

Highgate School MSC Phases 2 to 4

Utilities Assessment



January 2023

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- 1Introduction
- 1.1This Utilities Assessment presents the utilities approach that has informed the design of the proposed development. This report includes information on:
- Existing service entry points

• Existing surface and foul water drainage points

• Proposed utilities and services
 - Gas
 - Electricity
 - Water
 - Foul and Surface Water
 - Communications.

Site

- 1.2The Mallinson Sports Centre (MSC) is located on the Bishopswood Road campus of the school estate near other principal school buildings such as the Mills Centre, the Dining Hall, the Pre-preparatory School, and the Junior School.
- Site address

Mallinson Sports Centre

Bishopswood Road,

London.

N6 4PH
- 1.3The main building comprises the Pool Hall and associated changing rooms, which was the first building on the site in 1969, followed by the main sports hall with associated ancillary accommodation, gym, entrance hall, central offices and other sports spaces completed in 1989.
- 1.4The overriding aim of the design seeks to transform this building and create enhanced building aesthetics within the Conservation Area whilst providing all the sports and ancillary-related facilities that the School will need soon.
- 1.5The intention is to retain the essential elements of the existing building that have significant long-term value and condition, providing spaces of the required technical standard, and integrating them with alterations and extensions into a unified whole, a single sports centre.
- 1.6The new sports hall is the principal component of the proposed development of the School's indoor sports facilities. As part of the work, the School intends to demolish the existing Fives Court and Squash Courts building to open a large area within the site that can be more efficiently and architecturally developed. These works are also designed to incorporate a new sports centre building comprising an indoor sports hall, teaching classrooms and staff offices.
- 1.7The intent is to accommodate a National Standard Netball Court within the hall, one that will allow Premier League games to be played. There is an aspiration nationally for netball courts of this standard, for a sport that is increasing in popularity. Many other sports courts will fit within this same interior footprint.

The Vision

- 1.8The proposed development is auxiliary to several other applications in various parts of the School. The vision behind all the proposed developments at the School is set out in the planning statement accompanying the applications, an extract of which is reproduced as follows:

"Being both a Charity and a School, sustaining and further improving what Highgate does for the benefit of its pupils and pupils of partner schools elsewhere within the borough is never finished business."
"The School has, over the last 15 years or so, been undertaking an extensive programme of modernising and renewing its extensive and mixed stock of buildings and facilities to meet the educational and other demands of a 21st Century establishment. Significant funds have been invested over that period, and the programme will continue over the next decade."
"This programme combines the continuing need to maintain, both in terms of safety and appearance, the buildings on several sites and in varying degrees of condition, with the need to provide essential, flexible, good quality and long-lasting educational facilities for its varied educational and charitable objectives, as well as catering for its diverse pupil-body, which meets the different educational and supporting requirements for each of the three Schools to satisfy Department of Education (DfE) and other statutory requirements."

Community Uses

- 1.9The MSC sports centre is currently available to the community as a private sports club with membership. There are public uses for the outdoor pitches and the indoor sports centre, including other schools and sports clubs. In the holidays there are also holiday camps and other activities. The options for public use are noted as follows on the Camden Cindex website:

Private school facilities are available to the public. Term-time sports activities for children aged 5-14. School holiday courses include multi-activity, football, cricket, tennis, and dance. Facilities for adults include squash, fitness suite and tennis (courts available), 25m x 12.5m swimming pool. Children's parties for 5-15-year-olds (maximum 25 children) are available at weekends, including a variety of sports options and games and swimming sessions. Bouncy castle party available for children aged 5-7 years. Swimming club.



Figure 1 Aerial View of the site in Red

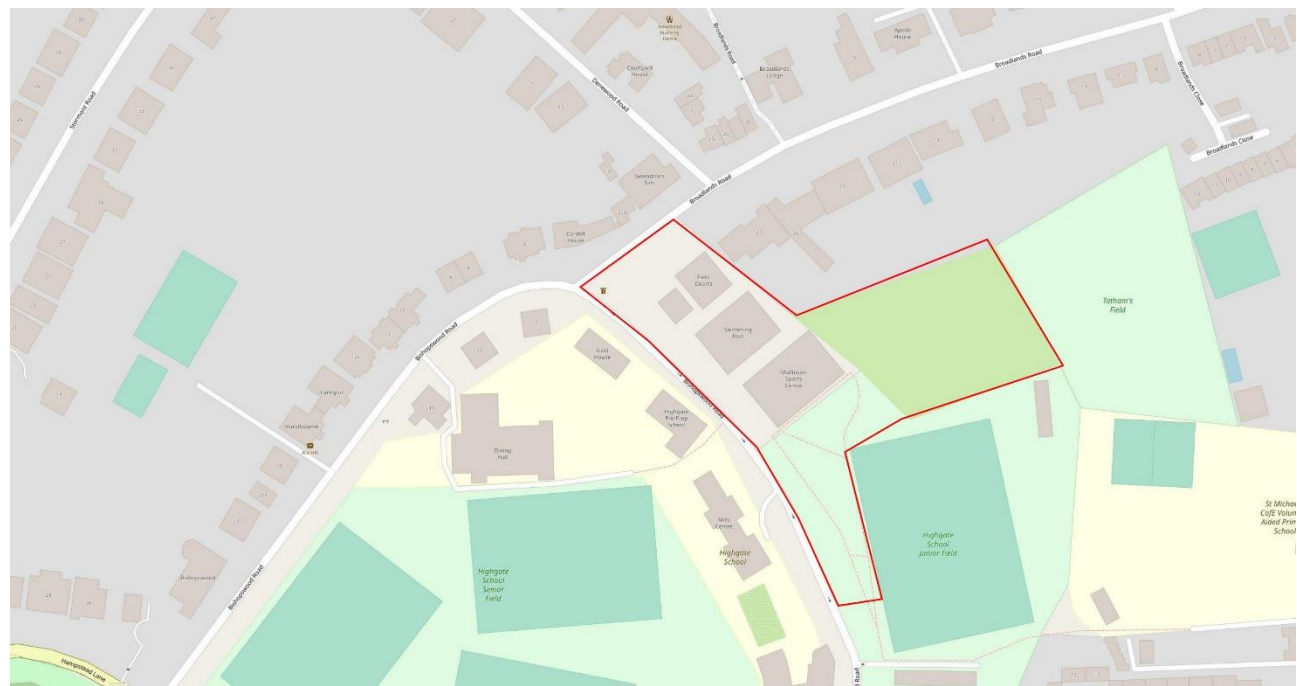


Figure 2 Site Location in Context (Open Street Map)

The Proposed works

1.10 The new extensions will create a larger building with various sports facilities, including a second sports hall, which will also be used for other School events, parent evenings, examinations, and assemblies.

