

Colthrop Village, Thatcham

Surface Water Concept Strategy

On behalf of: **Colthrop Village Consortium**



Project Ref: 30738/4002 | Rev: B | Date: December 2016



Document Control Sheet

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For and on behalf of Peter Brett Associates LLP				

Revision	Date	Description	Prepared	Reviewed	Approved
A	06/10/16	Minor amendments to text and site boundary	EE	JNP	JNP
B	06/12/16	Updated with Counsel comments	EE	RF	JNP

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1 Introduction

- 1.1.1 This 'Surface Water Concept Strategy' has been prepared by Peter Brett Associates LLP, on behalf of our clients, Colthrop Village Consortium, to outline the proposed outline surface water measures to be incorporated into any future development over the Colthrop Village site to mitigate surface water flood risk.
- 1.1.2 The requirements for new development in relation to surface water flood risk and Sustainable Drainage Systems are contained within the following national and local guidance:
- National Planning Policy Framework (NPPF) and associated Planning Practice Guidance released in March 2014;
 - The DEFRA '*Non-statutory technical standards for sustainable drainage systems*' (March 2015);
 - 'The SuDS Manual' (CIRIA document reference C753, updated 2015);
 - The Environment Agency (EA) '*Flood risk assessments – climate change allowances*' guidance (February 2016);
 - The West Berkshire Council (WBC) Core Strategy with particular reference to Policy CS16 'Flooding'.
- 1.1.3 The report should be read alongside the PBA 'Flood Mitigation Strategy' report (rev C, December 2016) which sets out the mitigation strategy to address fluvial floodplain impacts to the site. The report demonstrates that a surface water drainage scheme can be incorporated into the future development which will meet national and local planning policy requirements, and will be designed to compliment the fluvial flood mitigation strategy whilst ensuring that the capacity of each system is not compromised.
- 1.1.4 PBA has undertaken this report using experienced flood risk management staff chartered with the Institution of Civil Engineers (ICE) and the Chartered Institution of Water and Environmental Management (CIWEM). PBA has many years of experience in, amongst other areas, the assessment of flood risk, hydrology, flood defence and river engineering.

2 Site Setting

2.1 Site Description and Proposals

- 2.1.1 The Colthrop Village site consists of a 36.2 hectare area of land south of Colthrop, on the south-eastern fringe of Thatcham within the administrative boundary of West Berkshire Council (WBC).
- 2.1.2 The site is centred on OS grid reference 453,440m E, 166,200m N (see **Figure 2.1** below).

Figure 2.1: Site Location



- 2.1.3 The site is bordered by Avon and Kennet Canal in the north and the River Kennet in the south. Kennetholme Quarry, a minerals treatment and processing plant, lies to the east whilst agricultural land lies to the west.
- 2.1.4 The western part of the site consists of agricultural land which forms part of Rainsford Farm. This part of the site is accessed via Station Road, to the immediate west of the site (directly south of Thatcham train station).
- 2.1.5 The Rainsford Farm site, a small peninsula of land in the north-western end of the site, previously secured outline planning permission for a 13bunit residential development (ref: 09/02370/OUTMAJ), which has now been implemented.
- 2.1.6 The north-eastern part of the site consists of the former Colthrop Paper Mill, with its associated grounds. The Paper Mill site is accessed via Colthrop Lane to the north (passing over the Canal into the site from the Colthrop Business Park and Industrial Estate).
- 2.1.7 On the east side of the Rainsford Farm site, a syphon passes under the Canal which serves part of the Thames Water surface water sewer system which drains the residential area to the north of the site (see sewer records in **Appendix A**).

- 2.1.8 The syphon emerges a short distance south of the Canal into a trapezoidal concrete channel, which runs south to outfall into the River Kennet on the downstream side of the sluice/weir structures at Chamberhouse Mill (see Figure 2.2).

Figure 2.2: Thames Water sewer emerging from culvert (left) and concrete channel on-site (right)



- 2.1.9 An unnamed drainage channel runs through around field boundaries in the centre of the site, flowing east to outfall into the River Kennet along the southern site boundary.
- 2.1.10 A second drainage channel (potentially an overflow from the Canal) runs south across the western part of the site from the Rainsford Farm site, draining into the River Kennet at Chamberhouse Mill.
- 2.1.11 Parts of the paper mill to the north of the canal were demolished, but a number of structures are still present over the site, including a water tower, processing buildings and associated infrastructure. The site also includes significant areas of hard standing and a series of ponds associated with the mill.

2.2 Topography

- 2.2.1 A level survey of the central and eastern part of the site was undertaken by Midland Survey Ltd in November 2014. The survey was supplemented by additional levels covering the western end of the site.
- 2.2.2 In general, ground levels over the former paper mill in the north-eastern part of the site are between 66.0m AOD and 67.0m AOD.
- 2.2.3 The survey indicates ground levels along the northern boundary of the site (i.e. the canal towpath) are at approximately 66.0m AOD, with a shallow fall south across the site to the drainage channel through the middle of the site (at 65.0m AOD in the centre of the site, falling as it flows to the east). A slight rise in levels is observed to the south of this drainage channel, with ground levels increasing slightly up to the southern boundary with the River Kennet.
- 2.2.4 Ground levels range from 66.0m AOD and 67.0m AOD over the western part of the site, falling towards the drainage channel in the centre of the site.

2.3 Outline Proposals

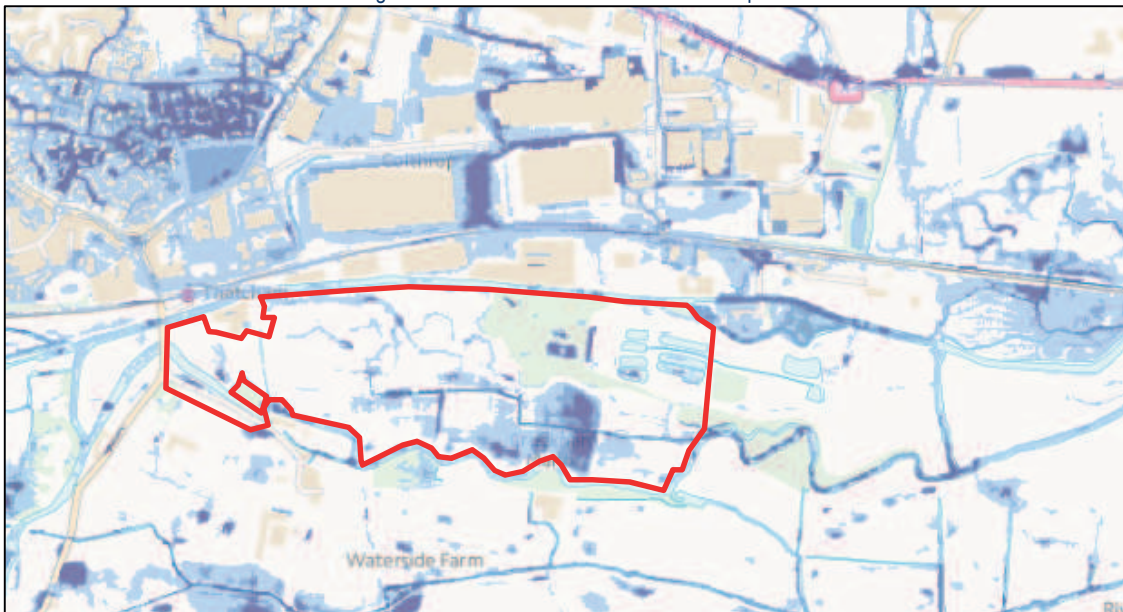
- 2.3.1 The outline proposals are for a mixed-use redevelopment comprising in the region of 850 to 950 dwellings, commercial units, shops and services, a new school, a sports club, and new public open space. Importantly, the proposed redevelopment would also provide a new bridge to facilitate the permanent closure of Thatcham level crossing, alleviating the traffic problems in south Thatcham - see JSA drawing in **Appendix B**.

3 Existing Surface Water Flood Risk

3.1 EA Surface Water Flood Risk Map

- 3.1.1 The EA 'Flood Risk from Surface Water' map is reproduced in **Figure 3.1** below. This shows that the majority of the site lies in an area at 'Very Low' risk of flooding from surface water (unshaded - less than 1 in 1000 (<0.1%) annual probability of surface water flooding).
- 3.1.2 The map indicates thin corridors of medium/high risk of surface water flooding, which correspond with the network of small drainage channels running through the site.
- 3.1.3 The area indicates as being potentially prone to surface water flooding is in the centre of the site close to the southern boundary, which is indicated as 'High' risk of surface water flooding (dark blue - greater than 1 in 30 (>1.3%) annual probability of surface water flooding).

Figure 3.1: EA Surface Water Flood Risk Map



3.2 Thatcham Surface Water Management Plan

- 3.2.1 The Thatcham 'Surface Water Management Plan' ('SWMP'), released in February 2010, was undertaken in liaison with key stakeholders (including West Berks Council, the EA, Thames Water and Thatcham Town Council) to investigate further the mechanism of flooding in Thatcham and identify options to reduce the risk of surface water flooding.
- 3.2.2 Copies of the referenced SWMP Figures are included in **Appendix C**.
- 3.2.3 **SWMP Figure 1** shows the recorded extents of historic flooding across the Thatcham area. The site is not specifically referenced, although this is potentially due to the undeveloped (low sensitivity) nature of the area.
- 3.2.4 **SWMP Figure 7** shows groundwater contours for the area as advised by the EA (shown in 'metres below ground level' (m bgl)). The map shows the depths to groundwater in the area gradually falling from north and south towards the base of the Kennet valley, with zero contours to the north and south of the site, suggesting that groundwater levels are very shallow (or above ground level over parts of the site).

- 3.2.5 **SWMP Figure 9** shows the presence of Thames Water public foul and surface water sewers in the area to the north of the site. A surface water sewer is shown to run parallel with and cross under the Canal and into the site.

- 3.2.6 The SWMP includes extensive analysis of pluvial modelling to simulate the severe surface water flooding of 2007, generate reference (1 in 100-year) flood extents and assist in identifying potential mitigation measures for the area to avoid a repeat of impacts of the 2007 event. However, the site appears to be outside the model boundary as no flooding is shown over the area.

