

INFRASTRUCTURE MANAGEMENT

Lone Star Land Ltd
Land off Balmoral Avenue
Banbury Phase 2
Utilities Assessment

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Banbury Phase 2
Utilities Assessment

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1. INTRODUCTION

Instruction

- 1.1 BWB Consulting (BWB) was instructed by Lone Star Land Ltd (The Client) to provide an assessment of the existing services infrastructure within/surrounding the site. The aim of the Utilities Assessment Report is to evaluate any potential impacts on the existing services networks resulting from the proposed development, and to establish a high-level strategy on the deliverability of supplies to service the proposed development.
- 1.2 The purpose of the UAR is to identify any existing utility infrastructure that may constrain the development within the site boundary and identify a strategy for the delivery of future supplies to the site. The assessment also considers whether any utility service diversions are required to accommodate the development proposals.
- 1.3 A proposed Masterplan (21303_PA_01-b Illustrative masterplan) has been prepared by Intelligent Residential Design for the site and is contained within **Appendix 1**. The proposals are for residential development with associated highways and landscaping. The site will be accessed from Broughton Road to the south and from a further proposed development to the northeast.
- 1.4 The development is understood to comprise 49 residential dwellings.

Scope of Works

- 1.5 The Utilities Assessment will outline and assess the utility issues in relation to the proposed site and will identify the need for new utility infrastructure, potential upgrade/reinforcement works and/or the need for further investigation/modelling.
 - i. Asset Records – request latest records of the existing statutory services onto topographic survey/OS background mapping to provide a combined composite utility plan
 - ii. Diversions of existing services – review the utility constraints against the proposed site layout to identify which utility assets needs to be diverted or accounted for with modification to the masterplan sketch
 - iii. New connections – identify points of connection and any reinforcement requirements for provision of new supplies including indicative infrastructure routes from the incumbent suppliers and independent providers and,
 - iv. Combined infrastructure summary – summary of the above items to understand the potential works required for the proposed development.

2. THE SITE

Site Location

- 2.1 The site is located to the western extent of Banbury, Oxfordshire approximately 2km west of the town centre. The greenfield site is surrounded by residential development to the north and east the B4035 (Broughton Road) to the south and farmland to the west. The site's location is illustrated within **Figure 2.1**.