1.11 The principle of a single secure point of access at the south end is to be maintained, with a larger and more open entrance and foyer fronting the all-weather pitches. Once inside the foyer via a draught lobby, the main Sports Centre reception desk immediately controls the area, which will always be staffed during regular operational hours. The desk will be open within the space to create a friendly and welcoming impression for pupils and visitors and improve visibility. It is anticipated that turnstiles will be used to control and monitor access into the sports centre – Turnstiles are provided at the west entrance next to the second hall. Turnstiles and entry doors would all be linked to the building fire alarm and detection system and default to open in the event of a fire for emergency egress.

1.12 As a result of the proposed extensions, new lifts will allow complete accessibility for disabled users to all areas of the building which is not currently wheelchair accessible.

1.13 Generally, during the school Day, the main doors will be openable, the entry doors being on automatic electric opening systems for disabled and Part M access. After School hours, it is anticipated that the main doors at both entrances will have access security control, operated by coded entry devices with magnetic closing locks. An option being investigated is to have the entry systems operated by pupil and staff cards, which will also serve several other functions in the School.

- 1.14 The proposed works in this submission include:
- The Fives Court and Squash Courts building is being demolition at the site's north end. The removal of the outer games court area and high chain-link fencing.
 - a. New north-west extension for a second indoor sports hall with associated:
 - b. new circulation corridor,
 - c. viewing gallery,
 - d. access stairs and lift,
 - e. ancillary spaces for storage and plant, and
 - f. A teaching block extension for 'Combined Cadet Force' and 'Outdoor Education' classrooms, offices, and associated storage.
 - A new south extension to the existing sports hall for eight (8) no. New external covered Fives Courts with run-off area.
 - New southwest extension and alterations to the existing building to create an enhanced entrance with a foyer, reception, and café. Including a bespoke staircase down to the current changing rooms.
 - New roof to sports hall 1 with new roof lights adding natural daylight to the and improved thermal comfort.
 - The courtyard between the pool hall and sports hall 1 will be covered to provide additional space. The space provides new dance studio and weights gym spaces and forms connections back to the changing rooms, with ancillary external storage for sports.
 - The external surrounding is improved with new hard and soft landscaping around the site's perimeter, including removing three trees. The trees will be replaced with new semi-mature trees and form an entrance courtyard area at the new south main entrance.

1.15 The recently completed swimming pool project is the first phase of these works and provides the changing room facilities for the following sports hall phases.

1.16 The proposed works will modernise this important indoor sports facility with alterations and extensions and

significantly extend the life of the retained elements of the existing building while also providing significant improvements to accessibility, energy efficiency and reduction of the carbon footprint of the whole development.

Landscaping & External Works

- 1.17 The design strategy for the new sports centre is to:
1.

Create new landscape areas which maximise the amount of planting so that the new building becomes a recognisable and embedded part of the School's landscape and estate.
2.

Introduce new tree planting.
3.

Provide low-level, safe, and efficient lighting for students and visitors.
4.

Surface the paths with permeable paving as part of a sustainable drainage system.
5.

Utilise a no-dig construction methodology to prevent damage to tree roots where necessary.
- 1.18 The design strategy for the Orchard site is to:
1.

Create a new outdoor sports area with a unique and elegant oval-shaped amphitheatre that will provide seating around the pitch and act as a barrier and flood water storage device to prevent future flooding events.
2.

Introduce new tree planting.
3.

Provide accessible and safe access to the sports pitches for students and visitors and connect with other areas of the School.
4.

Utilise a no-dig construction methodology to prevent damage to tree roots where possible.
5.

Minimise any impacts on the most valuable, existing trees around the site.
- 1.19 There are mature trees around the site perimeter, between the MSC and the Orchard site, and all-round and to the east of the Orchard site, where there is a small natural wood.

Power Requirement

Electricity	270kVA	From the new school substation
GAS		
Pool	U65 meter	600kW
New Dry Sport hall	U40 Meter	350kW
Existing Dry Sports hall	U40 Meter	350kW

Table 1 New Utilities for the sports centre

2 Local Polices

London Plan

London Plan Policy SI 5 Water Infrastructure

Development proposals should:

1)

seek to improve the water environment and ensure that adequate wastewater infrastructure capacity is provided.

2)

take action to minimise the potential for misconnections between foul and surface water networks.

London Plan Policy SI 5 Water Infrastructure

Development proposals should:

1)

through the use of Planning Conditions minimise the use of mains water in line with the Optional Requirement of the Building Regulations (residential development), achieving mains water consumption of 105 litres or less per head per day (excluding allowance of up to five litres for external water consumption)

2)

achieve at least the BREEAM excellent standard for the 'Wat 01' water category or equivalent (commercial development).

3)

incorporate measures such as smart metering, water saving and recycling measures, including retrofitting, to help to achieve lower water consumption rates and to maximise future-proofing.

Haringey Local Development Plan

Haringey Local Plan SP5 Water Management And Flooding

The Council will require all development in Haringey to be water efficient during construction and operation and to reduce all forms of flood risk. All development shall:

•

Improve the water environment, water quality and drainage systems;

•

Minimise water use and illustrate how development would contribute to general and flash flooding;

•

Take account of flood risk vulnerability classification as set out in paragraph 100 of the NPPF and will apply the NPPF Sequential Test and Exception Test;

•

Implement measures to prevent (or mitigate as last resort) local surface water and downstream flooding;

•

Implement Sustainable Drainage Systems from strategic to individual site level to improve water attenuation, quality and amenity;

•

Restore and enhance the Blue Ribbon Network including Pymmes Brook, Moselle Brook, the River Lee and its tributaries, deculverting wherever feasible, to improve water quality and amenity of these waterways and to help reduce flood risk (in line with London River Action Plan); and

•

Require higher resilience and levels of flood protection for critical infrastructure to ensure the protection of essential services such as water and power.

