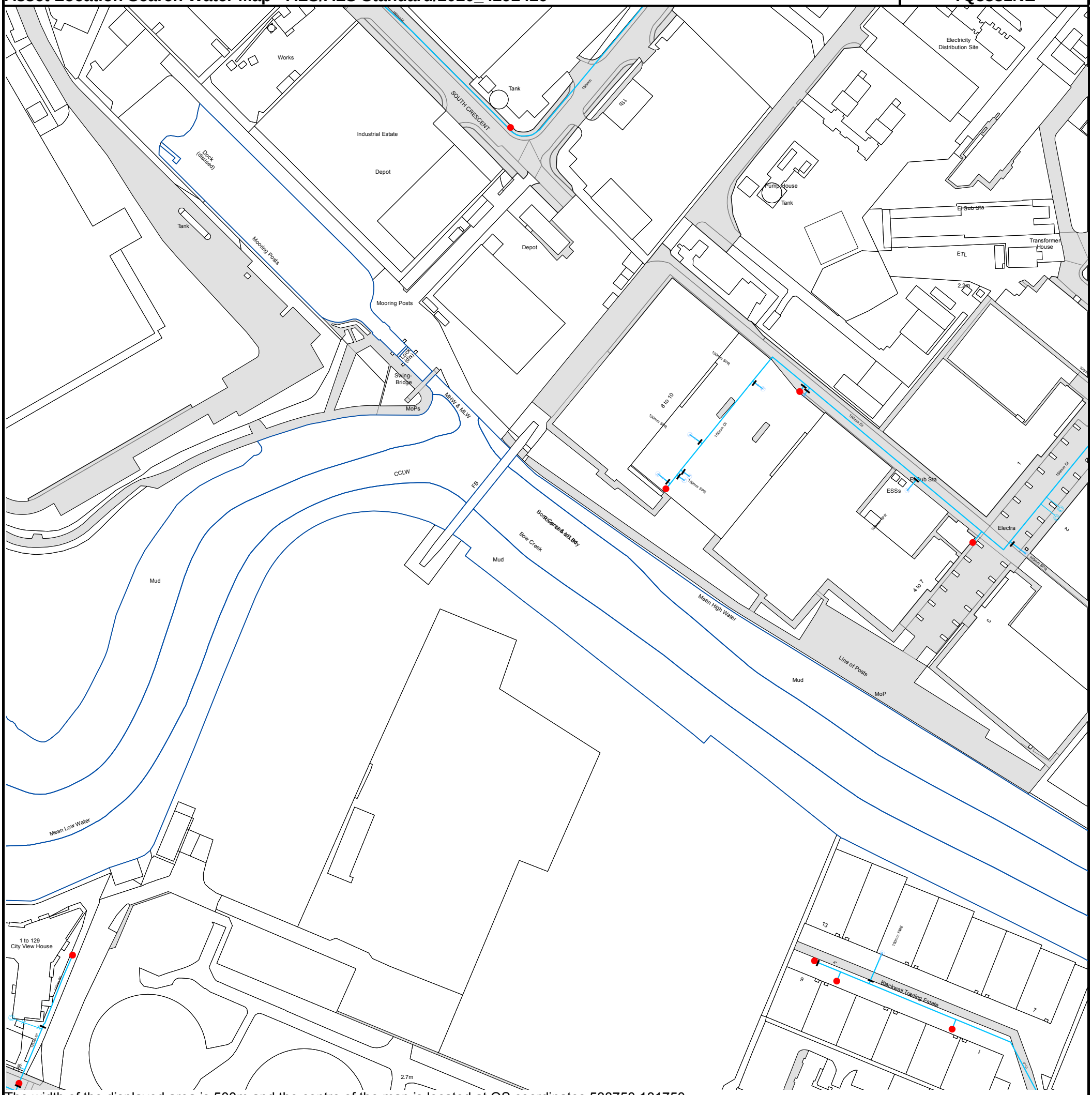
Abandoned Sewer

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.

