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Proposed Residential Development Icknield Way, Tring

Flood Risk & Drainage Constraints
For
Waterside Way Sustainable Planning

08543/FRDC

Original. 30 January 2009

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Flood Risk & Drainage Constraints

Proposed Residential Development, Icknield Way, Tring

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1.0 Introduction**1.1 Terms of Reference**

- 1.1.1 BSP Consulting has been commissioned by Waterside Way Sustainable Planning to carry out an initial assessment of the Flood Risk and Drainage Constraints associated with the a residential development of land off Icknield Way, Tring.
- 1.1.2 In the preparation of this report, consultations have been undertaken with the Environment Agency (EA) and Thames Water (TW). A site visit has been undertaken to walk the local area, assess the local topography and proposed development site constraints.
- 1.1.3 This report has been produced on behalf of the client, Waterside Way Sustainable Planning, and no responsibility is accepted to any third party for all or any part. This report should not be relied upon or transferred to any other parties without the express written authorisation of BSP Consulting. If any unauthorised third party comes into possession of this report, they rely on it at their own risk and the authors owe them no duty of care or skill.

2.0 Background Information

2.1 Site Location, Description and Details

2.1.1 Figure 2.1 below indicates the location of the site.

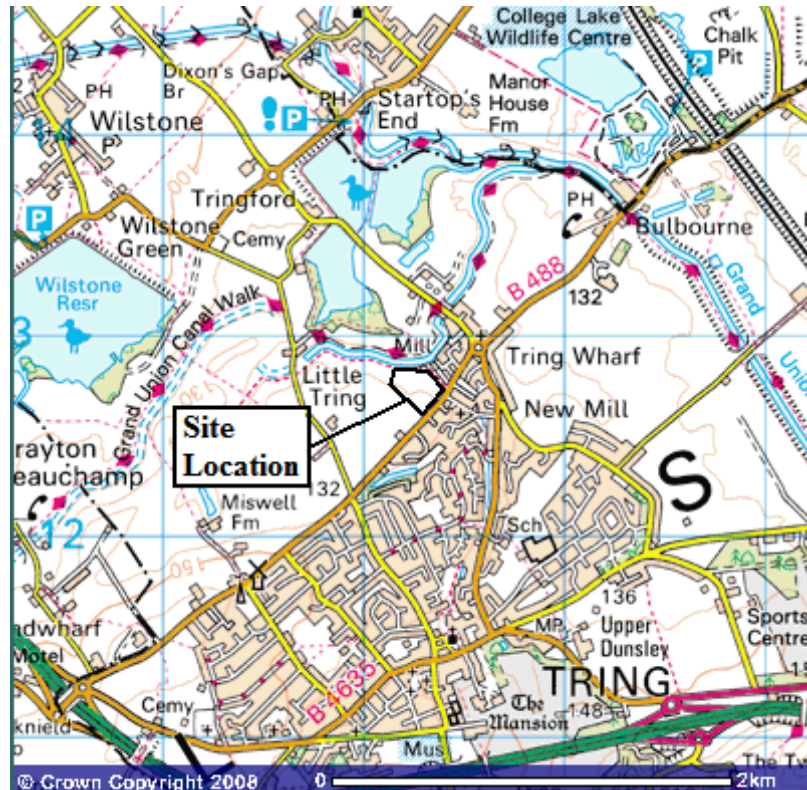


Fig 2.1 Icknield Way, Tring – Site Location Plan

- 2.1.2 The site occupies an area of approximately 9 ha and is located to the north west of Icknield Way, Tring at OS GR 492226m, 212719m. The site currently consists of existing rough grassland and is bounded by existing residential development to the south and east, the Grand Union Canal and further grass land to the north. A feeder channel for the canal forms the north eastern boundary. An un-named watercourse flows in a northerly direction approximately 75m to the east of the site. This watercourse flows beneath the canal and into Tringford Reservoir to the north of the site.
- 2.1.3 A topographical survey of the site has been carried out and a copy of this is included as Appendix A. This shows the site to fall from south to north, with levels generally falling from approximately 133.75m AOD in the south, to a minimum of 120m AOD in the north and east adjacent to the canal. The water level within the canal and feeder channel is approximately 119.1m AOD. Beyond the canal to the north, levels were observed to drop rapidly by approximately 7m towards the unnamed watercourse.

3.0 Flood Risk Constraints**3.1 Development Description and Planning Context**

- 3.1.1 The development proposals are for 200-300 residential dwellings and a possible marina complex adjacent to the canal.
- 3.1.2 In accordance with PPS 25, residential use falls under the More Vulnerable category and the marina under the Less Vulnerable category in terms of flood risk.

3.2 Sources of Flooding**3.2.1 Local Watercourses & Canal**

- 3.2.1.1 Inspection of the topographical survey and sewer records shows the unnamed watercourse to the east of the site to be in excess of 5m lower than the site and as such is not considered to present any risk of flooding to the site.
- 3.2.1.2 The water levels within the canal are maintained by a sluice to the north east of the site that discharges directly to the unnamed watercourse as it passes underneath the canal. In the unlikely event that the sluice becomes blocked water levels may rise within the canal, however they would overtop the northern bank and flow away from the site with the local topography. As such the canal is not considered to present any significant risk of flooding to the site.
- 3.2.1.3 The EA have provided a copy of their flood map for the local area. This map shows the site to lie outside of the areas shown to be at risk from flooding. A copy of the EA flood map for the area is shown below as Figure 3.1. The EA have also confirmed that they have no records of any historic flood events from rivers or groundwater effecting this site, see full EA correspondence with Appendix B. The site should therefore be classified as lying within Flood Zone 1 Low Probability, having a less than 1:1000 annual probability of river flooding (<0.1%) in any year.
- 3.3.1.4 As the site lies within Flood Zone 1 no specific constraints relating to fluvial flooding will effect this site. However the drainage constraints discussed below in Section 4 will need to be considered.

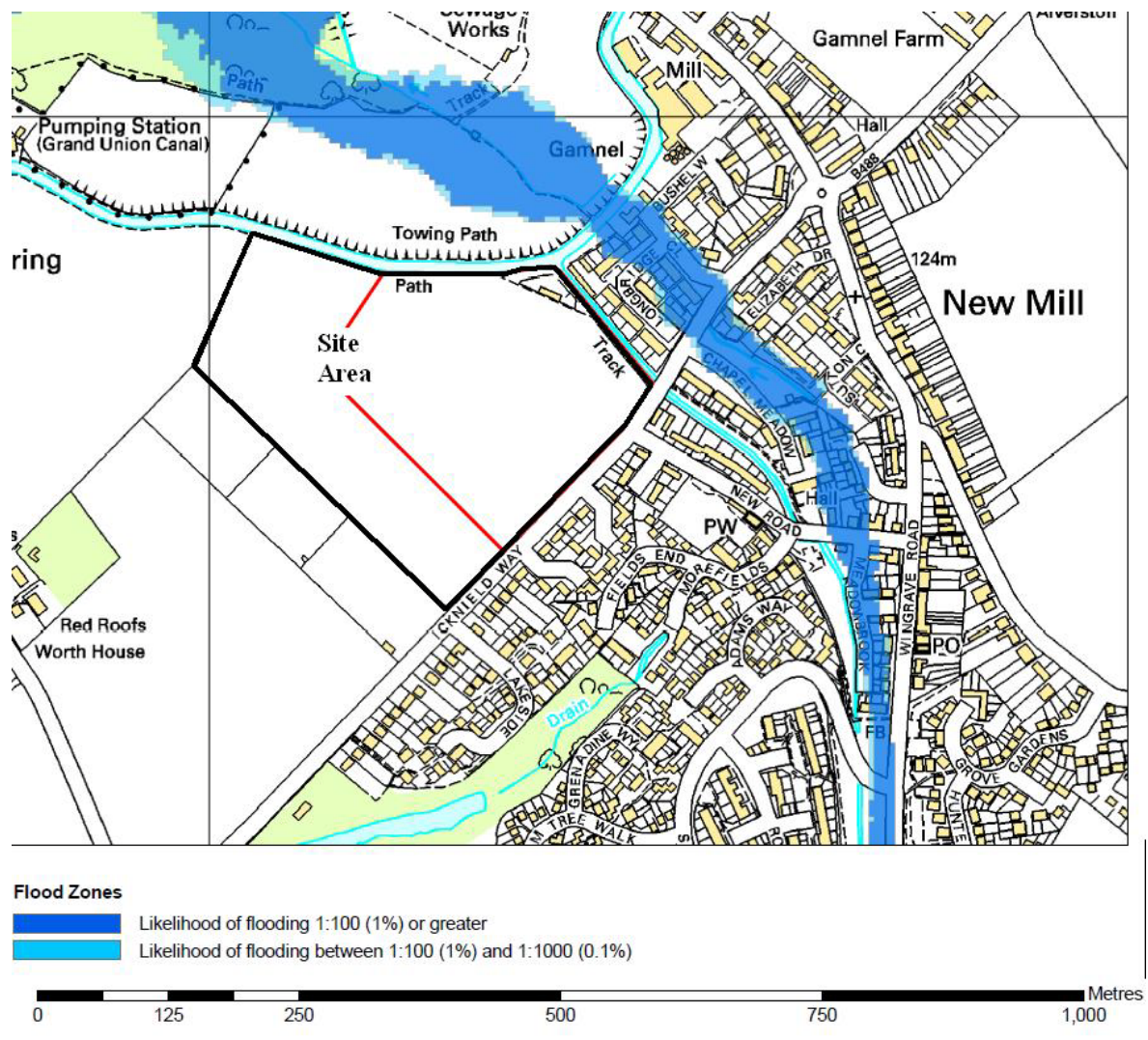


Figure 3.1 – Environment Agency Indicative Flood Map

3.2.2 Local Sewers

- 3.2.2.1 TW have been contacted and have provided copies of their sewer records for the site and copies of these are included as Appendix C. Inspection of these records indicates that there are no public sewers in close vicinity of the site that would present any risk of flooding to the site.

3.3 PPS 25 Sequential Test

- 3.3.1 PPS 25 calls for a risk based sequential test to be applied in the selection of sites for developments. The overall aim is to steer new development to areas within Flood Zone 1 and away from flood risk areas.
- 3.3.2 The site falls within Flood Zone 1 and as such satisfies the requirements of the sequential test and is suitable for the proposed residential and marina uses.

4.0 Drainage Constraints**4.1 Thames Water**

- 4.1.1 TW have been contacted and have provided copies of their existing sewer records for the site and copies of these are included as Appendix C.

4.2 Existing Sewers

- 4.2.1 Inspection of Thames Waters sewer records indicates that there are no public sewers crossing or adjacent to the site. However, there are public surface and foul water sewers within the local area and these can be summarised as follows:

Surface Water

- 900mm diameter gravity sewer/culvert that forms part of the unnamed watercourse approximately 75m to the north east of the site.

Foul Water

- 150mm diameter gravity sewer within New Road approximately 60m to the south east of the site.
- 675mm diameter gravity sewer flowing south east to north west approximately 140m north east of the site.
- Pumping station located within Longbridge Close approximately 75m to the east of the site.