In order to facilitate this, the Council:

•

Has carried out a joint SFRA (Strategic Flood Risk Assessment) Stage 1 for the whole borough;

•

Has carried out a Sequential Test for the Areas of Development (Growth Areas and Areas of Change);

•

Is carrying out, in association with other north London boroughs in the Drain London sub-region, a Surface Water Management Plan to identify issues with drainage networks and the effects of new development.

Haringey Local Policy DM30: New Waste Facilities

Development proposals for all new waste facilities (including transfer and treatment facilities) will be required to demonstrate that any impacts caused by the facility's operation can be controlled such that the facility will not significantly adversely affect human health and the environment in line with regulatory requirements.

Electricity

2.1

The Highgate school are planning several developments on both sides of Bishopswood Road requiring additional electricity supplies. The School estate has been recently upgraded with the installation of a new 1500kVA transformer which will provide an upgraded electricity supply to future phases of the Mallison Sports centre and accommodate the increase for all planned school developments

2.2

The proposal is to utilise the recently upgraded 1500kVA substation within school grounds to supply all the school buildings along Bishopswood Road eventually. The project team have applied for the increased power supply and agreed on the location of the new transformer and the method for the school building to be reconnected to the new substation switch room.

2.3

Supplying the school buildings from a single location will enable the School to maximise the use of zero Carbon electricity generated from PV arrays on the various buildings. Any surplus electricity generated on one building will back feed along the network into another school building without a PV array.

2.4

The project team has made an application for the works with UKPN for a new high voltage power supply to the School with the construction of a new transformer switch room and new cable ducts under Bishopswood Road. See Figure 3 below and the appendix

The diagram illustrates the proposed electrical supply network for the West and East sides of Bishopswood Road. On the West side, a 'New substation 1500kVA (470kVA Spare)' and a 'New Main 1500kVA Meter & Switch Room' are connected to a 'Refurbished Dining hall and new Pre-prep dining 270kVA' and an 'Existing Mills Centre 200kVA'. A 'UKPN network + 200kVA' is also shown. On the East side, a 'New Mallinson Sports centre phases 1-4 270kVA' is connected to an 'East side Switch room 560kVA', which in turn supplies a 'Refurbished Rifle range 20kVA' and a 'Temporary Classroom 270kVA'. A 'UKPN network + 210kVA' is also indicated. The diagram is titled 'West side 1500kVA Substation - Long term development electricity requirements' and 'Peter Deer and Associates 4276-SK190403dc'.

Figure 3 Proposed New Electrical Supply

Highgate School MSC Phases 2 to 4
4309-230110ac ~ HGS MSC Phase 2-4 - Utilities.docx

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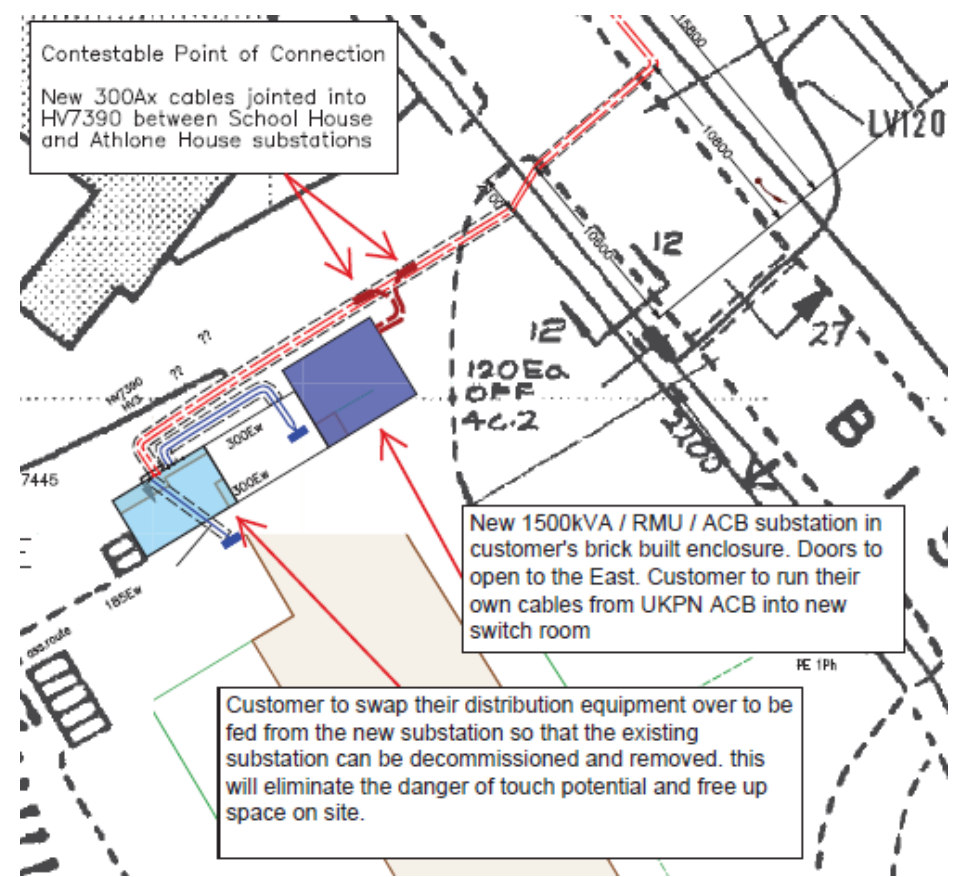


Figure 4 Location of New 1,500 kVA Transformer and Switch Room

3 Water

3.1 The design proposals do not require the installation of new water mains for the new buildings, which will be supplied from the existing water supply to the refurbished swimming pool. The MSC Sports centre changing rooms have been upgraded as part of the swimming pool refurbishment works. The new building only contains WC and hand washing facilities for staff and visitors.

3.2 All taps will use water-saving technologies such as low water rate taps and reduced flush WC.

4 Gas

4.1 The design proposal requires re-routing of existing gas supply serving pool hall plantroom and existing sports hall plantroom.

4.2 The proposed new sports hall will be designed to utilise high efficiency heat pumps for space heating and domestic hot water generation therefore, gas supply will not be provided to the new sports hall.