4 Surface Water Management

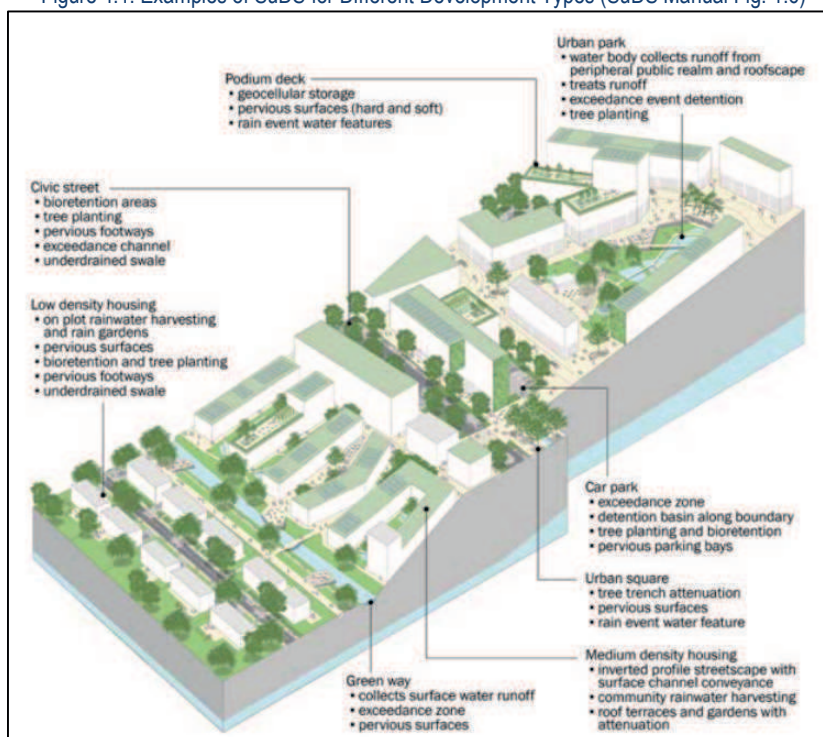
4.1 LLFA Requirements for Surface Water

- 4.1.1 As of April 2015, Lead Local Flood Authorities (LLFAs) have become statutory consultees on planning applications for surface water management.
- 4.1.2 As the proposal is considered 'Major development', a planning application for any new development at the site will require a surface water drainage strategy outlining the proposed disposal of surface water from the new development, and evidence of existing and proposed runoff rates to demonstrate that any proposed development will not increase surface water flood risk elsewhere.
- 4.1.3 The NPPF recognises that flood risk and other environmental damage can be managed by minimising changes in the volume and rate of surface runoff from development sites, and recommends that priority is given to the use of Sustainable Drainage Systems (SuDS) in new development, this being complementary to the control of development within the floodplain.
- 4.1.4 The West Berkshire Core Strategy Policy CS16 'Flooding' states the following in relation to surface water drainage:

"On all development sites, surface water will be managed in a sustainable manner through the implementation of Sustainable Drainage Methods (SuDS) in accordance with best practice and the proposed national standards and to provide attenuation to greenfield runoff rates and volumes, for all new development and re-development and provide other benefits where possible such as water quality, biodiversity and amenity."

- 4.1.5 The SuDS Manual should be consulted during the evolution of a surface water drainage strategy for a new development, as this provides extensive guidance on the range of SuDS measures appropriate for all situations. Figure 4.1 shows an extract from the SuDS Manual illustrating the range of measures commonly used in different development types.

Figure 4.1: Examples of SuDS for Different Development Types (SuDS Manual Fig. 1.6)



4.1.6 Table 4.1 shows how different forms of SuDS contribute to the key pillars of water quantity, water quality, amenity and biodiversity.

Table 4.1: SuDS Manual Table 7.1 'SuDS component delivery of design criteria'

Component type	Description	Collection mechanism	Design criteria						Further information (Chapter ref)
			Water quantity (Chapter 3)			Water quality (Chapter 4)	Amenity (Chapter 5)	Biodiversity (Chapter 6)	
			Peak runoff rate	Runoff volumes					
				Small events (Interceptions)	Large events				
Rainwater harvesting systems	Systems that collect runoff from the roof of a building or other paved surface for use	P		●	●		●		11
Green roofs	Planted soil layers on the roof of buildings that slow and store runoff	S	○	●		●	●	●	12
Infiltration systems	Systems that collect and store runoff, allowing it to infiltrate into the ground	P	●	●	●	●	●	●	13
Proprietary treatment systems	Subsurface structures designed to provide treatment of runoff	P				●			14
Filter strips	Grass strips that promote sedimentation and filtration as runoff is conveyed over the surface	L		●		●	○	○	15
Filter drains	Shallow stone-filled trenches that provide attenuation, conveyance and treatment of runoff	L	●	○		●	○	○	16
Swales	Vegetated channels (sometimes planted) used to convey and treat runoff	L	●	●	●	●	●	●	17
Bioretention systems	Shallow landscaped depressions that allow runoff to pond temporarily on the surface, before filtering through vegetation and underlying soils	P	●	●	●	●	●	●	18
Trees	Trees within soil-filled tree pits, tree planters or structural soils used to collect, store and treat runoff	P	●	●		●	●	●	19
Pervious pavements	Structural paving through which runoff can soak and subsequently be stored in the sub-base beneath, and/or allowed to infiltrate into the ground below	S	●	●	●	●	○	○	20
Attenuation storage tanks	Large, below-ground voided spaces used to temporarily store runoff before infiltration, controlled release or use	P	●						21
Detention basins	Vegetated depressions that store and treat runoff	P	●	●		●	●	●	22
Ponds and wetlands	Permanent pools of water used to facilitate treatment of runoff – runoff can also be stored in an attenuation zone above the pool	P	●			●	●	●	23

Key
P – Point, L – Lateral, S – Surface, ● – Likely valuable contribution to delivery of design criterion, ○ – Some potential contribution to delivery of design criterion, if specifically included in the design

- 4.1.7 The following sections provide an overview of the existing surface water drainage arrangements and the proposed strategy for the management of surface water from the new development.

4.2 Existing Surface Water Drainage Regime

- 4.2.1 The majority of the site is greenfield, with areas of hard standing from the former paper mill and the farm in the north-west part of the site.
- 4.2.2 No formal drainage features for these areas have been identified. It is assumed that the greenfield areas drain via infiltration or if the ground is saturated via overland flows towards the drainage channel in the centre of the site and the River Kennet.
- 4.2.3 Further investigation will be required for the north-eastern part of the site to determine the extent of impermeable area and runoff rates.
- 4.2.4 As mentioned in Section 2.1, the Thames Water surface water sewer network passes through a syphon to pass under the Canal at Rainsford Farm (ref. SWMP Figure 9). The sewer re-emerges as a concrete channel within the site (see **Appendix A**).
- 4.2.5 There have been concerns from the local community over the maintenance of the syphon due to flooding issues within the residential area to the north of the site (ref. SWMP Figure 1).
- 4.2.6 A survey of the syphon was commissioned by Thames Water and carried out in May 2013. Thames Water also confirmed at a Thatcham Flood Forum meeting in July 2015 that structural surveys, cleansing and maintenance were carried out on the syphon every three years.

4.3 Proposed Surface Water Drainage Strategy

Discharge Destination

- 4.3.1 As the intention of SuDS is to mimic the natural drainage regime of the undeveloped site, the NPPF PPG states the following (consistent with the Building Regulations H3 hierarchy):

...the aim should be to discharge surface water runoff as high up the following hierarchy of drainage options as reasonably practicable:

- into the ground (infiltration),*
- to a surface water body,*
- to a surface water sewer, highway drain or another drainage system,*
- to a combined sewer*

- 4.3.2 The above hierarchy is consistent with the Building Regulations Requirement H. This hierarchy is considered in the sections below in relation to any proposed development at the site.
- 4.3.3 PBA prepared a Phase 1 Ground Condition Assessment in June 2015 (ref. 30738/3501) for the site. The report indicates that the anticipated ground conditions at the site are as follows:
- Alluvium (clay/silt) and River Terrace Deposits (sand/gravel) to between 4 and 6 metres below ground level (m bgl);
 - London Clay Formation and the Lambeth Group Formation (silty/sandy clay) to 28m bgl;
 - White Chalk sub-group at >65 m bgl.

- 4.3.4 Given the close proximity to the River Kennet and the Kennet and Avon Canal, groundwater levels may be shallow at the site.
- 4.3.5 Intrusive site investigation including infiltration testing and groundwater monitoring will be required to determine if disposal of surface water via infiltration drainage will be feasible. If it is found that infiltration drainage is partly or not feasible, surface water can be discharged to the various ditches and watercourses in the immediate vicinity of the site.

Flow and Volume Control

- 4.3.6 In accordance with the DEFRA standards for SuDS and West Berkshire policy, runoff rates from the site will be restricted to greenfield runoff rates. The greenfield runoff rates for the site in l/s/ha are shown in Table 4.2 below and provided in **Appendix D**.

Return Period	Greenfield Discharge Rate
1 Year	3.9 l/s/ha
Q _{bar}	4.6 l/s/ha
100 Year	14.6 l/s/ha

Table 4.2: Greenfield Runoff Rates

- 4.3.7 The 'developable area' of the site based on the current masterplan has been estimated as 23.7ha. The proposed impermeable area has been estimated as 65% of this area (i.e. 15.4ha).
- 4.3.8 The EA's '*Flood risk assessments – climate change allowances*' guidance provides climate change allowances for peak rainfall intensity as shown in Table 4.3 below.