4.3 Surface Water Drainage**4.3.1 Existing Run-off**

- 4.3.1.1 Surface water run-off from the site under current 'green field' conditions will follow the topography of the site and run-off directly into the canal and feeder channel to the north and east of the site. Excess water within the canal will then pass through the sluice and into the unnamed watercourse.
- 4.3.1.2 In accordance with the SUDS Manual, the existing green field run-off from the site has been calculated using the method detailed with the Institute of Hydrology Report 124. Windes modelling software has been utilised to calculate run-off rates in accordance with this method and the results are shown in Table 1 below. Full calculations can be found in Appendix D. Q_{BAR} represents the mean annual flood flow rate and can generally be equated to the 1:2 year return period.

**Table 1 – Greenfield Run-off Rates
(IOH 124 Method)**

	Run-off Rate (l/s) for various storm return periods			
Site Area	1 Year	30 Year	100 Year	Q_{BAR}
9 ha (Greenfield)	34	91	128	40

4.3.2 Proposed Surface Water Drainage Options

4.3.2.1 The impermeable area of the proposed development is likely to be approximately 65% of the site area and as such this will generate an increased surface water run-off over that of the existing situation. The actual impermeable area will need to be confirmed following completion of a site layout.

4.3.2.2 The following options have been identified for the disposal of surface water from the site:

1. Infiltration techniques
2. Restricted gravity discharge to the canal
3. Restricted gravity discharge to the unnamed culverted watercourse within Icknield Way to the east of the site.
4. Restricted gravity discharge to the unnamed open channel watercourse to the north of the canal.

4.3.2.3 Option 1 will require the site substrata to be of a permeable nature in order to allow water to soak away into the ground. The feasibility of this option will be subject to the results of a ground investigation and infiltration testing. Infiltration techniques offer a sustainable form of drainage (SUDS) and would typically consist of the following:

- Permeable paving
- Soakaways
- Infiltration basins

4.3.2.4 Options 2-4 will require restricting the surface water discharge rate and providing a volume of attenuation on site. In accordance with PPS25 and the SUDS Manual, the existing site run-off, should not be exceeded by the proposed development drainage system for all storms up to the 1:100 year design event. Should infiltration drainage not be suitable on the site an extended attenuation system would be required as set out in the SUDS Manual. This requires that the off site discharge is restricted back to a rate equivalent to the Q_{BAR} discharge rate (40l/s) for the previous site for all storms up to and including the 1:100 year return period.

- 4.3.2.5 Initial calculations have been carried out and based upon an impermeable area of 5.85ha (65% impermeable) and a restricted discharge of 40 l/s show that approximately 2200m³ of attenuation would be required for the 1:100 year + 30% climate change event.
- 4.3.2.6 To provide this volume of attenuation and meet the requirements of PPS 25 and the EA it would be recommended that a SUDS drainage system is utilised. This would typically consist of providing above ground attenuation in the form of a balancing pond or swales. The use and volume of above ground storage will be subject to further discussions with the EA, TW and the Local Authority, and careful consideration will need to be given to the long term maintenance of this. At this stage it may be wise to allow for an area of approximately 3100m² along the eastern or northern boundary of the site layout for the provision of a balancing pond. The location of the pond for the different option will vary as discussed below.
- 4.3.2.7 In considering options 2-4 the following issues will need to be addressed:

Option 2 Restricted gravity discharge to the canal

1. Whilst it is evident that the existing run-off from the site does discharge into the canal, British Waterways do not normally permit surface water discharges from developments into their canals. However in certain circumstances an agreement for a restricted discharge can be agreed. The feasibility of this option will therefore be subject to further detailed discussions with British Waterways.
2. The preferred location for the pond would be midway along the boundary of the site with the canal and feeder channel. Minor raising of levels may be required for plots to the north west and south eastern corners to achieve a gravity discharge.

Option 3 Restricted gravity discharge to the unnamed culverted watercourse within Icknield Way to the east of the site.

1. This option would require approximately 75m of new off-site public sewers being constructed within Icknield Way to the east of the site.
2. Approvals would need to be sought from Thames Water, Environment Agency and the Local Highway Authority.
3. The preferred location for the pond would be in the far eastern corner of the site adjacent to the feeder channel and Icknield Way.

Option 4 Restricted gravity discharge to the unnamed open channel watercourse to the north of the canal.

1. This option would require approximately 85m of new off-site public sewers being constructed to the north east of the site under the canal and through third party land before out falling to the watercourse.
2. Approvals would need to be sought from British Waterways, Thames Water, Environment Agency and the third party land owner. It is likely

that this option would be very costly and take some time to obtain approval for.

3. The preferred location for the pond would be in the north eastern corner of the site adjacent to the feeder channel and canal.

4.3.2.8 The locations of the outfalls for each of these locations is illustrated on drawing 08543/SK1000 included within Appendix D. It should be noted that it may be possible to construct the off site sewers for options 3 and 4 via a sewer requisition with Thames Water, this may be time consuming and costly but would be easier to overcome any third party land issues.

4.4 Foul Water Drainage

4.4.1 The estimated peak foul flow rates from a development of 300 houses and a marina is approximately 17l/s. TW have been contacted with regard to the capacity of the local sewers to accept a foul water discharge from the site and they have stated that due to the size of the site a detailed impact assessment will be required. TW make a charge for undertaking this assessment and confirmation of these costs will be forwarded once received.

4.4.2 Prior to TW undertaking a detailed impact assessment we have reviewed the following initial options for the disposal of foul water from the site:

1. Discharge to the foul sewer within New Road to the south east of the site.
2. Discharge to the foul sewer within Icknield Way to the east of the site.
3. Discharge to the foul sewer to the north of the canal.
4. Discharge to the existing pumping station within Longbridge Close to the east of the site.

4.4.3 In considering these the following issues will need to be addressed:

Option 1 Discharge to the foul sewer within New Road to the south east of the site.

1. This option would require approximately 60m of new off-site public sewers being constructed within Icknield Way and New Road to the south east of the site.
2. This sewer is only 150mm in diameter and as such is unlikely to have capacity to accept an unrestricted discharge from the site. Therefore attenuation of foul flows or off site improvement works may be required.
3. Unfortunately no levels for this sewer are stated on TW records, however based upon site observations it is unlikely that a gravity discharge from the entire site will be feasible.
4. Consideration would therefore need to be given for the provision of a adoptable pumping station within the site layout. Refer to comments below with regard to the impacts on the site layout.
5. Approvals would need to be sought from Thames Water and the Local Highway Authority.

Option 2 Discharge to the foul sewer within Icknield Way to the east of the site.

1. This option would require approximately 140m of new off-site public sewers being constructed within Icknield Way to the east of the site.
2. This sewer is has a larger 675mm diameter and as such is more likely to have capacity to accept a discharge from the site.
3. TW records show the soffit of this sewer to be 116.36m AOD, which is approximately 3.5m below minimum site levels. However the route of the off-site sewer is such that ground levels drop below this level along Icknield Way at the location of the unnamed watercourse culvert. Therefore a gravity discharge would not be feasible.
4. Consideration would therefore need to be given for the provision of a adoptable pumping station within the site layout. Refer to comments below with regard to the impacts on the site layout.
5. Approvals would need to be sought from Thames Water and the Local Highway Authority.

Option 3 Discharge to the foul sewer to the north of the canal.

1. This option would require approximately 150m of new off-site public sewers being constructed to the north east of the site under the canal and through third party land before out falling to the watercourse.
2. This sewer is 675mm in diameter and as such is more likely to have capacity to accept a discharge from the site.
3. TW records show the soffit of this sewer to be 115.84m AOD, which is approximately 4.2m below minimum site levels. However the route of the off-site sewer is such that ground levels drop below this level at the unnamed watercourse. Therefore a gravity discharge would not be feasible.
4. Consideration would therefore need to be given for the provision of a adoptable pumping station within the site layout. Refer to comments below with regard to the impacts on the site layout.
5. Approvals would need to be sought from British Waterways, Thames Water, Environment Agency and the third party land owner. It is likely that this option would be very costly and take some time to obtain approval for.

Option 4 Discharge to the existing pumping station within Longbridge Close to the east of the site.

1. This option would require approximately 75m of new off-site public sewers being constructed to the east of the site under the canal feeder channel and through third party land.
2. This pumping station has a small catchment and as such is unlikely to have capacity to accept an unrestricted discharge from the site. Therefore attenuation of foul flows or off site improvement works may be required.
3. TW records show the invert of the sewer upstream of this pumping station to be 114.35m AOD, which is approximately 5.7m below minimum site

levels. It is thought that a gravity discharge to this pumping station may be feasible subject to confirmation of off site levels.

4. Approvals would need to be sought from British Waterways, Thames Water, Local Highway Authority and the third party land owner. It is likely that this option would be very costly and take some time to obtain approval for.

4.4.4 The locations of the outfalls for each of these locations is illustrated on drawing 08543/SK1000 included within Appendix D. It should be noted that it may be possible to construct the off site sewers for these options via a sewer requisition with Thames Water, this may be time consuming and costly but would be easier to overcome any third party land issues.

4.4.5 In accordance with Sewers for Adoption the requirements for an adoptable pumping station are as follows:

1. A compound of 8m wide by 10m long, with access provision for a 4000 gallon tanker.
2. The compound should be accessed directly off a public highway, avoiding the need for the tanker to reverse long distances
3. The pumping station should be located no closer than 15m to a habitable building in order to minimise the risk of odour, noise and nuisance.

In addition the pumping station would be best placed in a low point of the site along the north or eastern boundaries to avoid excessive depths.