Asset Location Search Water Map - ALS/ALS Standard/2020_4292429

TQ3881NE

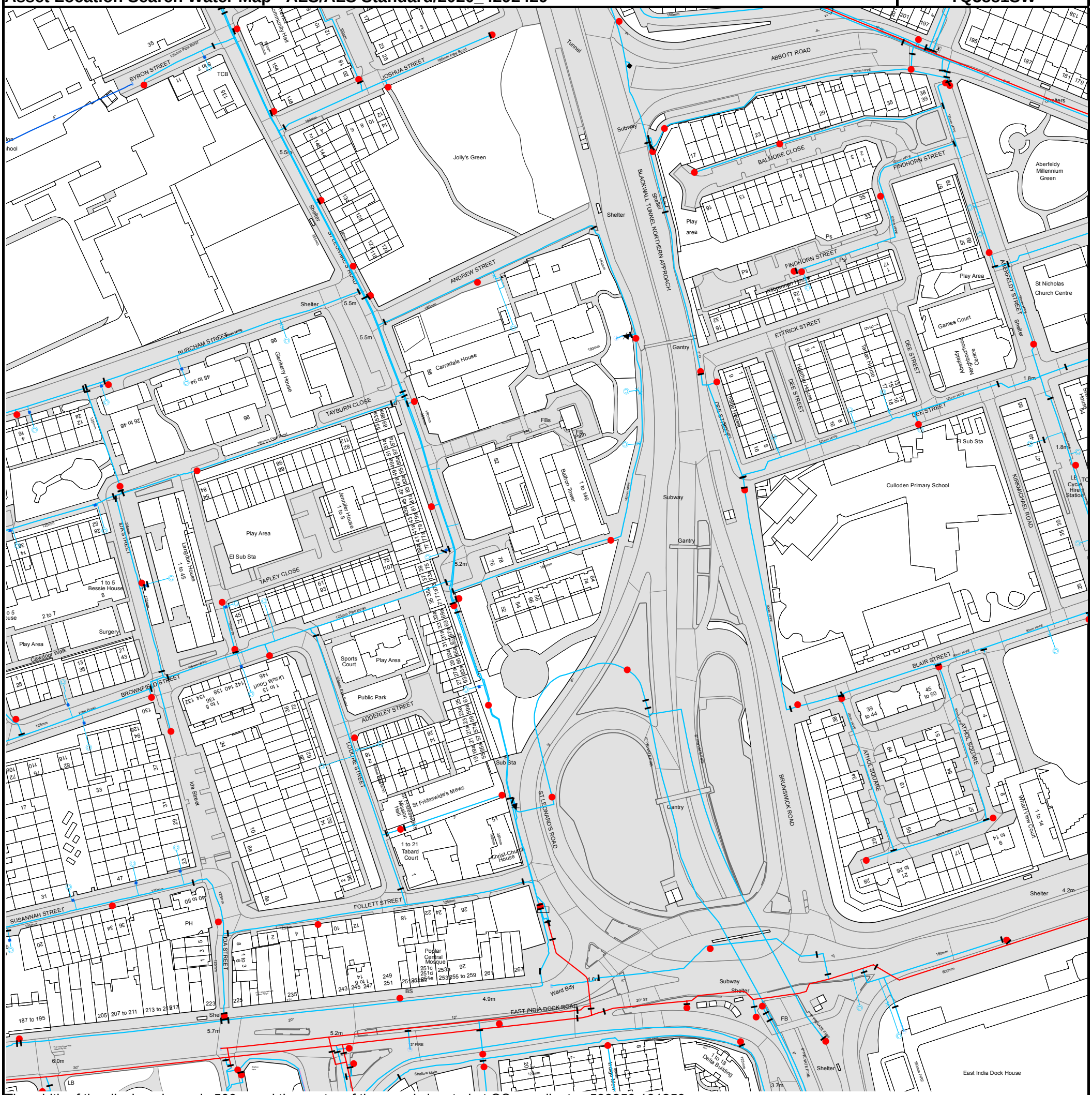


The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538750,181750

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.

