Water Eaton PR6a: Land East of Oxford Road

Foul Drainage and Utilities Assessment





WE/FDU/P02





FOUL DRAINAGE AND UTILITIES ASSESSMENT

Water Eaton PR6a: Land East of Oxford Road

Prepared for: Bellway Homes Limited and Christ Church, Oxford Ref: 032_8210440_BW_Foul_Drainage_and_Utilities_Assessment Issue P02: 26 February 2024



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Contents

1.0	Introduction	1
2.0	Development Proposals	2
3.0	Existing Site Characteristics	3
4.0	Foul Drainage	4
5.0	Utilities Assessment	8
6.0	Conclusions	13

Appendices

Appendix A: Cherwell Local Plan Partial Review – PR6a Extract and Draft Policies Map

Appendix B: Illustrative Masterplan

Appendix C: Site Location Plan

Appendix D: Topographical Survey

Appendix E: Existing Services Plan

Appendix F: Outline Foul Drainage Strategy
Appendix G: Foul Drainage Flow Calculations

Appendix H: Thames Water Correspondence



1.0 Introduction

- 1.1 This Foul Drainage and Utilities Assessment has been prepared by Glanville Consultants on behalf of Bellway Homes Limited and Christ Church, Oxford with respect to an outline planning application (with all matters reserved except for access) for development of land at Water Eaton, Oxford, OX2 8HF.
- 1.2 The Site is included in the Cherwell Local Plan 2011-2031 (Part 1) Partial Review as Site PR6a, Land East of Oxford Road. Site PR6a allocates the Site for mixed-use development including around 690 dwellings, a two form entry primary school, a local centre and recreation space. The strategic allocation extends to approximately 45.8 hectares of land to the east of the A4165, Oxford Road, as shown on the extract from the Cherwell Local Plan Partial Review included in Appendix A.
- 1.3 This report outlines the existing situation with regards to foul drainage and utilities, and outlines the proposals for foul water drainage disposal, as well as utility supply and diversion.



2.0 Development Proposals

- 2.1 A copy of the illustrative masterplan is included in Appendix B. The proposed development consists of:
 - The demolition of existing buildings;
 - Erection of up to 800 dwellings (Class C3);
 - A two form entry primary school;
 - A local centre comprising: convenience retailing (not less than 350sqm and up to 500sqm (Class E(a))), business uses (Class E(g)(i)) and/or financial and professional uses (Class E(c)) up to 500sqm, a café or restaurant (Class E(b)) up to 200sqm;
 - Community building (Class E and F2);
 - Car and cycle parking;
 - Associated play areas, allotments, public open green space and landscaping.
 - New vehicular, pedestrian and cycle access points, internal roads and paths and communal parking infrastructure.
 - Associated works, infrastructure (including Sustainable Urban Drainage, services and utilities) and ancillary development.
 - Works to the Oxford Road in the vicinity of the site to include, pedestrian and cycle infrastructure, drainage, bus stops, landscaping and ancillary development.



3.0 Existing Site Characteristics

3.1 This Section outlines the existing site characteristics. The site extends to approximately 45.8ha and is located to the east of the A4165, Oxford Road to the north of Oxford. The site largely consists of agricultural land, with Pipal Barns located in the north-west of the site alongside Oxford Road. St Frideswide's Farm is located adjacent to the eastern site boundary and Pipal Cottage is located adjacent to Pipal Barns outside of the site boundary. A site location plan is included in Appendix C.

Topography

3.2 The site generally falls away from two main high points. The first is located in the centre of the site along the western boundary with the A4165, with land falling to the north, and to the east towards St Frideswide's Farm. The second high point is located along the southern boundary, with land falling from this point to the east towards the River Cherwell, and to the north towards St Frideswide's Farm. The topographical survey is included in Appendix D.



4.0 Foul Drainage

4.1 This Section identifies the existing foul water drainage infrastructure on and in the vicinity of the site in order to assess the impact of the development on the existing infrastructure, and whether any diversions or easements are required to facilitate the development.

Existing Drainage

- 4.2 Thames Water is the statutory undertaker for wastewater drainage in Oxfordshire. The location of existing drainage infrastructure in the vicinity of the site obtained from Thames Water records are shown on the Existing Services Plan included in Appendix E.
- 4.3 The records do not indicate any public foul water sewers within the site boundary, or along the A4165 adjacent to the site.
- A gravity foul water network is indicated within the residential areas to the south of the site: a 225mm gravity foul sewer is indicated along the A4165 flowing in a southerly direction; and 225mm gravity foul sewers are indicated in Hayward Road and Harbord Road, flowing in a westerly direction. The closest manhole to the site is Thames Water manhole 3803 along the A4165 to the south-west of the site.
- 4.5 Pipal Cottage in the north-west of the site and St Frideswide's Farm to the east of the site are not known to connect into the public sewer network and instead are served by a septic tank / on-site treatment.
- 4.6 No private foul drainage infrastructure is known to be located within the site boundary.

Diversions and Easements

- 4.7 Given that no foul drainage infrastructure is known to be located within the boundary of the site, it is envisaged that foul sewer diversions will not be necessary to facilitate the development of the site.
- 4.8 Drainage to Pipal Cottage and St Frideswide's Farm will not be required to be diverted to facilitate the development of the site.

Proposed Foul Water Drainage Strategy

- 4.9 The site levels generally fall away from the A4165, and therefore the closest Thames Water foul drainage manhole (3803). Therefore, it is proposed to pump flows from the development to Thames Water manhole 3803. Due to the topography of the site with multiple low points, it is expected that two pump stations will be required to serve the development, located at low points within different catchments.
- 4.10 Indicative locations of pump stations have been shown on the Outline Foul Drainage Strategy drawing included in Appendix F. Two pumping options are shown as described overleaf. The option taken forward will depend on a number of factors, including phasing and construction considerations.



- Option 1 involves discharging flows from the northern pump station into the southern pump station, from where the combined flows will be pumped to a manhole just upstream of the connection point (manhole 3803), from where flows will discharge via a final short gravity section into manhole 3803; and
- Option 2 involves discharging flows from the two pump stations via two separate
 rising mains to a manhole just upstream of the connection point (manhole 3803),
 where flows will combine and discharge via a final short gravity section into
 manhole 3803. The two pump stations will therefore not be connected.
- 4.11 A more detailed on-site foul water drainage design will be developed at the appropriate stage, once detailed proposals for the development are available.

Peak and Pump Flow Rates

4.12 A range of flow rates have been calculated based on the expected quantum of development using guidance provided in Sewer Design and Construction Guidelines and Flows and Loads 4. The peak and pump flow rates calculated are shown in Table 1. The full calculation is included in Appendix G.

Table 1: Peak and Pump Flow Rates

Туре	Unit	Quantum	Peak I/s	Pump ^{1, 2} I/s
Dwellings	-	800	37.04	18.52
Primary School ³	Pupils	630	11.81	5.91
Retail (E(a))	m²	500	0.07	0.03
Business Development (E(g)(i)) or Financial and Professional (E(c))	m²	500	0.07	0.03
Café/restaurant (E(b)) ⁴	Seat	50	0.94	0.47
Community building (E and F2)	Users	400	1.25	0.63
			51.2	25.6

¹ Peak flows = 6 x DWF

Foul Drainage Capacity

4.13 A pre-planning enquiry was submitted to Thames Water in May 2018 which related to both PR6a, and the adjoining site allocated within the Cherwell Local Plan Partial Review, PR6b. Thames Water's response to this enquiry, which was for approximately 1,500 residential units between the two sites, indicated that reinforcements to the existing foul water network would be necessary in order to facilitate the development of the two sites.