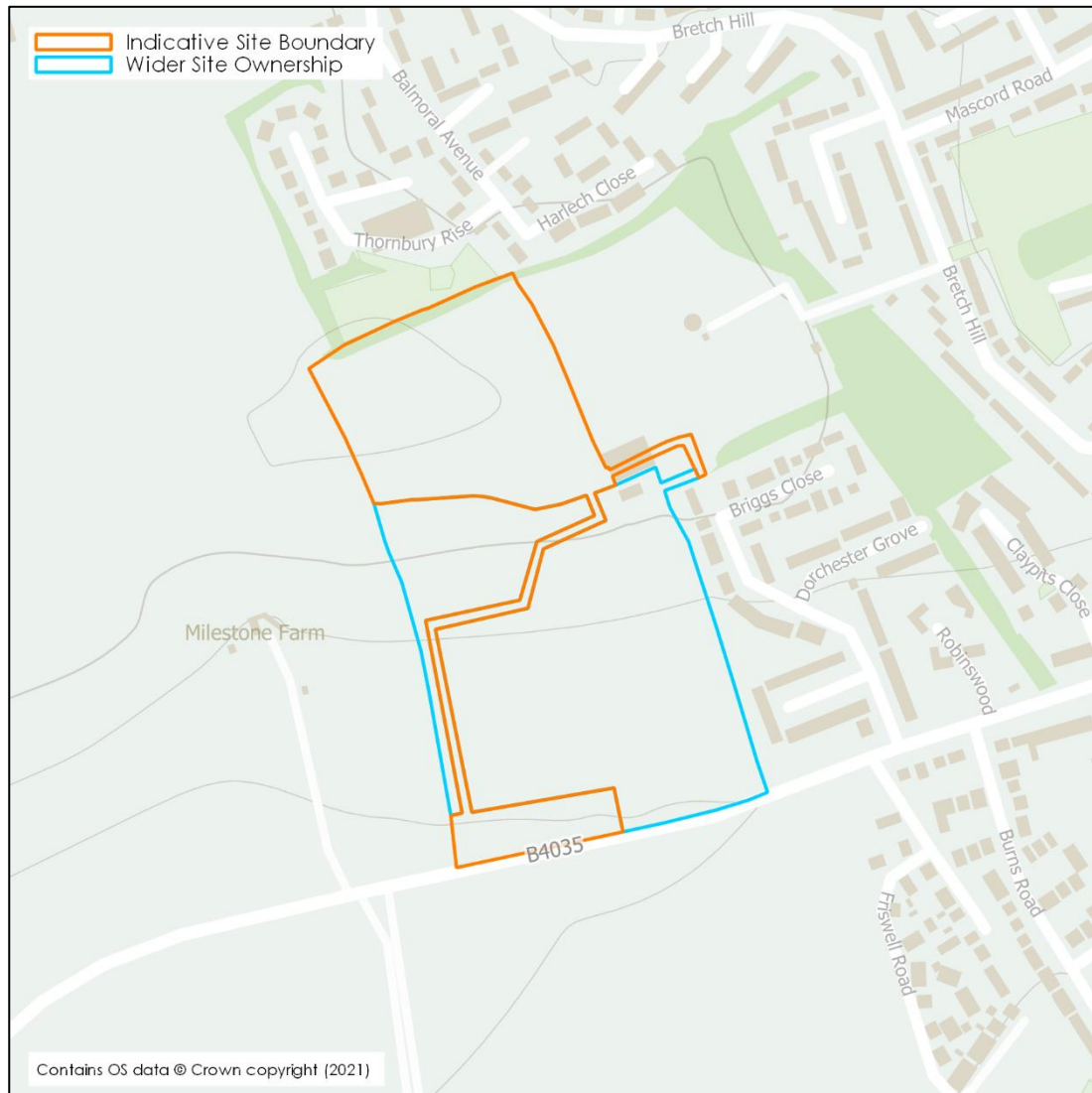


Figure 2.1: Site Location Plan

- 2.2 A proposed Masterplan (21303_PA_01-C - Illustrative Masterplan) has been prepared by Intelligent Residential Design for the site and is contained within **Appendix 1**.

Utility Providers

- 2.3 BWB has for the purpose of this report, made initial utility search enquiries, to statutory undertakers to ascertain existing utility infrastructure within and adjacent to the proposed development site.
- 2.4 The site is in an area where, Western Power Distribution and National Grid operate the electricity supply, Scotia Gas Networks operate the gas network, Severn Trent Water Limited operate the clean and wastewater networks, and Openreach operate the telecommunications.

Table 2.1: Statutory Undertakers List

Utility	Provider	Existing Infrastructure
Electricity	Western Power Distribution	Within the site
Gas	Scotia Gas Networks	Near the site
Waste Water	Thames Water	Near the site
Clean Water	Thames Water	Near the site
Telecomms	BT Openreach	Near the site

- 2.5 From a review of the existing asset records obtained by BWB, a Composite Utility Plan (Drawing No. BP2-BWB-VUT-ZZ-DR-G-0001) has been prepared showing the extent of the existing utility infrastructure within and adjacent to the development site, and is contained within **Appendix 2**.
- 2.6 The information on utilities contained within this report has been derived from data provided by the main public utility companies. No information is provided in relation to "private" infrastructure that might be present on site.
- 2.7 It should be noted that all asset records obtained have a validity period of a maximum 3-6 months, and the capacity investigation responses received at the time of writing this report are correct and have a validity period which ranges from 3-12 months, the result of these enquiries may be subject to future reinforcement/change by network operators. Where statutory undertakers have identified services within or near the proposed development, those services are discussed within the following sections.

3. Electrical Infrastructure

Existing Electrical Infrastructure

- 3.1 The following section details the existing electrical utility infrastructure network identified within the Western Power Distribution (WPD) record drawings received 27/05/2021.
- 3.2 The WPD asset records show a mature network of High Voltage (HV) and Low Voltage (LV) apparatus present with the development area.
- 3.3 The record plans show a network of 11kV overhead apparatus present within the site boundary. A single 11kV cable is shown to cross the site from the southern site boundary at Broughton Road, where it continues to the centre of the site boundary and forks toward the existing dwellings beyond the eastern and western site boundaries respectively.
- 3.4 A further cable is shown to be taken from this 11kV OH route at the southern extent of the site, where it continues toward Broughton Road, to serve existing residential developments beyond the eastern site boundary.