Asset Location Search Water Map - ALS/ALS Standard/2020_4292429

TQ3881SW

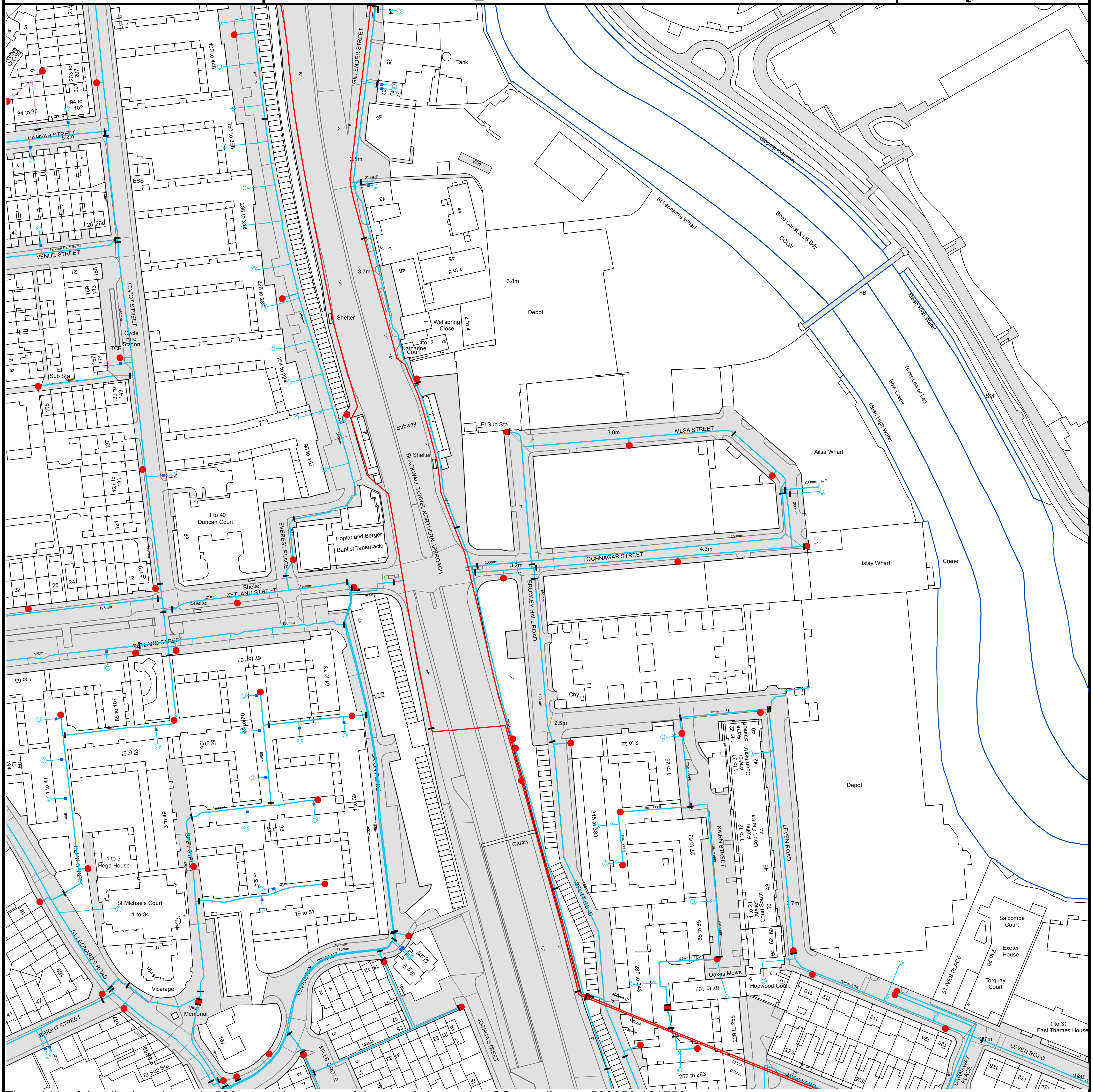


The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538250,181250

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.

Based on the Ordnance Survey Map with the Sanction of the controller of H.M. Stationery Office, License no. 100019345 Crown Copyright Reserved.

