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Duke's Wharf, Norwich, Norfolk
Utilities Report

DUKE'S WHARF, NORWICH, NORFOLK

Utilities Report

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**Duke's Wharf, Norwich, Norfolk
Utilities Report**

DUKE'S WHARF, NORWICH, NORFOLK

Utilities Report

Contents

Executive Summary

- 1.0 Introduction
- 2.0 Existing Services
- 3.0 Diversions
- 4.0 Proposed Services
- 5.0 Conclusions
- 6.0 Disclaimer

Appendices

- A. Anglian Water correspondence:
 - Clean Water Asset Record Plan Reference 101497-1 obtained 10 June 2014
 - Waste Water Asset Record Plan Reference 101497-2 obtained 10 June 2014
 - Pre-Planning Enquiry Reference 00002683 dated 15 July 2014
- B. National Grid and GTC correspondence:
 - Network Enquiry Response 180001846 dated 9 June 2014
 - GTC letter reference BU00061415 dated 4 June 2014
- C. UK Power Networks correspondence:
 - Letter reference 2013/2133195 dated 9 August 2013 and plans
 - Letter reference 401586692/QID213745 dated 2 July 2014
- D. BT Openreach Asset Plan Reference ROF05202U dated 4 June 2014
- E. Virgin Media correspondence:
 - PE Affected Letter – VM/CIP/207128 dated 23rd June 2014
 - Virgin Media Asset Plan dated 23rd June 2014
- F. Linesearch correspondence:
 - LS BUD Reference 2049117 dated 5 June 2014
- G. Innes Associates – Schedule of Accommodation dated 14 June 2014
- H. Mott MacDonald electrical loading information dated 28th May 2014

Plans

517/00/001A Site Location Plan

084 02-00 Revision I Proposed Ground Floor Plan (by Innes Associates)

Registration of Amendments

| Revision | Amendment Details | Revision Prepared By | Revision Approved By |
|----------|-------------------|----------------------|----------------------|
| | | | |

EXECUTIVE SUMMARY

The purpose of this report is to review the location and capacity of existing services within the vicinity of the proposed mixed use development site at Dukes Wharf, Norwich. The site was formally occupied by Eastern Electricity and there are a number of existing service connections to the existing buildings.

This report reviews the location of each of these services and identifies what, if any, diversions are required to enable the development to be brought forward.

The report also identifies the proposed supply demands of the scheme and concludes that there are no service or utility constraints that would prevent the Dukes Wharf site from being redeveloped for residential and commercial purposes.

1.0 INTRODUCTION

- 1.1 Create Consulting Engineers Ltd have been instructed by Highcourt Developments Ltd to provide a utilities strategy in support of a proposed redevelopment for residential and commercial purposes of the former Eastern Electricity Offices at Dukes Wharf, Norwich, Norfolk.
- 1.2 The proposed Dukes Wharf development site is located on the southern bank of the River Wensum within the jurisdiction of Norwich City Council (NCC). The site is located within the inner ring road of Norwich, north of the City Centre retail area and within the designated City Centre Conservation Area. Dukes Street and Charing Cross/Westwick Street bound the site to the east and south, the River Wensum forms the northern boundary and the residential properties of Anchor Quay are to the west. See Drawing Number 517/00/001A for a Site Location Plan.
- 1.3 This 2.2 acre brownfield site comprises of existing buildings providing approximately 8,743 sq m of office space. This commercial space has generally been vacant for a number of years, with only the existing car parking areas being used as a privately operated car park.

Proposed Development

- 1.4 A comprehensive redevelopment of the former Eastern Electricity Headquarters site is proposed to provide 155 residential units and 442 m² of office floor space (Class B1(a) or A2), together with associated parking, highway and landscaping work. The principal building on the site will be converted from office use to residential in accordance with the Town and Country Planning (General Permitted Development) Order 1995 (as amended) (Schedule 2, Part 3, Class J). An application for determination as to whether Prior Approval will be required in relation to the proposed change of use, which provide 70 of the 155 residential units properties has been submitted in parallel to an application for full planning permission for:

Demolition of Warehouse and Central Buildings and fourth floor canteen; extension of former Eastern Electricity Headquarters building by between 1-3 storey's to provide 70 residential units (Class C3); external alterations to former Eastern Electricity Headquarters building including recladding and refenestration of elevations, replacement of windows; development of 5 three storey townhouses, 3 five storey blocks providing 80 residential units (Class C3) and 442 sq m of office floorspace (Class B1(a) or A2); with associated landscaping, including creation of central landscaped square and riverside outlook deck, highway and parking works, including development of basement car park; reinstatement of water source heat pump; repair and extension of riverside wall and provision of pontoons.

- 1.5 To ensure a robust and holistic assessment of the impacts of the proposed development this Statement considers both applications jointly.

1.6 It is proposed that when complete the overall development will consist of the following:-

- 79 – One Bedroom Flats
- 68 – Two Bedroom Flats
- 3 – Three Bedroom Flats
- 5 – Four Bedroom Town-houses
- 442 sqm of office floorspace (Class B1(a) or A2)
- 95 car parking places (1 as dedicated car club parking space)
- 155 bicycle parking spaces
- 7 motor cycle parking spaces

Delivering a total of 155 residential units

1.7 It is intended that the development will also provide for its residents a total of 98 car parking spaces. This report has been based on the above development accommodation schedule.

Scope of Assessment

1.8 This utility strategy reviews the location and capacity of existing services apparatus within the vicinity of the site. It identifies any significant constraints that may occur on the site due to the existence of existing cables/pipes and conduits, advising on what if any diversionary works are required to bring the development forward. The report also considers the supply demands of the new development and ascertains if there are any major constraints that would prevent the appropriate new service supplies from being provided.

1.9 This report will need to be read in conjunction with the Mechanical and Electrical Design proposals being developed by Mott MacDonald.

1.10 The contents of this report have been based purely on a proposed development site with a mix as per the schedule of accommodation supplied by Innes Associates which can be found in Appendix G. If, for any reason, the mix of uses, or the scale of the development changes then the recommendations of this report maybe subject to change, and it is recommended that each of the utilities are re-contacted to ensure that the site can still be supplied.

2.0 EXISTING SERVICES

Water

- 2.1 Anglian Water manage the public water supply and sewer networks in the vicinity of Duke's Wharf. See Appendix A for a copy of the Anglian Water asset plans.
- 2.2 The Anglian Water asset plans obtained for the area shows a substantial water supply network with the vicinity of the site. A 300mm diameter ductile iron (DI) pipe is shown along Westwick Street and Charing Cross, with a 4 inch diameter galvanised iron (GI) pipe branching off this water main into the entrance of the Dukes Wharf site.
- 2.3 A 7 inch diameter galvanised iron pipe is shown along Duke Street from its junction with Charing Cross reducing to 5 inches approximately 60m north of the junction. At the location of the pipe reduction, a 100mm diameter pipe branches off under the existing frontage building extending approximately 80m into the site.

Gas

- 2.4 National Grid are the gas distribution network provider for the region and GTC an independent gas transporter. Refer to Appendix B for correspondence from National Grid and GTC.
- 2.5 Enquiries have been made to National Grid but we are still awaiting existing asset plans. However, in the response from them to the question of their ability to supply the site, they have included a plan of their existing assets. These include a 63mm diameter polyethylene (PE) pipe laid along the length of Westwick Street. This joins an 18 inch diameter cast iron (CI) pipe which runs along Charing Cross.
- 2.6 Enquiries made to GTC have established that they have no apparatus within or in close proximity to the site.

Electricity

- 2.6 UK Power Networks are the Distribution Network Operator for the eastern region.
- 2.7 The UK Power Networks plan provision policy is to only record the approximate location of buried services on their plans as any overhead apparatus is likely to be clearly visible on sites, although pole mounted apparatus may occasionally be shown.
- 2.8 Asset plans were obtained for the site in August 2013 and these are included in Appendix C.

- 2.9 From these asset plans it is clear that there is a substantial network including high voltage cables, in the vicinity of the site along Westwick Street, Charing Cross and in particular, along the western footpath of Duke Street. Also shown are two substations within the site.
- 2.10 One of the substations is located on the southern side of the building running along the northern boundary of the site and is named "Duke Street No 2". This appears from the site visit to be abandoned. The asset plans show that there are abandoned high and low voltage cables leading eastwards from the substation and a note stating "Underground cables and construction cleared from open areas but some disused cables may remain". UK Power Networks however have not formally confirmed that this is abandoned, and it is recommended that further checks are undertaken prior to construction.
- 2.11 The second substation on the east side of the site is named "Duke Street No 1" and is understood to be live. Low voltage cables are shown to the north, south and southwest of this substation connecting nearby buildings. Electricity cables, including high voltage cables, run in a service duct under the building on the eastern boundary of the site from Duke Street to the substation.



Photograph A – View of Electric Substation "Duke Street No 1"

- 2.12 Electricity apparatus also enters the site from east of the existing access on Westwick Street. This apparatus extends approximately 50m into the site.
- 2.13 The site visit has confirmed that there is no overhead electrical apparatus in the vicinity of the site.

Telecommunications

- 2.14 Record plans from BT Openreach show that underground plant is laid within the eastern and western footpaths of Duke Street. There is also underground plant laid along the northern and southern footpaths of Westwick Street and Charing Cross.
- 2.15 The site visit has confirmed that there is no overhead BT apparatus in the vicinity of the site.
- 2.16 Refer to Appendix D for a copy of the record plans from BT Openreach.
- 2.17 Record plans from Virgin Media show that underground plant is laid along the southern footpath of Westwick Street. Approximately 20m west of the junction between Westwick Street and Charing Cross, this crosses to the north and is laid along the northern footpath of Charing Cross then turns north along the western footpath of Duke Street.
- 2.18 See Appendix E for correspondence from Virgin Media.

Foul and Surface Water Drainage

- 2.19 The public sewer record plans from Anglian Water show that there both local foul and surface water sewer networks within the vicinity of the site. See Appendix A for copies of Anglian Water records.
- 2.20 A 225mm diameter vitreous clay (VC) foul water sewer runs from opposite the existing Westwick Street site access down Westwick Street towards the west. The closest manhole from this sewer to the site is Manhole Reference 8711 which is 1.74m deep with an invert level of 5.14m (AOD).
- 2.21 A foul water sewer of unknown diameter is shown running south along Duke Street adjacent to the site connecting with a 225mm diameter vitreous clay foul water sewer at the junction with Charing Cross. There is no invert information for the manhole at the head of the run which is nearest to the site (Manhole Reference 9802) but the depth to invert is recorded as 2.41m. (However no cover or invert levels are shown on the records). The next manhole down the run (Manhole Reference 9803) is 2.78m deep with an invert of 1.81m (AOD).
- 2.22 A 9 inch diameter vitreous clay surface water sewer is shown starting at the junction of Westwick Street and Charing Cross which runs westwards along Westwick Street. Another 9 inch diameter vitreous clay surface water sewer runs northbound along Duke Street. Both surface water sewers discharge into the River Wensum.

3.0 DIVERSIONS

- 3.1 The review of the asset plans has established that there is buried apparatus within or located in close proximity to the site.
- 3.2 A 100mm diameter water supply main extends approximately 80m around the existing buildings on the eastern side of the site. This water mains has a 2.25m easement measured either side of the centre line of the pipe. The buildings over and adjacent to the pipe are to be renovated and converted to commercial and residential properties and the external limits of the building will not alter. As such, this will not affect the easement of the pipe.
- 3.3 UK Power Networks have tested existing substations within the site boundary and related apparatus connecting them to their network. It is likely that a new substation would need to be provided in replacement of the existing substations and therefore a budget estimate has been received for the existing substation removal works. The cost of these works are in proportion to the scale of the development. Details of the budget estimate can be found in Appendix C and do not form a significant constraint to the development.
- 3.4 It is envisaged that access to the site will be provided by the two existing access points and no additional access points will need to be constructed. Therefore no diversion works will be required to form the accesses to the site.
- 3.5 There are no other major utilities located within the site area itself, resulting in the site being clear of any significant service constraints.

4.0 PROPOSED SERVICES

Electricity

- 4.1 There are high and low voltage electricity cables located within the footways adjacent to the site and existing supply cables connecting the substations within the site itself. UK Power Networks have been consulted to establish the principle of supplying the proposed development with electricity. The information supplied to UK Power Networks was based on the schedule of accommodation supplied by Innes Associates as found in Appendix G as well as loadings and indicative electrical supply schematics provided by Mott MacDonald which can be found in Appendix H.
- 4.2 The loadings and schematics from Mott MacDonald were provided prior to a block renaming exercise and therefore need to be read in conjunction with the following. Blocks A, B & C were renamed A1, A2 & A3 respectively. Block D (the townhouses) is now Block B and Blocks E, F & G have been renamed Blocks C, D & E respectively.
- 4.3 It is proposed that a new substation will need to be provided to replace the existing substations within the site.
- 4.4 Given that the existing connection to site is fed from a high voltage supply in Duke Street located adjacent to the site, it is reasonable to expect no major problems in supplying the site from the same source. This is supported by the requested budget cost estimate received from UK Power Networks, letter reference 401586692/QID213745 in Appendix C, which makes reference to using a Point of Connection from the existing high voltage network within Duke Street.
- 4.5 The budget estimate for the works are in proportion to the scale of the development and are therefore considered not to form a constraint in bringing forward the proposed development.
- 4.6 UK Power Networks have highlighted within this quote that due to the overall required loadings required for Blocks A1, A2 and A3 including the Landlords main load of 350kVA, it will be the clients responsibility to provide the tails back to the substation. UK Power Networks would normally expect the meter position to be within 20m of the substation.