4.3 The proposal also includes replacing existing gas fired boilers serving the existing sports hall with new high efficiency air source heat pumps to provide space heating and domestic hot water generation.

4.4 An application to Fulcrum for the new (re-routed) gas supply has been submitted on the 12 July 2019 project reference 5095104/PQ176399. See Appendix B Nation Grid Gas Services Layout.

Building	Phase	Capacity	Meter	Predicted Annual Load
Pool Hall	1	600kW	U64	824,900 kWh

Table 2 Required gas supply

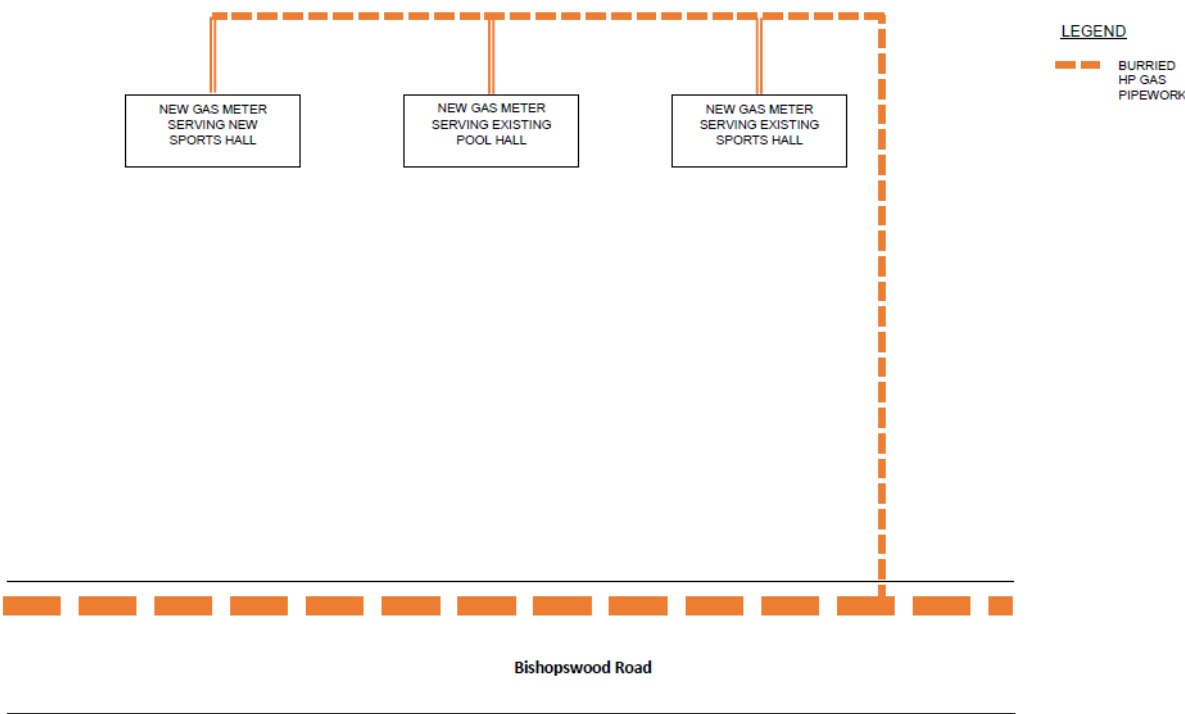


Figure 5 Proposed New gas supply from Bishopswood Road.

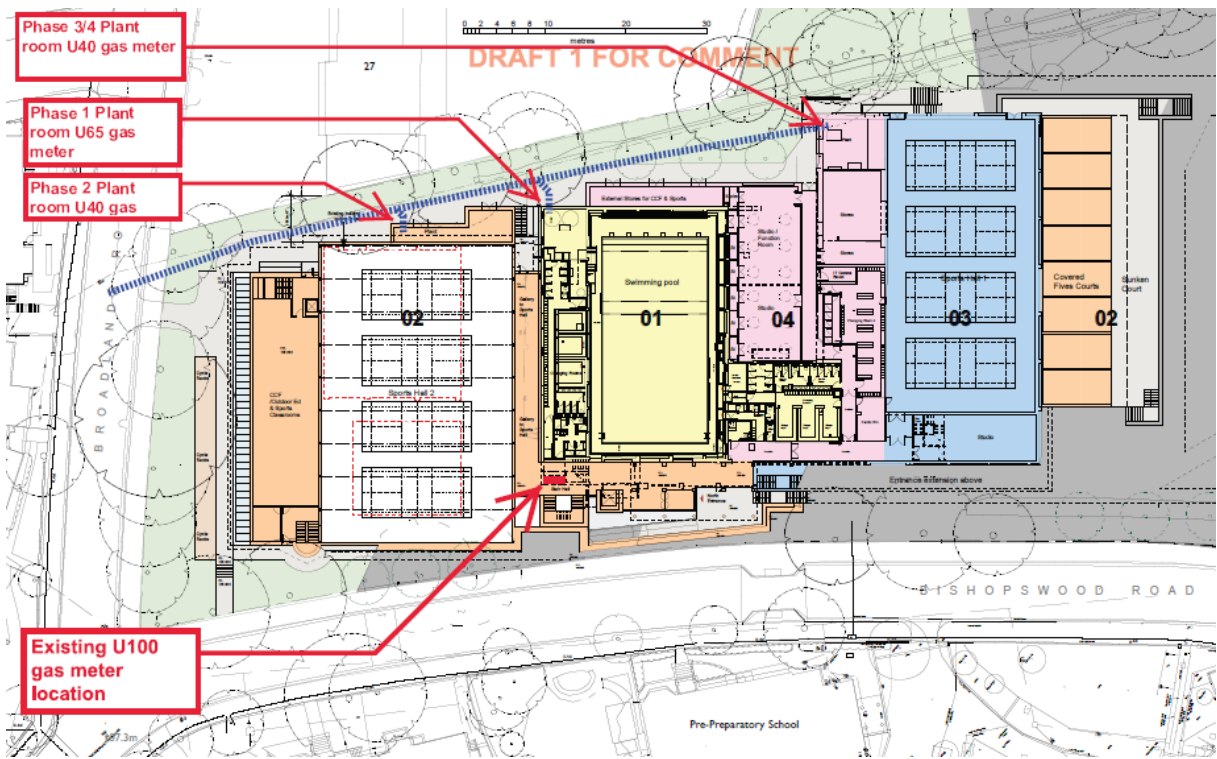


Figure 6 Location of Gas Meters.