Applies across all of England	Total potential change anticipated for 2010 to 2039	Total potential change anticipated for 2040 to 2059	Total anticipated change for 2060 to 2115
Upper End	+10%	+20%	+40%
Central	+5%	+10%	+20%

Table 4.3: Climate change allowances – peak rainfall intensity

- 4.3.9 Consultation with WBC on the above climate change allowances has confirmed that for most developments a 30% allowance can be used, however for more sensitive sites, such as those at risk of additional flooding and likely within Flood Zones 2 or 3, a 40% allowance should be applied (see correspondence in **Appendix E**).
- 4.3.10 A Quick Storage estimate has been undertaken within MicroDrainage based on the following assumptions:
- Infiltration drainage is not feasible as a conservative approach;
 - Calculation based on 1ha of impermeable area;
 - Restriction of the runoff rate to the Q_{bar} rate of 4.6 l/s/ha.
 - Use of the 40% allowance for climate change for the 1 in 100 (1.0%) annual probability rainfall event as a conservative approach.
- 4.3.11 This produces an attenuation storage estimate of 660-930m³ per ha of impermeable area (see **Appendix F**).
- 4.3.12 This attenuation storage volume would be provided within open features such as ponds and swales in addition to lined permeable pavement to provide storage in the sub-base and water quality treatment of roads/driveways.

4.3.13 The incorporation of a green corridor through the site provides an opportunity to remove the existing straight concrete channel into which the Thames Water syphon outfalls, and instead redirect the flow into this green corridor. This would provide further enhancement to the green corridor, and would remove the artificial and highly engineered existing feature (which does not provide any benefit to the native ecology). Such works would be subject to further investigation and liaison with Thames Water.

Maintenance

4.3.14 Any SuDS features incorporated into the masterplan would require regular maintenance by an appropriate body e.g. Management Company.

4.3.15 Typical maintenance activities for SuDS features such as permeable pavements, swales and basins/ponds are summarised as follows:

- Grass cutting in swales and ponds
- Brushing and vacuuming of permeable pavement surfaces
- Regular monitoring of sediment accumulation in swales and ponds
- Weed/litter removal
- Clearing of trash screens, inlets/sumps and flow controls
- Remedial work as identified

5 Conclusions and Way Forward

- 5.1.1 This 'Surface Water Concept Strategy' has been prepared to outline the requirements for surface water drainage for any proposed development at Colthrop Village in Thatcham, Berkshire.
- 5.1.2 The majority of the site is shown to have a 'Very low' to 'Low' risk of surface water flooding in accordance with the EA 'Flood Risk from Surface Water' map. Areas of higher surface water flooding risk within the site correspond to corridors of the unnamed watercourses within the site.
- 5.1.3 The site is mostly greenfield with areas of hard standing from the Rainsford Farm Mews and a former usage as a paper mill. Any surface water drainage strategy will need to mimic the existing greenfield regime as close as is reasonably practicable in accordance with the DEFRA Standards for Sustainable Drainage Systems (SuDS) and West Berkshire guidance.
- 5.1.4 The site is underlain by Alluvium/River Terrace Deposits over the London Clay/Lambeth Group Formations and Upper Chalk sub-group. Groundwater is anticipated to be close to the surface due to the proximity of the site to the River Kennet and the Kennet and Avon Canal.
- 5.1.5 The use of infiltration, either full or partial may be feasible subject to intrusive site investigation including window sampling to confirm ground conditions, groundwater monitoring and infiltration testing.
- 5.1.6 In the event that infiltration is not found to be feasible, there are numerous watercourses within and adjacent to the site for surface water disposal.
- 5.1.7 An initial assessment of the surface water attenuation has been made with restriction to existing greenfield runoff rates for the 1 in 100 (1.0%) annual probability plus climate change rainfall event. In accordance with West Berkshire Council guidance, a +40% allowance for climate change for peak rainfall intensity has been included within the assessment.
- 5.1.8 The likely SuDS measures to be used on site include permeable paving, swales and ponds/basins.
- 5.1.9 The incorporation of a green corridor through the site provides an opportunity to remove the existing concrete channel which receives surface water from the Thames Water syphon, subject to further investigation and liaison with Thames Water.
- 5.1.10 In conclusion, the report demonstrates that a surface water drainage scheme can be incorporated into the future development which will meet national and local planning policy requirements. This can be designed to compliment the fluvial flood mitigation strategy (see PBA 'Flood Mitigation Strategy' report) whilst ensuring that the capacity of each system is not compromised.
- 5.1.11 The surface water drainage strategy will continue to develop alongside the evolving masterplan, and any future application will be supported by an outline surface water drainage strategy demonstrating how the development will manage surface water in a safe and sustainable manner, ensuring no detrimental impact on the site or to thirds parties.

Appendix A Thames Water Sewer Records

Thames Water sewer records provided by SMA

Asset Location Search



Atkins Telecoms
Stats Enquiries Team, The Hub, 5 Aztec
West, Almonds, The Hub
Park Avenue The Hub
BRISTOL
BS32 4RZ



Search address supplied Colthrop Business Park, Colthrop Lane, THATCHAM
RG19 4NA

Your reference LM 40403

Our reference ALS/ALS Standard/2015_3130736

Search date 1 September 2015

You are now able to order your Asset Location Search requests online by visiting
www.thameswater-propertysearches.co.uk



Asset Location Search



Search address supplied: Colthrop Business Park, Colthrop Lane, THATCHAM, RG19 4NA

Dear Sir / Madam

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

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

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

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

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

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

Contact Us

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

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

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Asset Location Search



Waste Water Services

Please provide a copy extract from the public sewer map.

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

SU5266SE
SU5266NE
SU5366SW
SU5366NW
SU5366SE
SU5366NE
SU5466SW
SU5466NW

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

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

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

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

The following quartiles have not been printed as they contain no assets:

SU5265NE
SU5365NW
SU5365NE
SU5465NW
SU5465NE

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water

Asset Location Search



Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

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

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

SU5265NE
SU5266SE
SU5266NE
SU5366SW
SU5366NW
SU5366NE
SU5466NW

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

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

The following quartiles have not been printed as they contain no assets:

SU5365NW
SU5365NE
SU5366SE
SU5465NW
SU5466SW
SU5465NE

For your guidance:

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

Asset Location Search



Payment for this Search

A charge will be added to your suppliers account.

Asset Location Search



Further contacts:

Waste Water queries

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

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

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

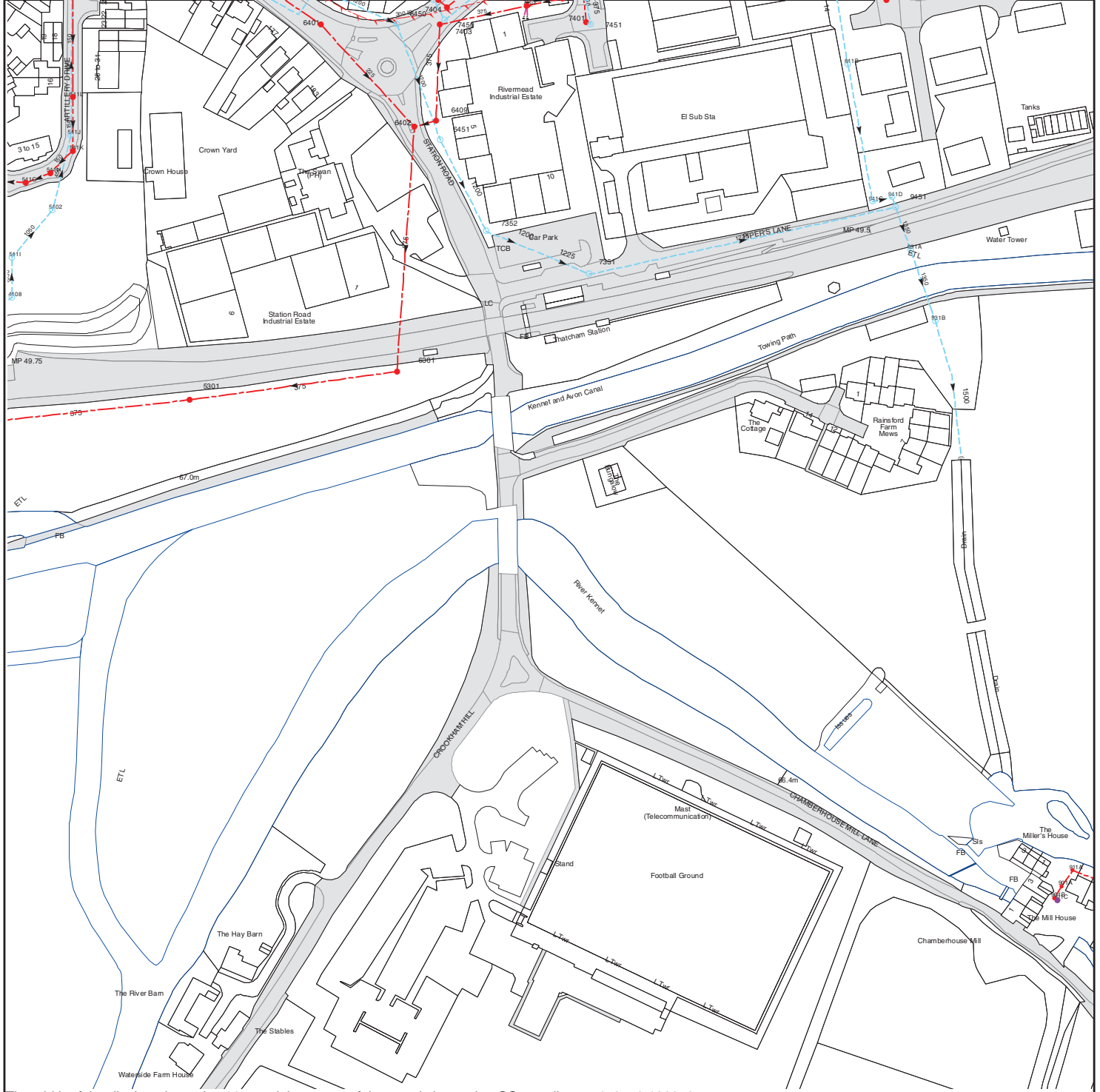
Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk

Clean Water queries

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

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

Tel: 0845 850 2777
Email: developer.services@thameswater.co.uk



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 452750,166250

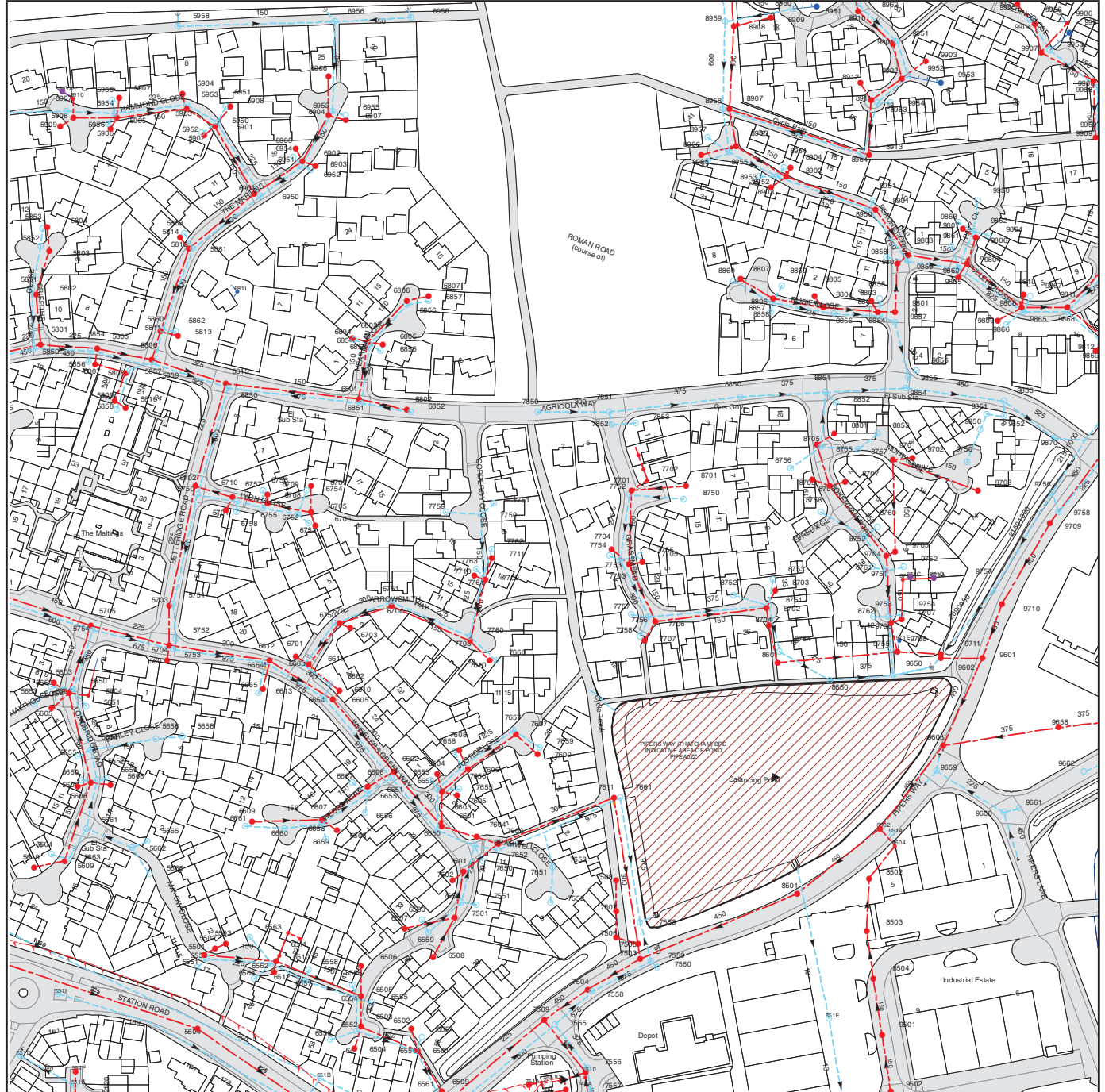
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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7401	n/a	n/a
7451	67.44	66.1
7403	67.94	65.35
7450	67.89	65.68
7404	67.92	64.44
7402	67.59	65.49
901C	n/a	n/a
901B	n/a	n/a
901A	n/a	n/a
911A	n/a	n/a
931B	n/a	n/a
7351	67.42	65.12
931A	n/a	n/a
7352	67.37	65.21
9451	67.3	64.63
941C	n/a	n/a
941D	n/a	n/a
6451	67.75	65.24
6402	67.69	n/a
6409	67.95	65.35
841B	n/a	n/a
4408	69.11	67.31
541I	69.12	67.4
541G	68.425	66.392
541H	68.111	66.481
5402	69.24	67.42
541J	68.5	66.94
541K	67.756	66.587
541L	68.123	66.77
6401	67.88	n/a
6450	67.86	65.48
5301	67.41	64.73
6301	67.28	64.97

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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 452750,166750

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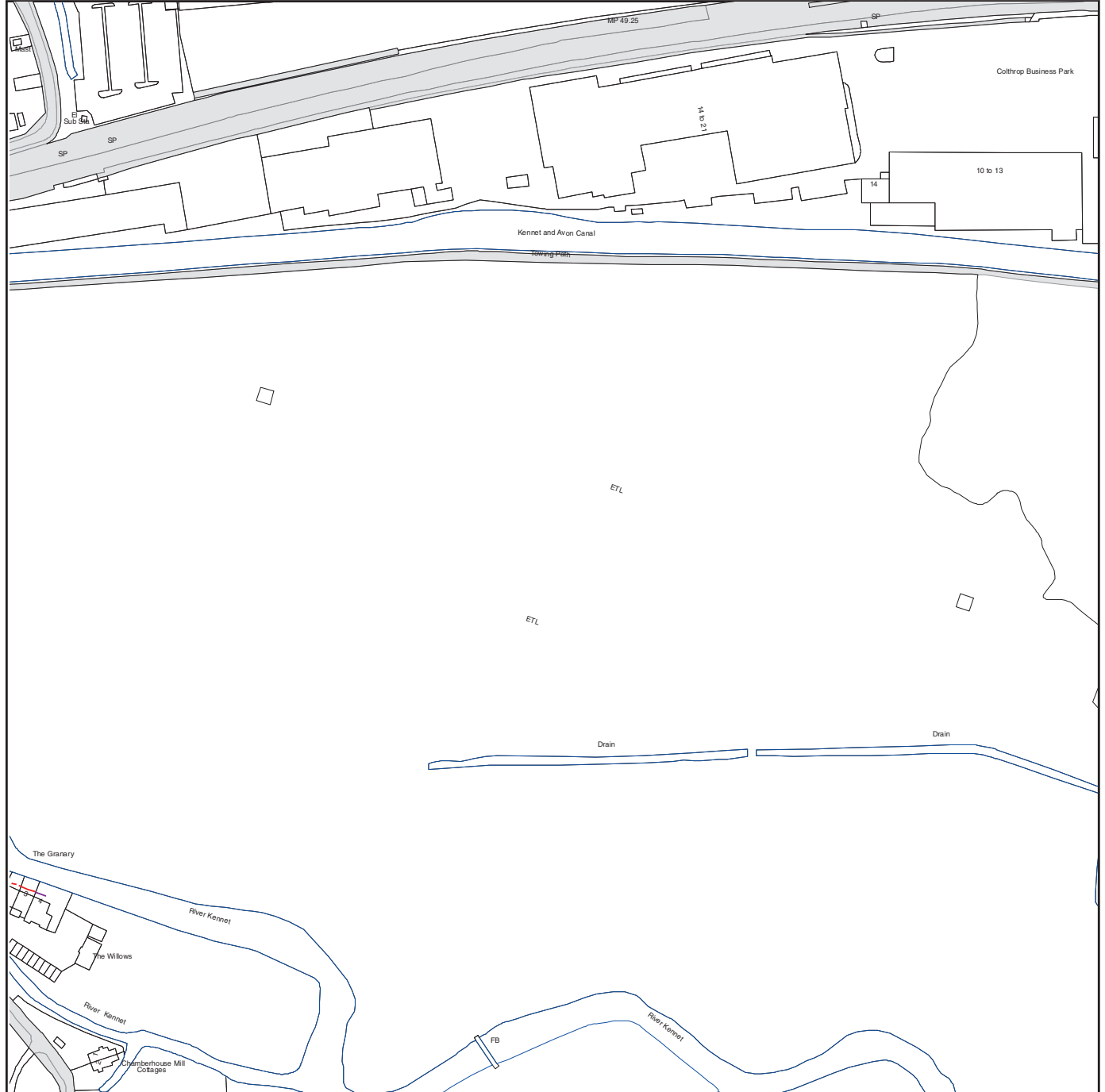
Manhole Reference	Manhole Cover Level	Manhole Invert Level
9756	67.95	65.15
9703	67.22	65.66
9750	67.32	66.23
9702	67.51	65.49
9870	67.7	65.27
9850	67.53	66.14
9852	67.72	65.99
9851	67.59	66.09
9853	67.59	65.7
9854	67.28	65.77
9855	67.23	65.97
9856	67.42	66.22
9869	67.74	66.51
9812	67.73	64.54
9866	67.73	66.31
9857	67.37	66.06
9660	n/a	65.81
9661	n/a	n/a
9662	n/a	n/a
9659	n/a	n/a
9603	67.484	63.06
9658	n/a	n/a
9650	67.87	65.45
9602	67.2	63.68
9601	67.583	63.17
9711	67.26	63.73
9708	67.56	64.04
971E	n/a	n/a
9707	67.46	65.55
9754	67.47	65.94
9710	67.51	63.28
9757	67.71	65.11
971B	n/a	n/a
971A	n/a	n/a
971D	n/a	n/a
971C	n/a	n/a
9752	67.4	66.18
9705	67.38	65.03
9709	67.59	63.38
9758	67.52	66.05
9804	67.67	64.66
9802	67.56	65.02
9859	67.58	65.64
9858	67.82	66.69
9803	67.57	64.82
9861	67.82	66.37
9806	67.77	65.9
9864	67.88	66.63
9862	67.85	66.24
9807	67.8	66.01
9863	67.95	66.56
8901	67.87	65.03
8950	67.92	65.72
8951	68.01	66.96
9950	68.17	66.77
8913	68.68	66.39
8964	68.66	66.77
9909	68.46	66.74
9959	68.46	66.81
8963	69.17	67.5
9954	69.35	67.87
8911	69.13	67.09
9958	n/a	n/a
8912	69.49	67.34
9953	69.7	68.35
9908	69.57	67.41
9902	69.48	67.35
9952	69.48	67.94
9903	69.9	67.77
9907	69.7	67.85
9955	69.76	68.25
9901	69.71	67.53
9951	69.74	n/a
9957	69.97	68.7
9904	69.86	68.08
9906	69.96	68.41
9956	70.09	69.13
8910	69.85	67.84
9905	70.12	68.97
8962	69.91	68.49
8753	67.32	66.14
8703	67.41	65.26
8601	67.58	64.5
8754	67.44	65.5
8756	67.31	66.28
8709	n/a	n/a
8705	67.47	65.35
8758	67.37	66.33
8755	67.47	66.08
8851	67.37	65.93
8650	67.72	65.51