Water

- 4.7 Anglian Water have mains water supplies adjacent to and within the proposed site. A Pre Planning Enquiry has been submitted to Anglian Water in order to assess the ability to supply the site which can be found in Appendix A. This states that the site can be supplied from the existing 200mm main in Westwick Street. It also states that it is predicted that there will be no required offsite reinforcement works to the local network.

Telecommunications

- 4.8 BT has underground apparatus adjacent to the site in Westwick Street and Duke Street. It is not envisaged that there will be any problems in providing a suitable BT service to the proposed development.
- 4.9 Early contact with BT Openreach Newsites during the detailed design of the development spine infrastructure will ensure that allowance is made for the installation of the necessary telecommunication apparatus to service the future development on the site.
- 4.10 Similarly, there is also Virgin Media apparatus adjacent to the site in Westwick Street and Duke Street. Again it is recommended to make early contact with Virgin Media in order to request a suitable design to service the site. It is not envisaged that there will be any problems in providing a suitable Virgin Media service to the proposed development.

Gas

- 4.11 There is a local gas infrastructure in close proximity to the site from which the site could be supplied with gas. National Grid have suggested a Point of Connection (POC) from their apparatus in Westwick Street which has the capacity to supply the site. This is just 5m from the site boundary which should not present any problem in supplying the site with gas.

Foul Water

- 4.12 A Pre Planning Enquiry has been submitted to Anglian Water in order to assess the ability to discharge foul water from the site which can be found in Appendix A. This shows a point of connection for the site at Manhole 9802 which has capacity to serve the site. This is at the head of an existing foul sewer run to the east of the site in Duke Street which is lower than the sewer to the south of the site. Further details of the foul water strategy can be found in the Foul Water Drainage Strategy report.

Surface Water

- 4.13 Although there are surface water sewers in the vicinity of the site, it has been agreed with the Environment Agency to discharge the surface water from the site into the adjacent River Wensum. Further details of the surface water strategy can be found in the Flood Risk Assessment and the Surface Water Drainage Strategy reports.

5.0 CONCLUSIONS

- 5.1 The record plans from UK Power Networks, Anglian Water, National Grid, British Telecommunication and Virgin Media show that infrastructure networks are present in the surrounding area from which it is considered likely that the proposed future development can be serviced with electricity, water, gas and telecommunications.
- 5.2 The removal of existing electricity substations within the site and other works for the provision of electricity to the site will be required. However, the cost of this is unlikely to be disproportionate to the scale of development.
- 5.3 It is not envisaged that there will be any major problems in draining the site. Foul water sewage will drain to the existing sewer in Duke Street. Surface water will be discharged to the River Wensum.
- 5.4 The utility enquiries used within this report were based on an anticipated development mix of 153 residential units. As identified in paragraph 1.6, the scheme is now intended to consist of 155 residential units. This change of units is relatively small and it is not envisaged that there will be any problems with respect to providing services to the development and that the conclusions of this report still stand.
- 5.5 Completion of this Utilities Review has established that there are currently no obvious services constraints that would prevent this site from being redeveloped as residential and commercial development.

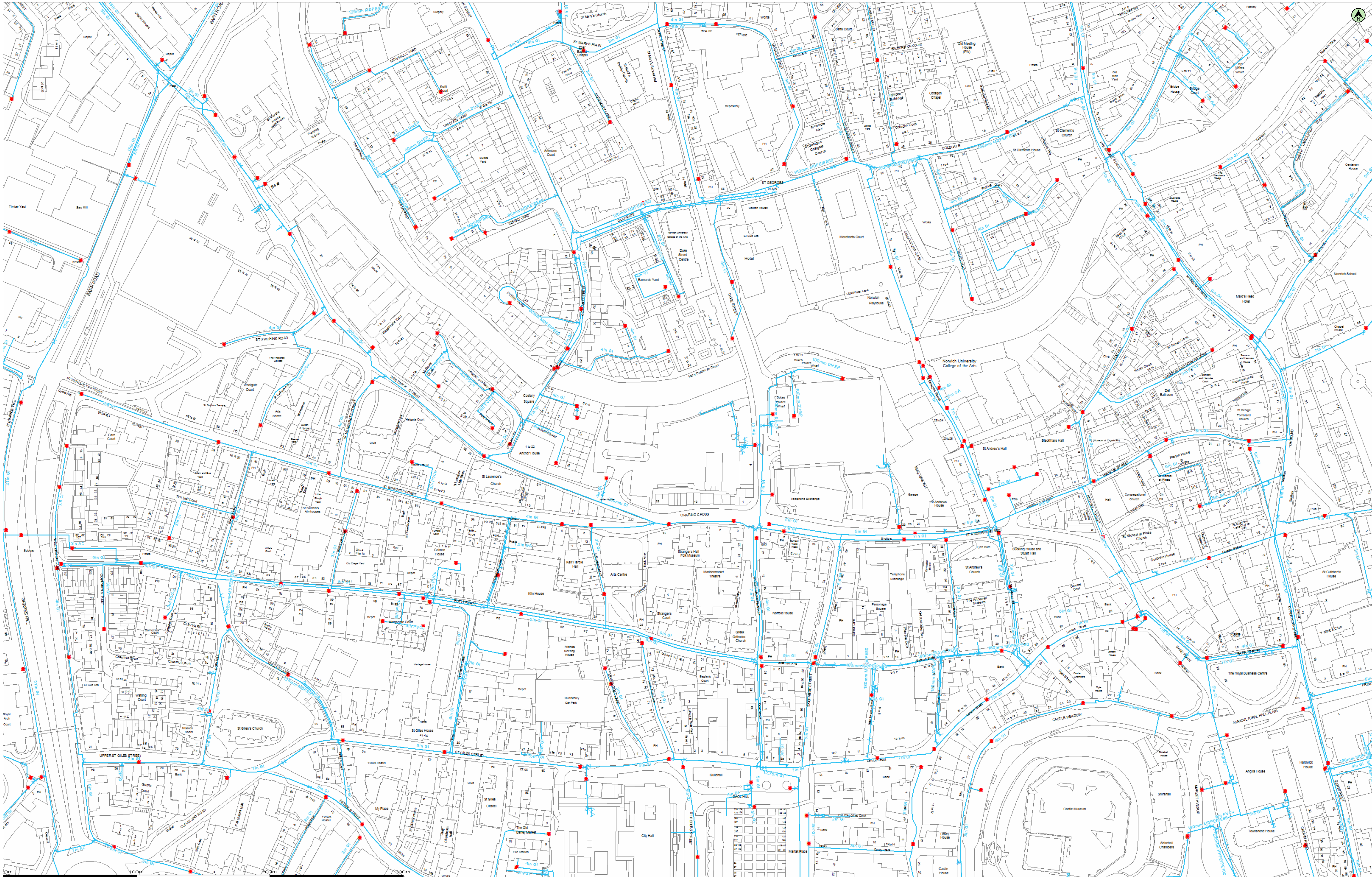
6.0 DISCLAIMER

- 6.1 Create Consulting disclaims any responsibility to the Client and others in respect of any matters outside the scope of this report.
- 6.2 The copyright of this report is vested in Create Consulting Engineers Ltd and Highcourt Developments Ltd. The Client, or their appointed representatives, may copy the report for purposes in connection with the development described herein. It shall not be copied by any other party or used for any other purposes without the written consent of Create Consulting Engineers Ltd or Highcourt Developments Ltd.
- 6.3 Create Consulting Engineers Ltd accepts no responsibility whatsoever to other parties to whom this report, or any part thereof, is made known. Any such other parties rely upon the report at their own risk.

APPENDICES

APPENDICES

APPENDIX A



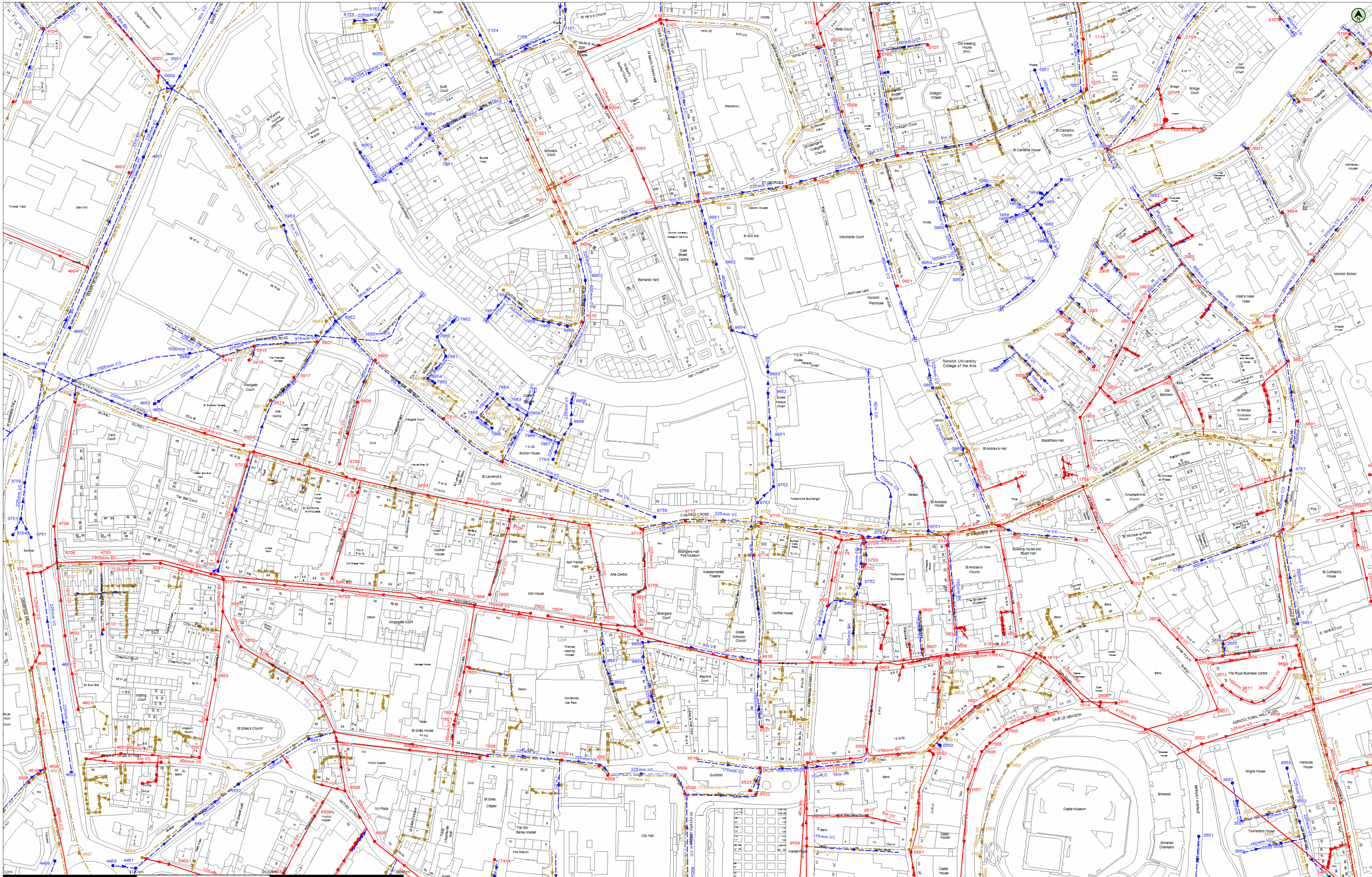
(c) Crown Copyright and database rights 2011 Ordnance Survey 100018507 Date: 11/06/14 Scale: 1:1250 Map Centre: 622893,308814 Data updated: 01/05/14 Our Ref: 101497 - 1 Clean Water Plan A1

This plan is provided by Anglian Water pursuant to its obligations under the Water Industry Act 1991 sections 198 or 199. It must be used in conjunction with any search results attached. This information on this plan is based on data currently recorded but position must be regarded as approximate. Service pipes, private sewers and drains are generally not shown. Users of this map are strongly advised to commission their own survey of the area shown on the plan before carrying out any works. The actual position of all apparatus MUST be established by trial holes. No liability whatsoever, including liability for negligence, is accepted by Anglian Water for any error or omission, including the failure to accurately record or record at all, the location of any water main, discharge pipe, sewer or disposal main or any item of apparatus. This information is valid for the date printed. The plan is produced by Anglian Water Services Limited from Ordnance Survey © Crown Copyright, 100018507. This map is to be used for the purposes of viewing the location of Anglian Water plant only. Any other uses of the map data or further copies is not permitted. This notice is not intended to exclude or restrict liability for death or personal injury resulting from negligence.