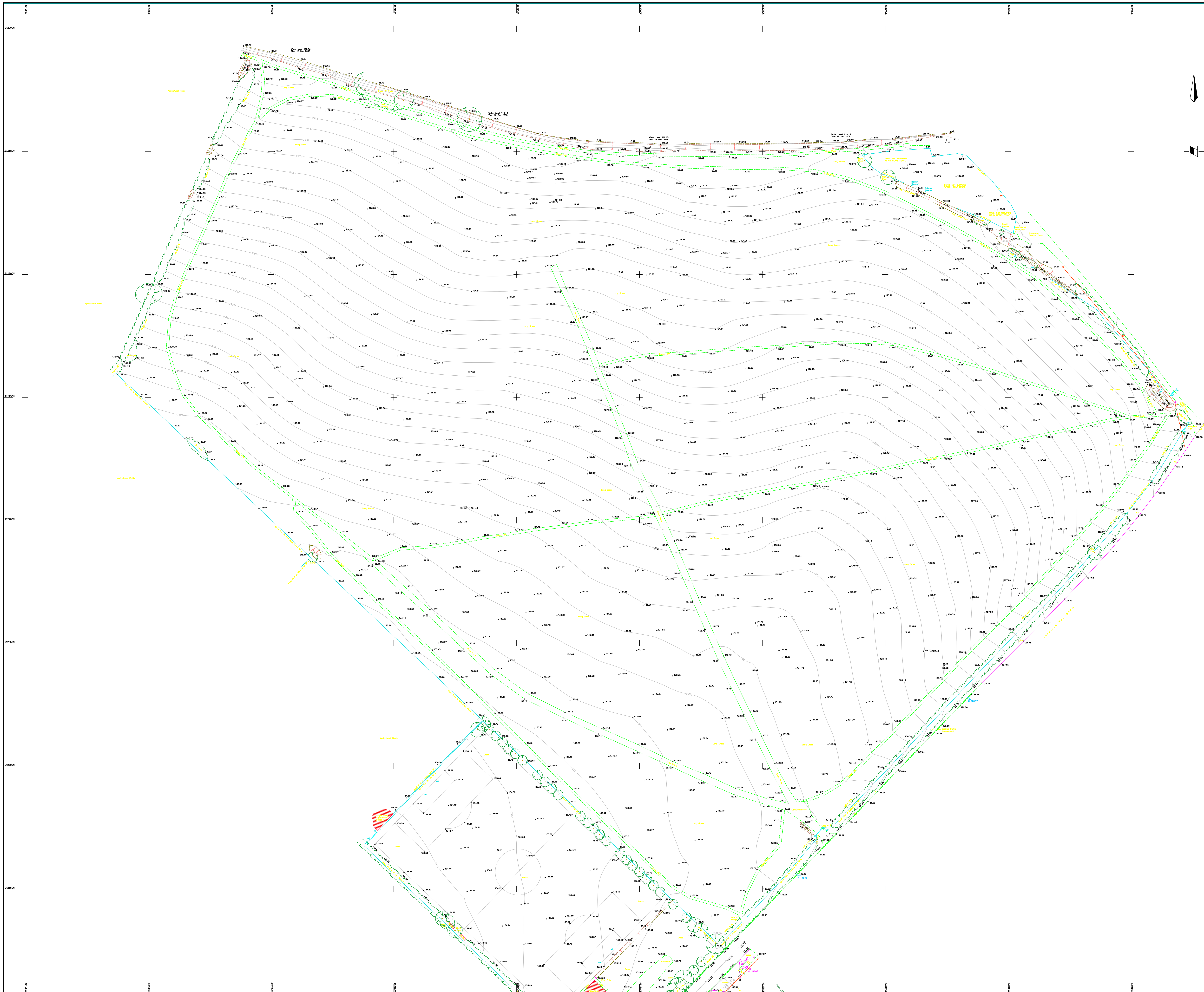
5.0 Conclusions

- 5.1 In terms of flood risk the site is suitable for the proposed residential and marina uses.
- 5.2 A full PPS 25 compliant Flood Risk Assessment will be required to accompany a planning application for the site.
- 5.3 A ground investigation and infiltration testing will be required to confirm the feasibility of infiltration drainage systems.
- 5.4 Further detailed discussions will need to be undertaken with Thames Water, British Waterways, Environment Agency and Local Authority with regard to the foul and surface water drainage strategy.
- 5.5 A detailed impact assessment will be required to confirm the capacity within the local sewers to accept a foul water discharge from the proposed development.
- 5.6 At this stage it is recommended that allowance for an area 3100m² is allowed for in the site layout for the provision of a balancing pond. Provisions should also be made for the inclusion of an adoptable foul water pumping station.

Disclaimer

We would note that all comments made in this report are based on the sources stated in Section 1.1. This report and its recommendations are intended for the use of Waterside Way Sustainable Planning for the above site only.

Appendix A
Topographical Survey

[illegible]

Appendix B
Environment Agency Correspondence

Mr. P. Garton
BSP Consulting
Suite B, Floor 3
24 De Montfort Street
Leicester
LE1 7GB

Our ref: WIR 29588

Date: 12 January 2009

Dear Mr. Garton

FLOOD MAPPING QUERY

Thank you for contacting the Environment Agency. I am pleased to provide you with information on flood risk at the following:

Icknield Way, Tring, SP 92343 12786

The Flood Map

The above site is not within the current 'Extreme Flood Outline'. According to the Flood Map, which provides a general estimate of the likelihood of flooding across England & Wales, the site is shown to have less than 0.1% (1 in 1000) chance of flooding in any year from rivers (please see enclosed extract of flood map showing flood zones).

Our Flood Map shows the natural floodplain ignoring the presence and effect of defences for England and Wales, and therefore the areas potentially at risk of flooding from rivers or the sea.

The map indicates an area with a 1 in 100 (1%) chance of flooding from rivers in any given year. The map also shows:

- The area with a 1 in 1000 (0.1%) chance of flooding from rivers in any given year. This is also known as the Extreme Flood Outline (EFO).
- The location of some flood defences and the areas that benefit from them;
- Information on the likelihood of flooding at any location taking account of the presence and effect of flood defences.

The Flood Map is used to raise awareness and encourage people in flood prone areas to take appropriate action. It is also used alongside other mapping information by:

- The Environment Agency - to improve local flood warning services, target flood risk awareness campaigns and assist in the planning, design, construction and maintenance of flood defences

Red Kite House, Howbery Park, Wallingford, Oxon OX10 8BD
Customer services line: 08708 506 506
Email: enquiries@environment-agency.gov.uk
www.environment-agency.gov.uk

- Local Authority Planners – to understand the future impact of new development on areas of land and control development within the floodplain
- Emergency Services - to direct resources to the most important locations during flood events
- Insurance industry – to provide a first step in decision making with insurance cover.

The Flood Map can be viewed on the 'What's in my backyard?' pages on our website at www.environment-agency.gov.uk

Defences

The Flood Map shows Environment Agency constructed and maintained flood defences. At present the map shows the location of all flood defences that are less than 5 years old, built to protect against a flood from rivers (fluvial) with a 1 in 100 (1%) chance of occurring in any year. Where we have good information about other defences we have also included them on the map.

There are no Environment Agency constructed or maintained river flood defences in the area of the above site that offer some protection from flooding from rivers.

Historic Flood Events

The above site is not within the Environment Agency's records of historic flood events from rivers or groundwater. However, please note that this does not necessarily mean that flooding has not occurred here in the past, as our records are not comprehensive. We would therefore advise that you make further enquiries locally with specific reference to flooding at this location.

Please note our standard notice for the supply of information (commercial).

Yours sincerely,



Rob Devas
External Relations Officer
Tel: 01491 828511
thwest@environment-agency.gov.uk

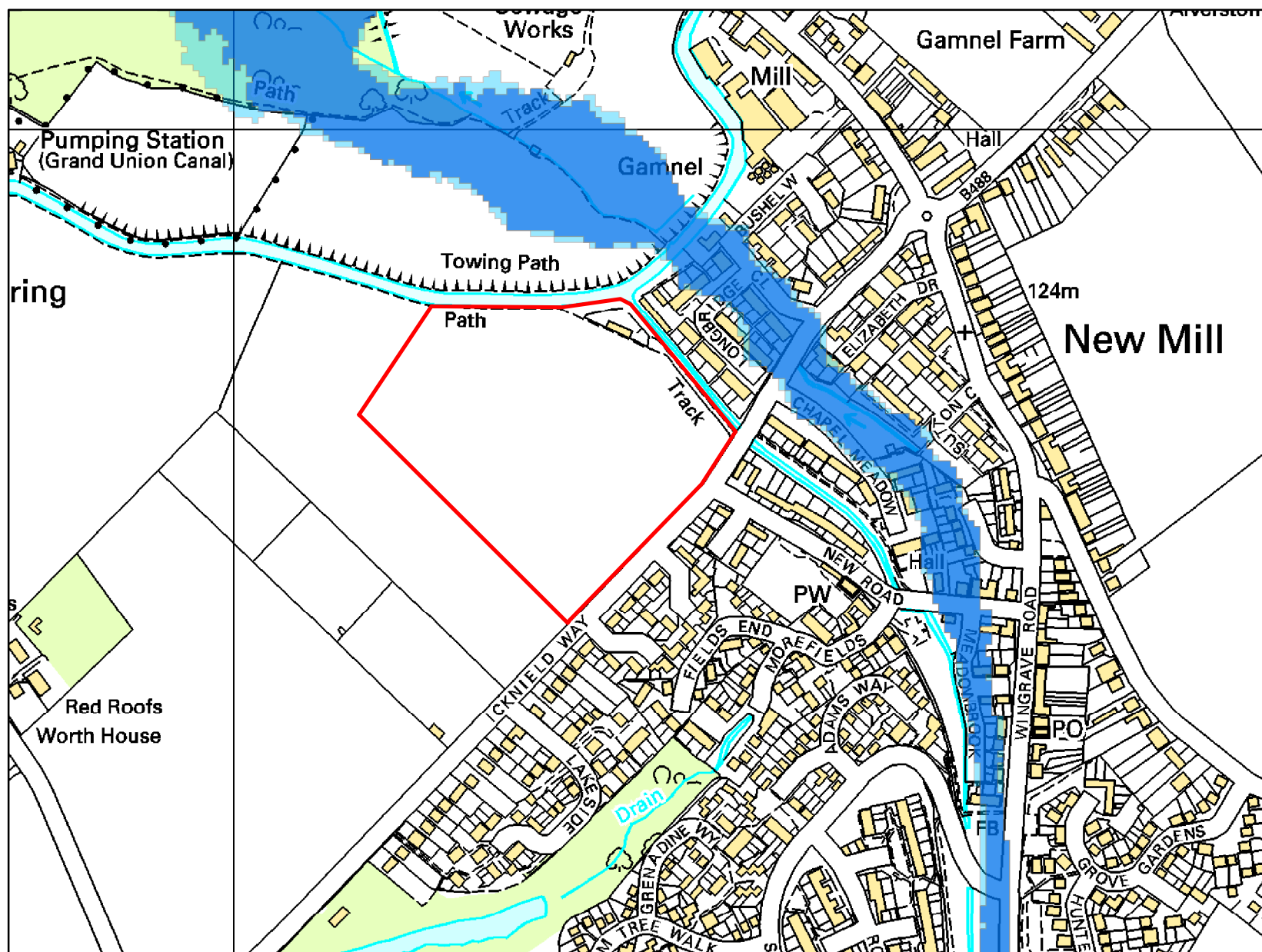
WIR 29588

Flood Zones Map
in vicinity of



492260, 212744
marked with a red outline

Please confirm correct
location

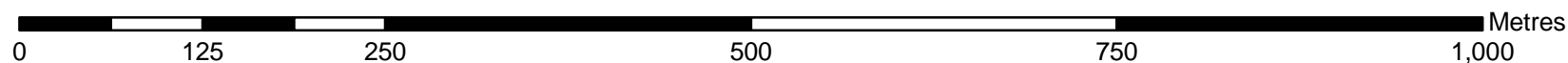
Map reproduced by RD
29/12/08



Flood Zones

-  Likelihood of flooding 1:100 (1%) or greater
-  Likelihood of flooding between 1:100 (1%) and 1:1000 (0.1%)

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 - a) any copies you send are in connection with the specific transaction or matter for which you obtained the Information from the Environment Agency;
 - b) you make no charge for supplying the Information other than for your actual costs and time incurred;
 - c) you attach a copy of this notice and require all recipients to comply with it.

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11. Please contact us if you need permission for any other use.

It is important that you also read any additional information or warning we give you about specific Information.

Appendix C
Thames Water Correspondence

Reference: 630010

Developer.Services@thameswater.co.uk [Developer.Services@thameswater.co.uk]

Sent: 27 January 2009 17:01

To: Paul Garton

To
Mr Paul Garton
From
Christopher Ofori
Company

Company
Thames Water
Email
P.Garton@bsp-consulting.co.uk
Email
developer.services@thames
water.co.uk

Date
27/Jan/2009

WHEN CONTACTING US PLEASE QUOTE REFERENCE 630010

Dear Mr Garton,

I am writing to inform you that the catchment planners carrying out the capacity check have concluded that an impact study is required.

I have passed your information to the engineer for the area of Dacorum. He will contact you in due course.

My apologies for the delay in response.

Yours Sincerely
Christopher Ofori

Ref 04

Email

Version 2.0 07/2008

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Our vision: If customers had a choice, they would choose Thames Water.