Asset Location Search Water Map - ALS/ALS Standard/2020_4292429	TQ3881NW

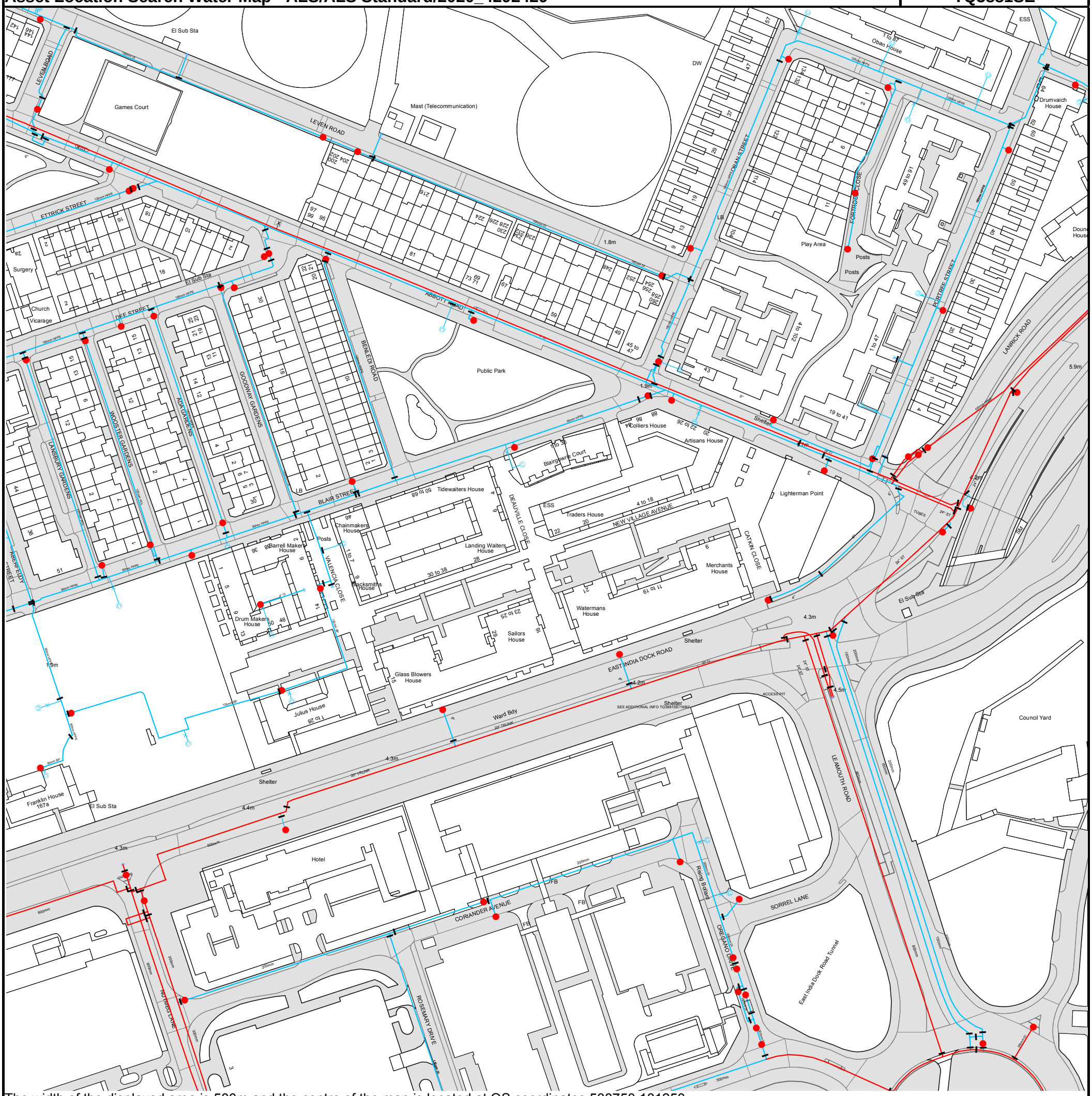


The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538250,181750

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.

Asset Location Search Water Map - ALS/ALS Standard/2020_4292429

TQ3881SE



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 538750,181250

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 Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"

Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.

16"

Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.

3" SUPPLY

Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.

3" FIRE

Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.

3" METERED

Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.

Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.

Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

Valves

- General Purpose Valve
- Air Valve
- Pressure Control Valve
- Customer Valve

Hydrants

- Single Hydrant

Meters

- Meter

End Items

Symbol indicating what happens at the end of a water main.

- Blank Flange
- Capped End
- Emptying Pit
- Undefined End
- Manifold
- Customer Supply
- Fire Supply

Operational Sites

- Booster Station
- Other
- Other (Proposed)
- Pumping Station
- Service Reservoir
- Shaft Inspection
- Treatment Works
- Unknown
- Water Tower

Other Symbols

- Data Logger

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Other Water Pipes (Not Operated or Maintained by Thames Water)

Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.

Private Main: Indiates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL`s terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	**BACS Payment**	**Telephone Banking**	**Cheque**
Call **0845 070 9148** quoting your invoice number starting CBA or ADS / OSS	Account number **90478703** Sort code **60-00-01** A remittance advice must be sent to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW.** or email **ps.billing@thameswater.co.uk**	By calling your bank and quoting: Account number **90478703** Sort code **60-00-01** and your invoice number	Made payable to '**Thames Water Utilities Ltd**' Write your Thames Water account number on the back. Send to: **Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW** or by DX to **151280 Slough 13**

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.