| | | | |
|----------------------|--|---------|--|
| Potable Water | | Fitting | |
| Raw Water | | Hydrant | |
| Decommissioned Water | | | |

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- Foul Sewer
- Surface Sewer
- Combined Sewer
- Final Effluent
- Rising Main (Colour denotes effluent type)
- Private Sewer (Colour denotes effluent type)
- Decommissioned Sewer (Colour denotes effluent type)
- Outfall (Colour denotes effluent type)
- Inlet (Colour denotes effluent type)
- Manhole (Colour denotes effluent type)
- Sewage Treatment Works
- Pumping Station

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| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
| 0002 | 623050 | 309027 | C | 2.96 | -0.98 | 3.94 |
| 0008 | 623008 | 309060 | C | 3.23 | 0.28 | 2.95 |
| 0010 | 623023 | 309019 | C | 2.94 | -0.87 | 3.81 |
| 0105 | 623036 | 309101 | C | 3.43 | 0.14 | 3.29 |
| 0107 | 623073 | 309110 | C | 3.64 | 2.28 | 1.36 |
| 0501 | 623060 | 308505 | C | 15.476 | 13.516 | 1.96 |
| 0502 | 623077 | 308578 | C | 13.656 | 11.886 | 1.77 |
| 0503 | 623074 | 308581 | C | 13.53 | 11.475 | 2.055 |
| 0504 | 623027 | 308582 | C | 12.446 | 8.456 | 3.99 |
| 0512 | 623085 | 308594 | C | 13.597 | 11.817 | 1.78 |
| 0517 | 623027 | 308532 | C | - | - | 1.475 |
| 0602 | 623082 | 308650 | C | 10.931 | 7.986 | 2.945 |
| 0603 | 623034 | 308642 | C | 10.092 | 7.347 | 2.745 |
| 0604 | 623015 | 308647 | C | 10.084 | 6.426 | 3.658 |
| 0606 | 623093 | 308654 | C | 11.499 | 6.149 | 5.35 |
| 0607 | 623069 | 308657 | C | 10.552 | 8.812 | 1.74 |
| 0608 | 623067 | 308685 | C | 10.707 | 9.552 | 1.155 |
| 0611 | 623095 | 308653 | C | 11.58 | 9.8 | 1.78 |
| 0612 | 623093 | 308668 | C | 10.876 | 9.396 | 1.48 |
| 0618 | 623080 | 308651 | C | - | - | 1.115 |
| 0702 | 623025 | 308719 | C | 6.18 | 4.355 | 1.825 |
| 0703 | 623025 | 308721 | C | 6.181 | 4.229 | 1.952 |
| 0704 | 623025 | 308736 | C | 5.851 | 3.446 | 2.405 |
| 0705 | 623008 | 308739 | C | 6.208 | 1.973 | 4.235 |
| 0706 | 623024 | 308741 | C | 5.864 | 3.464 | 2.4 |
| 0712 | 623088 | 308743 | C | 6.258 | 1.788 | 4.47 |
| 0713 | 623087 | 308735 | C | 6.478 | 5.178 | 1.3 |
| 0714 | 623004 | 308730 | C | 6.631 | 5.441 | 1.19 |
| 0901 | 623050 | 308929 | C | 3.089 | 0.159 | 2.93 |
| 1006 | 623105 | 309035 | C | 2.71 | -1.26 | 3.97 |
| 1015 | 623192 | 309077 | C | - | - | - |
| 1114 | 623189 | 309114 | C | 2.742 | 1.072 | 1.67 |
| 1505 | 623132 | 308597 | C | 18.694 | 17.689 | 1.005 |
| 1506 | 623113 | 308580 | C | 18.274 | 17.019 | 1.255 |
| 1507 | 623103 | 308552 | C | 18.132 | 16.647 | 1.485 |
| 1508 | 623119 | 308587 | C | 18.36 | 17.51 | 0.85 |
| 1605 | 623154 | 308654 | C | 16.628 | 14.968 | 1.66 |
| 1606 | 623134 | 308629 | C | 15.706 | 13.406 | 2.3 |
| 1607 | 623108 | 308614 | C | 14.516 | 12.161 | 2.355 |
| 1608 | 623139 | 308667 | C | 14.304 | 13.334 | 0.97 |
| 1609 | 623153 | 308606 | C | 19.326 | 18.386 | 0.94 |
| 1612 | 623122 | 308655 | C | 13.84 | 12.97 | 0.87 |
| 1613 | 623160 | 308651 | C | - | - | 1.575 |
| 1614 | 623189 | 308618 | C | - | - | 2.08 |
| 1701 | 623134 | 308704 | C | 11.364 | 10.354 | 1.01 |
| 1703 | 623127 | 308750 | C | - | - | 4.986 |
| 1704 | 623126 | 308747 | C | 8.151 | 0.891 | 7.26 |
| 1705 | 623138 | 308743 | C | 9.349 | 6.559 | 2.79 |
| 1706 | 623184 | 308739 | C | 12.844 | 10.564 | 2.28 |
| 1708 | 623189 | 308779 | C | 11.974 | 9.984 | 1.99 |
| 1710 | 623193 | 308794 | C | 11.243 | 9.203 | 2.04 |
| 1711 | 623139 | 308785 | C | 6.631 | 5.261 | 1.37 |
| 1712 | 623114 | 308776 | C | 6.165 | 4.855 | 1.31 |
| 1803 | 623187 | 308831 | C | 7.963 | 6.293 | 1.67 |
| 1804 | 623158 | 308845 | C | 6.216 | 5.286 | 0.93 |
| 1805 | 623145 | 308861 | C | 4.89 | 3.86 | 1.03 |
| 1807 | 623174 | 308892 | C | 3.336 | 2.216 | 1.12 |
| 1810 | 623187 | 308880 | C | 4.015 | 2.85 | 1.165 |
| 1811 | 623197 | 308869 | C | - | - | - |
| 1901 | 623181 | 308902 | C | 3.121 | 2.381 | 0.74 |
| 1902 | 623173 | 308908 | C | 2.989 | 1.389 | 1.6 |
| 1903 | 623190 | 308910 | C | 3.251 | 2.301 | 0.95 |
| 2003 | 623246 | 309077 | C | - | - | 4.3 |
| 2017 | 623248 | 309069 | C | - | - | - |
| 2018 | 623248 | 309047 | C | - | - | - |
| 2019 | 623206 | 309033 | C | 3.107 | -1.663 | 4.77 |
| 2104 | 623261 | 309115 | C | - | - | 3.95 |
| 2502 | 623278 | 308586 | C | 18.163 | 15.188 | 2.975 |
| 2504 | 623236 | 308597 | C | 19.847 | 18.367 | 1.48 |
| 2601 | 623290 | 308612 | C | 16.569 | 14.294 | 2.275 |
| 2602 | 623274 | 308649 | C | 16.565 | 13.975 | 2.59 |
| 2603 | 623246 | 308679 | C | 16.686 | 15.326 | 1.36 |
| 2604 | 623201 | 308614 | C | 20.475 | 5.815 | 14.66 |
| 2606 | 623202 | 308618 | C | 20.579 | 17.329 | 3.25 |
| 2610 | 623214 | 308617 | C | 20.358 | 19.458 | 0.9 |
| 2611 | 623286 | 308646 | C | - | - | - |
| 2612 | 623293 | 308630 | C | - | - | - |
| 2701 | 623226 | 308707 | C | 16.008 | 14.008 | 2 |
| 2702 | 623201 | 308748 | C | 13.783 | 11.633 | 2.15 |
| 2805 | 623254 | 308861 | C | 10.463 | 8.908 | 1.555 |
| 2806 | 623213 | 308842 | C | 8.284 | 6.999 | 1.585 |
| 2807 | 623202 | 308853 | C | 6.104 | 3.959 | 2.145 |
| 2901 | 623227 | 308902 | C | 4.193 | 2.888 | 1.305 |
| 2902 | 623239 | 308921 | C | 4.206 | 2.686 | 1.52 |
| 2903 | 623263 | 308946 | C | 4.471 | 2.431 | 2.04 |
| 2904 | 623221 | 308936 | C | 3.022 | 1.942 | 1.08 |
| 2905 | 623210 | 308948 | C | - | - | 0.915 |
| 2906 | 623203 | 308942 | C | 2.985 | 1.925 | 1.06 |
| 2908 | 623277 | 308929 | C | 5.21 | 2.843 | 2.367 |
| 3001 | 623313 | 309032 | C | 2.21 | 0.6 | 1.61 |
| 3004 | 623370 | 309098 | C | 2.79 | 0.24 | 2.55 |
| 3005 | 622387 | 309067 | C | - | - | 2.12 |
| 3006 | 623394 | 309092 | C | 3.5 | 1.97 | 1.53 |
| 3007 | 623351 | 309067 | C | - | - | - |
| 3107 | 623337 | 309129 | C | 1.76 | 0.28 | 1.48 |
| 3109 | 623389 | 309118 | C | - | - | - |
| 3405 | 623369 | 308494 | C | 11.933 | 5.523 | 6.41 |
| 3506 | 622399 | 308557 | C | 26.15 | 23.39 | 2.76 |
| 3507 | 623382 | 308542 | C | 10.795 | 8.805 | 1.99 |
| 3601 | 623362 | 308616 | C | 12.366 | 1.296 | 11.07 |
| 3605 | 623349 | 308660 | C | 12.638 | 9.328 | 3.31 |
| 3606 | 623336 | 308604 | C | 13.824 | 12.414 | 1.41 |
| 3607 | 623362 | 308612 | C | 12.289 | 10.459 | 1.83 |

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
| 3608 | 623314 | 308651 | C | - | - | - |
| 3609 | 623344 | 308642 | C | - | - | - |
| 3610 | 623325 | 308619 | C | - | - | - |
| 3611 | 623308 | 308620 | C | - | - | - |
| 3702 | 623339 | 308747 | C | 12.417 | 9.827 | 2.59 |
| 3704 | 623398 | 308714 | C | 15.06 | 11.76 | 3.3 |
| 3705 | 623395 | 308735 | C | 11.589 | 10.779 | 0.81 |
| 3707 | 623391 | 308759 | C | 10.175 | 8.24 | 1.935 |
| 3712 | 623308 | 308777 | C | 12.493 | 9.883 | 2.61 |
| 3713 | 623370 | 308754 | C | - | - | - |
| 3801 | 623350 | 308828 | C | 9.09 | 6.455 | 2.635 |
| 3802 | 623343 | 308873 | C | 8.054 | 5.454 | 2.6 |
| 3805 | 623312 | 308896 | C | 7.243 | 4.273 | 2.97 |
| 3901 | 623332 | 308907 | C | 7.133 | 4.728 | 2.405 |
| 3902 | 623362 | 308948 | C | 6.264 | 4.244 | 2.02 |
| 3903 | 623399 | 308994 | C | 5.513 | 3.158 | 2.355 |
| 3904 | 623339 | 308984 | C | 3.827 | 1.567 | 2.26 |
| 4002 | 622496 | 309090 | C | - | - | - |
| 4003 | 622474 | 309014 | C | - | - | - |
| 4104 | 622410 | 309122 | C | - | - | 3.95 |
| 4108 | 623405 | 309104 | C | 3.44 | 1.23 | 2.21 |
| 4501 | 622468 | 308579 | C | 25.47 | 23.84 | 1.63 |
| 4502 | 622442 | 308575 | C | 25.75 | 24.39 | 1.36 |
| 4506 | 622411 | 308568 | C | 24.18 | 20.42 | 3.76 |
| 4508 | 622468 | 308572 | C | - | - | - |
| 4509 | 622498 | 308572 | C | - | - | - |
| 4510 | 622406 | 308563 | C | 25.865 | 21.855 | 4.01 |
| 4601 | 622436 | 308612 | C | 23.99 | 22.57 | 1.42 |
| 4602 | 622426 | 308667 | C | - | - | 1.475 |
| 4604 | 623405 | 308693 | C | 11.102 | 8.862 | 2.24 |
| 4608 | 622401 | 308643 | C | 18.77 | 15.28 | 3.49 |
| 4609 | 622407 | 308654 | C | 18.88 | 14.75 | 4.13 |
| 4612 | 622455 | 308672 | C | - | - | 1.55 |
| 4701 | 622498 | 308722 | C | 13.99 | 12.1 | 1.89 |
| 4703 | 622453 | 308721 | C | - | - | 1.855 |
| 4705 | 622408 | 308715 | C | 14.27 | 11.7 | 2.57 |
| 4706 | 622420 | 308722 | C | 15.07 | 8.35 | 6.72 |
| 4706 | 623404 | 308788 | C | 7.748 | 5.188 | 2.56 |
| 4708 | 622418 | 308749 | C | - | - | 1.14 |
| 4813 | 622434 | 308842 | C | 6.28 | 4.54 | 1.74 |
| 4904 | 622443 | 308944 | C | - | - | 3.76 |
| 5402 | 622504 | 308496 | C | 27.76 | 24.87 | 2.89 |
| 5403 | 622590 | 308489 | C | - | - | - |
| 5501 | 622527 | 308576 | C | - | - | 2.06 |
| 5601 | 622544 | 308685 | C | - | - | 1.27 |
| 5602 | 622558 | 308659 | C | - | - | 1.6 |
| 5603 | 622539 | 308634 | C | - | - | 1.09 |
| 5701 | 622545 | 308709 | C | - | - | 1.55 |
| 5702 | 622541 | 308723 | C | - | - | 1.7 |
| 5703 | 622562 | 308794 | C | - | - | 1.75 |
| 5705 | 622536 | 308714 | C | - | - | 4.445 |
| 5804 | 622560 | 308810 | C | - | - | 1.75 |
| 5810 | 622568 | 308805 | C | - | - | 1.83 |
| 5813 | 622580 | 308844 | C | - | - | 2.87 |
| 5814 | 622545 | 308876 | C | - | - | 1.83 |
| 5815 | 622568 | 308884 | C | - | - | 1.74 |
| 5816 | 622564 | 308874 | C | - | - | 2.46 |
| 5817 | 622598 | 308861 | C | 4.44 | 3.21 | 1.23 |
| 5901 | 622628 | 308595 | C | 21.56 | 19.91 | 1.65 |
| 5903 | 622630 | 308588 | C | - | - | 1.345 |
| 5905 | 622658 | 308513 | C | - | - | 1.675 |
| 5906 | 622636 | 308551 | C | - | - | 1.22 |
| 5908 | 622613 | 308532 | C | - | - | 0.915 |
| 6001 | 622693 | 308695 | C | - | - | 8.025 |
| 6002 | 622604 | 308632 | C | - | - | 1.7 |
| 6702 | 622637 | 308786 | C | 7.14 | 2.51 | 4.63 |
| 6703 | 622698 | 308772 | C | - | - | 1.93 |
| 6704 | 622634 | 308701 | C | - | - | 1.675 |
| 6706 | 622645 | 308775 | C | - | - | 1.725 |
| 6707 | 622626 | 308710 | C | - | - | 1.5 |
| 6708 | 622632 | 308796 | C | 6.78 | 4.94 | 1.84 |
| 6805 | 622659 | 308874 | C | - | - | 4.57 |
| 6806 | 622645 | 308842 | C | 4.43 | 1.75 | 2.68 |
| 6807 | 622615 | 308887 | C | - | - | 1.8 |
| 7001 | 622773 | 309039 | C | - | - | 2.72 |
| 7414 | 622748 | 308499 | C | - | - | - |
| 7507 | 622737 | 308576 | C | - | - | 0.51 |
| 7508 | 622743 | 308577 | C | - | - | 1.55 |
| 7509 | 622798 | 308574 | C | 23.43 | 20 | 3.43 |
| 7601 | 622718 | 308601 | C | - | - | - |
| 7602 | 622775 | 308684 | | | | |