Diversification Works

- 3.5 The WPD asset records have been reviewed alongside the site masterplan, showing a 11kV overhead asset network crossing the proposed development boundary.
- 3.6 It is advised that WPD be contacted upon confirmation of the final development layout, as any diversion to the existing OH 11kV assets shown crossing the site boundary may be holistically addressed as part of the future supply strategy to serve the proposed development whilst ensuring continuity of supply to the existing properties being served by these assets.
- 3.7 It is advised that a review of the title deed, in addition to any existing wayleave agreements is undertaken to understand any existing legal rights WPD or another party may have over the assets present within the site vicinity.

Proposed Infrastructure

- 3.8 The WPD budget response raised for an initial 70no. domestic dwellings, (Ref. 4077482, Dated 02/09/2021) indicates that for a supply, an overall supply capacity of 644kVa can be delivered to the site.
- 3.9 WPD have advised a budget figure of £105,000.00 for the associated supply and delivery works.
- 3.10 WPD have outlined a supply strategy that includes establishment of a new ground mounted substation, installation of new 11kV infrastructure and installation of a new LV distribution network to supply the new dwellings.

- 3.11 WPD have further advised that upon request of a formal offer, WPD can incorporate both the on site supply, and anticipated diversionary works into a single offer and associated costing. This costing would include costs for diversions, a new substation and LV distribution network needed to deliver the scheme in full.
- 3.12 WPD have advised that for a formal offer application, full details of site requirements, a confirmed site masterplan and layout, as well as confirmed position for substation and site capacity will need to be supplied.

4. Gas Infrastructure

Existing Gas Infrastructure

- 4.1 The following section details the existing gas utility infrastructure network identified within the Scotia Gas Networks (SGN) record drawings received 25/07/2021.
- 4.2 The SGN record plans show a network of low pressure mains present within the vicinity of the site boundary.
- 4.3 A single LP main is shown within Broughton Road, bordering the southern site boundary. This main is shown to continue beyond the site boundary where it can be seen as part of a wider network of LP apparatus serving existing residential dwellings.
- 4.4 The SGN record plans confirm the site area is free of affected apparatus.

Diversiory Works

- 4.5 A review of the proposed site masterplan indicates that the SGN gas main present within Broughton Road is likely to be impacted by the site access proposals. It is expected that consultation with SGN will confirm the extent, if any, of protection or local diversionary works that may arise as a result of the site access proposals.
- 4.6 The SGN asset records have been reviewed alongside the site boundary, confirming that there are no SGN owned assets present within the site boundary, as such no diversionary works are anticipated.

Proposed Infrastructure

- 4.7 It is anticipated that a supply may be drawn from the existing LP main, bordering the southern site boundary within Broughton Road.
- 4.8 SGN has been contacted regarding production of a budget estimate quotation to deliver a supply to the proposed 70no. dwellings. Upon receipt, this section will be updated to include correspondence and any associated costings provided.

5. Clean Water Infrastructure

Existing Clean Water Infrastructure

- 5.1 The following section details existing clean water apparatus identified within the Thames Water (TW) record drawings received 14/07/2021.
- 1.1 The TW record plans show a network of clean water apparatus present within Broughton Road, part of a wider network shown to supply the existing residential dwellings present to the east of the proposed site boundary.
- 1.2 The TW asset records confirm that the site boundary is free of any TW owned apparatus.

Diversiónary Works

- 5.2 A review of the proposed site masterplan indicates that the TW clean water main present within Broughton Road is likely to be impacted by the site access proposals. This will require confirmation once the development proposals are reasonably fixed, at which point it is recommended that consultation be undertaken with TW to undertake any surveys that may be required to inform the scope, and nature of any diversionary and local protection works that may be necessary.
- 5.3 The TW asset records have been reviewed alongside the site boundary, showing that the site boundary is clear of any TW owned apparatus, as such no diversionary works are anticipated.