² Pumped flow rates based on 50% peak flow rates. Actual pumped flow rates may be higher to achieve minimum flow velocity or differ based on the pump station option taken forward.

³ Two-form entry primary school proposed, however a three-form entry primary school is assessed for a future expansion scenario to ensure that the pump station capacity and network capacity exists for this scenario.

⁴ Number of seats based on 200sqm



- 4.14 A pre-planning enquiry was subsequently submitted to Thames Water in May 2021 which related just to PR6a. Peak and pump flow rates were submitted in support of the application and updated in January 2023. Thames Water's response to this enquiry indicated that reinforcements to the existing foul water network would be necessary in order to facilitate the development of the site. Thames Water's letter is included in Appendix H.
- 4.15 To ensure that the appropriate upgrades are made, Thames Water will need to carry out modelling work to identify where and when reinforcement works will be needed. Thames Water will undertake this modelling work at their expense once the site has secured an outline planning consent.
- 4.16 A meeting with Thames Water was held in October 2021 in order to:
 - Understand the Thames Water's environmental obligations with respect to wastewater treatment works, and their liaison with the Environment Agency;
 - Discuss Thames Water's forward-planning process and how future developments, including those without planning permission or that are allocated in the Local Plan, are incorporated in Thames Water models at different stages; and
 - The timing and level of ongoing engagement with Thames Water relating to these
 development proposals, in order to ensure reinforcement works are identified,
 designed and built in order to meet the needs of the development prior to
 occupation.
- 4.17 Environmental obligations in respect of the Thames Water's discharge permit are considered as part of planning upgrade works, and this is discussed and agreed between Thames Water, the Environment Agency and the Local Council. On a development such as Water Eaton, developers are not party to discussions and have no bearing on how Thames Water's environmental obligations are met. However, it is noted that Thames Water are separately addressing issues such as infiltration, surface water and groundwater flows into the foul network in order to improve capacity and accommodate additional growth. The Asset Planning team at Thames Water deal with wastewater treatment works, and upgrade works to Wastewater Treatment Works are being planned and implemented.
- 4.18 Early engagement and regular correspondence with Thames Water (regarding housing numbers, build-out programme, expected first occupation date, planning status and drainage strategy), will ensure that the development proposals are accounted for in Thames Water modelling at the appropriate level and stage. Engagement at this stage allows Thames Water to start the process of feeding data about the site into a high-level assessment model which is operated in parallel with Thames Water's Strategic Growth Model (which captures developments that have received planning or expected to receive planning).
- 4.19 Since the meeting, detailed information on pump flow rates, drainage strategy, pumping arrangements and phasing have been provided to Thames Water in order for the development site to be incorporated into the high-level assessment model, work which is currently underway. Thames Water will identify how many houses can be accommodated without the need for reinforcement works (if any), based on the information provided to them, as well as considering other development sites which are expected to come forward.



- 4.20 Where reinforcement works are identified to be required, Thames Water will model, design and construct the reinforcement works. This process can take up to 20 months and typically any decisions around the extent of reinforcement works would be informed by development phasing and build programme. If the reinforcement modelling work is commenced once outline planning consent is granted, it is anticipated that the reinforcement works will be undertaken prior to first occupation of the development.
- 4.21 Although capacity within the system is not reserved, continued engagement with Thames Water helps to ensure that the appropriate capacity can be provided (including reinforcement works where necessary) ahead of occupancy of buildings on the site.
- 4.22 Liaison with Thames Water will continue in order to ensure the development site is included in all necessary modelling and discussions at the appropriate stage.
- 4.23 Under \$106 of the Water Industry Act 1991 there is a right for premises to connect to the public sewerage network and a water undertaker is not entitled to reject a \$106 connection on the basis of capacity. As such, there is not expected to be any issue in connecting the new development to the Thames Water network.

Sewer Design

4.24 All new foul water infrastructure constructed to serve the site will be designed in accordance with Building Regulations and Sewer Design and Construction Guidelines, as appropriate.

Maintenance

4.25 Drainage features, including both conventional piped networks and pump infrastructure are typically owned by the statutory drainage undertaker (Thames Water), by private householders or management company. The mix of ownership would be determined at detailed design stage, however it is likely that main foul drainage network, including pump infrastructure, would be owned and maintained by Thames Water. Any unadopted pipework and drainage features serving multiple properties would be maintained by private management company, and any private pipework and drainage features within the curtilage and serving one property will be owned and maintained by the owner of that property.



5.0 Utilities Assessment

- 5.1 This Section identifies the existing utility supply infrastructure on and in the vicinity of the site in order to assess the potential for adequate provision of supplies, and whether any diversions or easements are required to facilitate the development.
- 5.2 Service records have been obtained from the relevant utility companies which have apparatus within the vicinity of the site.
- 5.3 A LineSearch enquiry was also conducted to ascertain the presence of strategic apparatus, such as apparatus belonging to oil companies or the Government. No such apparatus is indicated to be within the boundary of the site.
- 5.4 Records and information from current landowners have also been obtained to establish the location of private utility apparatus. The topographical survey has also been reviewed for evidence of any unmapped utility apparatus and to locate mapped utility apparatus more accurately than statutory records.
- 5.5 All service records obtained are shown on the Existing Services Plan included in Appendix E.
- 5.6 It should be noted that other public or private service apparatus may be present but not shown. Furthermore, service positions are taken from records and the locations of services may not be accurate. Therefore, the presence and location of all services should be determined by utility trace techniques (e.g. GPR survey) and/or trial pits at the appropriate design stage where appropriate, and prior to any excavation or construction works being undertaken on the site.

Gas

5.7 The Gas Distribution Network Operator (DNO) for Oxfordshire is Scotia Gas Networks (SGN).
Gas apparatus owned by GTC is also located in the vicinity of the site.

Existing Networks

- The records obtained from SGN indicate low pressure (LP) and medium pressure (MP) mains serving residential properties to the south of the site. 12" LP and 18" MP gas mains are indicated along the eastern and western verges of the A4165 respectively. The LP main subsequently terminates adjacent to the access to the Park and Ride, and the MP main continues through the northern end of the Golf Couse before crossing the railway and A34.
- 5.9 The records obtained from GTC indicate that a small residential development to the south of the site is served from GTC apparatus, which is itself served from SGN apparatus in Banbury Road.

Provision of Supplies

5.10 It is intended that the proposed development will not use gas.



Diversions and Easements

- 5.11 No gas diversion works are anticipated to be required in order to facilitate the development of the site.
- 5.12 It is possible that protection and/or diversion works to mains in Oxford Road may be required to facilitate the construction of any road improvements and access points to the development.

Electricity

5.13 The Electricity DNO for Oxfordshire is Scottish and Southern Energy Power Distribution (SSE), within which Southern Energy Power Distribution (SEPD) is responsible for energy distribution in Oxfordshire.