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
| 9711 | 622989 | 308749 | F | - | - | 4.525 |
| 9712 | 622946 | 308749 | F | - | - | - |
| 9713 | 622938 | 308747 | F | - | - | - |
| 9801 | 622924 | 308898 | F | 4.58 | 1.72 | 2.86 |
| 9802 | 622946 | 308827 | F | - | - | 2.41 |
| 9803 | 622952 | 308822 | F | 4.59 | 1.81 | 2.78 |
| 9902 | 622912 | 308947 | F | 3.63 | 0.78 | 2.85 |
| 9906 | 622912 | 308992 | F | - | - | - |
| 0552 | 623082 | 308585 | S | 13.53 | 12.71 | 0.82 |
| 0653 | 623017 | 308692 | S | 8.397 | 5.917 | 2.48 |
| 0751 | 623073 | 308746 | S | 5.829 | 3.119 | 2.71 |
| 0752 | 623022 | 308706 | S | 7.12 | 3.99 | 3.13 |
| 0753 | 623036 | 308741 | S | 5.748 | 3.433 | 2.315 |
| 0857 | 623076 | 308853 | S | 3.414 | 0.569 | 2.845 |
| 0865 | 623099 | 308807 | S | - | - | 3.3 |
| 0951 | 623082 | 308992 | S | 3.444 | 1.234 | 2.21 |
| 0952 | 623087 | 308974 | S | 3.37 | 1.27 | 2.1 |
| 0953 | 623099 | 308938 | S | 3.15 | 1.51 | 1.64 |
| 0954 | 623071 | 308943 | S | 3.02 | 1.87 | 1.15 |
| 1051 | 623153 | 309091 | S | 2.83 | 1.69 | 1.14 |
| 1052 | 623173 | 309009 | S | 2.72 | 1.75 | 0.97 |
| 1057 | 623187 | 309075 | S | - | - | - |
| 1060 | 623117 | 309005 | S | 2.7 | 1.57 | 1.13 |
| 1854 | 623123 | 308867 | S | 3.837 | 2.442 | 1.395 |
| 1954 | 623157 | 308999 | S | 2.61 | 1.75 | 0.86 |
| 1955 | 623158 | 308990 | S | 2.74 | 1.74 | 1 |
| 1956 | 623147 | 308986 | S | 2.8 | 1.51 | 1.29 |
| 1957 | 623132 | 308978 | S | 2.77 | 1.87 | 0.9 |
| 1958 | 623132 | 308980 | S | 2.72 | 1.71 | 1.01 |
| 1959 | 623136 | 308994 | S | 2.67 | 1.7 | 0.97 |
| 1960 | 623158 | 308973 | S | 2.93 | 1.37 | 1.56 |
| 1961 | 623160 | 308963 | S | 2.87 | 1.44 | 1.43 |
| 1962 | 623152 | 308933 | S | 2.71 | 1.88 | 0.83 |
| 2051 | 623206 | 309030 | S | - | - | - |
| 2551 | 623276 | 308517 | S | - | 17.116 | - |
| 2654 | 623293 | 308663 | S | 15.457 | 14.657 | 0.8 |
| 2655 | 623294 | 308661 | S | 15.46 | 14.63 | 0.83 |
| 2751 | 623261 | 308718 | S | 15.309 | 14.079 | 1.23 |
| 2952 | 623233 | 308993 | S | 3.83 | - | - |
| 3456 | 623374 | 308487 | S | 11.444 | 9.619 | 1.825 |
| 3551 | 623308 | 308528 | S | 15.922 | 14.487 | 1.435 |
| 3552 | 623348 | 308539 | S | 13.805 | 12.18 | 1.625 |
| 3553 | 623342 | 308568 | S | 14.204 | 12.679 | 1.525 |
| 3554 | 623310 | 308505 | S | 15.69 | 13.54 | 2.15 |
| 3555 | 623329 | 308510 | S | 14.67 | 12.42 | 2.25 |
| 3556 | 623337 | 308512 | S | 13.314 | 11.249 | 2.065 |
| 3557 | 623301 | 308557 | S | 16.706 | 14.986 | 1.72 |
| 3651 | 623350 | 308676 | S | 12.701 | 10.811 | 1.89 |
| 3751 | 623345 | 308791 | S | 10.266 | 7.996 | 2.27 |
| 3751 | 622393 | 308755 | S | 12.18 | 7.93 | 4.25 |
| 3754 | 622387 | 308743 | S | - | - | - |
| 3755 | 622396 | 308782 | S | 10.27 | 6.3 | 3.97 |
| 4051 | 622485 | 309026 | S | 3.7 | 1.99 | 1.71 |
| 4451 | 622479 | 308493 | S | 28.18 | 26.12 | 2.06 |
| 4453 | 622462 | 308495 | S | 27.61 | 26.34 | 1.27 |
| 4456 | 622419 | 308498 | S | 27.66 | 26.22 | 1.44 |
| 4552 | 622431 | 308565 | S | 24.5 | 22.89 | 1.61 |
| 4655 | 622418 | 308642 | S | 19.54 | 17.73 | 1.81 |
| 4751 | 622401 | 308741 | S | - | - | - |
| 4853 | 622493 | 308841 | S | - | - | 1.435 |
| 4858 | 622486 | 308832 | S | - | - | 1.75 |
| 4859 | 622410 | 308866 | S | 5.91 | 3.18 | 2.73 |
| 4860 | 622430 | 308898 | S | 4.8 | 2.89 | 1.91 |
| 5051 | 622516 | 309094 | S | 3.62 | 1.01 | 2.61 |
| 5059 | 622506 | 309077 | S | - | - | 3.075 |
| 5551 | 622522 | 308530 | S | 26.07 | 24.22 | 1.85 |
| 5552 | 622556 | 308556 | S | 24.49 | 22.91 | 1.58 |
| 5858 | 622520 | 308879 | S | - | - | 4.55 |
| 5953 | 622590 | 308975 | S | - | - | 1.475 |
| 6050 | 622660 | 309008 | S | 3.87 | 0.8 | 3.07 |
| 6051 | 622647 | 309029 | S | 3.865 | 2.485 | 1.38 |
| 6052 | 622678 | 309021 | S | 4.255 | 1 | 3.255 |
| 6053 | 622699 | 309042 | S | 4.15 | 1.245 | 2.905 |
| 6054 | 622694 | 309051 | S | 4.022 | 1.333 | 2.689 |
| 6055 | 622667 | 309095 | S | 4.04 | 1.834 | 2.206 |
| 6056 | 622642 | 309083 | S | 4.319 | 2.634 | 1.685 |
| 6152 | 622659 | 309129 | S | - | 2.05 | - |
| 6153 | 622643 | 309128 | S | - | 2.2 | - |
| 6551 | 622609 | 308590 | S | 22.15 | 20.64 | 1.51 |
| 6854 | 622698 | 308860 | S | - | - | - |
| 6952 | 622629 | 308903 | S | - | - | 1.98 |
| 7050 | 622702 | 309038 | S | 4.19 | 1.449 | 2.741 |
| 7051 | 622712 | 309020 | S | 4.12 | 1.671 | 2.449 |
| 7052 | 622725 | 309056 | S | 4.102 | 1.861 | 2.241 |
| 7053 | 622749 | 309067 | S | 3.721 | 2.26 | 1.461 |
| 7154 | 622737 | 309117 | S | - | - | 2.9 |
| 7155 | 622748 | 309094 | S | - | - | - |
| 7156 | 622771 | 309107 | S | - | - | - |
| 7157 | 622798 | 309118 | S | - | - | - |
| 7453 | 622748 | 308487 | S | 26.36 | 25.28 | 1.08 |
| 7754 | 622792 | 308799 | S | - | - | - |
| 7858 | 622772 | 308832 | S | - | - | - |
| 7860 | 622705 | 308891 | S | - | - | - |
| 7861 | 622712 | 308877 | S | - | - | - |
| 7862 | 622703 | 308857 | S | - | - | - |
| 7863 | 622759 | 308840 | S | - | - | - |
| 7864 | 622750 | 308848 | S | - | - | - |
| 7865 | 622735 | 308831 | S | - | - | - |
| 7866 | 622746 | 308823 | S | - | - | - |
| 7867 | 622796 | 308812 | S | - | - | - |
| 7868 | 622776 | 308820 | S | - | - | - |
| 7952 | 622717 | 308902 | S | - | - | - |
| 7953 | 622744 | 308907 | S | 3.39 | 1.183 | 2.207 |

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
| 7954 | 622757 | 308922 | S | 3.39 | 1.24 | 2.15 |
| 7955 | 622789 | 308902 | S | 3.41 | 1.584 | 1.826 |
| 7956 | 622778 | 308904 | S | 3.56 | 1.41 | 2.15 |
| 8651 | 622830 | 308648 | S | 18.52 | 16.77 | 1.75 |
| 8652 | 622836 | 308631 | S | 19.46 | 17.44 | 2.02 |
| 8654 | 622860 | 308643 | S | 18.24 | 17.04 | 1.2 |
| 8655 | 622871 | 308602 | S | 20.54 | 19.4 | 1.14 |
| 8656 | 622859 | 308662 | S | 17.41 | 16.17 | 1.24 |
| 8758 | 622825 | 308773 | S | - | - | - |
| 8759 | 622868 | 308756 | S | - | - | - |
| 8858 | 622806 | 308842 | S | - | - | - |
| 8859 | 622805 | 308826 | S | - | - | - |
| 8860 | 622803 | 308899 | S | 3.23 | 1.73 | 1.5 |
| 8952 | 622816 | 308934 | S | - | - | 3 |
| 9555 | 622981 | 308568 | S | - | - | 2.03 |
| 9651 | 622992 | 308667 | S | - | - | 3 |
| 9751 | 622945 | 308767 | S | 7.51 | 5.6 | 1.91 |
| 9752 | 622957 | 308779 | S | 6.77 | 4.48 | 2.29 |
| 9851 | 622955 | 308813 | S | 4.91 | 3.5 | 1.41 |
| 9852 | 622953 | 308849 | S | 4.72 | 1.75 | 2.97 |
| 9853 | 622953 | 308865 | S | 4.92 | 1.16 | 3.76 |
| 9854 | 622926 | 308896 | S | 4.68 | 0.16 | 4.52 |
| 9951 | 622906 | 308976 | S | 3.79 | 0.62 | 3.17 |
| 9952 | 622914 | 308945 | S | 3.62 | 0.46 | 3.16 |

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|

| Manhole Reference | Easting | Northing | Liquid Type | Cover Level | Invert Level | Depth to Invert |
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|
|-------------------|---------|----------|-------------|-------------|--------------|-----------------|

Pre Planning Assessment Report

Duke's Wharf, Westwick Street, NORWICH - Mancroft

Section 1: Proposed Development

Thank you for submitting a pre planning enquiry. This has been produced for Create Consulting Engineers. Your reference number is **00002683**. If you have any questions upon receipt of this report, please contact Anna Lansdown on 01733 414690 or email planningliaison@anglianwater.co.uk.