Appendix C – Drainage Strategy Drawings and Calculations

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.221	0.221	1.4	154.5	O K
30 min Summer	9.289	0.289	1.4	202.3	O K
60 min Summer	9.359	0.359	1.4	251.6	O K
120 min Summer	9.430	0.430	1.4	301.0	O K
180 min Summer	9.470	0.470	1.4	328.8	O K
240 min Summer	9.496	0.496	1.4	347.2	O K
360 min Summer	9.533	0.533	1.4	372.8	O K
480 min Summer	9.558	0.558	1.4	390.5	O K
600 min Summer	9.576	0.576	1.4	403.2	O K
720 min Summer	9.590	0.590	1.4	412.7	O K
960 min Summer	9.608	0.608	1.4	425.4	O K
1440 min Summer	9.624	0.624	1.4	436.5	O K
2160 min Summer	9.623	0.623	1.4	436.0	O K
2880 min Summer	9.609	0.609	1.4	426.0	O K
4320 min Summer	9.578	0.578	1.4	404.3	O K
5760 min Summer	9.546	0.546	1.4	382.5	O K
7200 min Summer	9.515	0.515	1.4	360.2	O K
8640 min Summer	9.481	0.481	1.4	336.5	O K
10080 min Summer	9.450	0.450	1.4	314.8	O K
15 min Winter	9.247	0.247	1.4	173.1	O K
30 min Winter	9.324	0.324	1.4	226.7	O K
60 min Winter	9.403	0.403	1.4	282.1	O K
120 min Winter	9.483	0.483	1.4	338.0	O K
180 min Winter	9.528	0.528	1.4	369.7	O K
240 min Winter	9.558	0.558	1.4	390.7	O K
360 min Winter	9.600	0.600	1.4	419.8	O K
480 min Winter	9.629	0.629	1.4	440.0	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.153	0.0	108.0	19
30 min Summer	90.705	0.0	114.9	34
60 min Summer	56.713	0.0	218.1	64
120 min Summer	34.246	0.0	227.4	124
180 min Summer	25.149	0.0	225.6	184
240 min Summer	20.078	0.0	222.1	244
360 min Summer	14.585	0.0	213.9	364
480 min Summer	11.622	0.0	207.7	484
600 min Summer	9.738	0.0	203.0	602
720 min Summer	8.424	0.0	199.3	722
960 min Summer	6.697	0.0	193.6	962
1440 min Summer	4.839	0.0	186.3	1442
2160 min Summer	3.490	0.0	400.6	2160
2880 min Summer	2.766	0.0	385.5	2736
4320 min Summer	1.989	0.0	355.3	3416
5760 min Summer	1.573	0.0	669.5	4160
7200 min Summer	1.311	0.0	692.6	4976
8640 min Summer	1.129	0.0	706.6	5712
10080 min Summer	0.994	0.0	700.1	6464
15 min Winter	138.153	0.0	112.0	19
30 min Winter	90.705	0.0	116.1	34
60 min Winter	56.713	0.0	226.7	64
120 min Winter	34.246	0.0	226.1	122
180 min Winter	25.149	0.0	219.0	182
240 min Winter	20.078	0.0	213.5	242
360 min Winter	14.585	0.0	206.5	360
480 min Winter	11.622	0.0	202.2	478

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
600 min Winter	9.650	0.650	1.4	454.7	O K
720 min Winter	9.666	0.666	1.4	465.9	O K
960 min Winter	9.688	0.688	1.4	481.3	O K
1440 min Winter	9.709	0.709	1.4	496.5	Flood Risk
2160 min Winter	9.714	0.714	1.4	500.0	Flood Risk
2880 min Winter	9.704	0.704	1.4	492.7	Flood Risk
4320 min Winter	9.664	0.664	1.4	464.8	O K
5760 min Winter	9.627	0.627	1.4	438.8	O K
7200 min Winter	9.587	0.587	1.4	411.0	O K
8640 min Winter	9.546	0.546	1.4	381.9	O K
10080 min Winter	9.498	0.498	1.4	348.8	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
600 min Winter	9.738	0.0	199.3	596
720 min Winter	8.424	0.0	197.4	714
960 min Winter	6.697	0.0	195.6	946
1440 min Winter	4.839	0.0	195.1	1412
2160 min Winter	3.490	0.0	401.6	2096
2880 min Winter	2.766	0.0	389.5	2740
4320 min Winter	1.989	0.0	368.8	3592
5760 min Winter	1.573	0.0	743.8	4440
7200 min Winter	1.311	0.0	753.6	5400
8640 min Winter	1.129	0.0	733.8	6312
10080 min Winter	0.994	0.0	719.2	7168