Existing Network

- 5.14 The records indicate a number of high voltage (HV) and low voltage (LV) apparatus on and in the vicinity of the site, as follows:
 - HV 11kV and LV underground cables along the eastern side of the A4165 connecting to Kidlington Park and Ride Sub-Station, and serving Pipal Cottage;
 - HV 132kV overhead lines crossing the northern corner of the site in an east-west alignment, which then turns to the south-east at the site's eastern boundary;
 - LV overhead lines serving St Frideswide's Farm, which connects to apparatus along the A4165 in the south-west corner of the site; and
 - LV underground mains networks serving residential properties to the south of the site.

Provision of Supplies

5.15 From this review of the services records it is anticipated that the proposed development could be served from existing SSE apparatus in the vicinity of the site subject to SSE review. A peak load capacity assessment has been undertaken which assumes 7.2kW electric vehicle chargers will be provided for each dwelling, and that gas will not be used on-site. This peak load assessment is currently being used to engage with SSE regarding capacity in their network and whether reinforcement is required.

Diversions and Easements

5.16 No built development is proposed to be located in the vicinity of the HV overhead lines crossing the northern corner of the site in order to avoid the need for any grounding or diversion works of these high voltage overhead lines. Clearance distances to proposed works/buildings vary depending on the line height and works proposed. SSE guidance regarding all works proposed (including planting and landscaping) under or in the vicinity of the overhead lines will be adhered to. Typically, clearance distances from the maximum swing and sag of 132kV overhead lines are 5.3m-6.6m to buildings and 6.7-7.7m to ground / road surfaces. Roads and building are indicated on the illustrative masterplan to be located a minimum of approximately 30m and 40m away from the overhead lines respectively, and as such are located well in excess of the minimum clearance distances required.



- 5.17 The LV overhead wires connecting to St Frideswide's Farm are anticipated to require grounding and diverting in order to facilitate the development of the site. There are no anticipated issues in grounding and diverting these LV overhead wires.
- 5.18 It is possible that protection and/or diversion works to mains in Oxford Road may be required to facilitate the construction of any road improvements and access points to the development.

Broadband

- 5.19 A number of broadband companies serve the area surrounding the site: BT Openreach (BT); Vodafone; and Virgin Media.
- 5.20 The records obtained from BT indicate that an underground cable is located along the eastern verge of the A4165, with an underground network also serving residential properties to the south of the site. The cable along the A4165 also serves both Water Eaton Manor and St Frideswide's Farm, via an underground cable along the track to Water Eaton Manor; and an overhead wire connecting to St Frideswide's Farm along its access track.
- 5.21 The records obtained from Virgin Media indicate an underground cable located within the eastern verge of the A4165, with an underground network also serving residential properties to the south of the site.
- 5.22 The records obtained from Vodafone indicate an underground cable located within the western verge of the A4165.
 - Provision of Supplies
- 5.23 From this review of the service records it is anticipated that the proposed development could be served by the infrastructure which currently exists within the A4165. Engagement with the broadband operator(s) would be undertaken at the appropriate time to understand whether improvements would be required within their existing networks to facilitate the provision of high-speed broadband to the new development.
 - Diversions and Easements
- 5.24 The BT overhead wires connecting to St Frideswide's Farm are anticipated to require grounding and diverting in order to facilitate the development of the site. There are no anticipated issues in grounding and diverting these BT overhead wires.
- 5.25 It is possible that the BT underground cable serving Water Eaton Manor could be retained as existing, since a vehicular route to Water Eaton Manor will be maintained through the site. However, there are no anticipated issues in diverting this cable if required.
- 5.26 It is possible that protection and/or diversion works to broadband apparatus in the A4165 may be required to facilitate the construction of any road improvements and access points to the development.



Potable Water

- 5.27 Thames Water is the provider of potable water for Oxfordshire.

 Existing Network
- 5.28 The records indicate a 16" trunk main along the western verge of the A4165, which crosses the road at the entrance to the Park and Ride and continues northwards, crossing the railway and A34. The records also indicate 4" distribution mains within the residential areas to the south of the site.
- 5.29 A water main serving Water Eaton Manor not shown on statutory records is known to cross the northern part of the site. Although not shown on records, it is expected that a water main also serves St Frideswide's Farm, connecting across the site to the strategic trunk main along the A4165.

Provision of Supplies

- 5.30 From this review of the service records it is anticipated that the proposed development could be served by the apparatus which currently exists within the A4165.
- A pre-planning enquiry was submitted to Thames Water in May 2021 which related just to PR6a and which was updated in January 2023. Thames Water's response to this enquiry indicated that the existing network only had capacity for 50 new residential dwellings. Therefore, reinforcements to the existing potable water network would be necessary in order to facilitate the development of the site. Thames Water's letter is included in Appendix H.
- 5.32 To ensure that the appropriate upgrades are made, Thames Water will need to carry out modelling work to identify where and when reinforcement works will be needed. Thames Water will undertake this modelling work at their expense once the site has secured an outline planning consent. In due course, detailed proposals will need to be provided to Thames Water, including information relating to phased development and the rate of build. The timescale for modelling, design and construction of any reinforcement works is estimated to be 20 months. If the modelling work is commenced once outline planning consent is granted, it is anticipated that the reinforcement works will be undertaken prior to first occupation of the development.
- 5.33 Ongoing liaison is underway with Thames Water to understand how the proposed development sits alongside other allocated sites within the same catchment.

Diversions and Easements

- 5.34 It is possible that protection and/or diversion works to mains along the A4165 may be required to facilitate the construction of any road improvements and access points to the development.
- 5.35 The water mains connecting to Water Eaton Manor and St Frideswide's Farm are anticipated to require diverting in order to facilitate the development of the site. There are no anticipated issues in diverting these water main(s).



Conclusions

5.36 Gas, electric, telecommunications and potable water services are all indicated within and /or in the vicinity of the site.

Provision of Supplies

5.37 Given the size of the development it is anticipated that off-site reinforcement works will be necessary in order to facilitate the development. A capacity assessment by suppliers will be required at the appropriate stage in order to determine the nature and timing of any reinforcement of local supply networks.

Diversions and Easements

- 5.38 It is possible that minor protection works to broadband, electricity cables, water mains and gas mains along the A4165 may be required to facilitate the construction of any road improvements and access points to the development.
- 5.39 It is anticipated that a number of services (electricity lines, BT cables, water mains) serving St Frideswide's Farm and Water Eaton Manor which pass through the site may be required to be grounded and/or diverted in order to facilitate the development of the site.



6.0 Conclusions

- 6.1 This Foul Drainage and Utilities Assessment has been prepared by Glanville Consultants on behalf of Bellway Homes Limited and Christ Church, Oxford with respect to an outline planning application (with all matters except access reserved for future consideration) for development of land at Water Eaton, Oxford, OX2 8HF.
- 6.2 This report outlines the existing situation with regards to foul drainage and utilities, and outlines the proposals for foul water drainage disposal, as well as utility supply and diversion.
- 6.3 This report concludes that foul water flows will need to be pumped to the existing Thames Water foul drainage network, and that reinforcement works to the existing network will need to be undertaken to provide the capacity required to serve the site. In order to ensure that the appropriate upgrades are made in the future, Thames Water will carry out modelling work, design and build the necessary improvements at their own cost, provided that outline planning consent has been secured.
- This report concludes that gas, electric, telecommunications and potable water services are all indicated within and in the vicinity of the site. Given the size of the development, it is likely that off-site reinforcement works may be necessary in order to facilitate the development. A capacity assessment by suppliers will be required at the detailed design stage in order to determine if any reinforcement of the local supply network is required.
- 6.5 It is likely that protection and/or diversion works to services along the A4165 may be required to facilitate the construction of new access points into the development, and grounding and/or diversion works required to services serving Water Eaton Manor and St Frideswide's Farm which cross the site.
- 6.6 A more in-depth investigation will be required to ascertain the precise location and depths of utilities when designing the site access and internals and arranging for potential new connections.