Proposed Infrastructure

- 5.4 The Thames Water clean water capacity check raised for an initial 70no. dwellings (Ref:DS6087629, Dated 20/09/21) confirms that there is capacity within the network to serve part of the proposed development.
- 5.5 The TW response confirms sufficient capacity to serve the first 50no. properties within the proposed development, however, without further investigation, TW cannot confirm any further capacity to ensure supply to any further dwellings.
- 5.6 TW confirm that modelling will need to be undertaken to confirm the extent, if any, of reinforcements that may be required to deliver the capacity required. TW outline that these works will be undertaken at their cost, however they require confirmation of either land ownership, or outline/full planning permissions to ensure the development will go ahead.
- 5.7 Thames Water have further outlined points of connection that can be made within Broughton Road, or Balmoral Avenue, to serve the development proposals.
- 5.8 TW have advised that a request to progress network modelling can be made alongside an underwriting agreement, however should this request be made, and first occupancy has not been achieved within five years, TW will ask for the costs of the modelling work to be covered.

6. Foul and Surface Water Infrastructure

Existing Foul and Surface Water Infrastructure

- 6.1 The following section details the existing foul and surface water network identified within the Thames Water (TW) record drawings received 14/07/2021.
- 6.2 The TW record plans show a network of foul and surface water drainage present within Balmoral Avenue, serving the existing residential developments to the east of the proposed site boundary.
- 6.3 The TW record plans confirm that the site area is free of any TW owned foul or surface water apparatus.

Diversiónary Works

- 6.4 The TW asset records have been reviewed alongside the masterplan, confirming that the site is free of TW assets, as such no diversionary works are anticipated to deliver the development proposals

Proposed Infrastructure

- 6.5 The Thames Water Pre-Planning response (Ref:DS608716, Dated: 09/09/21) outlines the assessment undertaken for the development, for a total of 48no. proposed residential units.
- 6.6 The TW response indicates that the proposed foul water flows may discharge via gravity, and these flows would be directed into the Thames Water Foul Manhole Ref:8801.
- 6.7 The TW response further confirms that from initial review, the sewerage network has sufficient capacity for 30no. residential units, and further that the remaining units on the proposed development would exceed the capacity within the network.
- 6.8 Thames Water have advised that in order to make any appropriate upgrades, or off site reinforcement to serve the proposed development, a network modelling and design exercise will need to be undertaken. TW have indicated the following timescales for a development of this size:
 - 6.9 Modelling: 8 months
 - 6.10 Design : 6 Months
 - 6.11 Construction : 20 months
- 6.12 Thames Water have further advised that they will only carry out modelling once they are confident that the development will proceed, as such they would require confirmation of land ownership, or outline/full planning permission.

7. Telecommunications

Existing Telecommunications Infrastructure

- 7.1 The following section details the existing telecommunications utility infrastructure network identified within Openreach asset record drawings.
- 7.2 Asset records from Openreach obtained 25/07/2021, indicate the presence of an underground and overhead network in the vicinity of the proposed development.
- 7.3 The Openreach record plans show a network of underground (UG) apparatus located within Broughton Road, bordering the southern site boundary.
- 7.4 This network is shown to be part of a wider network of Openreach assets, present serving the existing residential dwellings to the east, and west of the proposed site boundary.
- 7.5 The Openreach asset records confirm the site area is free of any Openreach apparatus.

Diversionsary Works

- 7.6 A review of the proposed site masterplan indicates that the Openreach assets are likely to be impacted by the site access proposals. This will require confirmation once the development proposals are reasonably fixed, at which point it is recommended that consultation be undertaken with Openreach to undertake any surveys that may be required to inform the scope, and nature of any diversionsary and disconnection works that may be necessary.

Proposed Infrastructure

- 7.7 Following a review of the asset records obtained, early engagement with telecommunications providers is required to understand the potential to supply the proposed development.
- 7.8 Openreach normally provide telephone and broadband services to all new developments free of charge.
- 7.9 All civils works will typically be undertaken by the developer using 'free issue' Openreach ducts and Openreach specified ducts boxes to the Openreach confirmed design specification. This will then allow for Openreach to pull their cables through the newly installed ducts as and when required.