5

Foul and Surface Water

Foul

- 5.1
- The design proposal only increases the number of WC by 10 for the use of staff and visitors. The increase in WC will not result in a substantial increase in foul water from the site.

Surface Water

- 5.2
- Edenvale Young has undertaken Surface Water Modelling calculations in their Surface Water Modelling Report (10 May 2019) to assess the flood risk at the site for the development of the sports facilities and provided flood mitigation options. The conclusions that they reached are given below:

A Highgate school catchment hydraulic model has been constructed using industry standard ESTRY TUFLOW software to assess surface water flooding at the existing sports facilities and for the proposed sports facilities.

As part of the new sports facility development, various flood mitigation options have been proposed, which include:

- A proposed all-weather sports pitch is above 0.1m AOD. The flood storage attenuation area with ground levels set to 107.5m Above Ordnance Datum (AOD).
- A 0.7m high bund surrounding the southerly sports facility buildings to protect them from surface water run-off
- The plans indicate ground levels around the most northerly buildings are set to 106.00mAOD. There is a proposed extra gully to help drain this area.
- An existing swale has been diverted through the proposed all-weather sports pitch area.

The latest modelling has demonstrated that:

- The modelled flood mitigation options effectively prevent internal flooding to the School, including the 1 in 100-year design and even + 20% climate change. They also benefit those downstream of the School, with a reduction in flood levels of up to 100mm.
- The flood level for the 1 in 100-year design event + 20% climate change is 106.32mAOD at the northern end of the site. 0.1m below the proposed finished floor level of 106.40mAOD, the floor higher than the extra ground level reduces the risk of internal flooding.
- The proposed sports facilities are at risk of flooding in the 1 in 100-year event + 40% climate change and the 1 in the 1000-year event.

The following recommendations are considered appropriate:

- If possible, lowering the ground levels below 106.00mAOD around the northern proposed buildings would effectively provide more freeboard between the finished floor level of 106.40mAOD and the design flood level.
- Providing flood doors at the entrance to buildings and ensuring that the building is sealed at pipe entrance points will provide further flood resilience.

6

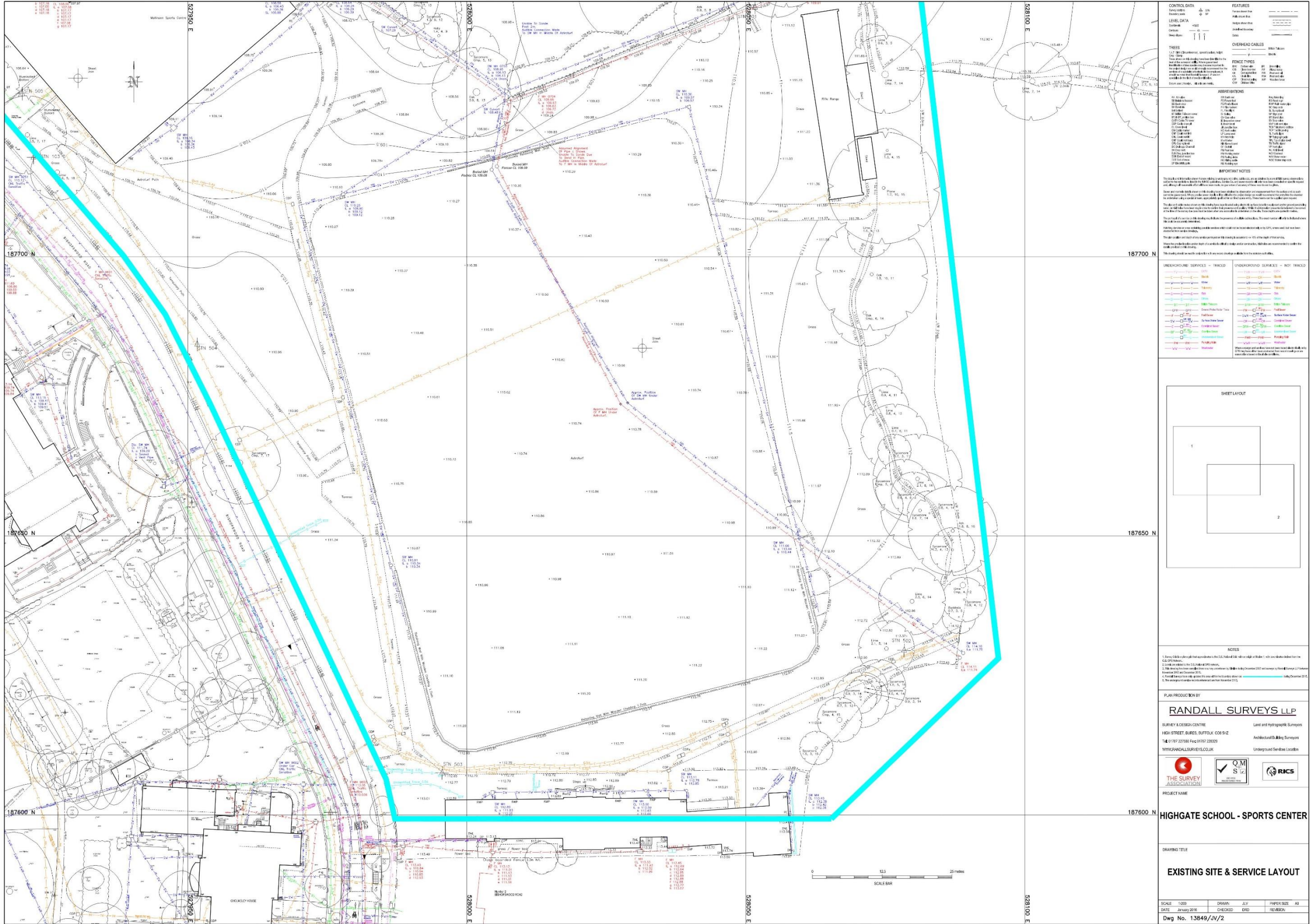
Conclusion

- 6.1
- The proposed new development will increase the size and number of buildings on site. However, installing new energy-efficient lighting and electrical equipment produces similar power requirements to existing buildings.
- 6.2
- The existing gas supplies were oversized for older, less efficient boilers, and new, more efficient replacement boilers are predicated on using a similar gas supply to existing allowed usage.