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.600

Time (mins) From:	To:	Area (ha)
0	4	0.600

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	700.0	1.000	700.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0058-1500-1000-1500
Design Head (m)	1.000
Design Flow (l/s)	1.5
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	58
Invert Level (m)	9.000
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	1.5	Kick-Flo®	0.515	1.1
Flush-Flo™	0.253	1.4	Mean Flow over Head Range	-	1.2

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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)
0.100	1.2	0.800	1.4	2.000	2.0	4.000	2.8	7.000	3.7
0.200	1.4	1.000	1.5	2.200	2.1	4.500	3.0	7.500	3.8
0.300	1.4	1.200	1.6	2.400	2.2	5.000	3.1	8.000	3.9
0.400	1.3	1.400	1.7	2.600	2.3	5.500	3.3	8.500	4.0
0.500	1.2	1.600	1.9	3.000	2.5	6.000	3.4	9.000	4.1
0.600	1.2	1.800	2.0	3.500	2.7	6.500	3.5	9.500	4.2

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.471	0.471	0.6	4.7	O K
30 min Summer	9.586	0.586	0.6	5.9	O K
60 min Summer	9.659	0.659	0.7	6.6	O K
120 min Summer	9.664	0.664	0.7	6.6	O K
180 min Summer	9.640	0.640	0.7	6.4	O K
240 min Summer	9.609	0.609	0.6	6.1	O K
360 min Summer	9.549	0.549	0.6	5.5	O K
480 min Summer	9.492	0.492	0.6	4.9	O K
600 min Summer	9.438	0.438	0.6	4.4	O K
720 min Summer	9.383	0.383	0.6	3.8	O K
960 min Summer	9.267	0.267	0.6	2.7	O K
1440 min Summer	9.141	0.141	0.6	1.4	O K
2160 min Summer	9.071	0.071	0.5	0.7	O K
2880 min Summer	9.053	0.053	0.4	0.5	O K
4320 min Summer	9.038	0.038	0.3	0.4	O K
5760 min Summer	9.032	0.032	0.3	0.3	O K
7200 min Summer	9.028	0.028	0.2	0.3	O K
8640 min Summer	9.026	0.026	0.2	0.3	O K
10080 min Summer	9.024	0.024	0.2	0.2	O K
15 min Winter	9.531	0.531	0.6	5.3	O K
30 min Winter	9.666	0.666	0.7	6.7	O K
60 min Winter	9.758	0.758	0.7	7.6	Flood Risk
120 min Winter	9.767	0.767	0.7	7.7	Flood Risk
180 min Winter	9.737	0.737	0.7	7.4	Flood Risk
240 min Winter	9.693	0.693	0.7	6.9	O K
360 min Winter	9.604	0.604	0.6	6.0	O K
480 min Winter	9.520	0.520	0.6	5.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.153	0.0	5.2	18
30 min Summer	90.705	0.0	6.8	32
60 min Summer	56.713	0.0	8.5	60
120 min Summer	34.246	0.0	10.3	98
180 min Summer	25.149	0.0	11.3	130
240 min Summer	20.078	0.0	12.0	164
360 min Summer	14.585	0.0	13.1	234
480 min Summer	11.622	0.0	13.9	302
600 min Summer	9.738	0.0	14.6	370
720 min Summer	8.424	0.0	15.2	440
960 min Summer	6.697	0.0	16.1	550
1440 min Summer	4.839	0.0	17.4	768
2160 min Summer	3.490	0.0	18.8	1104
2880 min Summer	2.766	0.0	19.9	1468
4320 min Summer	1.989	0.0	21.5	2192
5760 min Summer	1.573	0.0	22.6	2904
7200 min Summer	1.311	0.0	23.6	3664
8640 min Summer	1.129	0.0	24.4	4392
10080 min Summer	0.994	0.0	25.0	5144
15 min Winter	138.153	0.0	5.8	18
30 min Winter	90.705	0.0	7.6	32
60 min Winter	56.713	0.0	9.5	60
120 min Winter	34.246	0.0	11.5	108
180 min Winter	25.149	0.0	12.7	138
240 min Winter	20.078	0.0	13.5	178
360 min Winter	14.585	0.0	14.7	254
480 min Winter	11.622	0.0	15.6	326