Manhole Reference	Manhole Cover Level	Manhole Invert Level
8706	67.41	65.2
8801	67.52	65.87
8852	67.49	66.23
8707	67.51	65.48
8757	67.35	66.25
8759	67.34	66.01
8761	67.4	66.14
8762	67.49	65.97
8760	67.39	66.14
8853	67.49	66.39
9751	67.3	65.9
9704	67.32	65
9753	67.46	65.79
9755	67.46	65.65
9706	67.47	64.46
9701	67.36	65.26
8906	68.6	67.34
8957	68.55	67.14
8956	68.59	67.16
8958	68.48	66.16
8959	69.39	66.8
8907	68.55	65.65
8955	68.46	66.08
8908	69.48	66.2
8905	68.37	65.53
8953	68.4	n/a
8909	69.68	68.17
8903	68.29	65.94
8952	68.29	65.93
8954	68.31	67.2
8902	68.21	65.32
8904	68.33	67.19
8960	69.74	68.33
8961	70.11	69.25
7555	67.51	65.53
741A	n/a	n/a
7510	67.73	62.51
7504	67.47	62.57
7556	67.74	65.91
7557	67.61	66.02
7558	67.41	65.52
7506	67.68	65.03
7507	67.75	65.16
7508	67.69	65.38
7505	67.68	63.42
7553	67.67	65.05
7503	67.55	62.67
7559	67.38	65.39
7560	67.6	65.7
8501	67.67	62.84
851E	n/a	n/a
8503	67.57	63.79
8502	67.8	63.57
8504	67.33	64.06
8602	67.27	62.94
9501	67.28	64.28
9502	67.32	64.49
961A	n/a	n/a
9604	67.92	63.37
7759	67.53	66.2
7710	67.5	65.93
7763	67.5	66.14
7750	67.34	66.15
7761	67.5	66.04
7709	67.49	65.73
7762	67.56	66.2
7711	67.49	65.96
7751	67.38	66.28
7850	67.24	66.44
7851	67.41	66.28
7754	67.57	66.23
7704	67.53	65.43
7852	67.38	66.57
7753	67.41	65.85
7703	67.43	65.17
7752	67.23	66.02
7701	67.28	65.4
7853	67.61	66.69
771A	n/a	n/a
7755	67.56	66.16
7705	67.56	65.48
771B	n/a	n/a
7702	67.35	65.62
8750	67.42	66.17
8701	67.32	65.56
8752	67.21	66.2
8850	67.59	66.08
8751	67.45	65.6
7661	67.46	65.08
7611	67.4	63.87
7605	67.61	n/a
6603	67.57	65.26
6652	67.56	65.81

Manhole Reference	Manhole Cover Level	Manhole Invert Level
7655	67.56	65.99
6653	67.67	65.95
6604	67.6	65.59
7606	67.47	65.41
7656	67.53	65.84
7609	67.42	65.69
7658	67.58	66.02
7608	67.59	65.76
7659	67.47	66.29
7607	67.35	65.6
7657	67.31	66.1
7660	67.39	66.06
7610	67.39	65.55
7708	67.35	65.45
7707	67.47	65.67
7760	67.36	65.93
7758	67.46	66.16
8704	67.35	64.58
7706	67.28	64.98
7756	67.3	65.72
7757	67.42	66.15
8702	67.42	64.67
9809	67.65	65.8
8854	67.35	66.08
8856	67.59	66.26
8858	67.83	66.65
8802	67.42	65.31
9801	67.41	65.18
9865	67.57	65.4
9868	67.44	65.35
9811	67.49	64.28
8804	67.64	65.84
9808	67.59	64.45
8857	67.78	66.46
6857	68.16	67.01
8803	67.65	66.7
8855	67.55	66.38
8806	67.84	66.28
6807	68.13	66.6
9867	67.66	66.28
8805	67.76	66.25
9810	67.7	65.98
8859	67.84	66.67
8860	67.95	66.9
8807	67.91	66.93
9805	67.81	65.76
9860	67.7	65.55
6501	67.84	64.64
6560	67.56	66.26
6551	67.8	66.14
6559	67.45	66.22
6508	67.49	65.61
6561	68.06	65.69
6650	67.72	65.15
6509	68.05	64.54
6601	67.69	64.23
7502	67.88	65.9
7501	67.49	65.35
7550	67.67	66.03
7601	67.82	65.21
7651	67.79	65.14
7551	67.82	66.11
7604	67.96	64.17
7650	67.66	66.05
7652	67.72	65.13
7603	67.7	64.13
751A	n/a	n/a
7509	67.6	62.54
7552	67.45	66.33
7653	67.39	66.14
6609	67.65	66.16
6665	67.55	66.14
6613	67.53	65.23
6664	67.39	65.24
6612	67.34	64.62
6660	67.51	66.41
6701	67.41	65.14
6663	67.2	65.7
6611	67.17	64.94
6607	67.59	65.8
6658	67.59	66.24
6654	67.18	65.19
6659	67.7	66.29
6662	67.36	65.63
6605	67.14	64.5
6750	67.32	65.78
6608	67.7	65.9
6610	67.36	64.79
6702	67.35	65.07
6703	67.45	65.44
6657	67.63	66.24
6656	67.66	66.23
6655	67.61	66.06

Manhole Reference	Manhole Cover Level	Manhole Invert Level
6606	67.59	65.6
6651	67.5	65.17
6602	67.44	64.38
6507	67.55	66.07
6710	67.48	65.37
6757	67.41	66.11
6758	67.55	66.3
6756	67.52	66.51
6755	67.4	66.26
6709	67.51	65.73
6708	67.42	65.5
6752	67.28	66.3
6754	67.37	66.67
6753	67.4	66.48
6705	67.26	65.83
6707	67.39	66.09
6706	67.43	66.07
6804	67.98	66.09
6854	67.93	66.68
6801	67.61	65.73
6851	67.61	66.22
6803	67.87	66
6853	67.86	66.48
6855	67.94	66.74
6805	67.97	66.2
6704	67.5	65.32
6751	67.51	65.84
6802	67.48	65.87
6856	67.97	66.78
6806	68	66.27
6852	67.46	66.24
6550	67.84	65.9
6504	67.85	65.02
6553	67.8	66.29
6552	67.68	65.99
5504	68.12	n/a
6502	67.79	66.2
6503	67.67	64.82
6555	67.54	66.24
6554	67.51	66.04
6505	67.51	64.9
6556	67.61	66.22
6557	67.87	66.22
6564	67.96	66.43
6512	67.9	65.74
6558	67.85	66.35
5551	67.82	66.54
6506	67.58	66.02
6562	67.87	66.29
6510	67.81	65.23
5550	67.59	66.43
6511	67.68	65.7
5501	67.54	65.43
5502	67.64	66.04
5503	67.67	66.21
651C	n/a	n/a
6563	67.75	66.37
651D	n/a	n/a
5609	67.49	66.03
5663	67.49	66.39
5602	67.51	65.38
5650	67.52	65.87
5607	67.4	65.93
5655	67.52	66.26
5660	67.41	66.33
5661	67.37	66.16
5651	67.7	66.4
5604	67.65	65.75
5705	67.72	64.97
5606	67.27	65.74
5654	67.32	65.89
5754	67.76	65.6
5657	67.23	66.03
5659	67.43	66.37
5608	67.44	65.79
5662	67.55	66.32
5665	67.64	66.46
5666	67.7	66.6
5656	67.52	66.5
5601	67.78	65.12
5704	67.65	64.77
5753	67.65	65.32
5752	67.56	65.7