The response within this report has been based on the following information which was submitted as part of your application:

| List of Planned Developments | | |
|------------------------------|---------------|--------------|
| Type of Development | Type of Unit | No. Of Units |
| C3 Dwellings | Dwellings | 153 |
| B1 Business | Business Unit | 5 |

The anticipated residential build rate is:

| Year | 2014 | 2015 | 2016 |
|------------|------|------|------|
| Build Rate | 50 | 100 | 3 |

- The grid reference for the site is TG22900880.
- The site currently does not have planning permission and is located on a Brownfield site.

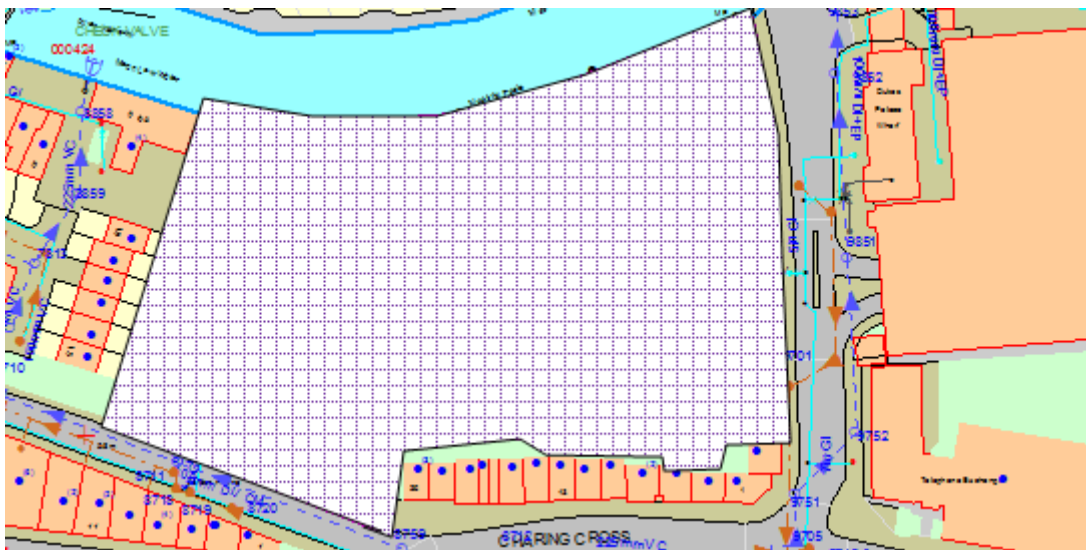


Figure 1: Location of proposed development

The comments contained within this report relate to the public water mains and sewers indicated on our records. Your attention is drawn to the disclaimer in the useful information section of this report.

Section 2: Assets Affected

Our records indicate that we have the following types of assets within or overlapping the boundary of your development site as listed in the table below.

Additionally, it is highly recommended that you carry out a thorough investigation of your proposed working area to establish whether any unmapped public or private sewers and lateral drains are in existence. We are unable to permit development either over or within the easement strip without our prior consent. The extent of the easement is provided in the table below. Please be aware that the existing water mains/public sewers should be located in highway or open space and not in private gardens. This is to ensure available access for any future maintenance and repair and this should be taken into consideration when planning your site layout.

| Water and Used Water Easement Information | | |
|--|----------------|---------------------------------------|
| Asset Type | Pipe Size (mm) | Total Easement Required (m) |
| Water Mains | 100 | 2.25 m either side of the centre line |

If it is not possible to avoid our assets then the water main may need to be diverted in accordance with Section 185 of the Water Industry Act (1991). We have a duty to divert our sewerage infrastructure if requested to do so although this would be at your expense. You will need to make a formal application if you would like a diversion to be considered. A copy of the section 185 diversion application form can be found at www.anglianwater.co.uk/developers

Due to the private sewer transfer in October 2011 many newly adopted public used water assets and their history are not indicated on our records. You also need to be aware that your development site may contain private water mains, drains or other assets not shown on our records. These are private assets and not the responsibility of Anglian Water but that of the landowner.

Section 3: Water Supply

In examining the available capacity for your development site we assess the capacity and costs for two categories of water main. These are:

Strategic – these are the offsite potable water mains which deliver water within an area to a large number of development sites often across a number of towns. The strategic provision of these water mains enables us to provide of the cheapest solution across a large geographical area.

Local reinforcement – these are the offsite potable water mains that connect your site to the closest available public water main. Alternatively, reinforcement may be needed to protect existing houses against the loss of water or water pressure.

On most sites we also have two categories of water mains the **Spine Mains** and **Housing Estate Mains (HEMS)**. To support your budgeting arrangements we have also examined the estimated cost for delivering the onsite water mains needed for a site of your size.

Water Supply Network

The water supply to the proposed development site can be provided from the existing 200 millimetre main in Westwick Street at National Grid Reference (NGR) TG2283108784. The water main has adequate capacity for your development site. Anglian Water cannot reserve capacity and therefore you are recommended to formally apply for a connection at your earliest convenience.

Please note that available capacity in our network can be reduced at any time due to increased requirements from existing businesses and houses as well as from new housing and new commercial developments.

The proposed development site does not benefit from local reinforcement.

Water Budget Costs

The costs provided in this report are based on the current information available. These costs are provided as an indicative estimate to help inform you on a budget for supplying water to your site.

- The **strategic costs** are based on a proportion of the total strategic scheme cost. These costs are calculated based on the flow rate that your development requires as compared to the total flow rate that the strategic main has been designed against.
- The **local reinforcement** costs have been calculated based on the typical costs of providing a length of water main across a similar distance as required for this development site.

Based on these estimated and predicted costs, the cost to provide water to your site:

| Predicted costs for supplying water to your development | |
|--|------------|
| Strategic Water Mains | |
| None Required | £ 0 |
| Estimated Local reinforcement Mains | |
| None Required | £ 0 |
| Total Cost for providing the water infrastructure | £ 0 |

The above table provides an estimated breakdown of the costs to supply the water infrastructure. A more detailed cost provision will be provided following a formal application for a new water mains or water connection.

Section 4: Water Recycling Services

In examining the used water system we assess the ability for your site to connect to the public sewerage network without causing a detriment to the operation of the system. We also assess the receiving water recycling centre and determine whether the water recycling centre can cope with the increased flow and influent quality arising from your development

Water Recycling Centre

The foul drainage from the proposed development is in the catchment of Whitlingham Trowse Water Recycling Centre, which currently has capacity to treat the flows from your development site. Anglian Water cannot reserve capacity and the available capacity at the water recycling centre can be reduced at any time due to growth and due to environmental and regulation driven changes.

Used Water Network

Anglian Water has assessed the impact of gravity flows from the planned development to the public foul sewerage network. We can confirm that this is acceptable as the foul sewerage system, at present, has available capacity for your site. The connection point will be to manhole 9802 in Duke Street, Norwich at NGR TG22940882.

Surface Water Disposal

You indicated on the Pre-Planning Application form that a connection to the public surface water sewer network is not required as a connection to a watercourse is to be utilised.

A new surface water sewer can be used as a mechanism to discharge surface water to a watercourse or as part of a Suds scheme where appropriate. Subject to the sewer being designed in accordance with the current version of Sewers For Adoption, the sewer can be put forward for adoption by Anglian water under Section 104 of the Water Industry Act 1991. If the outfall is to a watercourse, the applicant will be required to obtain consent to discharge via the appropriate body.

As you may be aware, Anglian Water will consider the adoption of SuDs provided that they meet the criteria outline in our SuDs adoption manual. This can be found on our website at www.anglianwater.co.uk/developers/sewer-connection/suds.aspx. We will adopt features located in public open space that are designed and constructed, in conjunction with the future SuDs Approving Body, to the criteria within our SuDs adoption manual. Specifically, developers must be able to demonstrate:

1. Effective upstream source control,
2. Effective exceedance design, and
3. Effective maintenance schedule demonstrating that the assets can be maintained both now and in the future with adequate access.

Our preference is that the Local Authority is requested to adopt in the first instance as duty will pass to them in future legislation. Consequently as part of your submission, evidence will need to be provided to show that you have approached the local authority. If you wish to look at the adoption of any SuDs then an expression of interest form can be found on our website at:

http://www.anglianwater.co.uk/assets/media/SuDS_Adoption_Form_2012.pdf

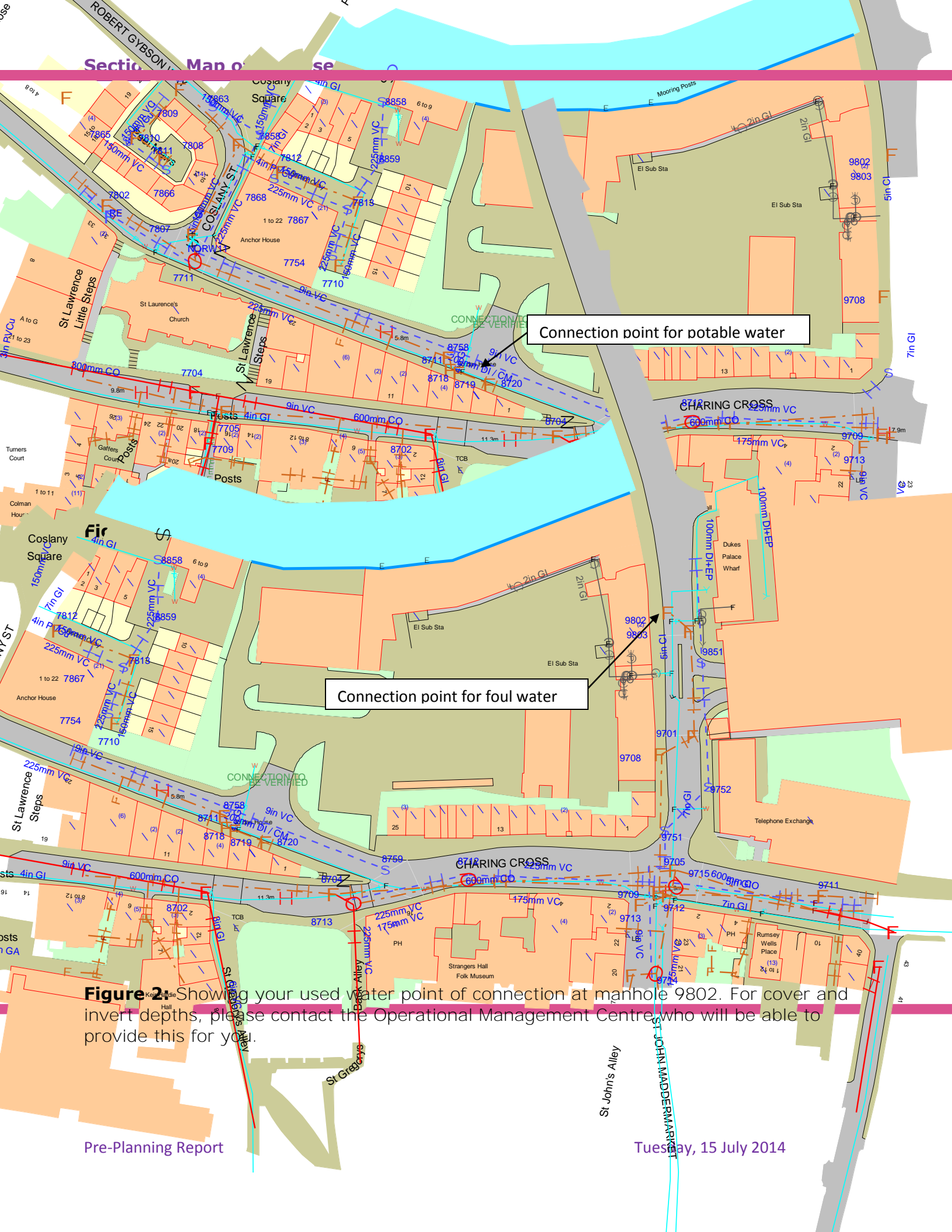
Trade Effluent

We note that you do not have any trade effluent requirements. Should this be required in the future you will need our written formal consent. This is in accordance with Section 118 of the Water Industry Act (1991).

Used Water Budget Costs

It has been assumed that the onsite used water network will be provided under a section 104 Water Industry Act application. It is recommended that you also budget for both infrastructure charges and connection costs. The 2014/15 charges are:

| | |
|---------------------------------------|--------------------------------------|
| Infrastructure Charge | £345.00 per connection |
| S104 Supervision and inspection costs | 2.5% of estimated construction costs |
| S104 Survey costs | 10% of estimated construction costs |



Connection point for potable water

Connection point for foul water

Figure 2 Showing your used water point of connection at manhole 9802. For cover and invert depths, please contact the Operational Management Centre, who will be able to provide this for you.