Asset Location Search



Paul Garton
BSP Consulting
Suite B, Floor 3
24 De Montfort Street
LEICESTER
LE1 7GB

Search address supplied Icknield Way
Tring
Hertfordshire

Your reference N/A
Our reference ALS/ALS Standard/2008_1366667

Search date 8 January 2009

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Thames Water Utilities Ltd

Property Insight
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Asset Location Search



Search address supplied: Icknield Way, Tring, Hertfordshire,

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.

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 0118 925 1504, or use the address below:

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

Tel: 0118 925 1504
Fax: 0118 923 6657

Email: searches@thameswater.co.uk
Web: www.twpropertyinsight.co.uk

Thames Water Utilities Ltd

Property Insight
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Asset Location Search



Waste Water Services

Please provide a copy extract from the public sewer map.

The following 500x500 metre square area(s) have been printed, centred on the coordinates below, as they fall within Thames' sewerage area:

491969, 212477
491969, 212977
492469, 212477
492469, 212977

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

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

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

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

For your guidance:

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

Clean Water Services

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

The following 500x500 metre square area(s), centred on the coordinates below, have been printed as they fall within Thames' water area:

Thames Water Utilities Ltd

Property Insight
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Asset Location Search



491969, 212477
491969, 212977
492469, 212477
492469, 212977

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 0845 920 0800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.

For your guidance:

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

Payment for this Search

An invoice is enclosed. Please send remittance to Thames Water Utilities Ltd., PO Box 223, Swindon, SN38 2TW.

Thames Water Utilities Ltd

Property Insight
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

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 Center 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, 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
Clear Water Court
Vastern Road
Reading
RG1 8DB

Tel: 0845 850 2777
Fax: 0118 923 6613
Email: developer.services@thameswater.co.uk

Should you require any further information regarding budget estimates, diversions or stopping up notices then please contact:

DevCon Team
Asset Investment
Thames Water
Maple Lodge STW
Denham Way
Rickmansworth
Hertfordshire
WD3 9SQ

Tel: 01923 898 072
Fax: 01923 898 106
Email: devcon.team@thameswater.co.uk

Thames Water Utilities Ltd

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PO Box 3189
Slough SL1 4WW

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T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB

Asset Location Search



Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact our Kew Service Desk by writing to:

Clean Water Design
Thames Water Utilities
1 Kew Bridge Road
Brentford
Middlesex
TW8 0EF

Tel: 0845 850 2777
Fax: 0208 213 8833
Email: developer.services@thameswater.co.uk

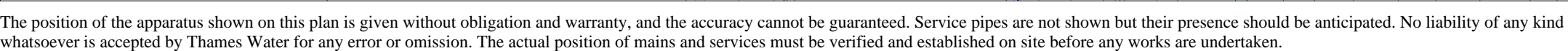
Thames Water Utilities Ltd

Property Insight
PO Box 3189
Slough SL1 4WW

DX 151280 Slough 13

T 0118 925 1504
F 0118 923 6655/57
E searches@thameswater.co.uk
I www.twpropertyinsight.co.uk

Registered in England and Wales
No. 2366661, Registered office
Clearwater Court, Vastern Road
Reading RG1 8DB



EAGLE hardcopy facility - Normal Map.
The plot is centred on (491969 , 212477), which is in SP9112SE. Printed on 8 January 2009 at 10:17:35 by A1CLARK.

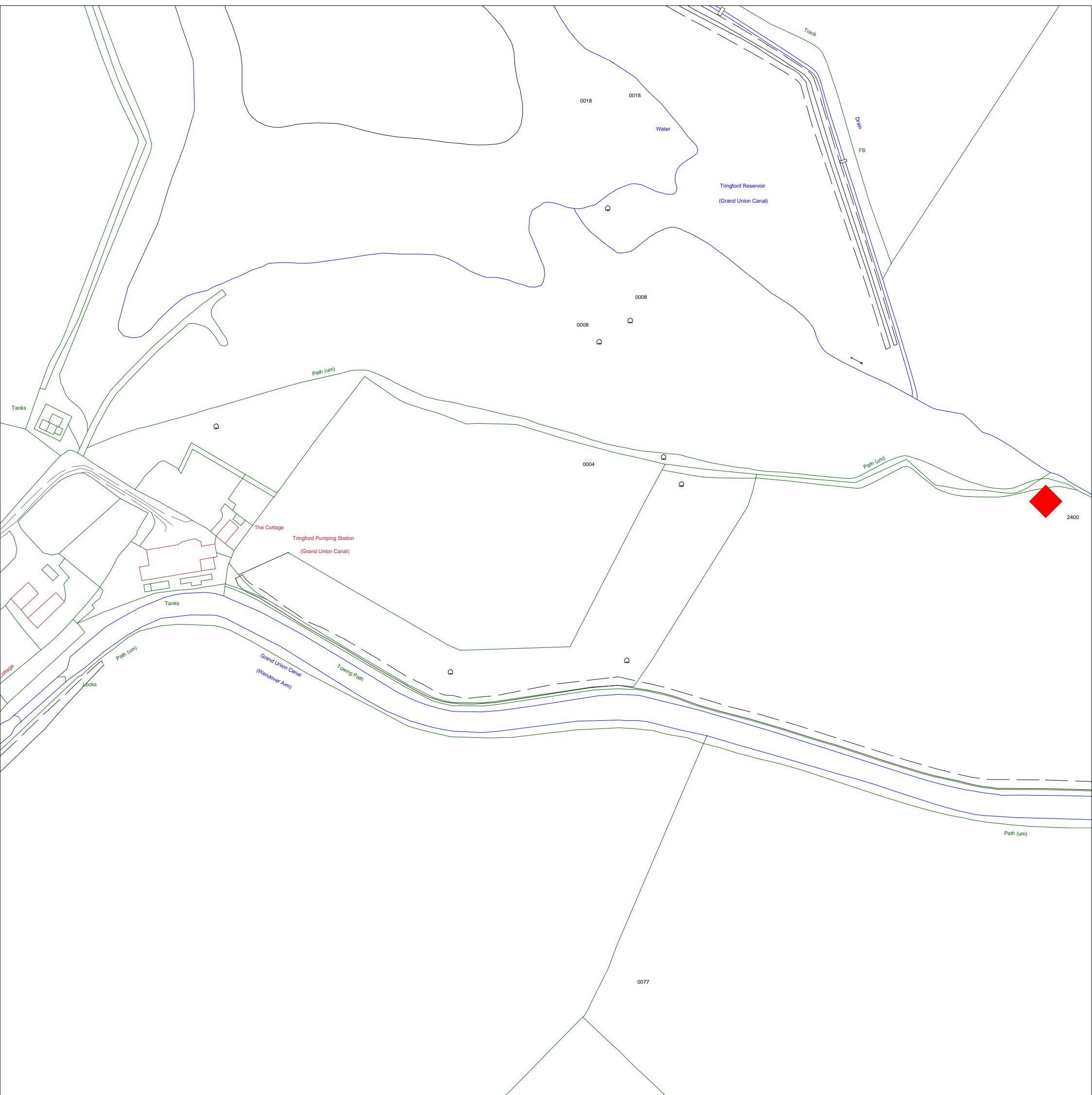
Page 1 of 1

Printbox (491717,212225) -> (492221,212729)
Central Mapsheet : SP9112SE
User : A1CLARK
Time : Thu Jan 8 10:17:50 2009

The position of 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 no survey information is available.

At (492109,212261)	there is a MANHOLE with SHORT NUMBER=1201	COVER=	129.76	INVERT=	127.51
At (492124,212267)	there is a MANHOLE with SHORT NUMBER=1202	COVER=	129.85	INVERT=	128.29
At (492170,212279)	there is a MANHOLE with SHORT NUMBER=1203	COVER=	129.29	INVERT=	127.46
At (492196,212281)	there is a MANHOLE with SHORT NUMBER=1206	COVER=	128.98	INVERT=	127.63
At (492143,212377)	there is a MANHOLE with SHORT NUMBER=1301	COVER=	0.00	INVERT=	0.00
At (492206,212281)	there is a MANHOLE with SHORT NUMBER=2204	COVER=	128.96	INVERT=	126.98
At (492221,212284)	there is a MANHOLE with SHORT NUMBER=2213	COVER=	128.65	INVERT=	127.30
At (492210,212398)	there is a MANHOLE with SHORT NUMBER=2301	COVER=	132.87	INVERT=	130.82
At (492221,212404)	there is a MANHOLE with SHORT NUMBER=2403	COVER=	132.70	INVERT=	130.75

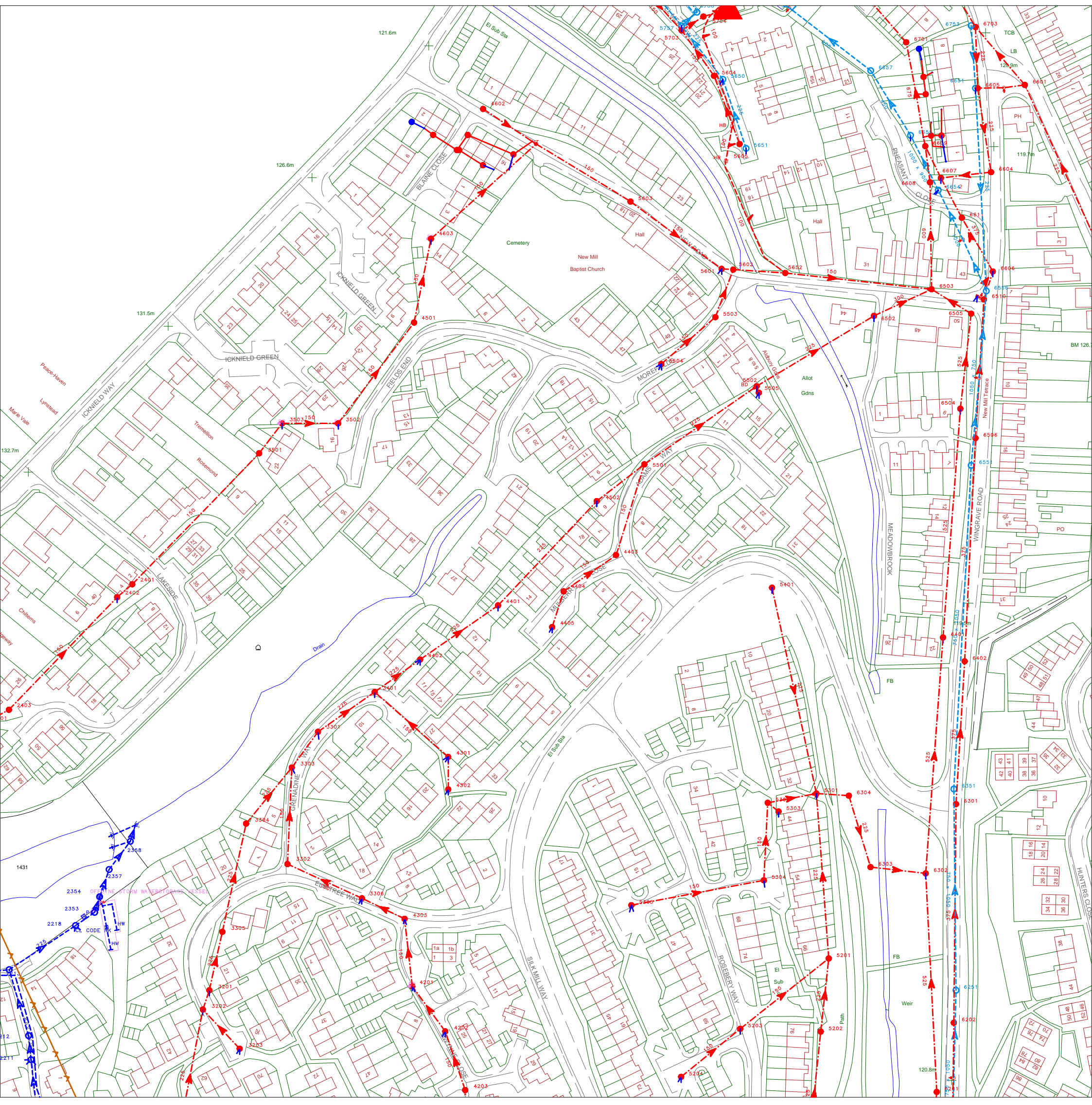


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EAGLE hardcopy facility - Normal Map.
The plot is centred on (491969 , 212977), which is in SP9112NE. Printed on 8 January 2009 at 10:19:27 by A1CLARK.