Appendices



Appendix A

Cherwell Local Plan Partial Review – PR6a Extract and Draft Policies Map

PR6a Oxford City

Policy PR6a - Policies Map - Land East of Oxford Road



Policy PR6a - Land East of Oxford Road

An urban extension to Oxford city will be developed on 48 hectares of land to the east of Oxford Road as shown on inset Policies Map PR6a. Development proposals will be permitted if they meet the following requirements:

Key Delivery Requirements

- I. Construction of 690 dwellings (net) on approximately 25 hectares of land (the residential area as shown).
- 2. The provision of 50% of the homes as affordable housing as defined by the National Planning Policy Framework.
- 3. The provision of a primary school with two forms of entry on 2.2 hectares of land in the location shown.
- 4. The provision of a local centre on 0.5 hectares of land in the location shown unless the location is otherwise agreed with Cherwell District Council. The Local Centre shall include provision for local convenience retailing (use class AI no more than 500 square metres net floorspace and no less than 350 square metres), ancillary business development (use class BI(a) only) and/or financial and professional uses (use class A2); a café or restaurant (use class A3); the provision of a community building to required standards providing the opportunity for social and childcare facilities, the opportunity for required health facilities to be provided and provision for required emergency services infrastructure.
- 5. The provision of facilities for formal sports, play areas and allotments to adopted standards within the developable area.
- 6. The provision of public open green space as an extension to Cutteslowe Park on 11 hectares of land in the location shown and including land set aside for the creation of wildlife habitats and for nature trail/circular walks accessible from the new primary school.
- 7. The creation of a green infrastructure corridor on 8 hectares of land incorporating a pedestrian, wheelchair and all-weather cycle route along the site's eastern boundary within the area of green space shown on the policies map. The route will connect Cutteslowe Park with Oxford Parkway Railway Station/Water Eaton Park and Ride and provide connection with the public rights of way network.
- 8. The retention of 3 hectares of land in agricultural use in the location shown.

Planning Application Requirements

9. The application(s) shall be supported by, and prepared in accordance with, a comprehensive Development Brief for the entire site to be jointly prepared and agreed in advance between the appointed representative(s) of the

landowner(s) and Cherwell District Council. The Development Brief shall be prepared in consultation with Oxfordshire County Council and Oxford City Council.

- 10. The Development Brief shall include:
- (a) A scheme and outline layout for delivery of the required land uses and associated infrastructure. Minor variations in the location of specific uses will be considered where evidence is available.
- (b) Two points of vehicular access and egress from and to existing highways, primarily from Oxford Road.
- (c) An outline scheme for public vehicular, cycle, pedestrian and wheelchair connectivity within the site, to the built environment of Oxford, to Cutteslowe Park, to the allocated site to the west of Oxford Road (policy PR6b) enabling connection to Oxford City Council's allocated 'Northern Gateway' site, to Oxford Parkway and Water Eaton Park and Ride, and to existing or new points of connection off-site and to existing or potential public transport services. Required access to existing property via the site should be maintained.
- (d) Protection and connection of existing public rights of way and an outline scheme for pedestrian and cycle access to the surrounding countryside.
- (e) Design principles which seek to deliver a connected and integrated urban extension to Oxford and which respond to historic setting of the city.
- (f) Outline measures for securing net biodiversity gains informed by a Biodiversity Impact Assessment in accordance with (11) below.
- (g) The sites for the required school and the Local Centre.
- (h) An outline scheme for vehicular access by the emergency services.
- II. The application(s) shall be supported by the Biodiversity Impact Assessment (BIA) based on the DEFRA biodiversity metric (unless the Council has adopted a local, alternative methodology) to be agreed with Cherwell District Council.
- 12. The application(s) shall be supported by a proposed Biodiversity Improvement and Management Plan (BIMP) informed by the findings of the BIA and habitat surveys and to be agreed before development commences. The BIMP shall include:
- (a) Measures for securing net biodiversity gain within the site and within the residential area and for the protection of wildlife during construction.
- (b) Measures for retaining and conserving protected/notable species (identified within baseline surveys) within the development.

- (c) Demonstration that designated environmental assets will not be harmed, including that there will be no detrimental impacts down-river in the Cherwell Valley through hydrological, hydro-chemical or sedimentation impacts.
- (d) Measures for the protection and enhancement of existing wildlife corridors.
- (e) The creation of a green infrastructure network with connected wildlife corridors, including within the residential area, and the improvement of the existing network including through the protection/enhancement of the existing hedgerow network and the protection of mature trees.
- (f) Measures to minimise light spillage and noise levels on connective features and other habitat features of biodiversity value.
- (g) The protection of the orchard and waterbody adjoining the site at St. Frideswide Farm.
- (h) Farmland bird compensation.
- (i) Proposals for long-term wildlife management and maintenance including for the wildlife habitats accessible from the primary school.
- (j) A scheme for the provision for in-built bird and bat boxes, for wildlife connectivity between gardens and for the viable provision of designated green walls and roofs.
- 13. The application(s) shall be supported by a phase I habitat survey including habitat suitability index (HSI) survey for great crested newts, and protected and notable species surveys as appropriate, including great crested newt presence/absence surveys (dependent on HSI survey), surveys for badgers, breeding birds and reptiles, an internal building assessment for roosting barn owl, a tree survey and an assessment of the watercourse that forms the south-eastern boundary of the site and Hedgerow Regulations Assessment.
- 14. The application(s) shall be supported by a Transport Assessment and Travel Plan including measures for maximising sustainable transport connectivity, minimising the impact of motor vehicles on new residents and existing communities, and actions for updating the Travel Plan during construction of the development.
- 15. The application shall be supported by a Heritage Impact Assessment which will identify measures to avoid or minimise conflict with the identified heritage assets within the site, particularly the Grade 2* Listed St Frideswide Farmhouse. These measures shall be incorporated or reflected, as appropriate, in any proposed development scheme.
- 16. The application shall be supported by a Flood Risk Assessment informed by a suitable ground investigation, and having regard to guidance contained within the Council's Level 2 Strategic Flood Risk Assessment. A surface water management framework shall be prepared to maintain run-off rates to

greenfield run-off rates and volumes, with use of Sustainable Drainage Systems in accordance with adopted Policy ESD7, taking into account recommendations contained in the Council's Level I and Level 2 SFRAs.