Section 6: Useful Information

Water

Water Industry Act – Key Water Sections:

- **Section 41:** This provides you with the right to requisition a new water main to connect your site to the public water network.
- **Section 45:** This provides you with a right to have a connection from a building or part of a building to the public water main.
- **Section 51A:** This provides you with the right to provide the water main or service connection yourselves and for us to vest them into our company.
- **Section 185:** This provides you with the right to have a public water asset diverted. Details on how to make an application and the s185 form is available on our website at <http://www.anglianwater.co.uk20/developers> or via our Developer Services team on 08457 60 66 087.

Details on how to make a formal application for a new water main, new connection or diversion are available on our website at www.anglianwater.co.uk/developers or via our Developer Services team on 08457 60 66 087.

If you have any other queries on your rights to requisition or connect your housing to the public water and used water infrastructure then please contact our developer services team at: Developer Services, Anglian Water, PO Box 495, Huntingdon, PE29 6YY or Telephone: 0845 60 66 087 or Email: developerservices@anglianwater.co.uk

Self Lay of Water Mains: A list of accredited Self Lay Organisations can be found at www.lloydsregister.co.uk/schemes/WIRS/providers-list.aspx.

Water pressure and flow rate:

The water pressure and consistency that we must meet for your site is laid out in the Water Industry Act (1991). This states that we must supply a flow rate of 9 litres per second at a pressure of 10 metres of head to the external stop tap. If your water pressure requirements exceed this then you will need to provide and maintain any booster requirements to the development site.

Used Water

Water Industry Act – Key Used Water Sections:

- **Section 98:** This provides you with the right to requisition a new public sewer. The new public sewer can be constructed by Anglian Water on your behalf. Alternatively, you can construct the sewer yourself under section 30 of the Anglian Water Authority Act 1977.

- **Section 102:** This provides you with the right to have an existing sewerage asset vested by us. It is your responsibility to bring the infrastructure to an adoptable condition ahead of the asset being vested.
- **Section 104:** This provides you with the right to have a design technically vetted and an agreement reached that will see us adopt your assets following their satisfactory construction and connection to the public sewer.
- **Section 106:** This provides you with the right to have your constructed sewer connected to the public sewer.
- **Section 185:** This provides you with the right to have a public sewerage asset diverted.

Details on how to make a formal application for a new sewer, new connection or diversion are available on our website at www.anglianwater.co.uk/developers or via our Developer Services team on 08457 60 66 087.

Sustainable Drainage Systems:

Many existing urban drainage systems can cause problems of flooding, pollution or damage to the environment and are resilient to climate change in the long term. Therefore our preferred method of surface water disposal is through the use of Sustainable Drainage Systems (SuDS). SuDS are a range of techniques that aim to mimic the way surface water drains in natural systems within urban areas. For more information on SuDS, please visit our website at <http://anglianwater.co.uk/developers/sewer-connection/suds.aspx>. We also recommend that you contact the future SuDS Approving Body (SAB) for the area to discuss your application.

Private Sewer Transfers: Sewers and lateral drains connected to the public sewer on the 1 July 2011 transferred into Water Company ownership on the 1 October 2011. This follows the implementation of the Floods and Water Management Act (FWMA). This included sewers and lateral drains that were subject to an existing Section 104 Adoption Agreement and those that were not. There were exemptions and the main non-transferable assets were as follows:

- Surface water sewers and lateral drains that did not discharge to the public sewer, e.g. those that discharged to a watercourse.
- Foul sewers and lateral drains that discharged to a privately owned sewage treatment/collection facility.
- Pumping stations and rising mains will transfer between 1 October 2011 and 1 October 2016.

The implementation of Section 42 of the FWMA will ensure that future private sewers will not be created. It is anticipated that all new sewer applications will need to have an approved section 104 application ahead of a section 106 connection.

Encroachment: Anglian Water operates a risk based approach to development encroaching close to our used water infrastructure. We assess the issue of encroachment if you are

planning to build within 400 metres of a water recycling centre or, within 15 metres to 100 metres of a pumping station. We have more information available on our website at <http://anglianwater.co.uk/developers/encroachment.aspx>

Locating our assets: Maps detailing the location of our water and used water infrastructure including both underground assets and above ground assets such as pumping stations and recycling centres are available from www.digdat.co.uk. All requests from members of the public or non-statutory bodies for maps showing the location of our assets will be subject to an appropriate administrative charge. We have more information on our website at: www.anglianwater.co.uk/developers/our-assets/

Summary of charges: A summary of this year's water and used water connection and infrastructure charges can be found at <http://www.anglianwater.co.uk/developers/charges/>

Disclaimer: The information provided within this report is based on the best data currently recorded, recorded within the last 12 months or provided by a third party. The position must be regarded as approximate. If there is further development in the area or for other reasons the position may change.

The accuracy of this report is therefore not guaranteed and does not obviate the need to make additional appropriate searches, inspections and enquiries. You are advised therefore to renew your enquiry should there be a delay in submitting your application for water supply/sewer connection to re-confirm the situation.

Any cost calculations provided within the report are estimated only and may be subject to change.

The responses made in this report are based on the presumption that your proposed development obtains planning permission. Whilst this report has been prepared to help assess the viability of your proposal, it must not be considered in isolation. Anglian Water supports the plan led approach to sustainable development that is set out in the National Planning Policy Framework (NPPF). As a spatial planning statutory consultee, we assist planning authorities in the preparation of a sustainable local plan on the basis of capacity within our water and water recycling (formerly referred to as wastewater) infrastructure. Consequently, any infrastructure needs identified in this report must only be considered in the context of up to date, adopted or emerging local plans. Where local plans are absent, silent or out of date these needs should be considered against the definition of sustainability set out in the NPPF as a whole.

No liability whatsoever including liability for negligence is accepted by Anglian Water Services Limited for any error or inaccuracy or omission including the failure to accurately record or record at all, the location of any water main, discharge pipe, sewer, or drain or disposal main or any item of apparatus.

Contacting us: If you have any comments or suggestions based on the information provided in this report then please feel free to contact on Anna Lansdown 01733 414690 or email planningliason@anglianwater.co.uk

APPENDIX B

Network Enquiry No : 180001846
Your Reference : NR2 1ZZ

nationalgrid

RECEIVED 11 JUN 2014

Network Strategy
Block 4 Area 6
Brick Kiln Street
Hinckley
LE10 0NA.

National Gas Emergency Service - 0800 111 999* (24hrs)
*calls will be recorded and may be monitored

Mr Jonathan Plastow
Create Consulting Engineers Ltd
15
PRINCES STREET
NORWICH
NORFOLK
NR3 1AF

Date : 9th June 2014
Contact : Roger Harman
Direct Tel : 0845 3666758
Direct Fax : 0845 0700868
Email : networkdesign@nationalgrid.com

www.nationalgrid.com

Dear Jonathan,

Re: Land Enquiry for Proposed Development Site at ., DUKE'S WHARF, WESTWICK STREET, NORWICH, NR2 1ZZ.

Thank you for your enquiry which we received on 5th June 2014. I enclose details of National Grid Gas plant in the vicinity of your proposed supply.

The nearest main with sufficient capacity is 5 metres from the site boundary and it is a Low Pressure main.

Standard design pressures have been used. Refer to www.nationalgrid.com.

Plans attached: Yes

A copy of the National Grid Connections Charging Statement referenced in this letter can be found on National Grid's website:

<http://www.nationalgrid.com/uk/Gas/Charges/statements/connection/publications/>

If you require a printed version please contact us on the details provided above.

I trust this meets with your requirements at this stage. If you have any queries please do not hesitate to contact Roger Harman on the above number.

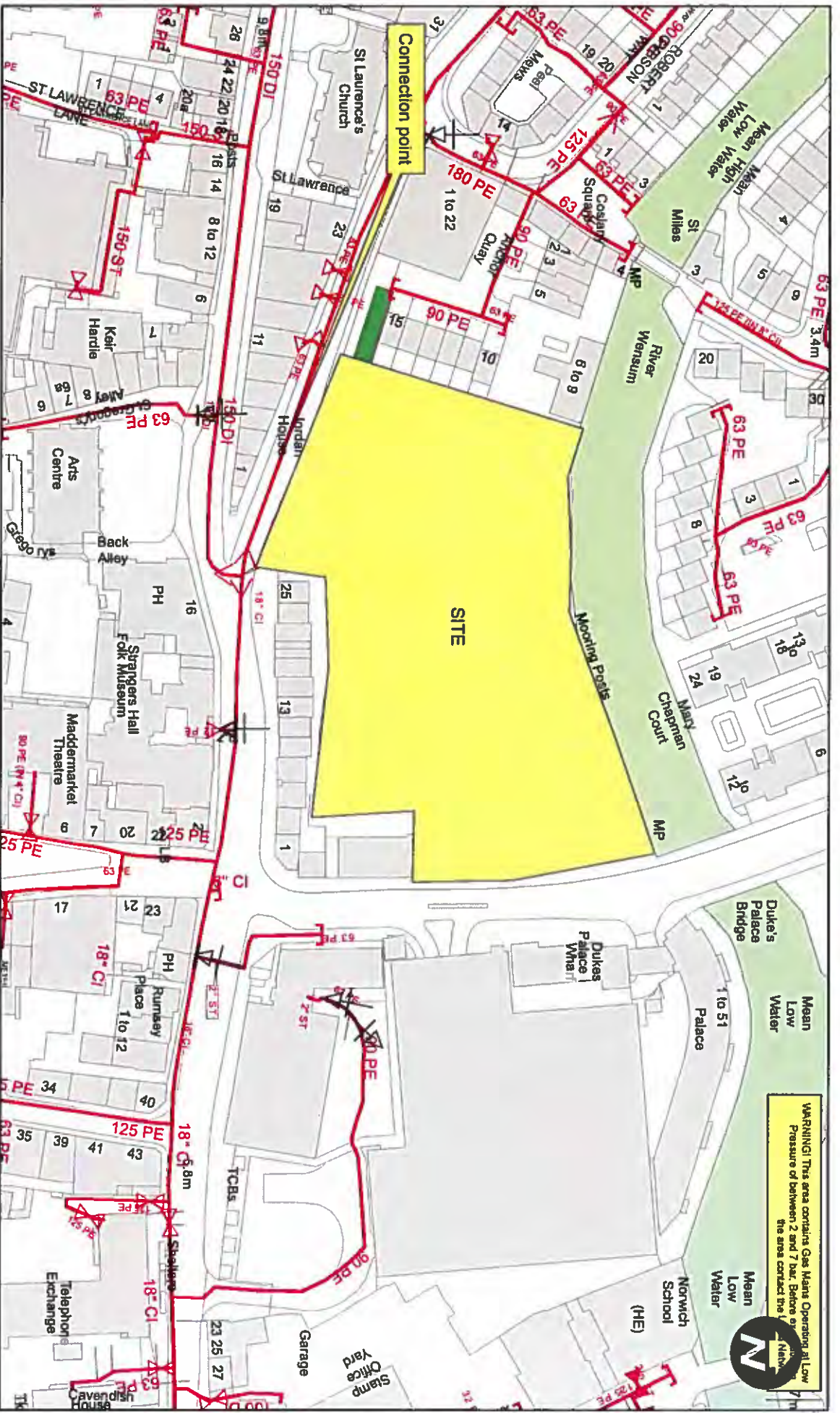
Yours sincerely,

Adam Leeson
Design Specialist



National Grid Gas plc
Registered No.2006000
Registered Address 1-3 Strand, London, WC2N 5EH

Letter Id: CRM013
Page 1 of 1



SCALE: 1:250

| | |
|---------------------------|--------------------|
| USED TO REGISTER | MP GAS MAIN |
| DATE: 05-10-2014 15:50:43 | MP GAS MAIN |
| INTERNAL USE ONLY | MP GAS MAIN |
| MP REF: 023001_30800 | PROPOSED PIPE - LP |
| CENTRE | PROPOSED PIPE - P |
| | ABANDON - MP |

| | |
|--------------------------------|-----------------------------|
| DESIGN: 443 GDFO Design Number | REVISION: 443 GDFO Revision |
|--------------------------------|-----------------------------|

This plan shows those pipes owned by National Grid in its role as a Licensed Gas Transporter (GT). Gas pipes owned by other GTs, or otherwise privately owned, may be present in this area. Information with regard to such pipes should be obtained from the relevant owners. The information shown on this plan is given without warranty, the accuracy thereof cannot be guaranteed. Services pipes, valves, symbols, also connections, etc., are shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by National Grid plc or their agents, servants or contractors for any error or omission. Site digging practices, consultation with HSC(M) must be used to verify and establish the actual position of mains, pipes, services and any other apparatus on site before any mechanical plant is used. It is your responsibility to ensure that the information is provided to all persons (either direct labour or contractors) working for you on or near gas apparatus. The information included on this plan should not be referred to beyond a period of 28 days from the date of issue.