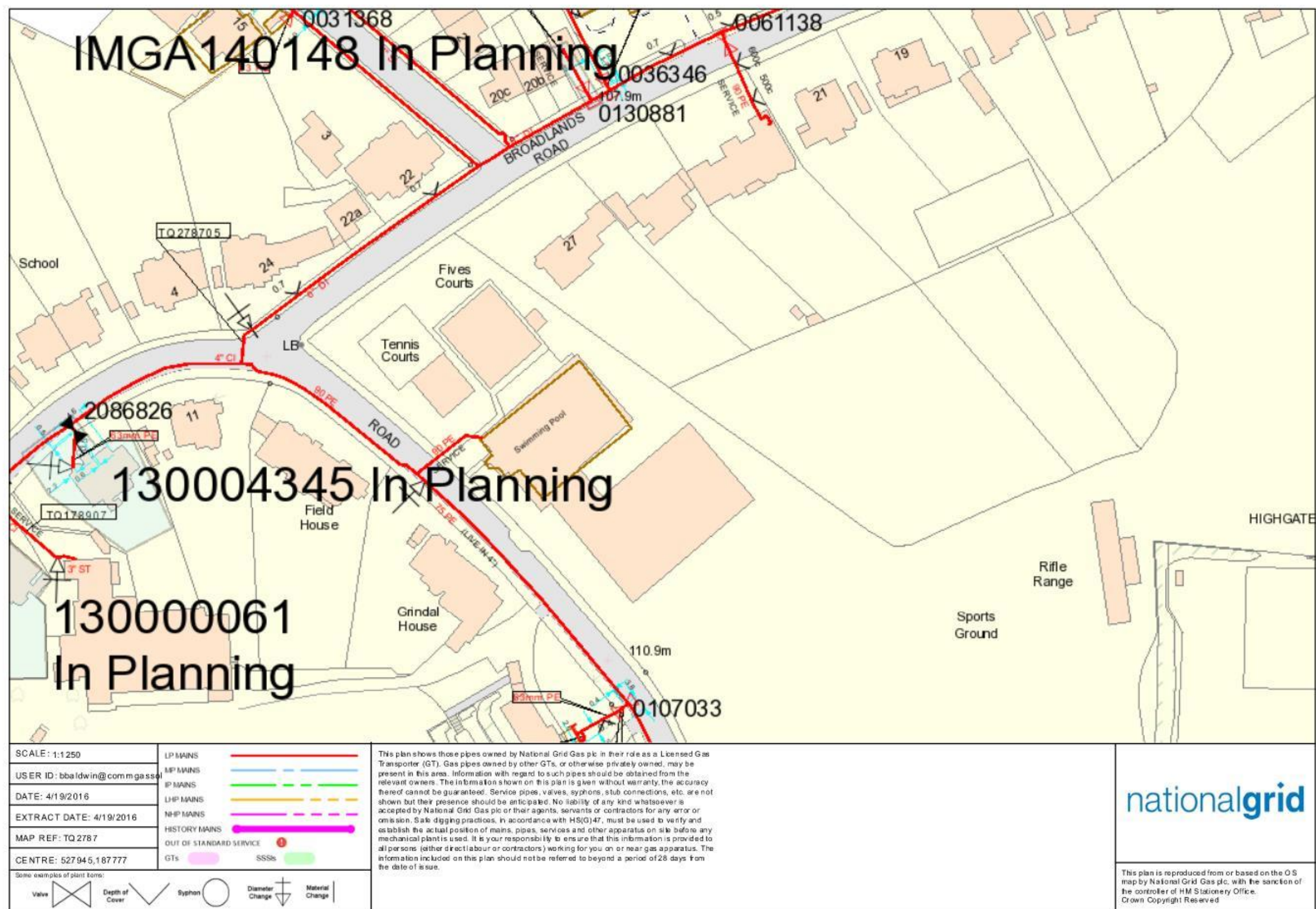
- 6.3
- The proposal to unify the electrical power supplies to all school buildings at a single location will help to maximise the use of electricity from PV across the school estate.