8. Conclusion & Recommendations

Summary of Investigations

- 8.1 The table below summarises the results of the investigations undertaken by BWB Consulting.

Table 8.2: Summary of Investigations

Utility Provider	Existing Utility Infrastructure		New Utility Infrastructure Requirements
	Onsite / Near Development	Diversion Requirements	
Western Power Distribution	WPD HV OH apparatus present within the southern extent of the site boundary	Anticipated diversions required to existing OH apparatus present within the site boundary	WPD have advised a budget figure of £105,000.00 for projected supply works to site. WPD further advise that a formal application submission will allow for production of a holistic strategy and associated costings to deliver the on site diversions, supply and associated new substation whilst maintaining continuity of supply.
Scotia Gas Networks (Gas)	SGN gas apparatus present within vicinity of the site. LP main present within Broughton Road bordering southern site boundary	Site access proposals within Broughton Road may affect the existing LP gas main shown beyond the southern site boundary.	SGN has been contacted regarding production of a budget estimate quotation to deliver a supply to the proposed 70no. dwellings. Upon receipt, this section will be updated to include correspondence and any associated costings provided.
Thames Water (Clean)	TW apparatus present within vicinity of site TW Clean water main present within Broughton Road, bordering southern boundary of site.	No diversionary works anticipated Site access proposals within Broughton Road may affect the existing clean water main shown beyond the southern site boundary	TW have confirmed that supply can be provided to 50no. dwellings within the proposed development. TW further confirm that a modelling and design exercise will need to be undertaken, once confirmation of land ownership or planning status can be provided to confirm the status of the proposed development.

Thames Water (Waste)	Site boundary confirmed clear of TW Waste Water apparatus	No diversionary works anticipated	TW have advised that foul water flows for 30no dwellings may be accepted to the network, at manhole MH8801. TW further confirm that a modelling and design excersize will need to be undertaken, once confirmation of land ownership or planning status can be provided to confirm the status of the proposed development.
Openreach (Telecommunications)	Openreach overhead and underground apparatus present within Broughton Road Site area clear of Openreach appratus	Consultation with Openreach recommended once masterplan and development proposals are reasonably fixed, to determine extent of any surveys required to inform the diversionary works assessment	Openreach normally provide telephone and broadband services to all new developments free of charge, with the end user ultimately paying for the connection costs.