Comments:
SEWERS



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.

100 metre intervals

EAGLE hardcopy facility - Normal Map.
The plot is centred on (492469 , 212477), which is in SP9212SW. Printed on 8 January 2009 at 10:20:18 by A1CLARK.

Comments:
SEWERS

Printbox (492217,212225) -> (492721,212729)
Central Mapsheet : SP9212SW
User : A1CLARK
Time : Thu Jan 8 10:20:37 2009

The position of 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 no survey information is available.

At (492231,212242)	there is a MANHOLE with SHORT NUMBER=2211	COVER=	130.15	INVERT=	128.80
At (492230,212253)	there is a MANHOLE with SHORT NUMBER=2212	COVER=	129.82	INVERT=	128.47
At (492221,212284)	there is a MANHOLE with SHORT NUMBER=2213	COVER=	128.65	INVERT=	127.30
At (492252,212304)	there is a MANHOLE with SHORT NUMBER=2218	COVER=	128.06	INVERT=	127.12
At (492260,212310)	there is a MANHOLE with SHORT NUMBER=2353	COVER=	127.80	INVERT=	125.40
At (492263,212317)	there is a MANHOLE with SHORT NUMBER=2354	COVER=	127.50	INVERT=	125.35
At (492267,212330)	there is a MANHOLE with SHORT NUMBER=2357	COVER=	127.02	INVERT=	125.16
At (492277,212343)	there is a MANHOLE with SHORT NUMBER=2358	COVER=	0.00	INVERT=	0.00
At (492407,212675)	there is a MANHOLE with SHORT NUMBER=46ZV	COVER=	0.00	INVERT=	0.00
At (492514,212517)	there is a MANHOLE with SHORT NUMBER=5501	COVER=	123.42	INVERT=	121.95
At (492547,212585)	there is a MANHOLE with SHORT NUMBER=5503	COVER=	120.30	INVERT=	118.95
At (492522,212564)	there is a MANHOLE with SHORT NUMBER=5504	COVER=	121.01	INVERT=	119.39
At (492550,212608)	there is a MANHOLE with SHORT NUMBER=5601	COVER=	120.08	INVERT=	118.60
At (492556,212607)	there is a MANHOLE with SHORT NUMBER=5602	COVER=	120.03	INVERT=	118.59
At (492508,212639)	there is a MANHOLE with SHORT NUMBER=5603	COVER=	122.44	INVERT=	120.22
At (492547,212697)	there is a MANHOLE with SHORT NUMBER=5604	COVER=	117.06	INVERT=	-9999.00
At (492558,212665)	there is a MANHOLE with SHORT NUMBER=5605	COVER=	117.66	INVERT=	-9999.00
At (492551,212695)	there is a MANHOLE with SHORT NUMBER=5650	COVER=	117.12	INVERT=	116.02
At (492561,212663)	there is a MANHOLE with SHORT NUMBER=5651	COVER=	117.69	INVERT=	116.30
At (492580,212606)	there is a MANHOLE with SHORT NUMBER=5652	COVER=	-9999.00	INVERT=	-9999.00
At (492532,212718)	there is a MANHOLE with SHORT NUMBER=5703	COVER=	116.96	INVERT=	-9999.00
At (492542,212724)	there is a MANHOLE with SHORT NUMBER=5704	COVER=	116.81	INVERT=	-9999.00
At (492532,212720)	there is a MANHOLE with SHORT NUMBER=5757	COVER=	116.95	INVERT=	115.78
At (492539,212726)	there is a MANHOLE with SHORT NUMBER=5758	COVER=	116.76	INVERT=	115.41
At (492621,212586)	there is a MANHOLE with SHORT NUMBER=6502	COVER=	119.15	INVERT=	117.56
At (492647,212598)	there is a MANHOLE with SHORT NUMBER=6503	COVER=	118.77	INVERT=	116.68
At (492660,212543)	there is a MANHOLE with SHORT NUMBER=6504	COVER=	119.22	INVERT=	116.96
At (492665,212587)	there is a MANHOLE with SHORT NUMBER=6505	COVER=	119.22	INVERT=	116.74
At (492667,212529)	there is a MANHOLE with SHORT NUMBER=6506	COVER=	0.00	INVERT=	-9999.00
At (492665,212517)	there is a MANHOLE with SHORT NUMBER=6551	COVER=	0.00	INVERT=	-9999.00
At (492672,212597)	there is a MANHOLE with SHORT NUMBER=6556	COVER=	119.30	INVERT=	116.27
At (492690,212693)	there is a MANHOLE with SHORT NUMBER=6601	COVER=	0.00	INVERT=	-9999.00
At (492675,212652)	there is a MANHOLE with SHORT NUMBER=6604	COVER=	0.00	INVERT=	-9999.00
At (492675,212606)	there is a MANHOLE with SHORT NUMBER=6606	COVER=	119.17	INVERT=	117.23
At (492651,212650)	there is a MANHOLE with SHORT NUMBER=6607	COVER=	118.15	INVERT=	116.90
At (492646,212648)	there is a MANHOLE with SHORT NUMBER=6608	COVER=	0.00	INVERT=	-9999.00
At (492644,212664)	there is a MANHOLE with SHORT NUMBER=6609	COVER=	117.73	INVERT=	116.36
At (492661,212631)	there is a MANHOLE with SHORT NUMBER=6611	COVER=	0.00	INVERT=	-9999.00
At (492667,212691)	there is a MANHOLE with SHORT NUMBER=6651	COVER=	120.20	INVERT=	118.61
At (492650,212644)	there is a MANHOLE with SHORT NUMBER=6654	COVER=	118.81	INVERT=	115.81
At (492637,212669)	there is a MANHOLE with SHORT NUMBER=6655	COVER=	117.17	INVERT=	115.88
At (492619,212699)	there is a MANHOLE with SHORT NUMBER=6657	COVER=	116.66	INVERT=	115.28
At (492635,212712)	there is a MANHOLE with SHORT NUMBER=6701	COVER=	0.00	INVERT=	-9999.00
At (492667,212719)	there is a MANHOLE with SHORT NUMBER=6703	COVER=	120.93	INVERT=	-9999.00
At (492665,212720)	there is a MANHOLE with SHORT NUMBER=6753	COVER=	120.92	INVERT=	-9999.00
At (492643,212696)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492652,212669)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492647,212669)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492644,212688)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492641,212709)	there is a MANHOLE with SHORT NUMBER=	COVER=	0.00	INVERT=	0.00
At (492278,212462)	there is a MANHOLE with SHORT NUMBER=2401	COVER=	131.08	INVERT=	129.67

Printbox (492217,212225) -> (492721,212729)
Central Mapsheet : SP9212SW
User : A1CLARK
Time : Thu Jan 8 10:20:37 2009

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

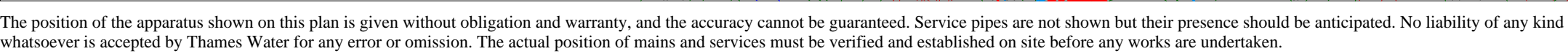
At (492271,212456)	there is a MANHOLE with SHORT NUMBER=2402	COVER=	131.09	INVERT=	129.77
At (492221,212404)	there is a MANHOLE with SHORT NUMBER=2403	COVER=	132.70	INVERT=	130.75
At (492313,212274)	there is a MANHOLE with SHORT NUMBER=3201	COVER=	127.61	INVERT=	126.78
At (492310,212265)	there is a MANHOLE with SHORT NUMBER=3202	COVER=	127.84	INVERT=	126.83
At (492327,212247)	there is a MANHOLE with SHORT NUMBER=3203	COVER=	129.24	INVERT=	128.37
At (492364,212394)	there is a MANHOLE with SHORT NUMBER=3301	COVER=	127.26	INVERT=	125.85
At (492350,212333)	there is a MANHOLE with SHORT NUMBER=3302	COVER=	128.96	INVERT=	126.54
At (492352,212377)	there is a MANHOLE with SHORT NUMBER=3303	COVER=	127.85	INVERT=	126.02
At (492330,212351)	there is a MANHOLE with SHORT NUMBER=3304	COVER=	128.37	INVERT=	126.31
At (492319,212301)	there is a MANHOLE with SHORT NUMBER=3305	COVER=	128.50	INVERT=	126.59
At (492384,212317)	there is a MANHOLE with SHORT NUMBER=3306	COVER=	130.21	INVERT=	127.66
At (492390,212412)	there is a MANHOLE with SHORT NUMBER=3401	COVER=	126.87	INVERT=	125.59
At (492336,212522)	there is a MANHOLE with SHORT NUMBER=3501	COVER=	0.00	INVERT=	0.00
At (492373,212536)	there is a MANHOLE with SHORT NUMBER=3502	COVER=	129.85	INVERT=	127.45
At (492347,212536)	there is a MANHOLE with SHORT NUMBER=3503	COVER=	130.84	INVERT=	127.78
At (492407,212276)	there is a MANHOLE with SHORT NUMBER=4201	COVER=	132.35	INVERT=	129.30
At (492422,212255)	there is a MANHOLE with SHORT NUMBER=4202	COVER=	133.36	INVERT=	131.35
At (492432,212228)	there is a MANHOLE with SHORT NUMBER=4203	COVER=	133.65	INVERT=	131.78
At (492424,212382)	there is a MANHOLE with SHORT NUMBER=4301	COVER=	129.24	INVERT=	127.06
At (492424,212367)	there is a MANHOLE with SHORT NUMBER=4302	COVER=	129.77	INVERT=	127.77
At (492404,212307)	there is a MANHOLE with SHORT NUMBER=4303	COVER=	131.10	INVERT=	128.42
At (492447,212452)	there is a MANHOLE with SHORT NUMBER=4401	COVER=	126.29	INVERT=	125.14
At (492411,212427)	there is a MANHOLE with SHORT NUMBER=4402	COVER=	126.33	INVERT=	125.41
At (492501,212475)	there is a MANHOLE with SHORT NUMBER=4403	COVER=	126.38	INVERT=	124.06
At (492477,212459)	there is a MANHOLE with SHORT NUMBER=4404	COVER=	127.07	INVERT=	125.43
At (492472,212442)	there is a MANHOLE with SHORT NUMBER=4405	COVER=	127.31	INVERT=	126.07
At (492408,212583)	there is a MANHOLE with SHORT NUMBER=4501	COVER=	129.43	INVERT=	126.77
At (492492,212500)	there is a MANHOLE with SHORT NUMBER=4502	COVER=	124.83	INVERT=	122.99
At (492440,212681)	there is a MANHOLE with SHORT NUMBER=4602	COVER=	0.00	INVERT=	0.00
At (492416,212621)	there is a MANHOLE with SHORT NUMBER=4603	COVER=	127.79	INVERT=	125.15
At (492454,212660)	there is a MANHOLE with SHORT NUMBER=46YY	COVER=	0.00	INVERT=	0.00
At (492433,212669)	there is a MANHOLE with SHORT NUMBER=46YZ	COVER=	0.00	INVERT=	0.00
At (492429,212662)	there is a MANHOLE with SHORT NUMBER=46ZP	COVER=	0.00	INVERT=	0.00
At (492440,212655)	there is a MANHOLE with SHORT NUMBER=46ZQ	COVER=	0.00	INVERT=	0.00
At (492428,212662)	there is a MANHOLE with SHORT NUMBER=46ZS	COVER=	0.00	INVERT=	0.00
At (492417,212669)	there is a MANHOLE with SHORT NUMBER=46ZT	COVER=	0.00	INVERT=	0.00
At (492559,212256)	there is a MANHOLE with SHORT NUMBER=5203	COVER=	129.66	INVERT=	128.01
At (492531,212234)	there is a MANHOLE with SHORT NUMBER=5204	COVER=	132.38	INVERT=	128.69
At (492508,212314)	there is a MANHOLE with SHORT NUMBER=5305	COVER=	131.89	INVERT=	128.12
At (492566,212553)	there is a MANHOLE with SHORT NUMBER=5502	COVER=	121.17	INVERT=	118.57
At (492567,212550)	there is a MANHOLE with SHORT NUMBER=5505	COVER=	121.63	INVERT=	119.03
At (492657,212259)	there is a MANHOLE with SHORT NUMBER=6202	COVER=	120.77	INVERT=	118.84
At (492658,212274)	there is a MANHOLE with SHORT NUMBER=6251	COVER=	120.77	INVERT=	-9999.00
At (492658,212360)	there is a MANHOLE with SHORT NUMBER=6301	COVER=	0.00	INVERT=	-9999.00
At (492657,212367)	there is a MANHOLE with SHORT NUMBER=6351	COVER=	120.05	INVERT=	117.17
At (492652,212437)	there is a MANHOLE with SHORT NUMBER=6401	COVER=	119.79	INVERT=	117.19
At (492662,212426)	there is a MANHOLE with SHORT NUMBER=6402	COVER=	119.61	INVERT=	117.92
At (492671,212593)	there is a MANHOLE with SHORT NUMBER=6510	COVER=	119.24	INVERT=	117.26
At (492668,212691)	there is a MANHOLE with SHORT NUMBER=6605	COVER=	120.18	INVERT=	118.63
At (492600,212289)	there is a MANHOLE with SHORT NUMBER=5201	COVER=	125.84	INVERT=	123.56
At (492596,212255)	there is a MANHOLE with SHORT NUMBER=5202	COVER=	0.00	INVERT=	-9999.00