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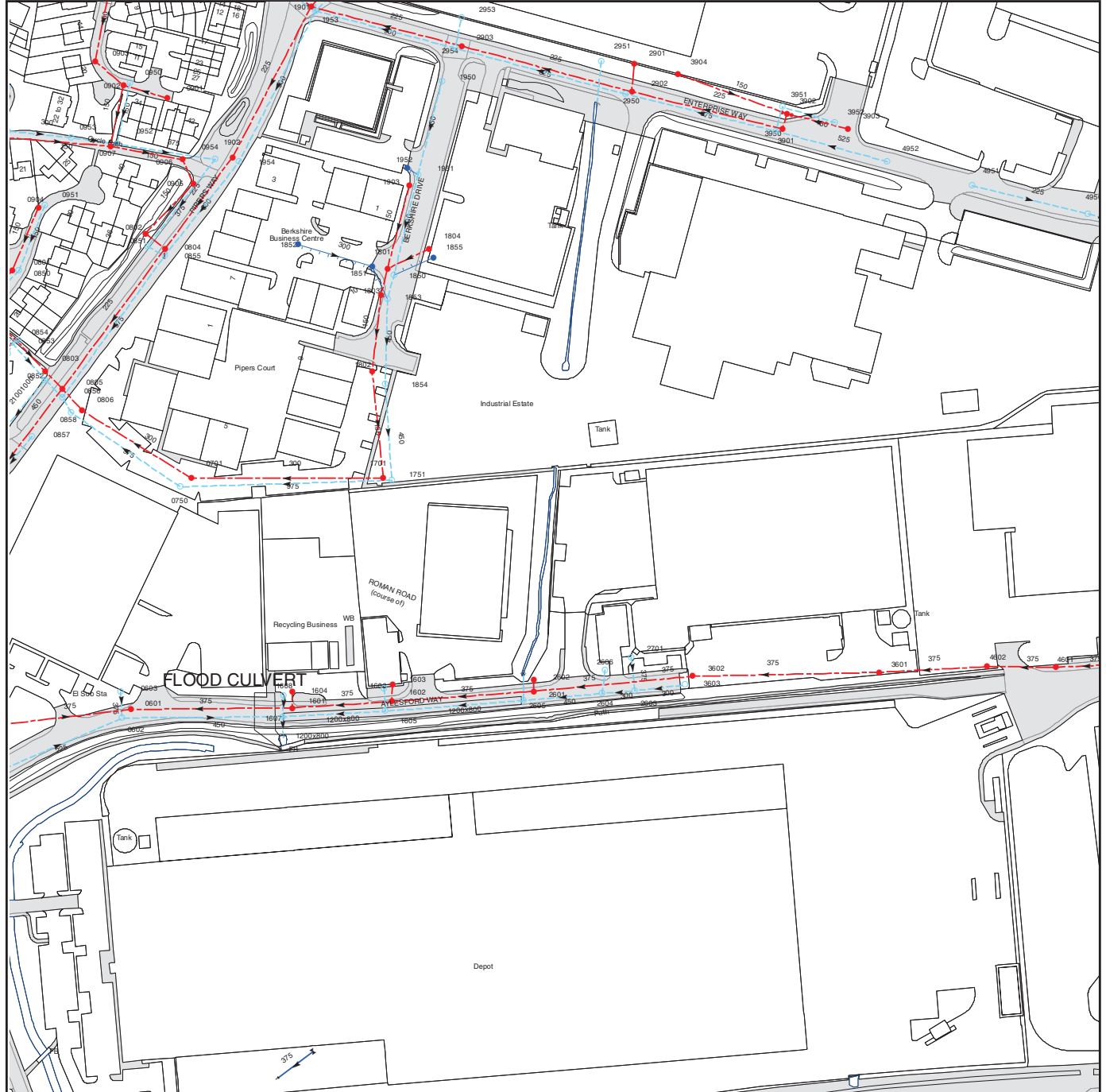
The width of the displayed area is 500m and the centre of the map is located at OS coordinates 453250,166250

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
n/a	n/a	n/a
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 453250,166750

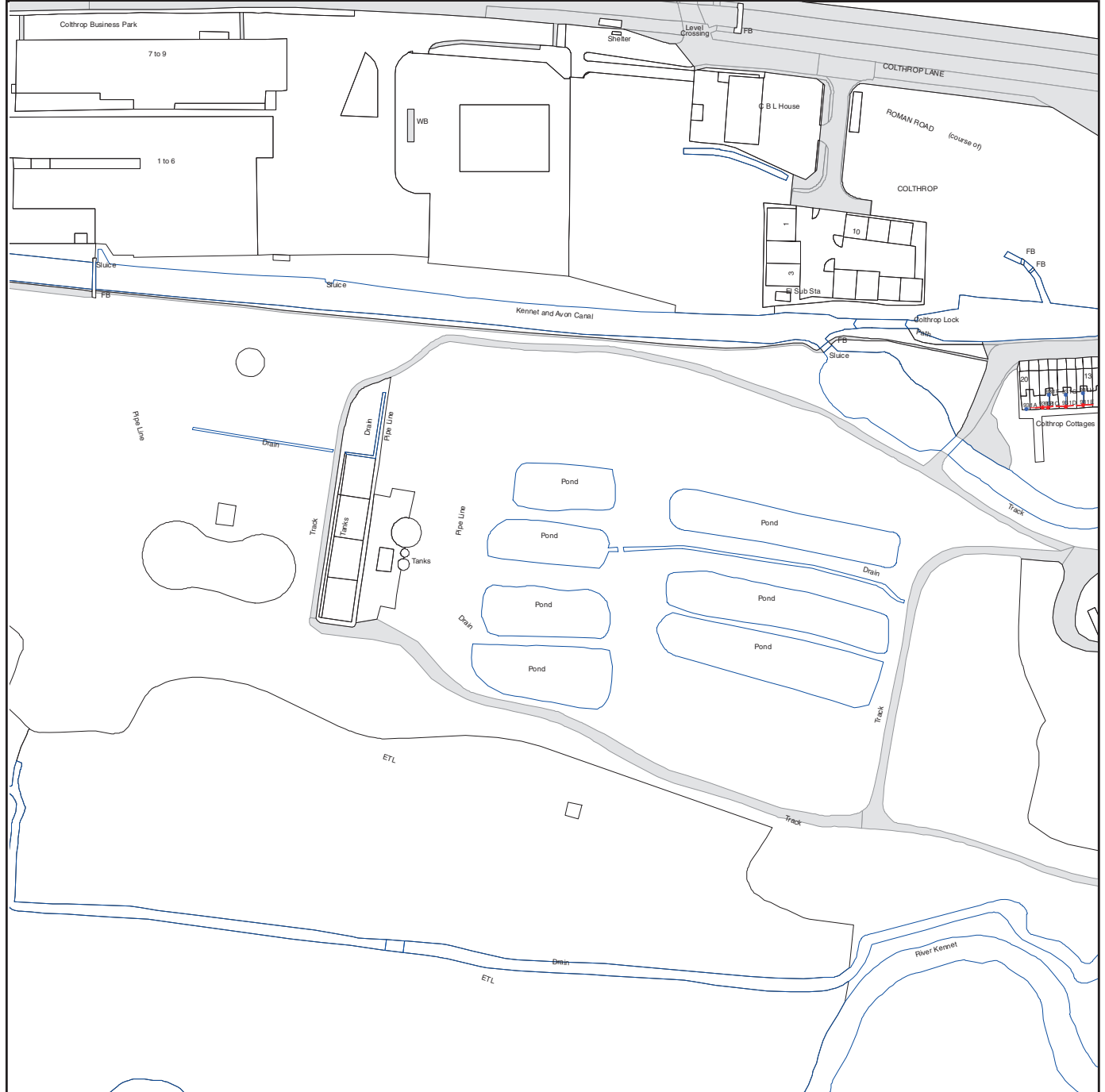
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Manhole Reference	Manhole Cover Level	Manhole Invert Level
1803	68.46	66
1853	68.28	66.57
1801	68.43	66.11
1850	68.42	66.68
1952	69.22	67.12
1903	n/a	n/a
1951	69.12	67.06
1804	68.83	67.13
1855	68.63	n/a
1950	70.64	69.19
2954	71.4	67.83
2903	71.41	66
2953	71.56	68.42
2951	71.46	69.32
2950	71.24	68.06
2902	71.23	67.13
2901	71.39	67.21
3904	71.18	69.79
3950	70.76	68.33
3901	70.75	67.49
3951	70.97	68.7
3902	70.87	67.52
3952	70.63	69.58
3903	70.66	69.79
4952	70.41	68.57
4951	70.17	68.7
4950	69.79	68.29
1607	n/a	n/a
1608	n/a	n/a
1601	n/a	n/a
1604	n/a	n/a
1802	68.25	65.43
1701	n/a	n/a
1606	n/a	n/a
1854	n/a	n/a
1605	n/a	n/a
1751	n/a	n/a
1602	n/a	n/a
1603	n/a	n/a
2605	n/a	n/a
2602	n/a	n/a
2601	n/a	n/a
2604	n/a	n/a
2606	n/a	n/a
2701	n/a	n/a
2603	n/a	n/a
3603	n/a	n/a
3602	67.98	64.02
3601	66.85	64.21
4602	66.48	64.33
4601	66.3	64.38
0953	68.66	66.68
0903	69.48	67.43
0907	68.72	66.26
0952	68.8	66.52
0902	69.29	67.2
0950	69.33	67.83
0802	68.8	64.99
0851	68.67	66.03
0804	68.466	64.706
0855	68.49	65.49
0901	69.54	67.91
0906	69.07	65.83
0905	68.91	65.7
0954	68.85	66.28
1902	68.93	65.36
1954	69.12	66.46
1852	68.36	67.01
1901	70.97	66.38
1953	70.94	67.39
1851	68.66	66.83
0750	67.39	65.57
0701	67.35	64.06
0857	67.79	66.33
0858	68.03	65.31
0806	68.05	63.8
0856	67.97	65
0805	67.993	63.643
0852	68.18	65.21
0803	68.23	63.98
0853	67.85	65.38
0854	67.92	66.86
0602	n/a	n/a
0601	n/a	n/a
0603	n/a	n/a
0904	67.88	66.26
0951	67.91	66.49
0801	67.64	65.19
0850	67.6	66.19

Manhole Reference	Manhole Cover Level	Manhole Invert Level
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The width of the displayed area is 500m and the centre of the map is located at OS coordinates 453750,166250