Conclusion

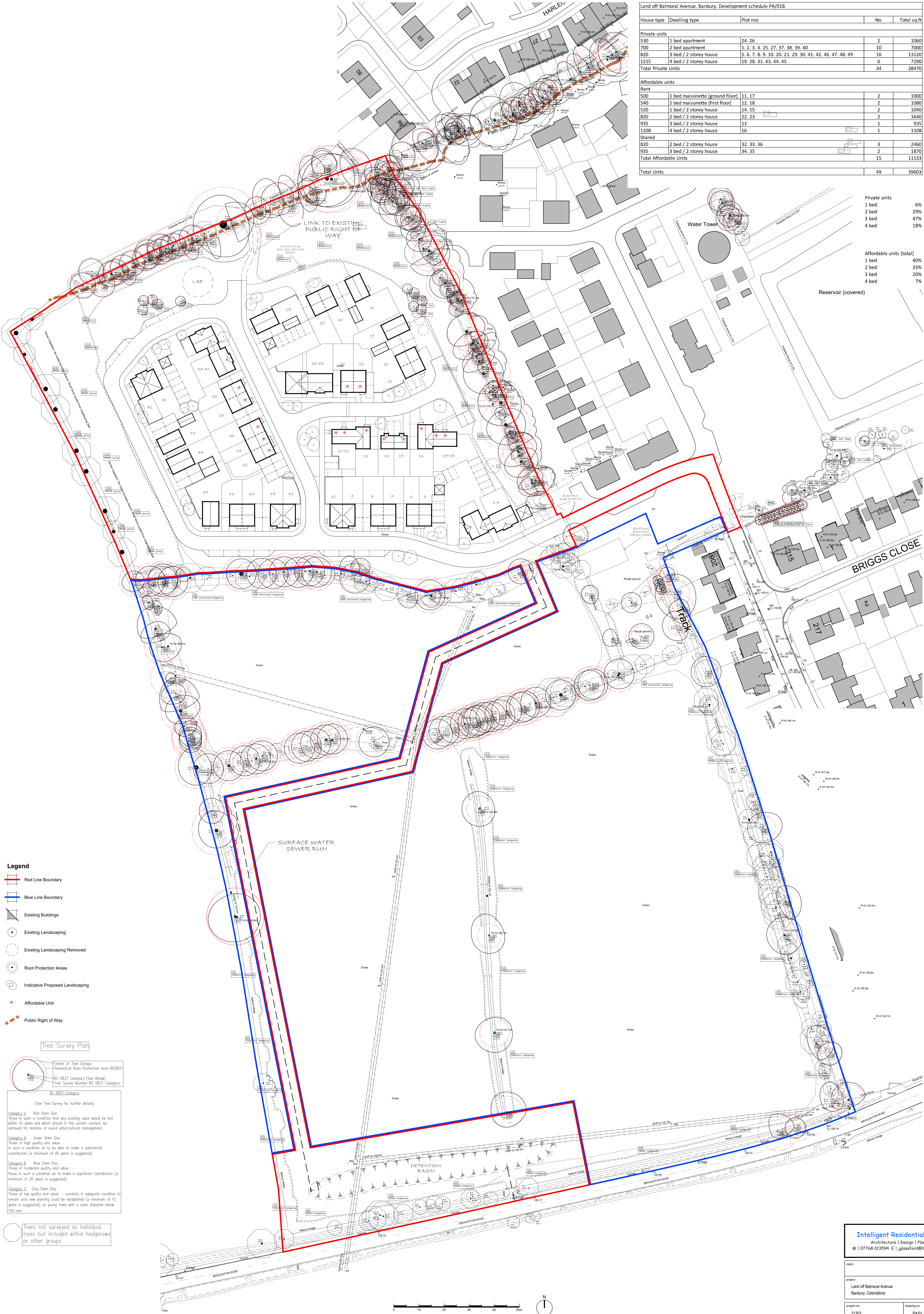
- 8.2 The information that has been obtained by BWB Consulting shows that the site contains electricity infrastructure owned by Western Power Distrubution.
- 8.3 The existing electricity record plans confirm the presence of a WPD owned network of overhead apparatus shown crossing the southern site boundary. Consultation with WPD determines that a formal offer can be considered to holistically address the supply, and diversionary works required to deliver the site proposals.
- 8.4 The plans received from the existing gas, telecoms, clean and potable water providers show that the site boundary is free of these assets. It is anticipated that the existing gas, telecoms and clean water apparatus within Broughton Road will require local protections to deliver the site access proposals.
- 8.5 Capacity consultation from Thames Water for the wastewater flows indicate that the first 30no. dwellings can be served from residual capacity within the network, however further dwellings would be subject to a modelling and design excersize to confirm the scale, if any, of any off-site reinforcement that may be required.
- 8.6 Thames Water further advise that the development can be supplied from residual capacity within their clean water network, for upto 50no. dwellings, however, as with the wastewater network, any further dwellings would be subject to a modelling and design excersize to confirm the scale, if any, of any off-site reinforcement that may be required.
- 8.7 Capacity consultation responses have been issued by BWB to the gas provider and is currently being progressed, at which point this report will be updated to reflect.

Recommendations

- 8.8 It is recommended that further consultation with the relevant companies is undertaken once a fixed masterplan is available to confirm the availability of capacity within the utility networks, as well as any considerations for phasing, and off-site reinforcement that may be necessary to deliver the proposed development.
- 8.9 It is recommended that consultation be undertaken with the relevant companies to confirm any easements and protections that may be required to the assets shown within the site and its vicinity to facilitate the site accesses and development proposals. BWB recommend that a search is carried out to establish if any of the utility infrastructure is held under legal agreements and consents.
- 8.10 BWB recommend formal quotations to be sought for diversion/or protection of existing assets which will be required.
- 8.11 The proposed development site will benefit from an PAS128 Level B survey to be undertaken to identify the accuracy of the infrastructure location and the depth of these services below ground, this will also inform the likely requirement for further discussion with the asset owners to allow for a diversion and/or protection strategy to be fixed, obtaining this level of information can potentially mitigate any need for diversionary work to the existing utility infrastructure.