180001846

nationalgrid

This plan is reproduced from or based on the OS map by National Grid Gas plc, with the sanction of the controller of Her Majesty's Ordnance. Crown Copyright Reserved.

04-Jun-2014

Our Ref: BU00061415

Your Ref: JPP_517-01



Energy House
Woolpit Business Park
Woolpit
Bury St Edmunds
IP32 9UP

T: 01359 243376
E: nrswa@gtc-uk.co.uk
www.gtc-uk.co.uk

Jon Plastow
Create Consulting Engineers Ltd
15 Princes Street
Norwich
NR3 1AF

APPARATUS NOT AFFECTED

Re: Site Location: Duke's Wharf, Westwick Street
Norwich

Grid Reference: 622900,308800

Dear Jon Plastow

Thank you for your enquiry concerning apparatus in the vicinity of your proposed work. Brookfield Utilities UK can confirm that we have no apparatus in the vicinity but please note that other asset owners may have and that you should ensure that all transporters/ distributors have been consulted.

Please note Brookfield Utilities UK assets now include those owned and operated by:

- * GTC Pipelines Limited
- * Independent Pipelines Limited
- * Quadrant Pipelines Limited
- * Electricity Network Company Limited
- * Independent Power Networks Limited
- * Independent Water Networks Limited
- * Independent Fibre Networks Limited

All future plant enquiries must contain accurate Easting and Northing references to enable us to process your enquiry efficiently.

If you have any queries or require any further information, please do not hesitate to contact me on 01359 243376.

Yours sincerely,

Danni Bourne
Planning Supervisor

APPENDIX C

RECEIVED 13 AUG 2013



Mr. Jon Plastow
Create Consulting Engineers Ltd
15 Princes Street
Norwich
Norfolk
NR3 1AF

Our Ref: 2013/2133195

Your Ref:
09/08/2013

Dear Sir/Madam

DUKE'S WHARF, WESTWICK STREET, NORWICH, NORFOLK

Thank you for your letter of 01/08/2013 in which you asked if there are any electric lines and/or electrical plant belonging to UK Power Networks (EPN) plc ("UK Power Networks") within land referred to by your enquiry. Unfortunately I have not been able to determine the specific site to which your enquiry relates. I have thus provided records for the land to which I believe your enquiry may refer. If the records provided do not relate to the land to which you had intended to refer please resubmit your enquiry, showing the relevant land edged red on a plan which clearly shows the entirety of the land for which you require copies of our records. It will help me to identify the land to which your enquiry relates if you could also provide me with a copy or page from an A to Z map, showing both the land itself and the area in which it is located.

Subject to the above, I enclose a copy of UK Power Networks record of its electric lines and/or electrical plant at the site. If the records provided do not relate to the land to which you had intended to refer please resubmit your enquiry.

This information is made available to you on the terms set out below.

- 1. UK Power Networks does not warrant that the information provided to you is correct. You rely upon it at your own risk.**
2. UK Power Networks does not exclude or limit its liability if it causes the death of any person or causes personal injury to a person where such death or personal injury is caused by its negligence.
3. Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise how for any loss, damage, costs, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.

4. The information about UK Power Networks electrical plant and/or electric lines provided to you belongs to and remains the property of UK Power Networks. You must not alter it in any respect.
5. The information provided to you about the electrical plant and/or electric lines depicted on the plans may **NOT** be a complete record of such apparatus belonging to UK Power Networks. The information provided relates to electric lines and/or electrical plant belonging to UK Power Networks that it believes to be present but the plans are **NOT** definitive: other electric lines and/or electrical plant may be present and that may or may not belong to UK Power Networks.
6. Other apparatus not belonging to UK Power Networks is not shown on the plan. It is your responsibility to make your own enquiries elsewhere to discover whether apparatus belonging to others is present. It would be prudent to assume that other apparatus is present.
7. You are responsible for ensuring that the information made available to you is passed to those acting on your behalf and that all such persons are made aware of the contents of this letter.
8. Because the information provided to you may **NOT** be accurate, you are recommended to ascertain the presence of UK Power Networks electric lines and/or electrical plant by the digging of trial holes. **Trial holes should be dug by hand only.**

Excavations must be carried out in line with the Health and Safety Executive guidance document HSG 47. We will not undertake this work. A copy of HSG 47 can be obtained from the Health and Safety Executives website.

All electric lines discovered must be considered LIVE and DANGEROUS at all times and must not be cut, resited, suspended, bent or interfered with unless specially authorised by UK Power Networks.

The electric line and electrical plant belonging to UK Power Networks remains so even when made dead and abandoned and any such electric line and/or electrical plant exposed shall be reported to UK Power Networks.

Where your works are likely to affect our electric lines and/or electrical plant an estimate of the price of any protective /diversionary works can be prepared by UK Power Networks Branch at Metropolitan House, Darkes Lane, Potters Bar, Herts. , EN6 1AG, telephone no. 0845 2340040

- 9 Any work near to any overhead electric lines must be carried out by you in accordance with the Health and Safety Executive guidance document GS6 and the Electricity at Work Regulations.

The GS6 Recommendations may be purchased from HSE Books or downloaded from the Energy Networks Association's website.

If given a reasonable period of prior notice UK Power Networks will attend on site without charge to advise how and where "goal posts" should be erected. If you wish to avail yourself of this service, in the first instance please telephone: 0845 6014516 between 08:30 and 17:00 Monday to Friday, Public and bank holidays excepted.

10. You are responsible for the security of the information provided to you. It must not be given, sold or made available upon payment of a fee to a third party.

11. If in carrying out work on land in, on, under or over which is installed an electric line and/or electrical plant that belongs to UK Power Networks you and/or anyone working on your behalf damages (however slightly) that apparatus you must inform immediately UK Power Networks by telephone at the number below providing:

- your name, address and telephone number; and
- the date, time and place at which such damage was caused; and
- a description of the electric line and/or electrical plant to which damage was caused; and
- the name of the person whom it appears to you is responsible for that damage; and
- the nature of the damage

In the South East of England 0800 0963766 (24 Hours).

In the East of England or London 0800 780078 (24 Hours).

12. The expression "UK Power Networks" includes UK Power Networks (EPN) plc, UK Power Networks (LPN) plc, UK Power Networks (SEPN) plc, UK Power Networks and any of their successors and predecessors in title.

IF YOU DO NOT ACCEPT AND/OR DO NOT UNDERSTAND THE TERMS OF USE SET OUT IN PARAGRAPHS 1 TO 12 INCLUSIVE ABOVE YOU MUST NOT USE THE PLANS AND RETURN THEM TO ME.

I would remind you that work adjacent to electric lines and/or electrical plant represents a serious risk to health and safety and as such should feature amongst the items you have assessed in your workplace risk assessment and method statement.

The enclosed plans normally only show the mains electricity cables. Service cables are not usually shown in the East of England. A service cable is the cable that takes the electricity from the mains cable to your property and ends at the main fuse close to the meter.

I shall be pleased to supply you with further assistance if you require it.

Yours sincerely

T Gilbert

Tracy Gilbert - Telephone: 0800 0565 866

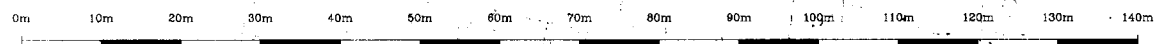
Plan Provision

UK Power Networks, Plan Provision, Fore Hamlet, Ipswich, IP3 8AA. Tel: 0800 0565866. Fax: 0870 1963782.

UK Power Networks Registered in England and Wales Registered No 7290590.
Registered office: Newington House, 237 Southwark Bridge Road London, SE1 6NP.



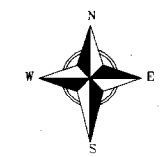
NORWICH



Plotted On : 12/08/2013
 Plotted By : Tracy Gilbert
 Plot Description : Contents of plot menu line title_line_1
 Contents of plot menu line title_line_2
 Map Centre : TG2208NE



UK Power Networks
 Plan Provision
 Fore Hamlet
 IPSWICH
 Suffolk
 IP3 8AA
 Tel 0800 0565 866
 Fax 08701 963782



For details of the symbology please refer to
<http://www.ukpowernetworks.co.uk/safety-emergencies/in-the-workplace/understanding-safety-symbols.html>

PRIMARY CABLES
 EXTRA HIGH VOLTAGE CABLES (EHV) 22,000 to 132,000 Volts
 Depth normally 750mm cover in carriageway & 600mm cover in footway.
 Before digging within one metre of these cable routes
 Telephone: 0800 056 5866 in order that the Company's apparatus may be located on site and any necessary protection works agreed.
 N.B. THRUST BORERS OR MOLES MUST NOT BE USED WITHIN THE VICINITY OF ANY CABLES BELONGING TO UK POWER NETWORKS WITHOUT FIRST CONTACTING THIS COMPANY.

- The position of the apparatus shown on this drawing is believed to be correct but the original landmarks may have been altered since the apparatus was installed.
- The exact position of the apparatus should be verified - use approved cable avoidance tools prior to excavation using suitable hand tools.
- It is essential that trial holes are carefully made avoiding the use of mechanical tools or picks until the exact location of all cables have been determined.
- It must be assumed that there is a service cable into each property, lamp column and street sign, etc.
- All cables must be treated as being live unless proved otherwise by UK Power Networks.
- The information provided must be given to all people working near UK Power Networks' plant & equipment. Do not use plans more than 3 months after the issue date for excavation purposes.
- Please be aware that electric cables/lines belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify their location.

- UK Power Networks does not warrant that the information provided to you is correct. You rely upon it at your own risk.
- UK Power Networks does not exclude or limit its liability if it causes the death of any person or causes personal injury to a person where such death or personal injury is caused by its negligence.
- Subject to paragraph 2 UK Power Networks has no liability to you in contract, in tort (including negligence), for breach of statutory duty or otherwise howsoever for any loss, damage, costs, claims, demands, or expenses that you or any third party may suffer or incur as a result of using the information provided whether for physical damage to property or for any economic loss (including without limitation loss of profit, loss of opportunity, loss of savings, loss of goodwill, loss of business, loss of use) or any special or consequential loss or damage whatsoever.

Reproduced by permission of Ordnance Survey on behalf of HMSO. (c) Crown copyright and database right 2013. All rights reserved. Ordnance Survey Licence number 100019626. Data has been added to the Ordnance Survey base map; all proprietary rights in such additional data are, and shall remain the exclusive property of (c) Eastern Power Networks plc or London Power Networks plc each being a distribution licensee under section 6(1)(c) of the Electricity Act 1989 for the relevant distribution services area as that term is defined in such licensee's distribution licence. All rights in such data reserved.

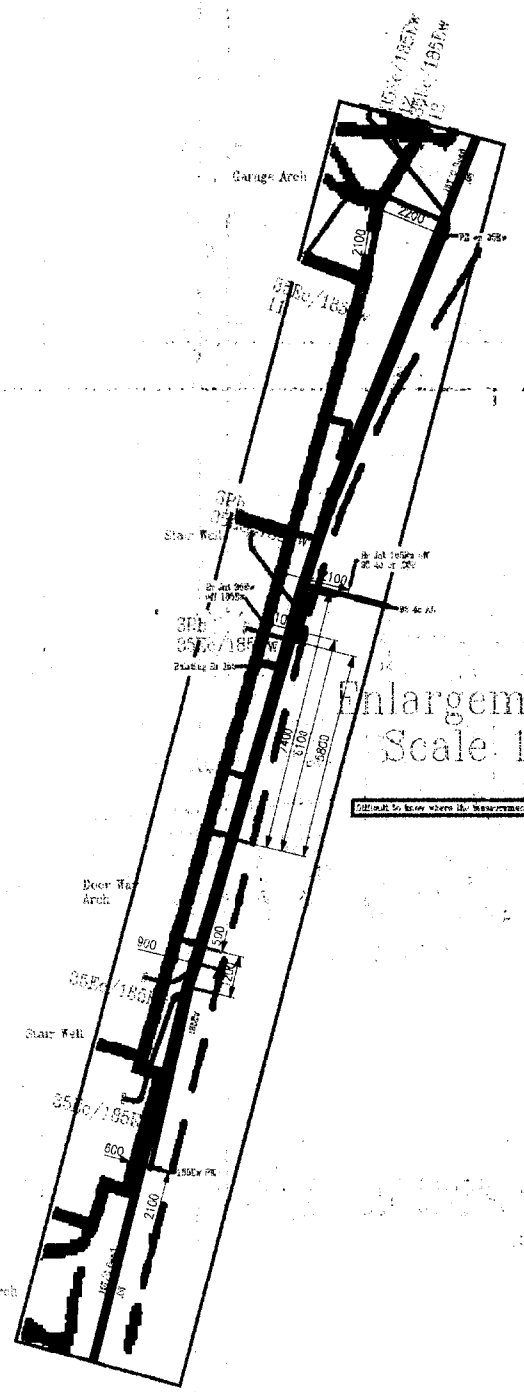
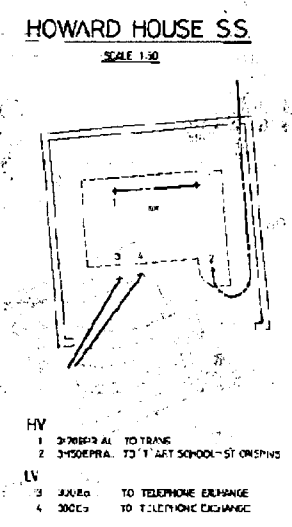
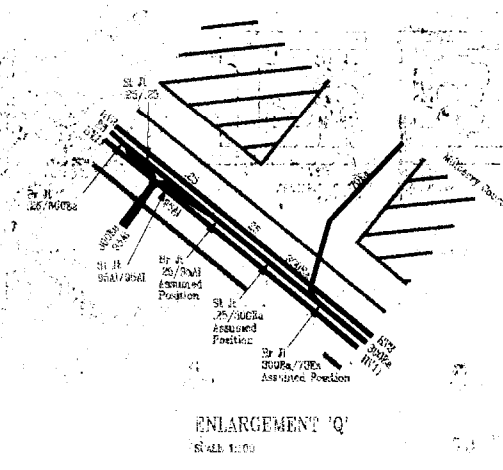
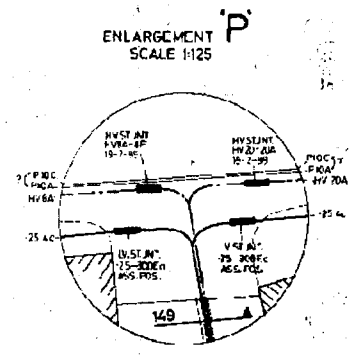
ADVICE TO CONTRACTORS ON AVOIDING DANGER FROM BURIED ELECTRICITY CABLES.