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
600 min Winter	9.437	0.437	0.6	4.4	O K
720 min Winter	9.337	0.337	0.6	3.4	O K
960 min Winter	9.190	0.190	0.6	1.9	O K
1440 min Winter	9.076	0.076	0.5	0.8	O K
2160 min Winter	9.048	0.048	0.4	0.5	O K
2880 min Winter	9.038	0.038	0.3	0.4	O K
4320 min Winter	9.030	0.030	0.2	0.3	O K
5760 min Winter	9.026	0.026	0.2	0.3	O K
7200 min Winter	9.023	0.023	0.2	0.2	O K
8640 min Winter	9.021	0.021	0.1	0.2	O K
10080 min Winter	9.020	0.020	0.1	0.2	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
600 min Winter	9.738	0.0	16.4	400
720 min Winter	8.424	0.0	17.0	464
960 min Winter	6.697	0.0	18.0	562
1440 min Winter	4.839	0.0	19.5	764
2160 min Winter	3.490	0.0	21.1	1104
2880 min Winter	2.766	0.0	22.3	1460
4320 min Winter	1.989	0.0	24.1	2140
5760 min Winter	1.573	0.0	25.4	2856
7200 min Winter	1.311	0.0	26.4	3592
8640 min Winter	1.129	0.0	27.3	4392
10080 min Winter	0.994	0.0	28.1	4960

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.020

Time (mins) From:	To:	Area (ha)
0	4	0.020

Model Details

Storage is Online Cover Level (m) 10.000

Tank or Pond Structure

Invert Level (m) 9.000

Depth (m)	Area (m²)	Depth (m)	Area (m²)
0.000	10.0	1.000	10.0

Hydro-Brake® Optimum Outflow Control

Unit Reference	MD-SHE-0041-8000-1000-8000
Design Head (m)	1.000
Design Flow (l/s)	0.8
Flush-Flo™	Calculated
Objective	Minimise upstream storage
Application	Surface
Sump Available	Yes
Diameter (mm)	41
Invert Level (m)	9.000
Minimum Outlet Pipe Diameter (mm)	75
Suggested Manhole Diameter (mm)	1200

Control Points	Head (m)	Flow (l/s)	Control Points	Head (m)	Flow (l/s)
Design Point (Calculated)	1.000	0.8	Kick-Flo®	0.369	0.5
Flush-Flo™	0.184	0.6	Mean Flow over Head Range	-	0.6

The hydrological calculations have been based on the Head/Discharge relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other than a Hydro-Brake Optimum® be utilised then these storage routing calculations will be invalidated

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)
0.100	0.6	0.800	0.7	2.000	1.1	4.000	1.5	7.000	1.9
0.200	0.6	1.000	0.8	2.200	1.1	4.500	1.6	7.500	2.0
0.300	0.6	1.200	0.9	2.400	1.2	5.000	1.6	8.000	2.0
0.400	0.5	1.400	0.9	2.600	1.2	5.500	1.7	8.500	2.1
0.500	0.6	1.600	1.0	3.000	1.3	6.000	1.8	9.000	2.2
0.600	0.6	1.800	1.0	3.500	1.4	6.500	1.9	9.500	2.2