APPENDICES

APPENDIX 1: Masterplan



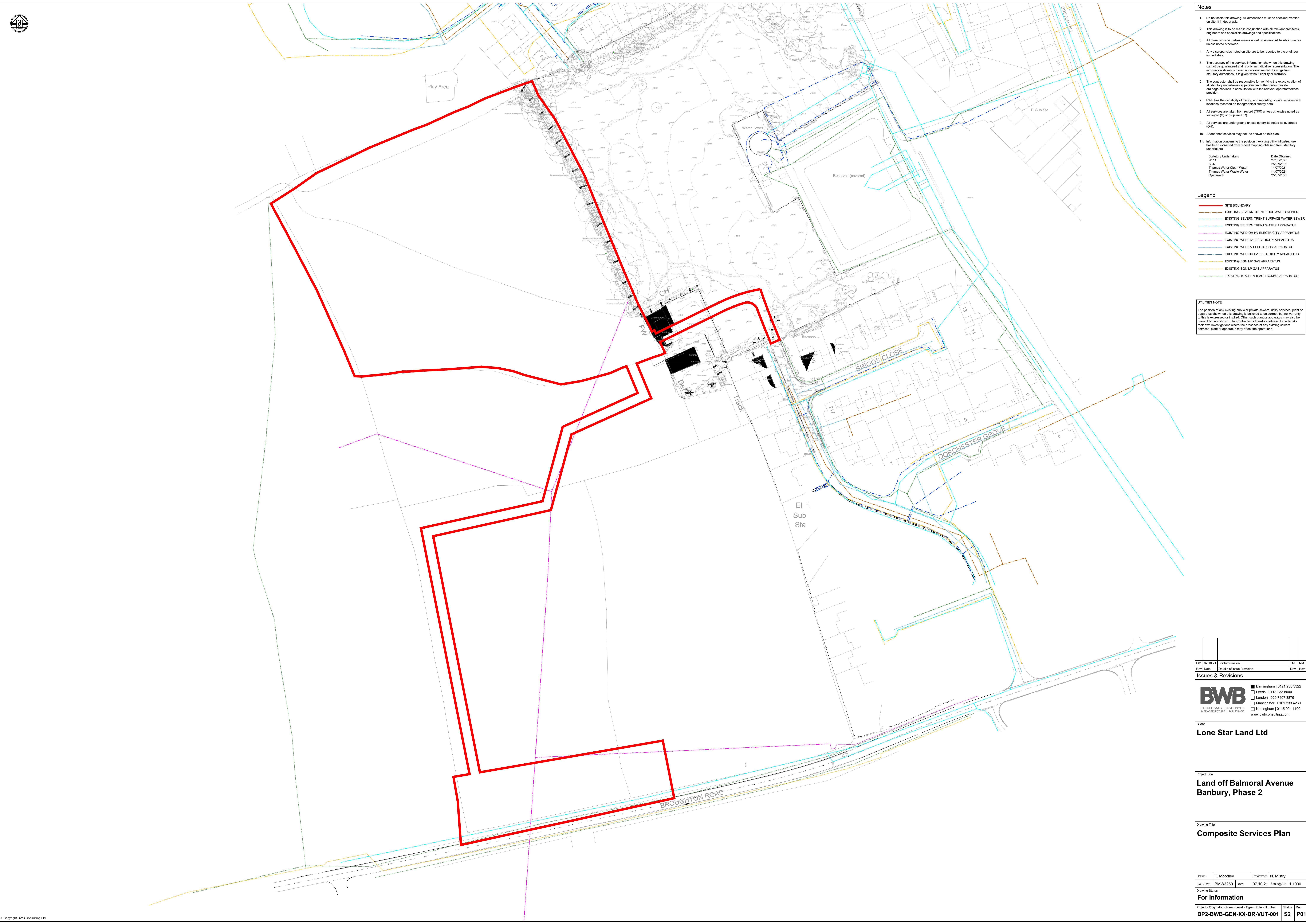
Land off Balmoral Avenue, Banbury, Development schedule PA/018				
House type	Dwelling type	Plot nos	No.	Total sq.ft
Private units				
530	1 bed apartment	24, 26	2	1060
700	2 bed apartment	1, 2, 3, 4, 25, 27, 37, 38, 39, 40	10	7000
820	3 bed / 2 storey house	5, 6, 7, 8, 9, 10, 20, 21, 29, 30, 41, 42, 46, 47, 48, 49	16	13120
1215	4 bed / 2 storey house	19, 28, 31, 43, 44, 45	6	7290
Total Private Units			34	28470
Affordable units				
Rent				
500	1 bed maisonette (ground floor)	11, 17	2	1000
540	1 bed maisonette (first floor)	12, 18	2	1080
520	1 bed / 2 storey house	14, 15	2	1040
820	2 bed / 2 storey house	22, 23	2	1640
935	3 bed / 2 storey house	13	1	935
1108	4 bed / 2 storey house	16	1	1108
Shared				
820	2 bed / 2 storey house	32, 33, 36	3	2460
935	3 bed / 2 storey house	34, 35	2	1870
Total Affordable Units			15	11133
Total Units			49	39603