- 17. The application should demonstrate that Thames Water and the Environment Agency have been consulted regarding wastewater treatment capacity and agreement has been reached in principle that foul drainage from the site will be accepted into the drainage network.
- 18. The application(s) shall be supported by a desk-based archaeological investigation which may then require predetermination evaluations and appropriate mitigation measures. The outcomes of the investigation and mitigation measures shall be incorporated or reflected, as appropriate, in any proposed development scheme.
- 19. The application(s) shall include proposals for securing the long-term use, management and maintenance of the community building, formal sports provision and play areas.
- 20. The application shall include a management plan for the appropriate re-use and improvement of soils.
- 21. The application(s) shall include proposals for securing the use, management and maintenance of the public open green space / extension to Cuttelowe Park and agricultural land in perpetuity.
- 22. A single comprehensive, outline scheme shall be approved for the entire site. The scheme shall be supported by draft Heads of Terms for developer contributions that are proposed to be secured by way of legal agreement. The application(s) shall be supported by a Delivery Plan demonstrating how the implementation and phasing of the development shall be secured comprehensively and how individual development parcels, including the provision of supporting infrastructure, will be delivered. The Delivery Plan shall include a start date for development, demonstration of how the development would be completed by 203 I and a programme showing how the site will contribute towards maintaining a five year supply of housing.
- 23. The application shall include an Employment, Skills and Training Plan to be agreed with the Council.

Place shaping principles

24. A layout, design and appearance for a contemporary urban extension to Oxford city that responds to the 'gateway' location of the site, is fully integrated and connected with the existing built environment, maximises the opportunity for sustainable travel into Oxford, provides a high-quality, publicly accessible and well connected green infrastructure and ensures a sensitive relationship with the site's Cherwell Valley setting.

- 25. The provision of a landscaped green infrastructure corridor at the eastern settlement edge which links Cutteslowe Park to Oxford Parkway, minimises the visual and landscape impact of the development, creates an appropriate setting to the Listed St. Frideswide Farmhouse and Wall, and provides a clear distinction between the site and the Green Belt.
- 26. The provision of connecting green infrastructure corridors running east-west across the site.
- 27. The provision of an active frontage along Oxford Road while maintaining a well treed streetscape.
- 28. The public open green space/extension to Cutteslowe Park and agricultural land to be kept free of buildings to avoid landscape impact.
- 29. The location of archaeological features, including the tumuli to the east of the Oxford Road, should be incorporated and made evident in the landscape design of the site.
- 30. Layout and design that encourages the sustainable and safe management of waste by individual households and by residents collectively while minimising the visual and pollution impacts.



Appendix B

Illustrative Masterplan





Buildings



Public open spaces and gardens



Existing and proposed trees

Drainage ponds (some will be permanently wet, some dry except



Allotments



Community gardens/ orchards



Destination play area



Play areas



Indicative locations for pedestrian/cycle off-site connection



Shared streets, cycleways, footpaths and leisure route through GI corridor



Vehicular entrance to the site



Carriageway

PR6a, North Oxford

in storm events)

on behalf of Bellway Homes Limited and Christ Church, Oxford

drawing no.	42	drawing	Illustrative I	Masterplan	
revision	Т	scale	1:5,000 @A3	job no.	477898
drawn by	AR	checked by	RL	date	17/01/2024

Urban Design Studio



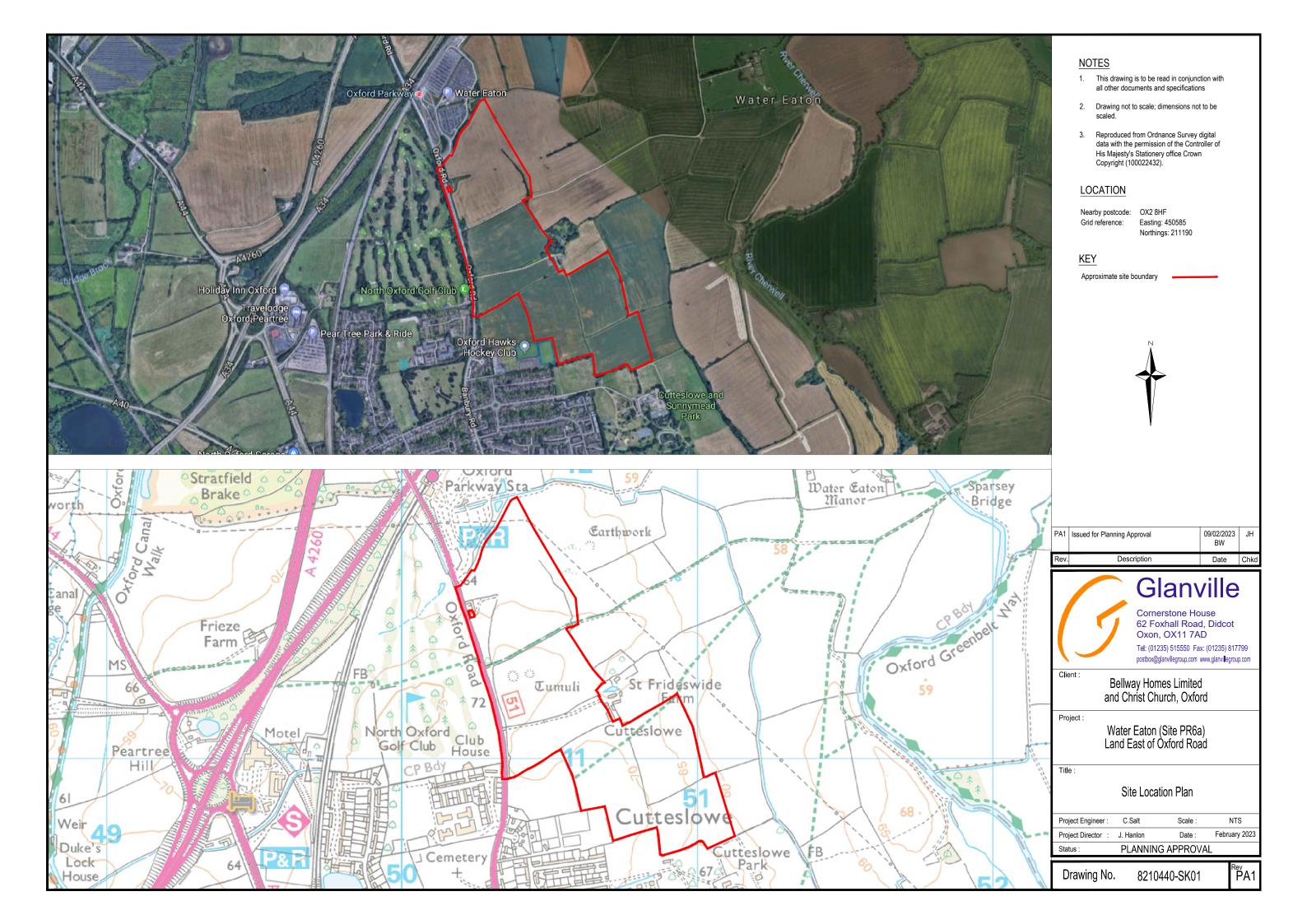
Reproduced from the Ordnance Survey Map with the permission of the Controller of H.M. Stationery Office Crown copyright licence number 100024244 Savills (UK) Ltd. Published for the purposes of identification only and although believed to be correct accuracy is not guaranteed. C:\Users\clare.mitchell\Box\UK Urban Design Projects\Christ Church Water Eaton Est\B) Drawings\INDD\477898 - INDD01 - PR6a Drawing Sheets 18/01/24 © Copyright Savills (UK) Ltd.