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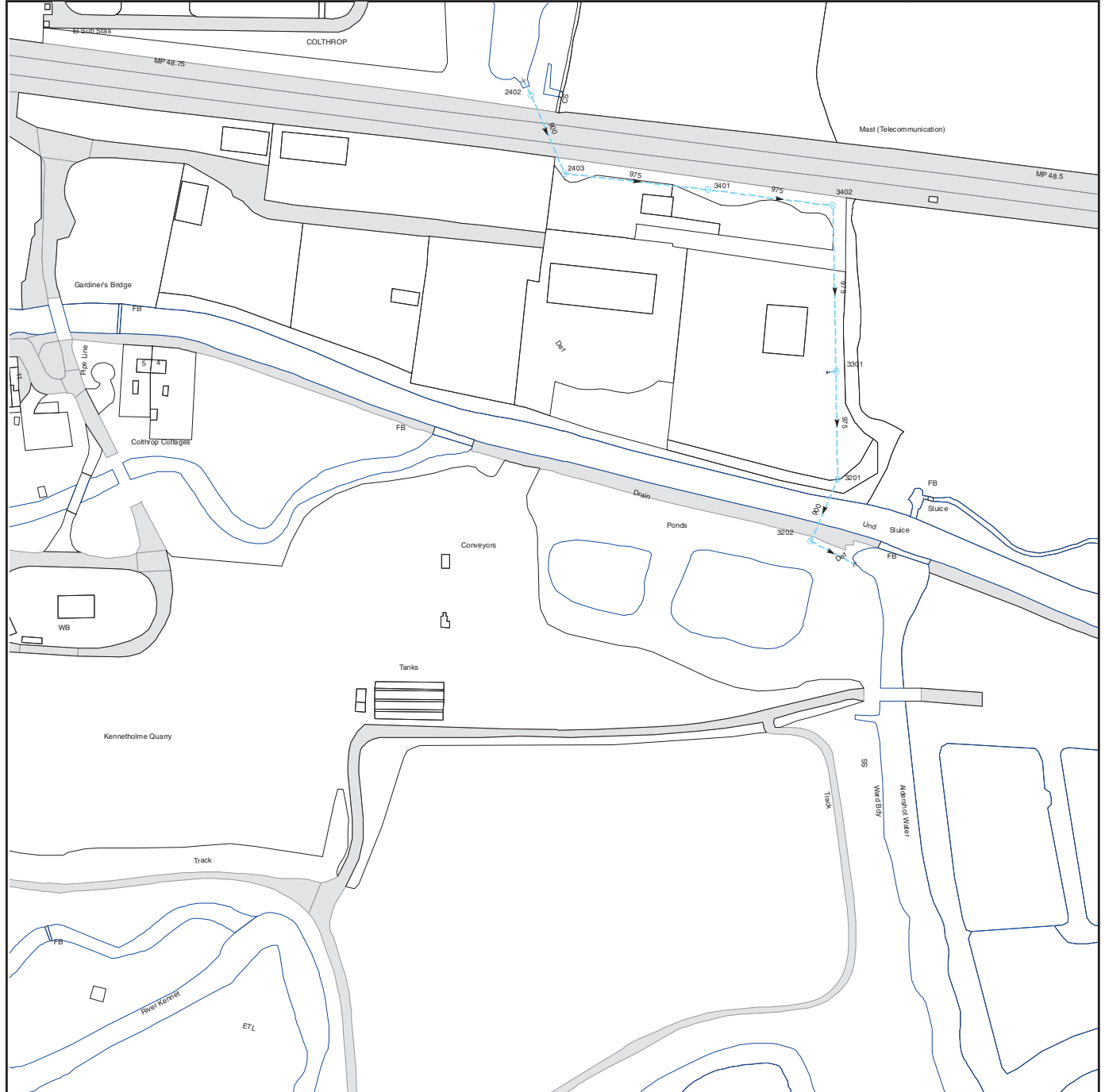
Manhole Reference	Manhole Cover Level	Manhole Invert Level
931A	n/a	n/a
931B	n/a	n/a
931C	n/a	n/a
931D	n/a	n/a
931E	n/a	n/a
931F	n/a	n/a
931G	n/a	n/a
931H	n/a	n/a

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Manhole Reference	Manhole Cover Level	Manhole Invert Level
8753	n/a	n/a
8601	n/a	n/a
8606B	n/a	n/a
9602	n/a	n/a
9601	n/a	n/a
8754	n/a	n/a
9755	n/a	n/a
8801	68.1	66.74
9851	n/a	n/a
7702	66.6	64.97
761A	n/a	n/a
761B	n/a	n/a
7701	67.11	65.41
7601	n/a	n/a
871D	n/a	n/a
8755	67.27	65.94
861A	n/a	n/a
8756	67.65	66.34
8505	n/a	n/a
871C	n/a	n/a
8602	n/a	n/a
871B	n/a	n/a
8506	n/a	n/a
8607	n/a	65.01
8501	65.82	62.92
871A	n/a	n/a
8514	n/a	n/a
8513	n/a	n/a
8603	n/a	n/a
8751	n/a	n/a
8502	65.72	62.87
8604	n/a	n/a
8503	65.61	62.8
8509	n/a	n/a
8752	n/a	n/a
8605	n/a	n/a
5601	66.3	64.43
5701	66.13	64.58
6701	66.1	64.77

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.



The width of the displayed area is 500m and the centre of the map is located at OS coordinates 454250,166250

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

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NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available

Manhole Reference	Manhole Cover Level	Manhole Invert Level
2402	n/a	n/a
3202	n/a	n/a
3201	n/a	n/a
3301	n/a	n/a
3402	n/a	n/a
3401	n/a	n/a
2403	n/a	n/a

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.

NB. Levels quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates that no survey information is available



















Manhole Reference	Manhole Cover Level	Manhole Invert Level
2801	69.75	68.33
2501	n/a	n/a
2502	n/a	n/a
2601	n/a	n/a
0501	n/a	n/a
1604	n/a	n/a
1612	n/a	n/a
1606	n/a	n/a
171A	n/a	n/a
1609	n/a	n/a
171B	n/a	n/a
171C	n/a	n/a
171D	n/a	n/a
1613	n/a	n/a
161A	n/a	n/a
1602	n/a	n/a
1605	n/a	n/a
1603	n/a	n/a
1703	n/a	n/a
1601	n/a	n/a
1702	n/a	n/a
1607	n/a	n/a
1701	70.75	67.79
1617	65.81	64.46
2504	n/a	n/a
1802	70.2	68.04
1803	70.01	68.59
1801	69.94	68.46

The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified and established on site before any works are undertaken.








ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

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





Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

-  Air Valve
-  Dam Chase
-  Fitting
-  Meter
-  Vent Column




Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

-  Control Valve
-  Drop Pipe
-  Ancillary
-  Weir





End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

-  Outfall
-  Undefined End
-  Inlet






Other Symbols

Symbols used on maps which do not fall under other general categories








-  Public/Private Pumping Station
-  Change of characteristic indicator (C.O.C.I.)
-  Invert Level
-  Summit

Areas

Lines denoting areas of underground surveys, etc.

-  Agreement
-  Operational Site
-  Chamber
-  Tunnel
-  Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

-  Foul Sewer
-  Surface Water Sewer
-  Combined Sewer
-  Gully
-  Culverted Watercourse
-  Proposed
-  Abandoned Sewer

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plans are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
- 5) 'na' or '0' on a manhole level indicates that data is unavailable.

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

Appendix B JSA Concept Plan



- Bus Stops
- Bus Route
- Cycle Path

Appendix C Thatcham SWMP Figures

Figure 1 – Historical Flood Events and Surface Water Flooding

Figure 7 – Groundwater Contours

Figure 9 – Thames Water Sewers



DO NOT SCALE

KEY :

SURFACE WATER FLOODING

EXISTING WATERCOURSE

SCALE 1:5000	DATE	APPROVED
PROJECT NO. 11012465	NOVEMBER 2009	BC
DRAWING NO. FIGURE 1		

THATCHAM SWMP

HISTORIC FLOOD EVENTS & SURFACE WATER FLOODING

WEST BERKSHIRE COUNCIL



WSP

Mountbatten House, Basing View, Basingstoke, Hampshire RG21 4JU
 Tel: +44 (0)1256 319800 Fax: +44 (0)1256 316700
<http://www.wspgroup.com>

REV	DATE	BY	DESCRIPTION	CHK	APP
FOR INFORMATION ONLY					

Please note that these maps only show the predicted likelihood of flooding from surface water for defined areas, and are not detailed enough to account for precise addresses. Individual properties therefore may not always face the same chance of flooding as the areas that surround them.

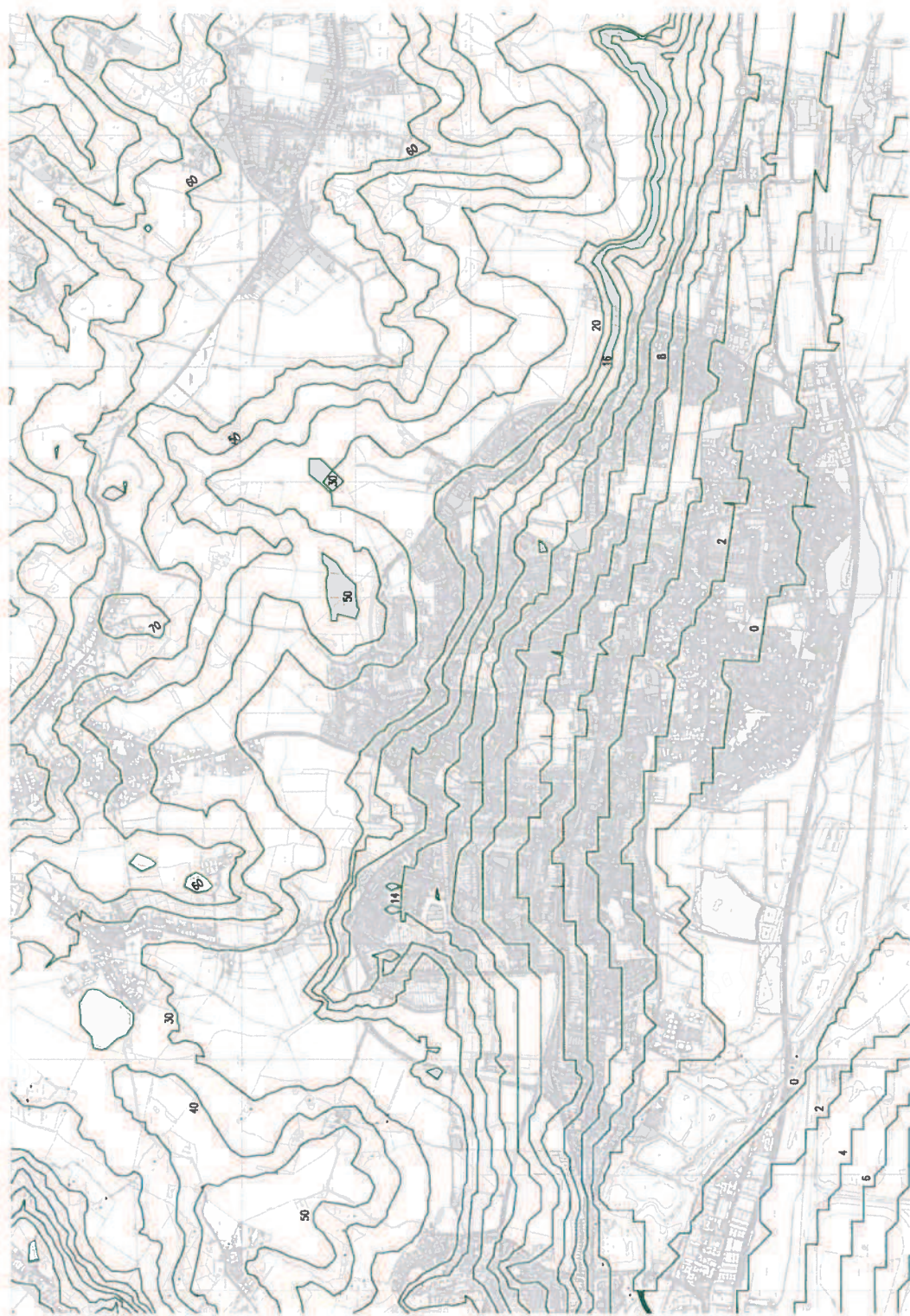
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DO NOT SCALE