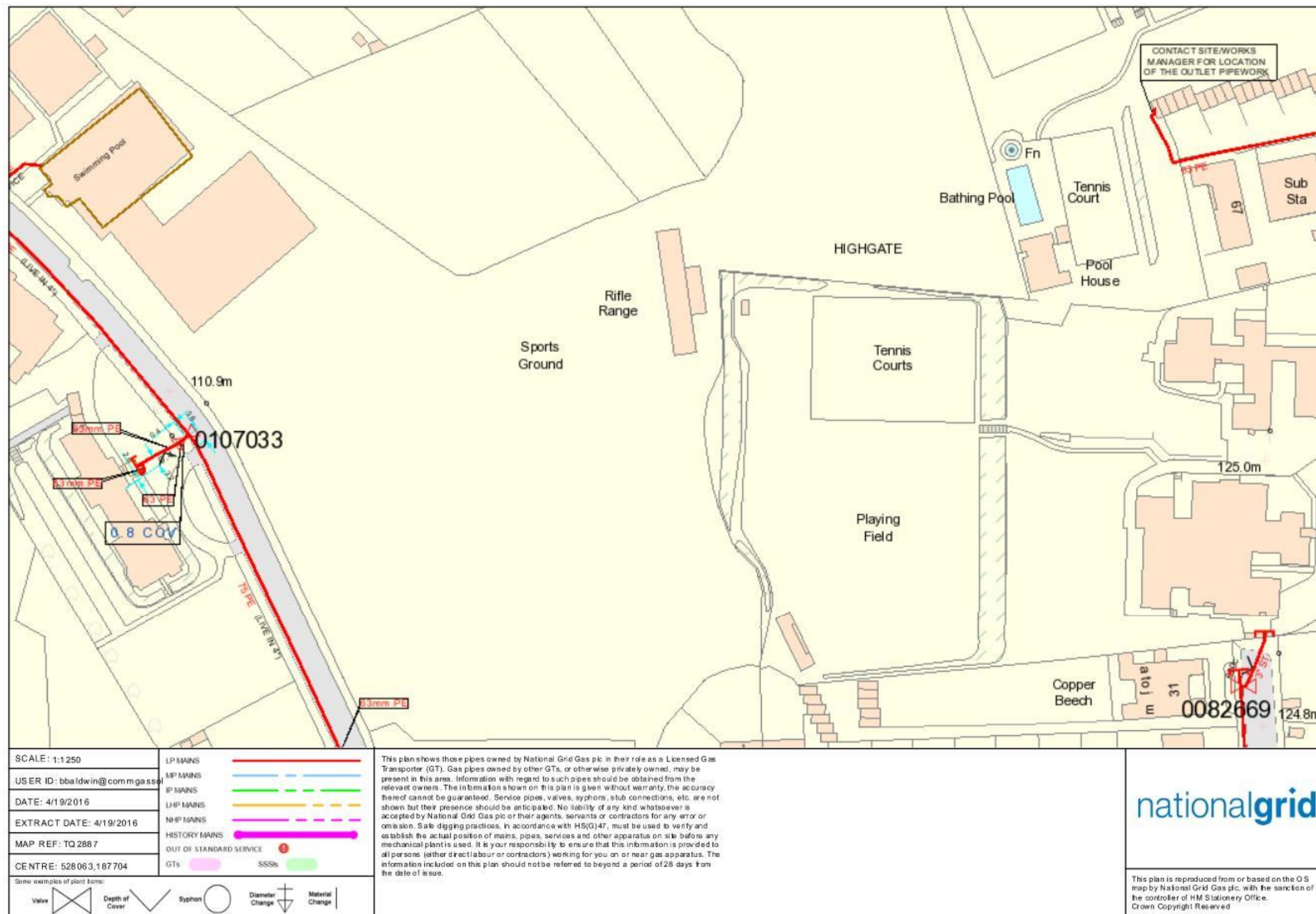
APPENDIX

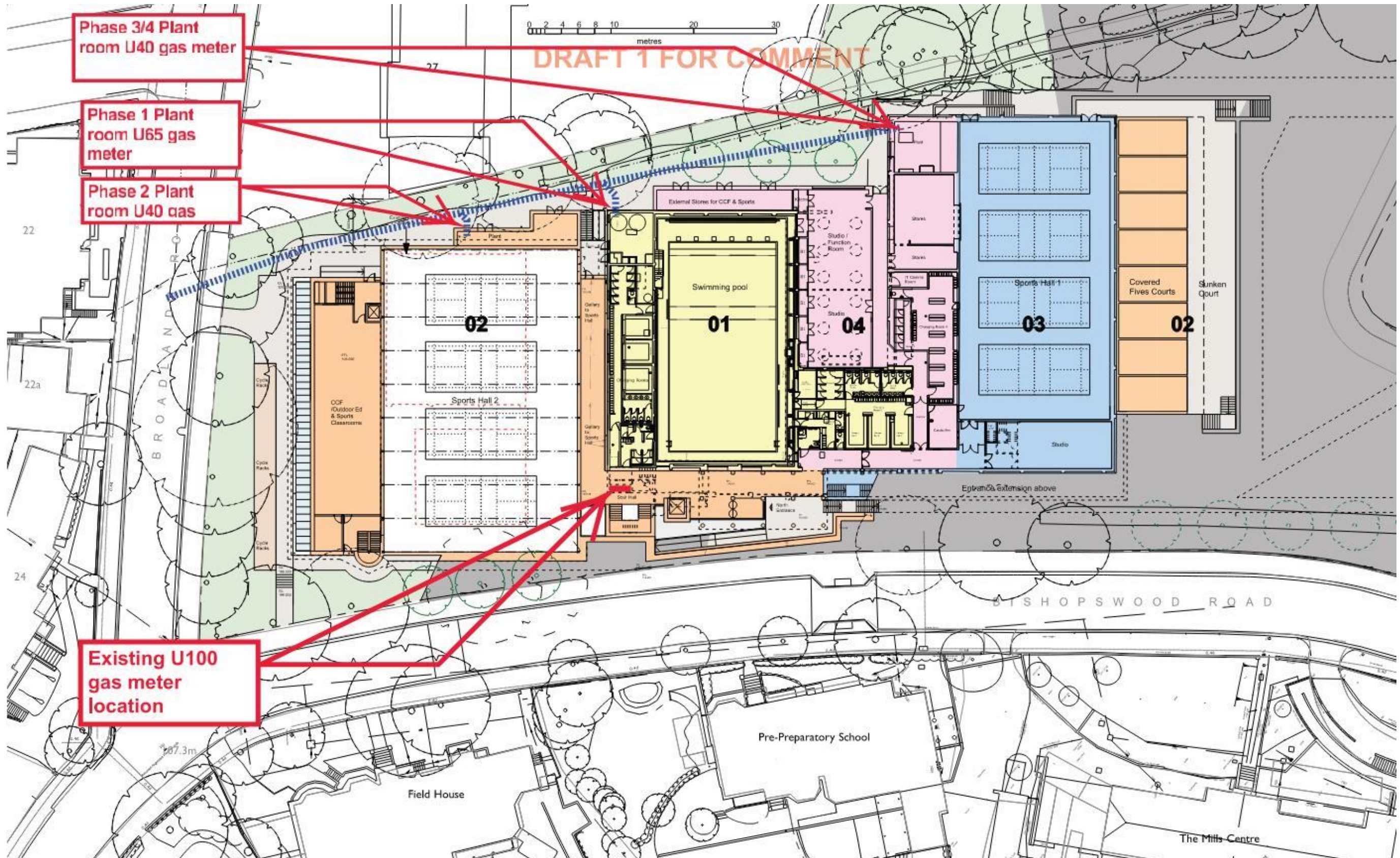
Appendix A Existing Site Services Layout



Appendix B Nation Grid Gas Services Layout







PETER DEER ASSOCIATES

4309-SK190625ac1

Gas meter locations for new gas supply

DATE 12/07/2019
PROJECT REFERENCE 5095104/PQ176399
YOUR REFERENCE 4309



Tel: 03330 146 466

2 Europa View
Sheffield Business Park
Sheffield S9 1XH

Web: fulcrum.co.uk
Email: enquiries@fulcrum.co.uk

YOUR QUOTE

Mr Munden
Peter Deer & Associates
Solar House, 282 Chase Road
London
N14 6HA

Dear Mr Munden,

RE: Mallinson Sports Centre @ Highgate School, Bishopswood Road, London, N6 4NY

Thank you for giving us the opportunity to quote for your project.