Printbox (492217,212225) -> (492721,212729)
Central Mapsheet : SP9212SW
User : A1CLARK
Time : Thu Jan 8 10:20:37 2009

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

At (492594,212365)	there is a MANHOLE with SHORT NUMBER=5301	COVER=	125.30	INVERT=	120.45
At (492571,212361)	there is a MANHOLE with SHORT NUMBER=5302	COVER=	127.48	INVERT=	125.02
At (492576,212357)	there is a MANHOLE with SHORT NUMBER=5303	COVER=	126.62	INVERT=	125.48
At (492570,212325)	there is a MANHOLE with SHORT NUMBER=5304	COVER=	127.56	INVERT=	126.22
At (492573,212460)	there is a MANHOLE with SHORT NUMBER=5401	COVER=	125.40	INVERT=	121.58
At (492650,212227)	there is a MANHOLE with SHORT NUMBER=6201	COVER=	120.55	INVERT=	118.21
At (492644,212328)	there is a MANHOLE with SHORT NUMBER=6302	COVER=	119.85	INVERT=	117.78
At (492619,212331)	there is a MANHOLE with SHORT NUMBER=6303	COVER=	120.62	INVERT=	118.11
At (492609,212364)	there is a MANHOLE with SHORT NUMBER=6304	COVER=	121.32	INVERT=	119.77



EAGLE hardcopy facility - Normal Map.
The plot is centred on (492469 , 212977), which is in SP9212NW. Printed on 8 January 2009 at 10:22:19 by A1CLARK.

Page 1 of 1

Printbox (492217,212725) -> (492721,213229)
Central Mapsheet : SP9212NW
User : A1CLARK
Time : Thu Jan 8 10:22:30 2009

The position of 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 no survey information is available.

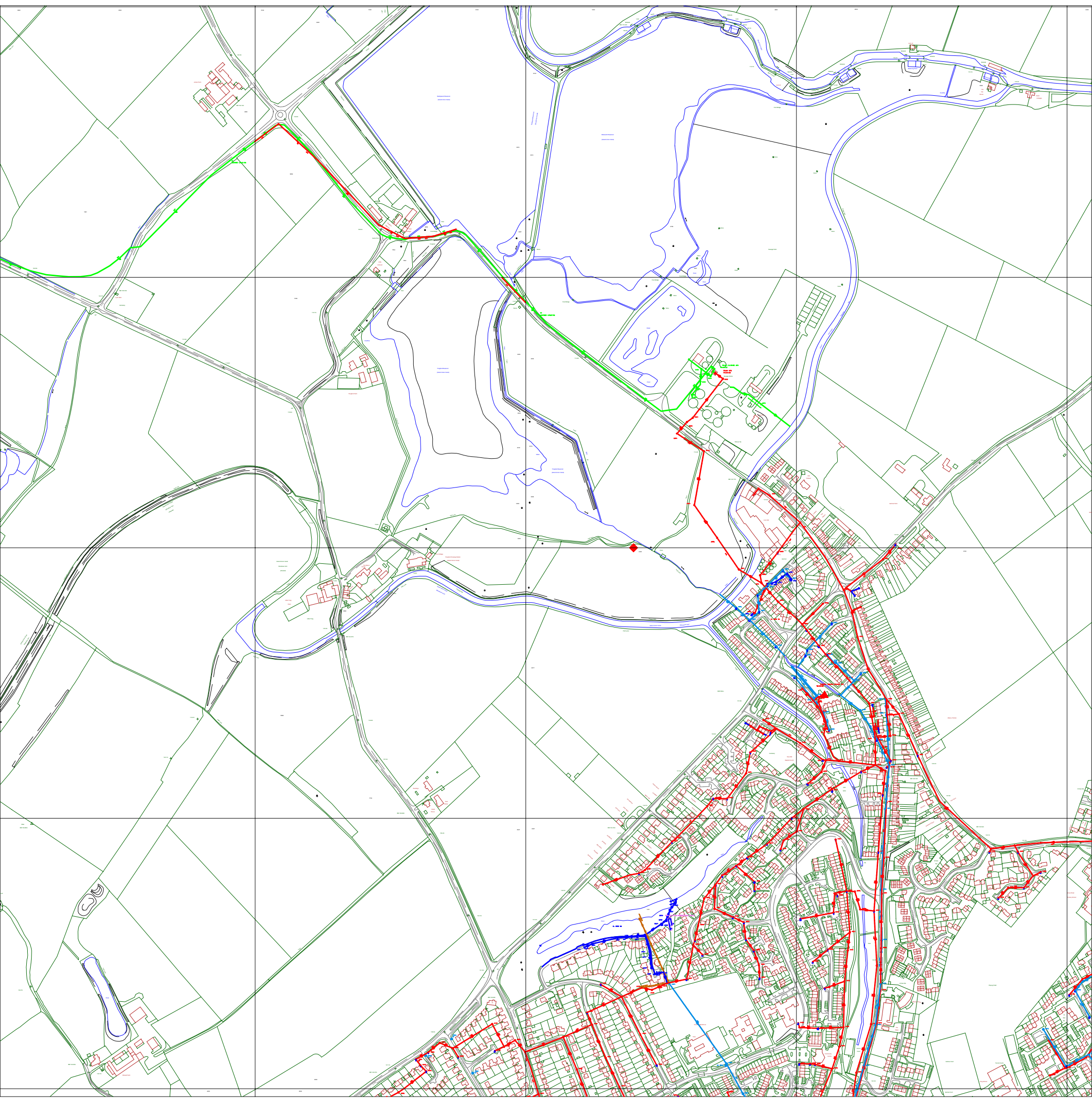
At (492390,212888)	there is a MANHOLE with SHORT NUMBER=3851	COVER=	116.28	INVERT=	113.37
At (492395,212960)	there is a MANHOLE with SHORT NUMBER=3901	COVER=	0.00	INVERT=	0.00
At (492498,212760)	there is a MANHOLE with SHORT NUMBER=4750	COVER=	117.34	INVERT=	116.06
At (492493,212779)	there is a MANHOLE with SHORT NUMBER=4753	COVER=	116.47	INVERT=	115.14
At (492422,212880)	there is a MANHOLE with SHORT NUMBER=4801	COVER=	116.40	INVERT=	114.15
At (492419,212877)	there is a MANHOLE with SHORT NUMBER=4802	COVER=	116.39	INVERT=	114.35
At (492464,212817)	there is a MANHOLE with SHORT NUMBER=4851	COVER=	116.19	INVERT=	113.88
At (492415,212866)	there is a MANHOLE with SHORT NUMBER=4852	COVER=	115.67	INVERT=	113.52
At (492432,212882)	there is a MANHOLE with SHORT NUMBER=4853	COVER=	116.02	INVERT=	114.55
At (492436,212935)	there is a MANHOLE with SHORT NUMBER=4901	COVER=	0.00	INVERT=	0.00
At (492434,212949)	there is a MANHOLE with SHORT NUMBER=4902	COVER=	120.67	INVERT=	0.00
At (492466,212991)	there is a MANHOLE with SHORT NUMBER=4903	COVER=	120.86	INVERT=	117.86
At (492467,212901)	there is a MANHOLE with SHORT NUMBER=4904	COVER=	117.74	INVERT=	115.53
At (492492,212941)	there is a MANHOLE with SHORT NUMBER=4905	COVER=	119.82	INVERT=	118.18
At (492484,212952)	there is a MANHOLE with SHORT NUMBER=4906	COVER=	119.63	INVERT=	118.12
At (492464,212937)	there is a MANHOLE with SHORT NUMBER=4907	COVER=	118.98	INVERT=	117.28
At (492456,212934)	there is a MANHOLE with SHORT NUMBER=4908	COVER=	118.13	INVERT=	116.78
At (492447,212933)	there is a MANHOLE with SHORT NUMBER=4909	COVER=	117.82	INVERT=	116.44
At (492491,212941)	there is a MANHOLE with SHORT NUMBER=4951	COVER=	119.77	INVERT=	117.94
At (492476,212958)	there is a MANHOLE with SHORT NUMBER=4952	COVER=	119.73	INVERT=	117.52
At (492448,212930)	there is a MANHOLE with SHORT NUMBER=4953	COVER=	117.59	INVERT=	116.61
At (492440,212922)	there is a MANHOLE with SHORT NUMBER=4954	COVER=	117.05	INVERT=	115.34
At (492429,212912)	there is a MANHOLE with SHORT NUMBER=4955	COVER=	116.22	INVERT=	115.07
At (492508,213047)	there is a MANHOLE with SHORT NUMBER=5001	COVER=	0.00	INVERT=	-9999.00
At (492595,212759)	there is a MANHOLE with SHORT NUMBER=5701	COVER=	119.86	INVERT=	116.07
At (492512,212740)	there is a MANHOLE with SHORT NUMBER=5702	COVER=	117.13	INVERT=	-9999.00
At (492542,212724)	there is a MANHOLE with SHORT NUMBER=5704	COVER=	116.81	INVERT=	-9999.00
At (492574,212788)	there is a MANHOLE with SHORT NUMBER=5751	COVER=	120.37	INVERT=	119.23
At (492572,212788)	there is a MANHOLE with SHORT NUMBER=5753	COVER=	120.30	INVERT=	119.20
At (492571,212787)	there is a MANHOLE with SHORT NUMBER=5754	COVER=	120.23	INVERT=	119.17
At (492539,212726)	there is a MANHOLE with SHORT NUMBER=5758	COVER=	116.76	INVERT=	115.41
At (492555,212803)	there is a MANHOLE with SHORT NUMBER=5801	COVER=	120.10	INVERT=	115.92
At (492550,212897)	there is a MANHOLE with SHORT NUMBER=5802	COVER=	0.00	INVERT=	-9999.00
At (492543,212818)	there is a MANHOLE with SHORT NUMBER=5803	COVER=	119.66	INVERT=	115.84
At (492520,212848)	there is a MANHOLE with SHORT NUMBER=5804	COVER=	119.01	INVERT=	115.73
At (492512,212858)	there is a MANHOLE with SHORT NUMBER=5805	COVER=	117.56	INVERT=	115.69
At (492558,212802)	there is a MANHOLE with SHORT NUMBER=5852	COVER=	120.22	INVERT=	119.42
At (492521,212811)	there is a MANHOLE with SHORT NUMBER=5853	COVER=	118.22	INVERT=	116.14
At (492518,212801)	there is a MANHOLE with SHORT NUMBER=5854	COVER=	117.74	INVERT=	115.71
At (492589,212922)	there is a MANHOLE with SHORT NUMBER=5902	COVER=	123.89	INVERT=	121.08
At (492684,213006)	there is a MANHOLE with SHORT NUMBER=6001	COVER=	127.32	INVERT=	125.11
At (492608,212754)	there is a MANHOLE with SHORT NUMBER=6751	COVER=	120.22	INVERT=	-9999.00
At (492620,212768)	there is a MANHOLE with SHORT NUMBER=6752	COVER=	121.68	INVERT=	120.54
At (492614,212835)	there is a MANHOLE with SHORT NUMBER=6802	COVER=	0.00	INVERT=	-9999.00
At (492661,212979)	there is a MANHOLE with SHORT NUMBER=6901	COVER=	126.59	INVERT=	124.49
At (492602,212919)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492608,212885)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492620,212890)	there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00
At (492609,212911)	there is a MANHOLE with SHORT NUMBER=	COVER=	0.00	INVERT=	0.00
At (492617,212925)	there is a MANHOLE with SHORT NUMBER=	COVER=	0.00	INVERT=	0.00
At (492280,213211)	there is a MANHOLE with SHORT NUMBER=2201	COVER=	114.32	INVERT=	111.71