KEY

DEPTH TO GROUNDWATER (m bgl)



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REV	DATE	BY	DESCRIPTION

FOR INFORMATION ONLY



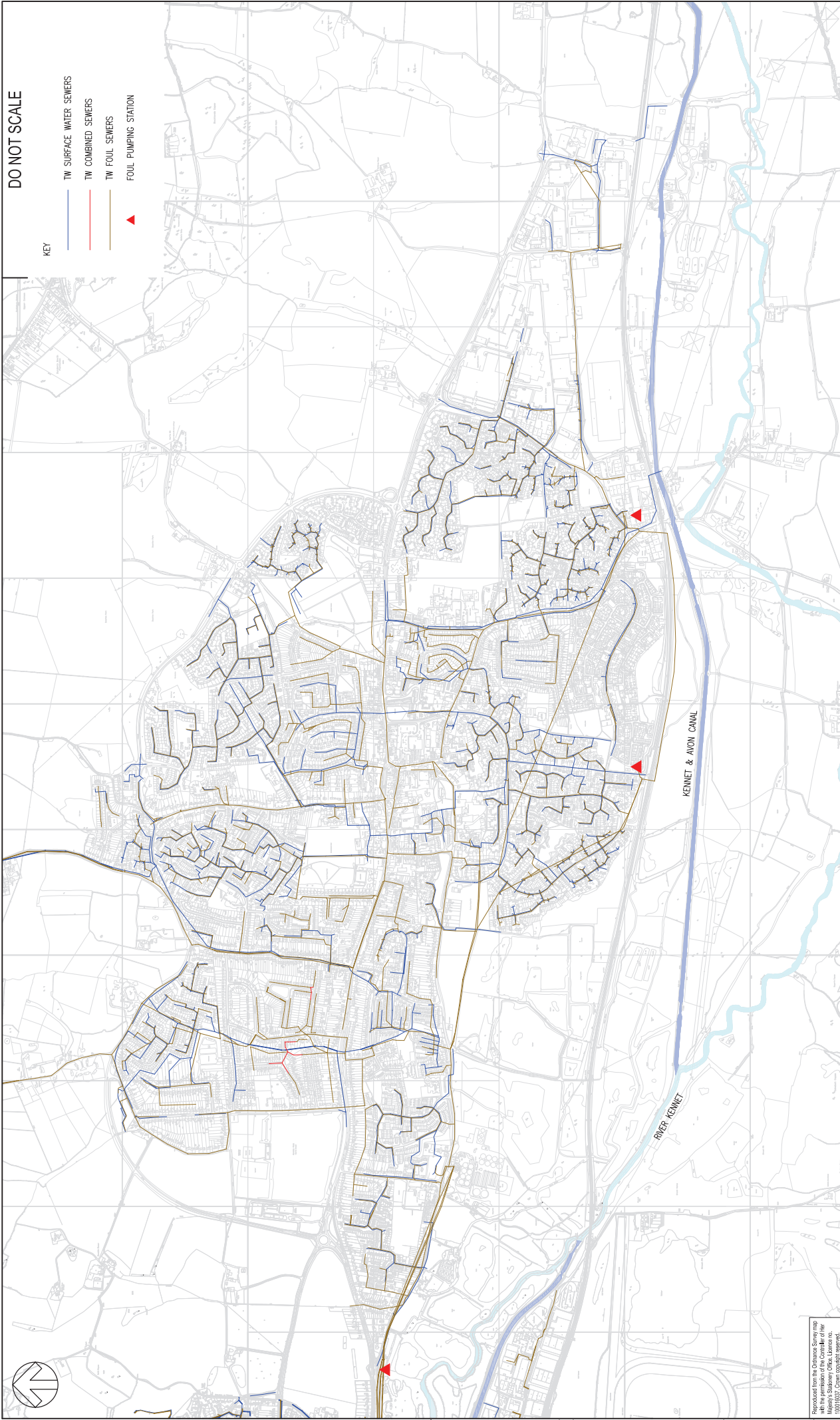
Mountbatten House, Basing View, Basingstoke, Hampshire RG21 4HU
Tel: +44 (0)1256 318600 Fax: +44 (0)1256 318700
<http://www.wspgroup.com>

CLIENT: WEST BERKSHIRE COUNCIL

PROJECT: THATCHAM SWAMP

TITLE: EA GROUNDWATER CONTOURS

SCALE @ A2	CHECKED:	CL A	APPROVED:	BC
CAD FILE	FIG07	RJU	DATE:	November 2009
PROJECT No	11012465	DRAWING No	FIGURE 7	REV
© WSP Group plc				



DO NOT SCALE

KEY

- TW SURFACE WATER SEWERS
- TW COMBINED SEWERS
- TW FOUL SEWERS
- FOUL PUMPING STATION

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SCALE @ A2:	1:10,000	CHECKED:	CLA	APPROVED:	BC
CAD FILE:	FIG09	DESIGNER/CHK:	RJJ	DATE:	December 2009
PROJECT No:	11012465	DRAWING No:	FIGURE 9	REV:	

PROJECT:	THATCHAM SWMP
TITLE:	THAMES WATER SEWERS

CLIENT:	WEST BERKSHIRE COUNCIL
ARCHITECT:	

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<http://www.wspgroup.com>

REV	DATE	BY	DESCRIPTION	CHK	APP
FOR INFORMATION ONLY					

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Appendix D Runoff Rate Calculations

Greenfield runoff rate calculations

Brett Associates LLP		Page 1
Caversham Bridge House Waterman Place Reading RG1 8DN	30738 Colthrop Village, Thatcham Greenfield Runoff Rates	
Date 21/09/2016 10:36 File	Designed by eedney Checked by	
XP Solutions	Source Control 2016.1	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	100	Soil	0.450
Area (ha)	1.000	Urban	0.000
SAAR (mm)	725	Region Number	Region 6

Results l/s

QBAR Rural 4.6
QBAR Urban 4.6

Q100 years 14.6

 Q1 year 3.9
 Q30 years 10.4
Q100 years 14.6

Appendix E West Berkshire Correspondence

Correspondence 26th April 2016

Elizabeth Edney

From: Jon Bowden <Jon.Bowden@westberks.gov.uk>
Sent: 26 April 2016 15:42
To: Elizabeth Edney
Cc: Stuart Clark; Antonia Bartzou
Subject: RE: Climate Change Allowances for Surface Water Drainage

Hi Elizabeth,

Our view is a little different from what you have quoted. We currently have an informal policy on Climate Change Allowance, which will be included in a new Supplementary Planning Document as formal policy to be published later this year.

What we require for most developments is to allow a 30% increase for climate change in all occurrences except those developments for which there is clearly a limited life span. For those cases we are prepared to relax it to 20% increase, broadly based on what was contained in PPG25 when appropriate. We will also ask for a 40% increase for 'sensitive sites' when there is a clear and serious risk of additional flooding resulting from the proposed development. This is most likely to apply to certain sites within Flood Zone 3 and possibly FZ2 depending on the proposed site use.

I hope this helps to clarify the issue.

Regards

Jon Bowden

Senior Engineer (Land Drainage)

Highways & Transport West Berkshire Council
Market Street Newbury RG14 5LD
(01635) 519066 | Ext 2066 jon.bowden@westberks.gov.uk
www.westberks.gov.uk



Please consider the environment before printing this e-mail

From: Elizabeth Edney [<mailto:eedney@peterbrett.com>]
Sent: 18 April 2016 12:29
To: Jon Bowden; Stuart Clark
Subject: Climate Change Allowances for Surface Water Drainage

Jonathan/Stuart

I am preparing surface water drainage strategies for sites in Theale and Speen. The new EA climate change guidance for surface water drainage requires a range of 20% to 40% increase in peak rainfall intensity to be considered.

Our strategy in accordance with guidance for other Lead Local Flood Authorities is to design to the 20%cc and use the 40%cc allowance as a sensitivity/for exceedance flows.

I would be grateful if you could confirm if you have an approach towards these climate change allowances and whether the above approach is acceptable.

Many thanks.


Kind Regards,

Elizabeth Edney

Appendix F Quick Storage Estimate

MicroDrainage Quick Storage Estimate

Quick Storage Estimate



Variables

FSR Rainfall:

Return Period (years):

Region:

M5-60 (mm):

Ratio R:

Cv (Summer):

Cv (Winter):

Impermeable Area (ha):


Maximum Allowable Discharge (l/s):

Infiltration Coefficient (m/hr):

Safety Factor:

Climate Change (%):

Quick Storage Estimate



Variables

Results

Design

Overview 2D

Overview 3D

Vt

Results

Global Variables require approximate storage of between 677 m³ and 953 m³.

These values are estimates only and should not be used for design purposes.

Enter Climate Change between -100 and 600