Our price to undertake the work is: **£ 22,554.88** (excluding VAT)

YOUR REQUIREMENT

- Lay new MDPE LP Gas mains and 3x MDPE LP gas services all to terminate internally. N
- Install 2 x U40 gas meters & 1 x U65 gas meter 3
- Disconnect 90mmMDPE LP gas service and remove u100 meter on additional visit nt

Please check that we have fully understood your requirements. If you would like us to complete your project, please fill in the attached **order confirmation form**, and either post it back to us free using the **Freepost address**, email it to us at enquiries@fulcrum.co.uk or fax it to us on 03330 146 477.

To provide greater price certainty to you, and unlike other utility providers, we have included all anticipated traffic management requirements for the completion of this project within this quotation.

**This excludes Lane Rental, Road Closures, Parking Bay Suspensions, Out of Hours Working and the Manual Operation of Traffic Management, which can only be ascertained by us / or is stipulated by the council, when planning the works.*

If this quotation is being accepted by anyone other than who it is addressed to, please notify us by completing the contact information section on the acceptance form.

If you would like to discuss your quotation in more detail, please get in touch with your Fulcrum contact Christopher Smith directly on **01142 804 251** who will be happy to help.

As soon as we receive your acceptance form and payment, we will contact you to discuss a schedule for your works.

THANK YOU FOR CHOOSING FULCRUM - THE UK'S TRUSTED UTILITY SERVICES PARTNER

Yours sincerely,

Christopher Smith

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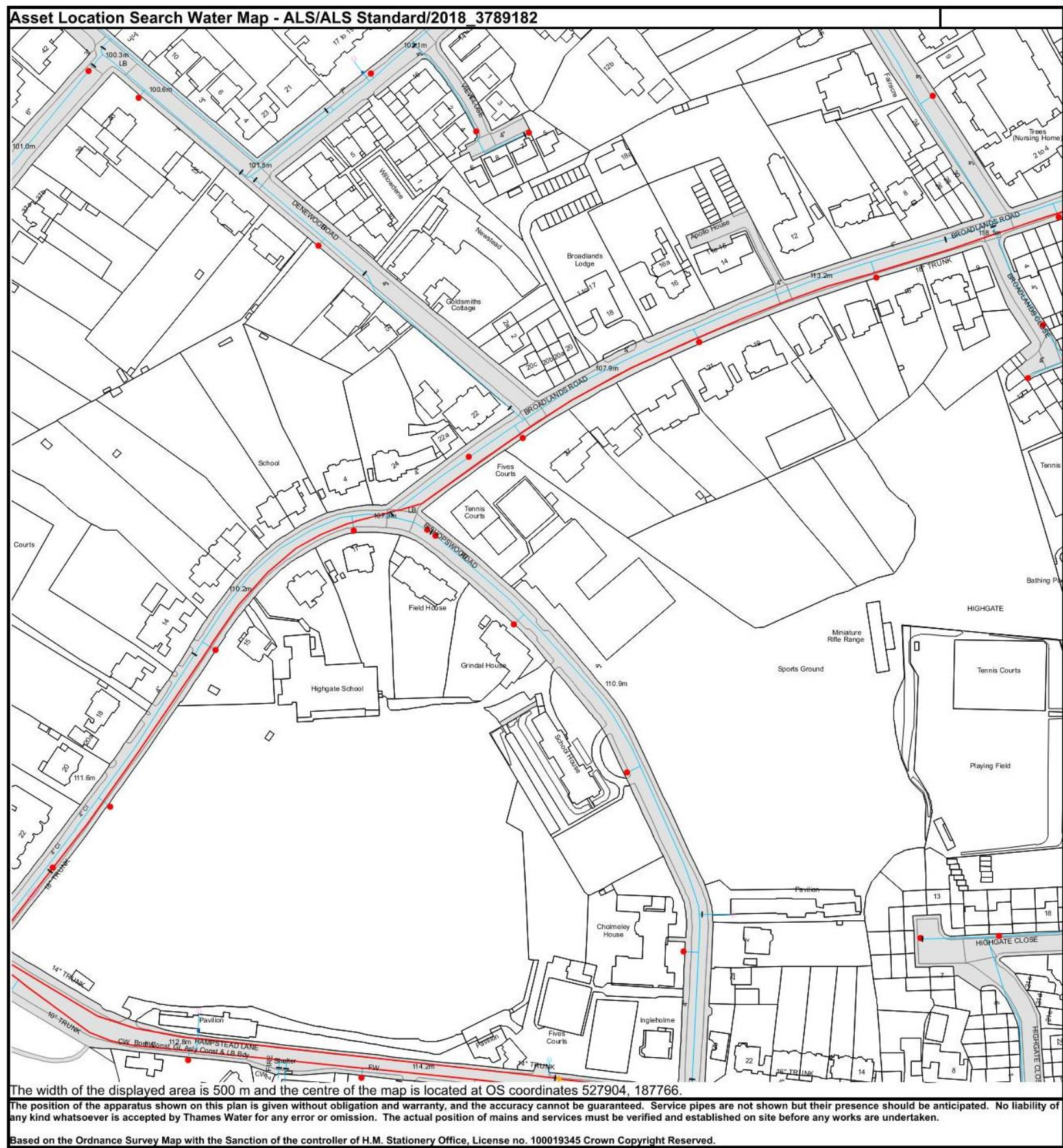
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Appendix C Thames Water- Water Services and Sewage Layouts





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.
- 18"** **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.

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')

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

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:** Indicates 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.





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.		Trunk Foul
	Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.		Trunk Surface Water
	Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.		Trunk Combined
	Storm Relief		Bio-solids (Sludge)
	Vent Pipe		Proposed Thames Water Foul Sewer
	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		

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.

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

- 6) The text appearing alongside a sewer line indicates the internal diameter of the pipe in millimetres. 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.

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

Appendix D UKPN site Electrical Services Layout