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
15 min Summer	9.378	0.378	0.1	3.8	O K
30 min Summer	9.489	0.489	0.1	4.9	O K
60 min Summer	9.594	0.594	0.2	5.9	O K
120 min Summer	9.679	0.679	0.2	6.8	O K
180 min Summer	9.710	0.710	0.2	7.1	Flood Risk
240 min Summer	9.718	0.718	0.2	7.2	Flood Risk
360 min Summer	9.709	0.709	0.2	7.1	Flood Risk
480 min Summer	9.696	0.696	0.2	7.0	O K
600 min Summer	9.681	0.681	0.2	6.8	O K
720 min Summer	9.665	0.665	0.2	6.7	O K
960 min Summer	9.634	0.634	0.2	6.3	O K
1440 min Summer	9.576	0.576	0.2	5.8	O K
2160 min Summer	9.500	0.500	0.1	5.0	O K
2880 min Summer	9.434	0.434	0.1	4.3	O K
4320 min Summer	9.328	0.328	0.1	3.3	O K
5760 min Summer	9.245	0.245	0.1	2.5	O K
7200 min Summer	9.166	0.166	0.1	1.7	O K
8640 min Summer	9.101	0.101	0.1	1.0	O K
10080 min Summer	9.066	0.066	0.1	0.7	O K
15 min Winter	9.424	0.424	0.1	4.2	O K
30 min Winter	9.550	0.550	0.2	5.5	O K
60 min Winter	9.670	0.670	0.2	6.7	O K
120 min Winter	9.771	0.771	0.2	7.7	Flood Risk
180 min Winter	9.810	0.810	0.2	8.1	Flood Risk
240 min Winter	9.824	0.824	0.2	8.2	Flood Risk
360 min Winter	9.822	0.822	0.2	8.2	Flood Risk
480 min Winter	9.803	0.803	0.2	8.0	Flood Risk

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
15 min Summer	138.153	0.0	3.9	19
30 min Summer	90.705	0.0	5.1	33
60 min Summer	56.713	0.0	6.4	62
120 min Summer	34.246	0.0	7.7	122
180 min Summer	25.149	0.0	8.5	182
240 min Summer	20.078	0.0	9.0	240
360 min Summer	14.585	0.0	9.8	322
480 min Summer	11.622	0.0	10.5	382
600 min Summer	9.738	0.0	11.0	444
720 min Summer	8.424	0.0	11.4	510
960 min Summer	6.697	0.0	12.0	648
1440 min Summer	4.839	0.0	13.1	924
2160 min Summer	3.490	0.0	14.1	1324
2880 min Summer	2.766	0.0	14.9	1728
4320 min Summer	1.989	0.0	16.1	2504
5760 min Summer	1.573	0.0	17.0	3280
7200 min Summer	1.311	0.0	17.7	4032
8640 min Summer	1.129	0.0	18.3	4584
10080 min Summer	0.994	0.0	18.8	5240
15 min Winter	138.153	0.0	4.3	19
30 min Winter	90.705	0.0	5.7	33
60 min Winter	56.713	0.0	7.1	62
120 min Winter	34.246	0.0	8.6	120
180 min Winter	25.149	0.0	9.5	178
240 min Winter	20.078	0.0	10.1	234
360 min Winter	14.585	0.0	11.0	342
480 min Winter	11.622	0.0	11.7	406

Summary of Results for 100 year Return Period (+40%)

Storm Event	Max Level (m)	Max Depth (m)	Max Control (l/s)	Max Volume (m³)	Status
600 min Winter	9.787	0.787	0.2	7.9	Flood Risk
720 min Winter	9.767	0.767	0.2	7.7	Flood Risk
960 min Winter	9.724	0.724	0.2	7.2	Flood Risk
1440 min Winter	9.640	0.640	0.2	6.4	O K
2160 min Winter	9.530	0.530	0.2	5.3	O K
2880 min Winter	9.437	0.437	0.1	4.4	O K
4320 min Winter	9.293	0.293	0.1	2.9	O K
5760 min Winter	9.162	0.162	0.1	1.6	O K
7200 min Winter	9.066	0.066	0.1	0.7	O K
8640 min Winter	9.042	0.042	0.1	0.4	O K
10080 min Winter	9.035	0.035	0.1	0.4	O K

Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Discharge Volume (m³)	Time-Peak (mins)
600 min Winter	9.738	0.0	12.3	470
720 min Winter	8.424	0.0	12.7	546
960 min Winter	6.697	0.0	13.5	702
1440 min Winter	4.839	0.0	14.6	996
2160 min Winter	3.490	0.0	15.8	1428
2880 min Winter	2.766	0.0	16.7	1844
4320 min Winter	1.989	0.0	18.0	2636
5760 min Winter	1.573	0.0	19.0	3408
7200 min Winter	1.311	0.0	19.8	3888
8640 min Winter	1.129	0.0	20.5	4408
10080 min Winter	0.994	0.0	21.0	5136

Rainfall Details

Rainfall Model	FSR	Winter Storms	Yes
Return Period (years)	100	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	20.000	Shortest Storm (mins)	15
Ratio R	0.400	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.015

Time (mins) From:	To:	Area (ha)
0	4	0.015