Printbox (492217,212725) -> (492721,213229)
Central Mapsheet : SP9212NW
User : A1CLARK
Time : Thu Jan 8 10:22:30 2009

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

At (492312,213079) there is a MANHOLE with SHORT NUMBER=3001	COVER=	116.57	INVERT=	114.97
At (492354,213018) there is a MANHOLE with SHORT NUMBER=3002	COVER=	118.44	INVERT=	115.16
At (492330,213178) there is a MANHOLE with SHORT NUMBER=3104	COVER=	115.25	INVERT=	113.16
At (492452,213097) there is a MANHOLE with SHORT NUMBER=4001	COVER=	0.00	INVERT=	-9999.00
At (492566,212860) there is a MANHOLE with SHORT NUMBER=5851	COVER=	121.36	INVERT=	119.68
At (492431,213110) there is a MANHOLE with SHORT NUMBER=	COVER=	-9999.00	INVERT=	-9999.00



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1000 metre intervals


EAGLE hardcopy facility - Normal Map.
The plot is centred on (492038 , 212993), which is in SP9212NW. Printed on 8 January 2009 at 10:25:32 by A1CLARK.


Comments:
SEWERS - "overview"






















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.

 Joint	 Trunk Foul
 Trunk Surface Water	 Trunk Combined
 Storm Relief	 Bio-solids (Sludge)
 Vent Pipe	 Trade Effluent
 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	 Syphon



















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.

 AV Air Valve	 LH Lamp Hole
 BS Blind Shaft	 LS Lifting Shaft
 CP Catch Pit	 ME Meter
 DC Dam Chase	 RE Rodding Eye
 DF Double Flushing Tank / Chamber	 VC Vent Column
 SF Single Flushing Tank / Chamber	 VT Vent
 HB Hatch Box	 WO Washout
 Other (specified on plan)	








Operational Controls

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

 BD Backdrop Manhole	 HY Hydrobrake
 BV Butterfly Valve	 PI Petrol Interceptor
 CL Clough	 PS Penstock
 DB Dam Board	 RV Reflux Valve
 DP Drop Pipe	 ST Step
 DS Drop Shaft	 SV Sluice Valve
 FL Flume	 TA Tank
 FV Flap Valve	 WW Weir
 HW Headwall	 Other (specified on plan)








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.

 STW Effluent Discharge	 Undefined End
 SA /  SA Soakaway	 GU Gully
 Outfall	 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.)	
 Sewage Treatment Works	
 IL Invert Level	 Summit

Areas

Lines denoting areas of underground surveys, etc.

 Building over Case (BOC No.) or Low Lying Land (LLL No.)	
 Sewage Treatment Works or Pumping Station	
 Area under Adoption Agreement	 Survey Area
 Drawing Area or chamber	 Licence Area
 Area pending Adoption Agreement	 Other Area (specified on plan)

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

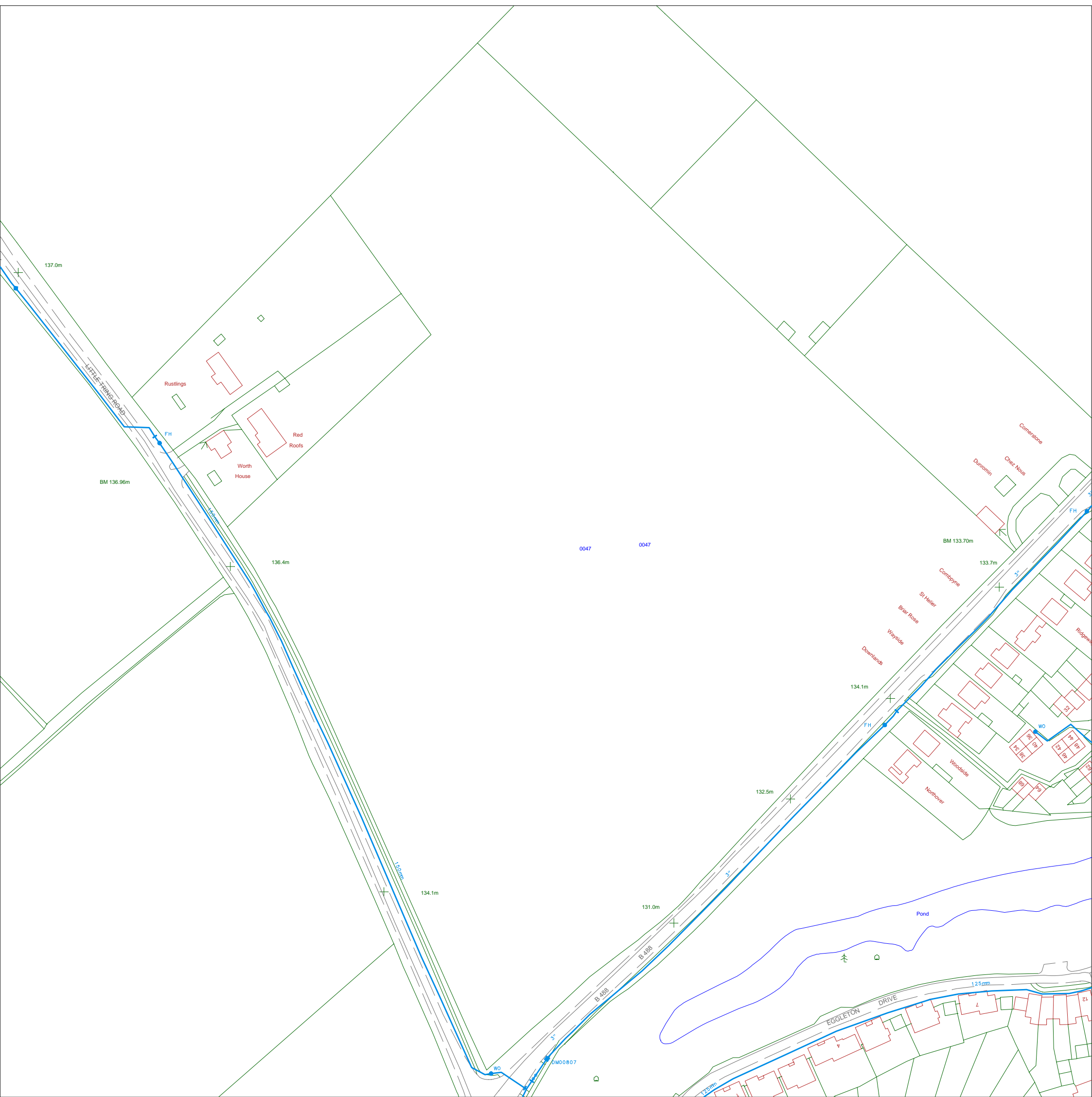
 Foul Sewer	 Surface Water Sewer
 Combined Sewer	 Highway Drain
 Culverted Watercourse	 Proposed
 Status Unknown	 Abandoned Sewer

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) For symbols referred to as 'Other' on this key, please see the plan for further information.
- 5) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.

6) -9999.00 or 0 on a manhole level indicates that data is unavailable.

7) 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. When cover and invert levels appear on a plan they are clearly prefixed by 'CL' and 'IL'. If you are unsure about any text or symbology present on the plan, please contact a member of Property Insight on 0118 925 1504.

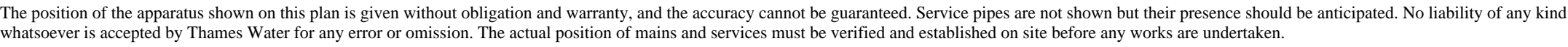


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100 metre intervals

EAGLE hardcopy facility - Normal Map.
The plot is centred on (491969 , 212477), which is in SP9112SE. Printed on 8 January 2009 at 10:18:20 by A1CLARK.

Comments:
WATER



EAGLE hardcopy facility - Normal Map.
The plot is centred on (492469 , 212477), which is in SP9212SW. Printed on 8 January 2009 at 10:21:02 by A1CLARK.