Private units	6%
1 bed	29%
2 bed	47%
3 bed	18%
4 bed	

Affordable units (total)	40%
1 bed	33%
2 bed	20%
3 bed	7%
4 bed	

Reservoir (covered)

APPENDIX 2: Composite Services Plan



Notes

1. Do not scale this drawing. All dimensions must be checked/ verified on site. If in doubt ask.
2. This drawing is to be read in conjunction with all relevant architects, engineers and specialist drawings and specifications.
3. All dimensions in metres unless noted otherwise. All levels in metres unless noted otherwise.
4. Any discrepancies noted on site are to be reported to the engineer immediately.
5. The accuracy of the services information shown on this drawing cannot be guaranteed and is only an indicative representation. The information shown is based upon asset record drawings from statutory authorities. It is given without liability or warranty.
6. The contractor shall be responsible for verifying the exact location of all statutory undertakers apparatus and other public/private drainage services in consultation with the relevant operator/service provider.
7. BWB has the capability of tracing and recording on-site services with locations recorded on topographical survey data.
8. All services are taken from record (TFR) unless otherwise noted as surveyed (S) or proposed (R).
9. All services are underground unless otherwise noted as overhead (O).
10. Abandoned services may not be shown on this plan.
11. Information concerning the position of existing utility infrastructure has been extracted from record mappings obtained from statutory undertakers

Statutory Undertakers	Date Obtained
WPD	27/05/2021
SON	25/07/2021
Thames Water Clean Water	14/07/2021
Thames Water Waste Water	14/07/2021
Openreach	25/07/2021

Legend

- SITE BOUNDARY
- EXISTING SEVERN TRENT FOUL WATER SEWER
- EXISTING SEVERN TRENT SURFACE WATER SEWER
- EXISTING SEVERN TRENT WATER APPARATUS
- EXISTING WPD OH HV ELECTRICITY APPARATUS
- EXISTING WPD LV ELECTRICITY APPARATUS
- EXISTING WPD OH LV ELECTRICITY APPARATUS
- EXISTING SON MP GAS APPARATUS
- EXISTING SON LP GAS APPARATUS
- EXISTING BTCHENREACH COMMS APPARATUS

UTILITIES NOTE

The position of any existing public or private sewers, utility services, plant or apparatus shown on this drawing is believed to be correct, but no warranty to this is expressed or implied. Other such plant or apparatus may also be present but not shown. The Contractor is therefore advised to undertake their own investigations where the presence of any existing sewers services, plant or apparatus may affect the operations.

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Rev	Date	Details of issue / revision		Drawn	Rev

Issues & Revisions

BWB

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Client

Lone Star Land Ltd

Project Title

Land off Balmoral Avenue
Banbury, Phase 2

Drawing Title

Composite Services Plan

Drawn:	T. Moody	Reviewed:	N. Misty
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Drawing Status

For Information

Project - Originator - Zone - Level - Type - Role - Number	Status	Rev
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