0 50 100 150 200 SCALE (m) [1:5000]



Appendix C

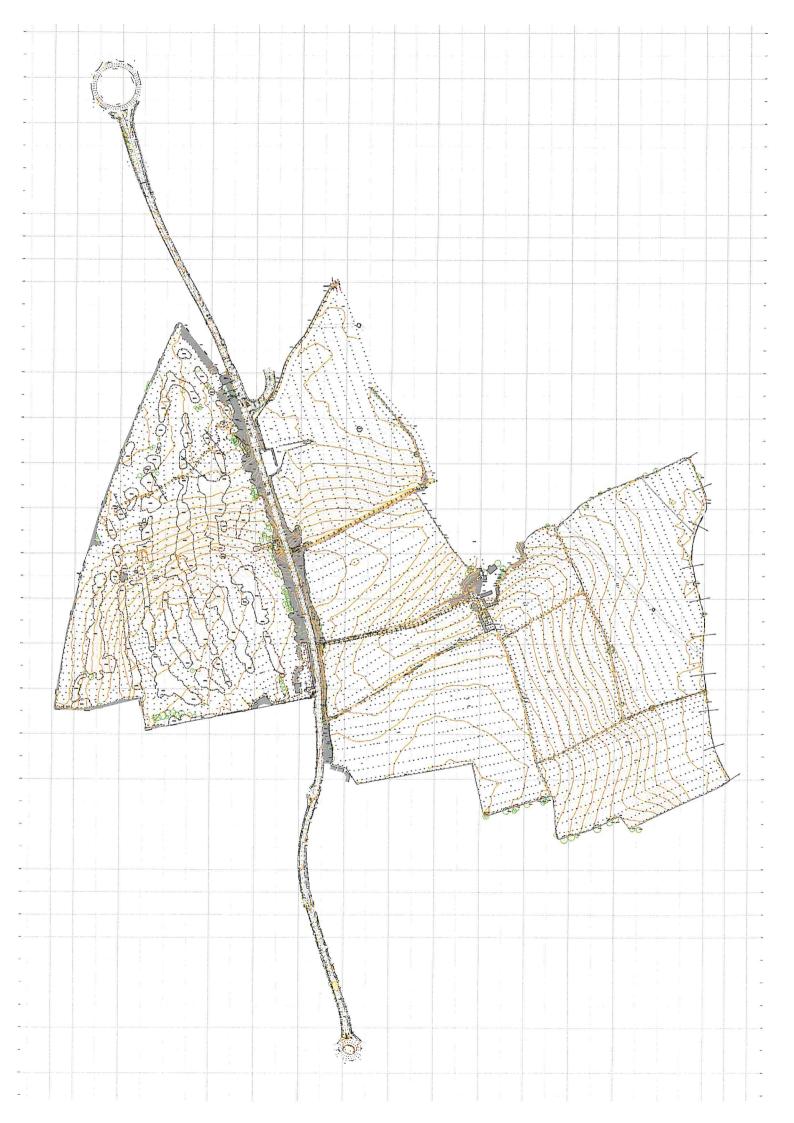
Site Location Plan





Appendix D

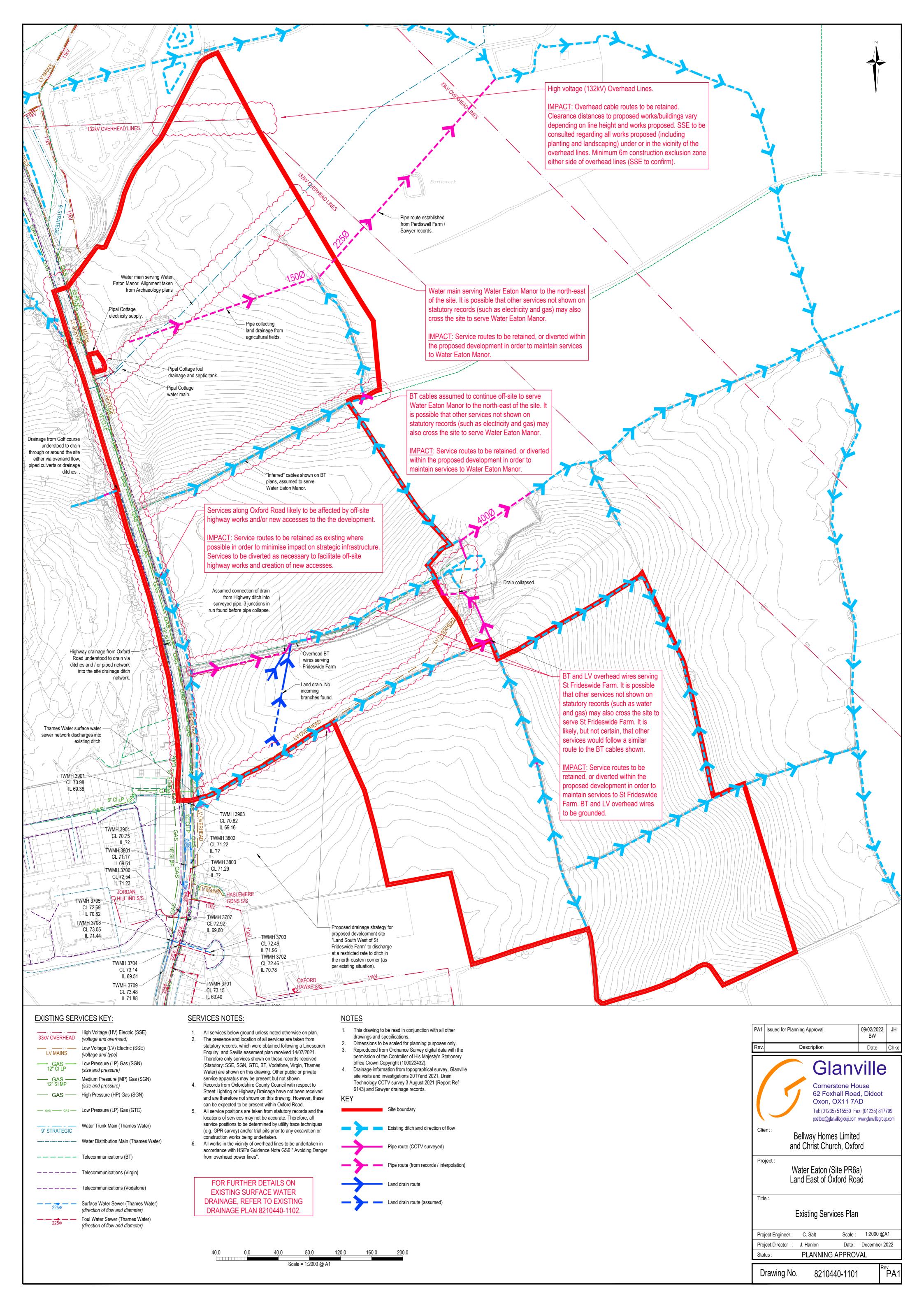
Topographical Survey





Appendix E

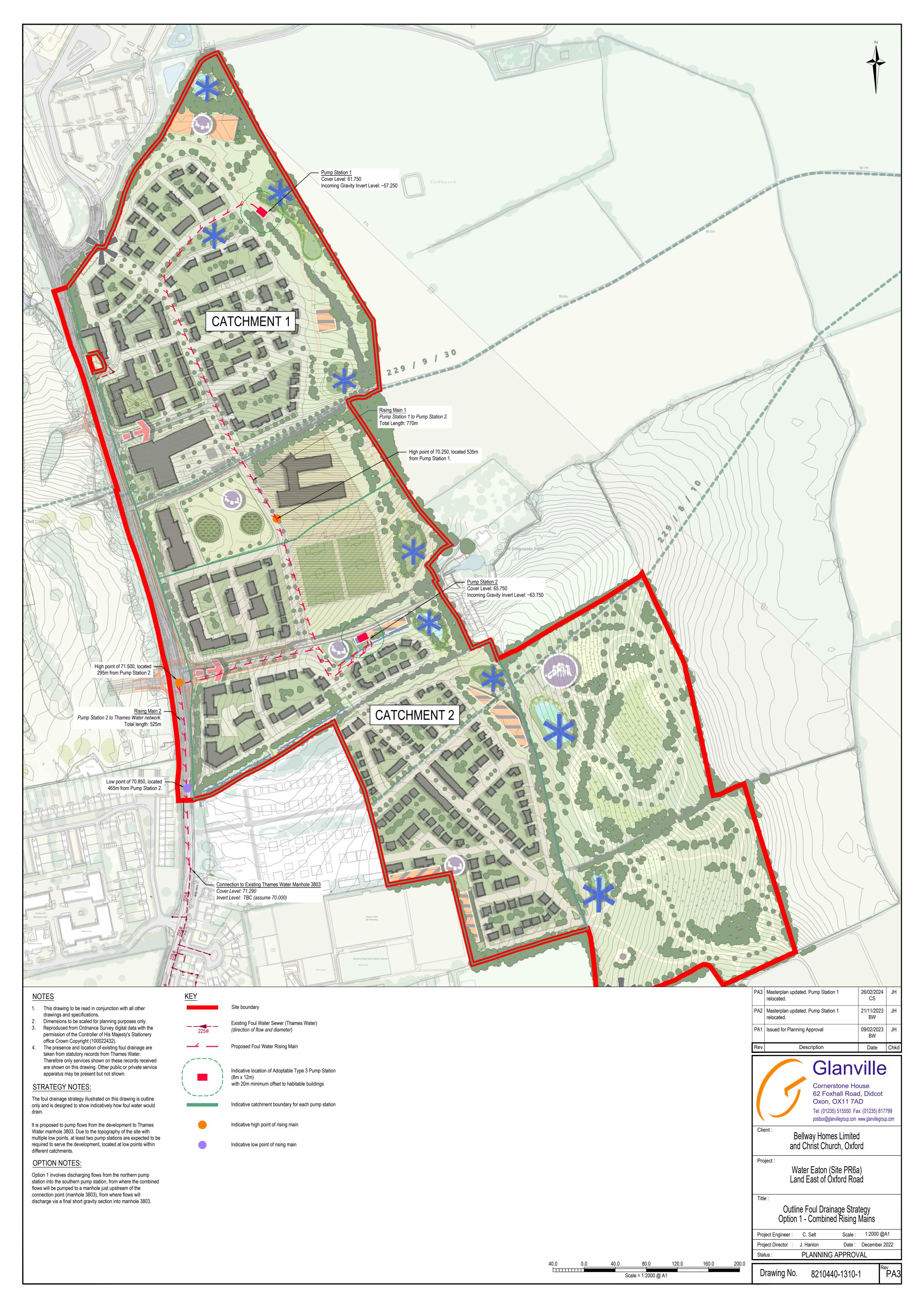
Existing Services Plan

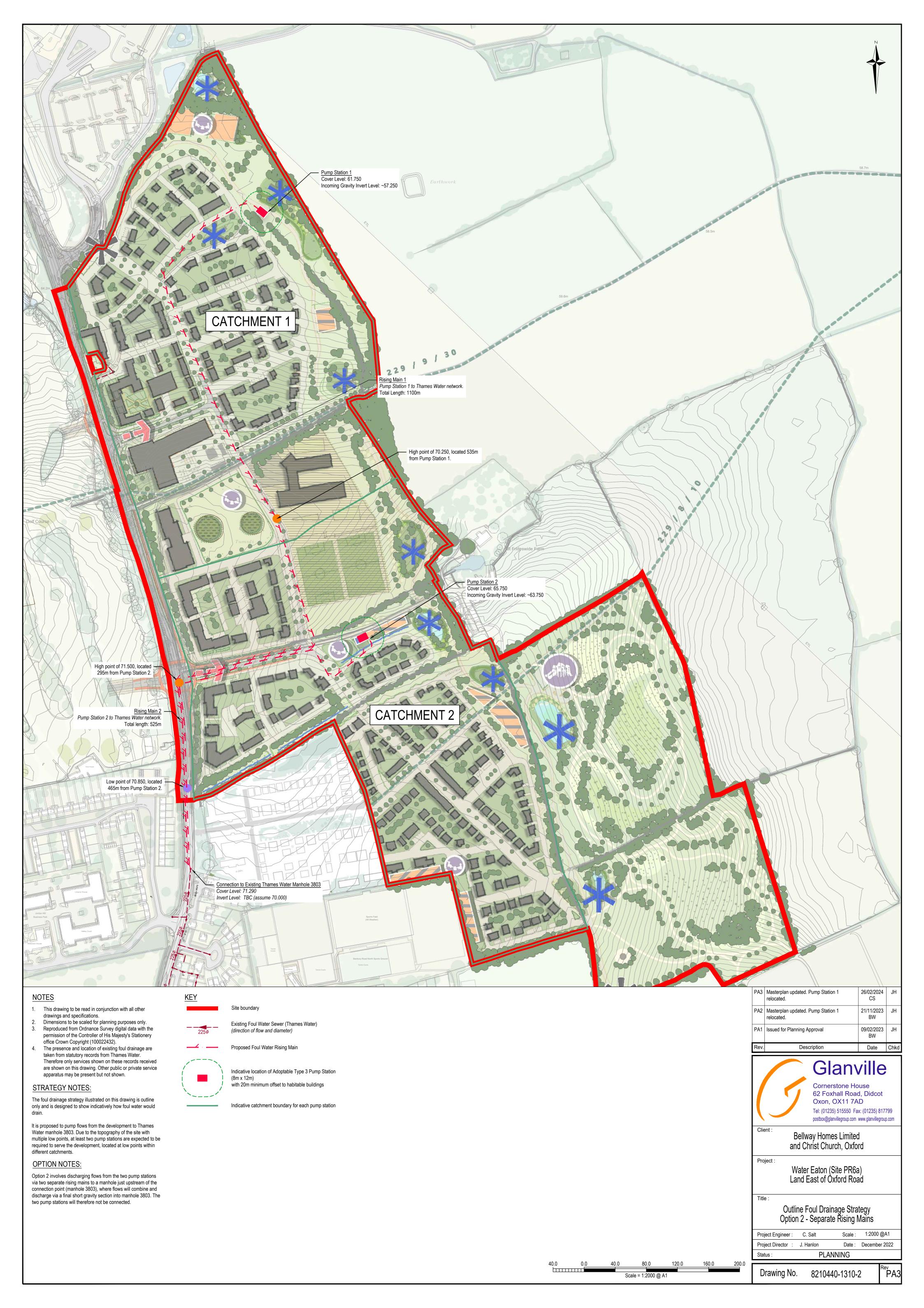




Appendix F

Outline Foul Drainage Strategy







Appendix G

Foul Drainage Flow Calculations

Water Eaton, Oxford (PR6a) Foul Water Peak and Pump Flow Rates

Rev 6: Masterplan update

Туре	Unit	Quantum	DWF I/unit/day	Peak I/unit/day	Peak I/day	Peak I/s	Pump 1, 2 I/s	Source of I/unit/day data
Dwellings	-	800	-	4000	3,200,000	37.04	18.52	Sewer Design and Construction Guidelines
Primary School ³	Pupils	630	90	540	340,200	11.81	5.91	Flows and Loads 4 (90 I/p/day, 8 hour day)
Retail (E(a))	m ²	500	-	112320	5,616	0.07	0.03	Sewer Design and Construction Guidelines (1.3 l/s/ha)
Business Development (E(g)(i)) or Financial and Professional (E(c))	m²	500	-	112320	5,616	0.07	0.03	Sewer Design and Construction Guidelines (1.3 l/s/ha)
Café/restaurant (E(b)) 4	Seat	50	90	540	27,000	0.94	0.47	Flows and Loads 4 (301/cover/day, 3 covers, 8 hour day)
Community building (E and F2)	Users	400	15	90	36,000	1.25	0.63	Flows and Loads 4 (15 I/p/day/event, 8 hour day)

TOTAL: 51.2 25.6

Peak flows = 6 x DWF

² Pumped flow rates based on 50% peak flow rates, Actual pumped flow rates may be higher to achieve minimum flow velocity.

³ Two-form entry primary school proposed, however a three-form entry primary school is assessed for a future expansion scenario to ensure that the pump station capacity and network capacity exists for this scenario.

⁴ Number of seats based on 200sqm



Appendix H

Thames Water Correspondence



Mr Neville Surtees

Savills (UK) Ltd Wytham Way 11 West Way Oxford OX2 0QL



24 January 2023

Pre-planning enquiry: Capacity concerns

Dear Mr Surtees

Thank you for providing information on your development located on Land East of Oxford Road, Oxford for the construction of up to 800 dwellings, a two-form primary school, a 500sqm local centre comprising, up to 500 sqm retail area, 500 sqm business and/or financial and professional use, up to 200 sqm a café or restaurant and community building.

Foul water will use a pumping station with flows up to 25.6l/s which will connect into chamber 3803 or 3706 near no 2 Banbury Road.

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

We've assessed your **foul water** proposals and concluded that our sewerage network does not have enough capacity to meet the needs of your development at this time.

In order to ensure we make the appropriate upgrades – or 'off-site reinforcement' – to serve the remainder of your development, we'll need to carry out modelling work, design a solution and build the necessary improvements. This work is done at our cost.

Once we've begun modelling, we may need to contact you to discuss changing the connection point for capacity reasons. Please note that we'll pay the cost of covering any extra distance if the connection needs to be made at a point further away than the nearest practicable point of at least the same diameter.