Comments:
WATER

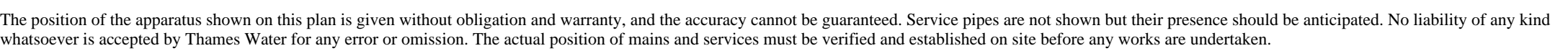


The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual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

100 metre intervals

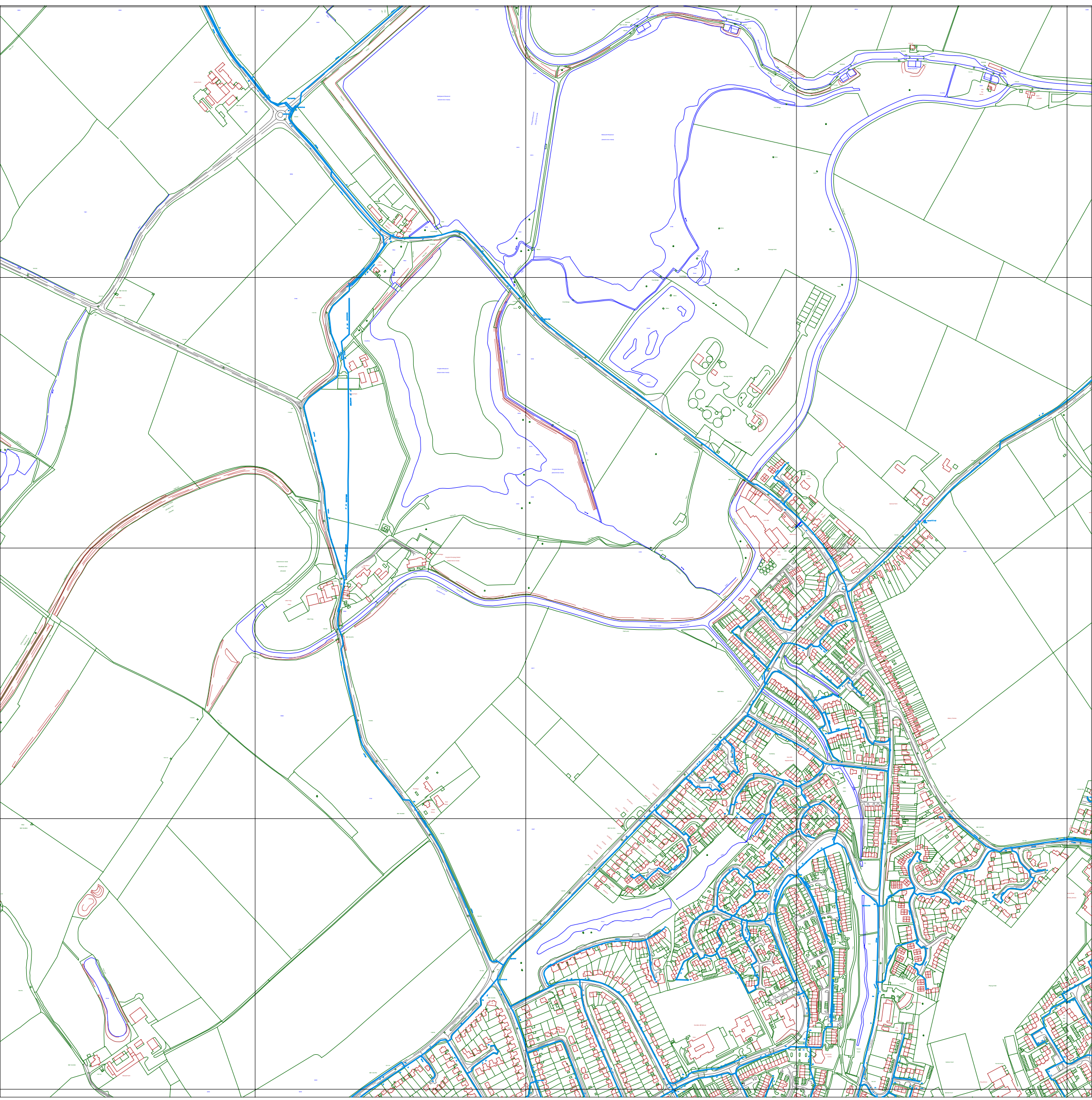
EAGLE hardcopy facility - Normal Map.
The plot is centred on (491969 , 212977), which is in SP9112NE. Printed on 8 January 2009 at 10:18:58 by A1CLARK.

Comments:
WATER



EAGLE hardcopy facility - Normal Map.
The plot is centred on (492469 , 212977), which is in SP9212NW. Printed on 8 January 2009 at 10:21:45 by A1CLARK.

Page 1 of 1



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1000 metre intervals

EAGLE hardcopy facility - Normal Map.
The plot is centred on (492038 , 212993), which is in SP9212NW. Printed on 8 January 2009 at 10:26:26 by A1CLARK.

Comments:
WATER - "overview"



ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

- 4"** **Distribution Main:** The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
- 16" TRUNK** **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.
- 800mm RAW WATER** **Raw Water Main:** A main that carries untreated water rather than water that is safe to drink. These mains are usually found near reservoirs where their purpose is to link reservoirs or to feed untreated water from a reservoir into a water treatment works.
- Other (Specified on plan)**
- 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.

Depth of Water Pipes (Normal Cover)

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')

Hydrants

- Single Hydrant
- Double Hydrant

The abbreviations below indicate the use of the hydrant symbols above.

- FH** Fire Hydrant
- WO** Washout
- RWH** Raw Water Hydrant
- P** Private Hydrant

Meters

- Meter

The abbreviations below indicate the use of the meter symbol above. Meter symbols without an abbreviation should be taken as revenue meters.

- ZM** Zonal
- DM** District
- WM** Waste

Valves

- Open General Purpose Valve

The abbreviations below indicate the type of the valve symbol above.

- BF** Butterfly
- BP** Bypass
- EV** Emptying
- SV** Sluice
- Closed General Purpose Valve

The abbreviations below indicate the use of the valve symbol above.

- DBV** District Boundary Valve
- DPV** District Pressure Valve
- PBV** Pressure Boundary Valve
- SSV** Stand Shut Valve
- ZBV** Zonal Boundary Valve
- ZZ** Other (specified on plan)
- Air Valve

The abbreviations below indicate the use of the valve symbol above.

- AV** Air Valve
- AC** Air Cock (manual air valve)
- AAV** Automatic Air Valve

The abbreviations below indicate the use of the valve symbol above.

- PS** Pressure Sustaining
- PC** Pressure Controlling
- Pressure Reducing
- Reflux Non-Return Valve (NRA)
- Stopcock

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

Supply Assets



The abbreviations below indicate the use of the supply asset symbol above.

- BS** Booster Station
- PS** Pumping Station
- SI** Inspection Shaft
- SP** Pumping Shaft
- SR** Service Reservoir
- TO** Tower
- TW** Treatment Works
- XX** Other (specified on plan)

Other Symbols

- Protection Test Point
- Protection Point / Anode
- Pressure Transducer / Critical Pressure Point
- Data Logger
- Telemetry Pit / Chamber
- Other (specified on plan)

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.

Terms and Conditions

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

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

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (TW.cashoperations@npower.com).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0845 9200 800.

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

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to WaterVoice Thames on 0845 758 1658 (it will cost you the same as a local call) or write to them at 4th Floor (South), High Holborn House, 52-54 High Holborn, London WC1V 6RL.

Ways to pay your bill

By Post – Cheque only, made payable to 'Thames Water Utilities Ltd' writing your Thames Water account number on the back. Please fill in the payment slip below and send it with your cheque to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW	By BACS Payment direct to our bank on account number 90478703, sort code 60-00-01 may be made. A remittance advice must be sent to Thames Water Utilities Ltd., PO Box 223, Swindon SN38 2TW. Or fax to 01793 424599 or email: cashoperations@thameswater.co.uk	Telephone Banking By calling your bank and quoting your invoice number and the Thames Water's bank account number 90478703 and sort code 60-00-01	By Swift Transfer You may make your payment via SWIFT by quoting NWBKGB2L together with our bank account number 90478703, sort code 60-00-01 and invoice number
--	--	---	--

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

Invoice



Paul Garton

BSP Consulting
24
De Montfort Street
Leicester
LE1 7GB

Thames Water Utilities Ltd.
PO Box 223
Swindon
SN38 2TW

Customer Reference: N/A

Invoice No: ADS09241976
Our Ref: ALS/ALS
Standard/2008_1366667

Customer Number: ADS119873
Purchase Order No:

Posting Date: 08-01-2009
Due Date: 22-01-2009

Search Address Supplied: Icknield Way, Tring, Hertfordshire,

Description of Charges	Qty	Unit Price	VAT (15%)	Amount (Inc VAT)
Asset Location Search	1	£83.60	£12.54	£96.14

Mr Greg Cunningham has agreed to be invoiced for £96.14 on 08/01/2009

OUTSTANDING AMOUNT (Inc. VAT)

£96.14

Please send any outstanding amount to Thames Water, PO Box 223, Swindon, SN38 2TW.

Your payment terms are within 14 days. Please see previous page for ways to pay.

For queries please contact the Property Insight Customer Support Team on Tel: 0118 925 1504.

VAT Reg. No GB 537456915



Girobank plc: Bootle Merseyside GIR 0AA

Payment slip

bank giro credit



138 208 70	Reference (customer account number) ADS119873 / ADS09241976	Credit account number 257 1706	Amount due (40p fee payable at PO counter) £ 96.14	By transfer from Alliance and Leicester Giro account number
------------------	--	-----------------------------------	--	--

Cheque NOT acceptable at Post Office

Cashiers
stamp and initials

Signature

Date

BSP Consulting
24
De Montfort Street
Leicester
LE1 7GB

NatWest
Collection Account
Thames Water
Utilities Ltd

Cash		
Cheques		
£		

57-17-06

Please do not write or mark below this line and do not fold this counterfoil

010010002419767 V7702571706 000096148 74 X

Appendix D
Drawings and Calculations



General Notes

1. DO NOT SCALE.
2. This drawing is to be read in conjunction with all other relevant drawings and details.
3. Should there be any conflict between the details indicated on this drawing and those indicated on other drawings the Engineer should be informed PRIOR to construction on site.
4. Until technical approval has been obtained from the relevant Authority, it should be understood that all drawings issued are Preliminary and NOT for construction. Should the contractor commence site work prior to such approval being given, it is entirely at his own risk.
5. All dimensions are in millimetres unless otherwise stated.
6. The BSP Risk Assessments for this project must be reviewed PRIOR to the commencement of any works on site

Rev.	Description	Date.	Drawn	Appr.

• CIVIL • STRUCTURAL • TRANSPORTATION • GEOTECHNICAL • ENVIRONMENTAL

bsp
consulting

Suite B, Floor 3, 24 De Montfort Street, Leicester, LE1 7GB
Tel : (0116) 2047766 - Fax : (0116) 2047769
e-mail : info@bsp-consulting.co.uk


Drawing Status
PRELIMINARY

Client
Waterside Way Sustainable Planning

Project Title
Icknield Way
Tring

Drawing Title
Drainage Outfall Options

Drawn By:	PG	Checked By:	PG	Scale:	1:1000@A1
Project Engineer:	PG	Approved By:	PG	Date:	30-01-09
Drawing Number:	08543/SK1000			Revision:	/

BSP Consulting		Page 1
Suite B, Floor 3 24 De Montfort Street Leicester LE1 7GB	Icknield Way Tring Existing Run-off	
Date January 2009 File	Designed By PG Checked By	
Elstree Computing Ltd	Source Control W.11.3	

ICP SUDS Mean Annual Flood

Input

Return Period (years)	1	Soil	0.450
Area (Ha)	9.000	Urban	0.000
SAAR (mm)	709.000	Region Number	6

Results l/s

QBAR Rural	40.1
QBAR Urban	40.1
Q 1 year	34.1
Q 1 year	34.1
Q 30 years	91.0
Q 100 years	128.0