How long could modelling and reinforcement take?

Typical timescales for a development of your size are:

Modelling: 8 months
Design: 6 months

Construction: 6 months

Total: 20 months

If the time you're likely to take from planning and construction through to first occupancy is longer than this, we'll be able to carry out the necessary upgrades in time for your development. If it's shorter, please contact me on the number below to discuss the timing of our activities.

What do you need to tell us before we start modelling?

We will only carry out modelling once we're confident that your development will proceed. In order to have this confidence, we'll need to know that you **own the land and have either outline or full planning permission**. Please email this information to us as soon as you have it.

If you'd like us to start modelling work ahead of this point, we can do this if you agree to underwrite the cost of modelling and design. That means we'll fund the work – but you agree to pay the cost if you don't achieve first occupancy within five years.

If the modelling shows we need to carry out reinforcement work, then before we start construction we'll need you to supply us with notification that you've confirmed your F10 – Notification of construction project - submission to the Health and Safety Executive.

Surface Water

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

The disposal hierarchy being:

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

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

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

What do I need to do next?

If you've satisfied the points above, then you should compare your own timeline with the typical timescales we've suggested for our activities. If the time you're likely to take from planning and construction through to first occupancy is **more** than the total time we're likely to take, we'll be able to carry out the necessary upgrades in time for your development.

If it's **less** than this, you might want to ask us to start modelling earlier – in which case we'll require you to underwrite the cost, as noted above.

If you've any further questions, please contact me on 0203 5779811.

Yours sincerely

Andrew John

Andrew John

Adoption Engineer

Developer Services – Adoptions Engineer, Sewer Adoptions Team



Your reference: DS6084752

Your site address: PR6a, Land East of Oxford Road, Oxford, Oxon, OX2 8HF

Customer: Glanville Consultants

Clean water capacity report

Status: Capacity concerns

Date: 17.01.2023

Validity: Valid until 17.01.2023 or for the duration of your Local Authority planning permission when this report is used to support your application.

We confirm that there will be sufficient capacity in our clean water network to serve the first 50 domestic properties of your development:

However, we're unable to confirm capacity for your whole development of up to 800 dwellings, primary school, 500sqm retail, 500sqm office, 200 sqm restaurant and community centre, without further investigation. How to make a request for us to progress with network modelling activity is listed in the accompanying email.

Please be aware that this report is based upon the details and drawings provided. If there are any subsequent changes to these, then the contents of this report will become invalid and a new assessment will be needed.

Please note that the below POC is based on desktop study and it might change after capacity check study or site-specific survey.

Nearest point of connection





Contaminated land

If your site is on contaminated land, any new water pipes laid should be barrier pipe which is more expensive. If you think this is not the case you will need to provide a soil report when applying for new mains and services.

Building near our assets

Please <u>read our guide</u> 'working near our assets' to ensure your workings will be in line with the necessary processes you need to follow if you're considering working above or near our pipes or other structures. Should you require further information please contact us.

Diversions

From our records we don't anticipate that any clean water assets need to be diverted to accommodate your proposals.

Building water

It's important that you apply for a building water supply before you start using water on site even if you believe your supply is already metered. We need to ensure your account is properly set up and you have the correct meter for your supply or fines maybe imposed. Apply here.

Fire hydrant and sprinkler demand

Please note that we cannot confirm whether a fire hydrant or sprinkler demand can be accommodated on a new connection. You'll need to contact an independent consultant or specialist company for hydrant testing for fire-fighting purposes. Valve operations must be carried out by our Network Service Technician which can be booked on 0800 316 9800.

Asset location search

If you need help in identifying the location of existing water mains and sewers, you can get this information from any property search provider. We have a Property Searches team who will carry out an asset location search, which provides information on the location of known Thames Water clean and/or wastewater assets, including details of pipe sizes, direction of flow and depth (for which a fee is payable). You can find out more online or by calling us on 0845 070 9148.

Quotation process

Please use links below to find out more information about water main and services connections, including application process.

Click here for our home improvements website, or click here to apply for clean water services.

Issued on behalf of the Clean Water Pre-Planning team, Developer Services, Thames Water, Clearwater Court, Vastern Road, Reading, RG1 8DB



Cornerstone House, 62 Foxhall Road Didcot, Oxfordshire OX11 7AD

01235 515550 postbox@glanvillegroup.com www.glanvillegroup.com

- Structural Engineering
- Transport and Highways
- Civil Engineering
- Geomatics
- Building Surveying