- Do have cable drawings with you on site and check them before you start the excavation.
- Do have a cable locator tool on site and use it to help you.
- Mark out the location of electricity cables.
- Do not use a mechanical excavator within 0.5m of electricity cables.
- Use spades and shovels in preference to other tools.
- Never disturb electricity cables and joints or their protective covers.

IF IN DOUBT - ASK! PHONE 0800 056 5866
 EMERGENCY - If you damage a cable or line
 Phone 0800 780 0780 (24hrs) URGENTLY

These basic safety precautions are explained in detail in the HSE booklet, HS(G)47 - Avoiding Danger from Underground Services, a copy of which may be obtained from your supervisor or HMSO.

Please be aware that electric lines belonging to other owners of licensed electricity distribution systems may be present and it is your responsibility to identify their location.



High Voltage Cables

| No. | Site | Year | Designation | Type | Size | Core | Designation | Run |
|-----|------|------|---|------|------|------|---------------------------------|-----|
| 1 | 11 | 2004 | Min House Postage to St Benedicts Street | 12 | 12 | 12 | DUNKI STREET - ST ABBEYS HILL I | |
| 2 | 11 | 25 | WESTWICK STREET - COSLANY ST. | 12 | 12 | 12 | | |
| 3 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 4 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 5 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 6 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 7 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 8 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 9 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 10 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 11 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 12 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 13 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 14 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 15 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 16 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 17 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 18 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 19 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 20 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 21 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 22 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 23 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 24 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 25 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 26 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 27 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 28 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 29 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |
| 30 | 11 | 25 | RD Church Unthick Rd/Megham St East - Westwick St | 12 | 12 | 12 | | |

PILOT CABLES

| No. | Size | Core | Designation | No. | Size | Core | Designation |
|-----|------|------|--|------|------|------|--|
| P1 | 7/11 | 3c | ROAD (at W. Church) Cross - Brian Road | P15a | 1/24 | 3c | SIRE STREET - ST P 121 To Work |
| P2 | 6/2 | 3c | DERRHAM STREET - OAK ST | P15b | 1/24 | 3c | ROAD, from John Street / B. Stephens - to a storage at 'S' |
| P3 | 12/3 | 3c | DERRHAM STREET - OAK ST | P16 | 1/24 | 3c | ROAD, from John Street / B. Stephens - to a storage at 'S' |
| P4 | 6/2 | 3c | DERRHAM STREET - OAK ST | P17 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P5 | 6/2 | 3c | DERRHAM STREET - OAK ST | P18 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P6 | 6/2 | 3c | DERRHAM STREET - OAK ST | P19 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P7 | 6/2 | 3c | DERRHAM STREET - OAK ST | P20 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P8 | 6/2 | 3c | DERRHAM STREET - OAK ST | P21 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P9 | 6/2 | 3c | DERRHAM STREET - OAK ST | P22 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P10 | 6/2 | 3c | DERRHAM STREET - OAK ST | P23 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P11 | 6/2 | 3c | DERRHAM STREET - OAK ST | P24 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P12 | 6/2 | 3c | DERRHAM STREET - OAK ST | P25 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P13 | 6/2 | 3c | DERRHAM STREET - OAK ST | P26 | 1/24 | 3c | DERRHAM STREET - OAK ST |
| P14 | 6/2 | 3c | DERRHAM STREET - OAK ST | P27 | 1/24 | 3c | DERRHAM STREET - OAK ST |

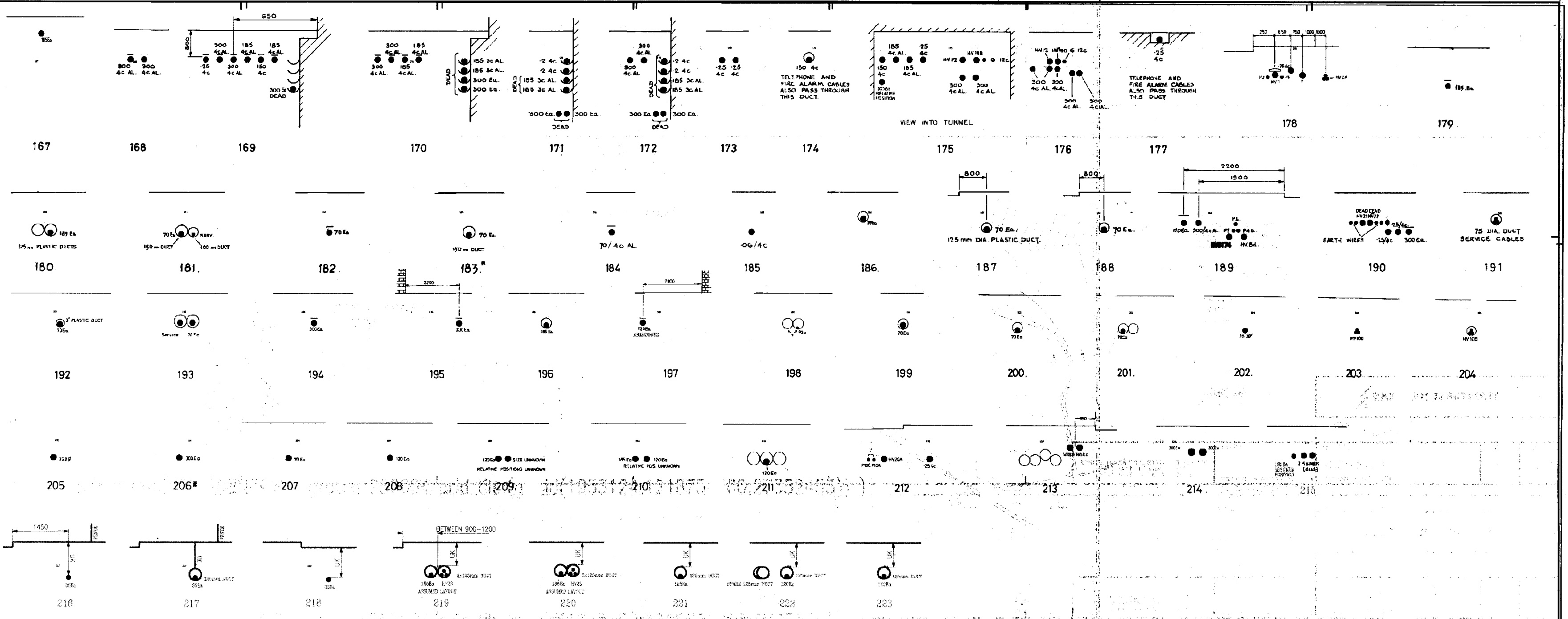
NOTES:
 (1) E-grades are cable, a duplex ALPES type.
 (2) UNLESS OTHERWISE STATED - 33 CORES OR GREATER & CORES 4 & 5 PAGES AND 1/8" DIA. CABLES.
 (3) CABLES ARE TO BE LAYED AT A DEPTH OF 150 TO 175 mm of free of laying.

REPRODUCED FROM AND BASED UPON THE ORDINANCE SURVEY MAP WITH PERMISSION OF THE CONTROLLER OF H.M. STATIONERY OFFICE.

EASTERN ELECTRICITY
 LOCATION: NORWICH

SHEET No. TG2208NEA 80
 SUPPLEMENTARY SHEET No.

ISSUE DATE: 24-06-04



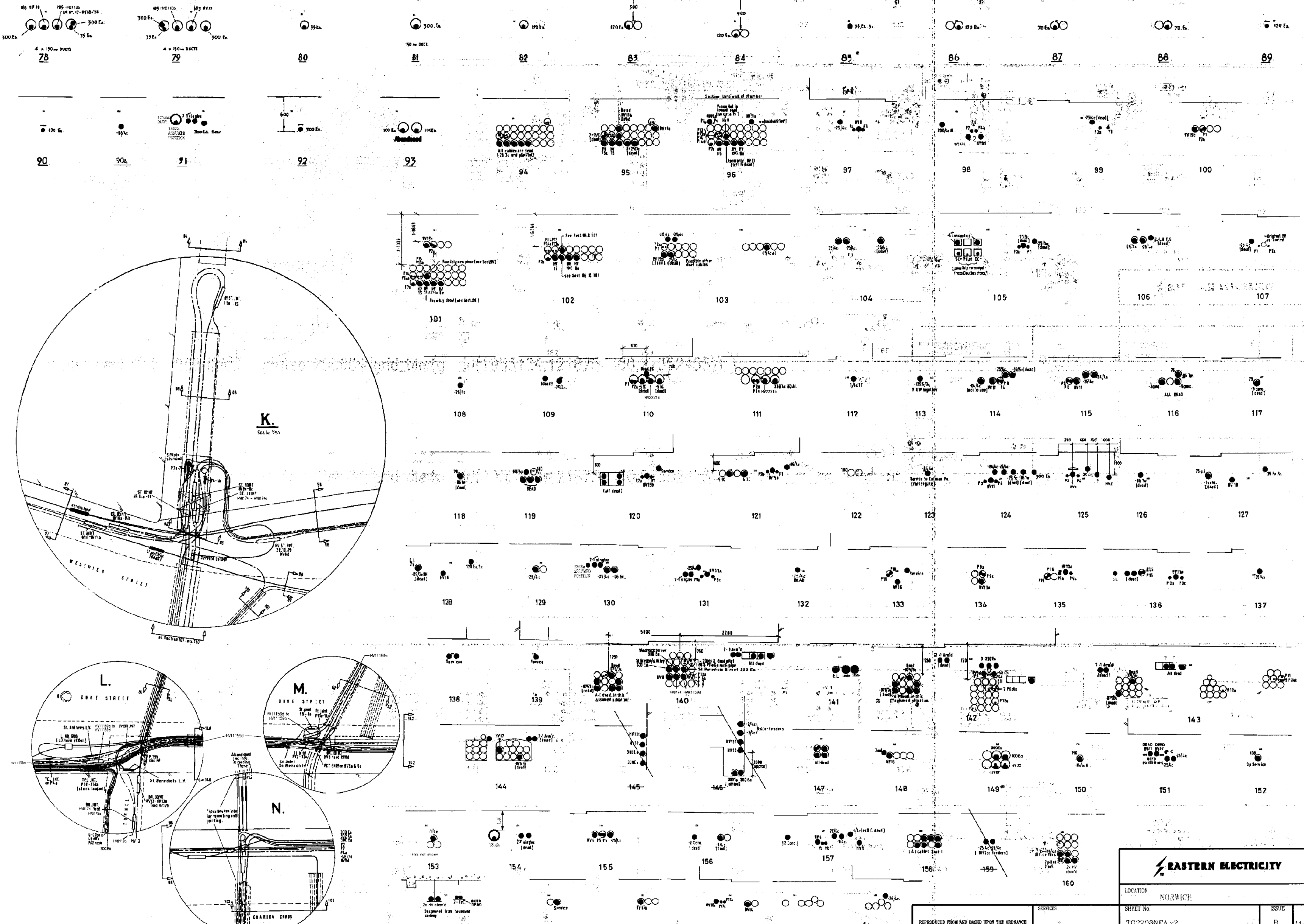
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| EASTERN ELECTRICITY | | | |
| LOCATION | | NORWICH | |
| SHEET No. | TG2208NEA.s3 | ISSUE | B |
| SUPPLEMENTARY SHEET No. | | DATE | 14-12-96 |

REPRODUCED FROM AND BASED UPON THE ORDINANCE SURVEY MAP WITH PERMISSION OF THE CONTROLLER OF N.M. STATIONERY OFFICE

FOR DETAILS OF SERVICE CABLE REFER TO THE SERVICE CARDS IN THE LOCAL OFFICE

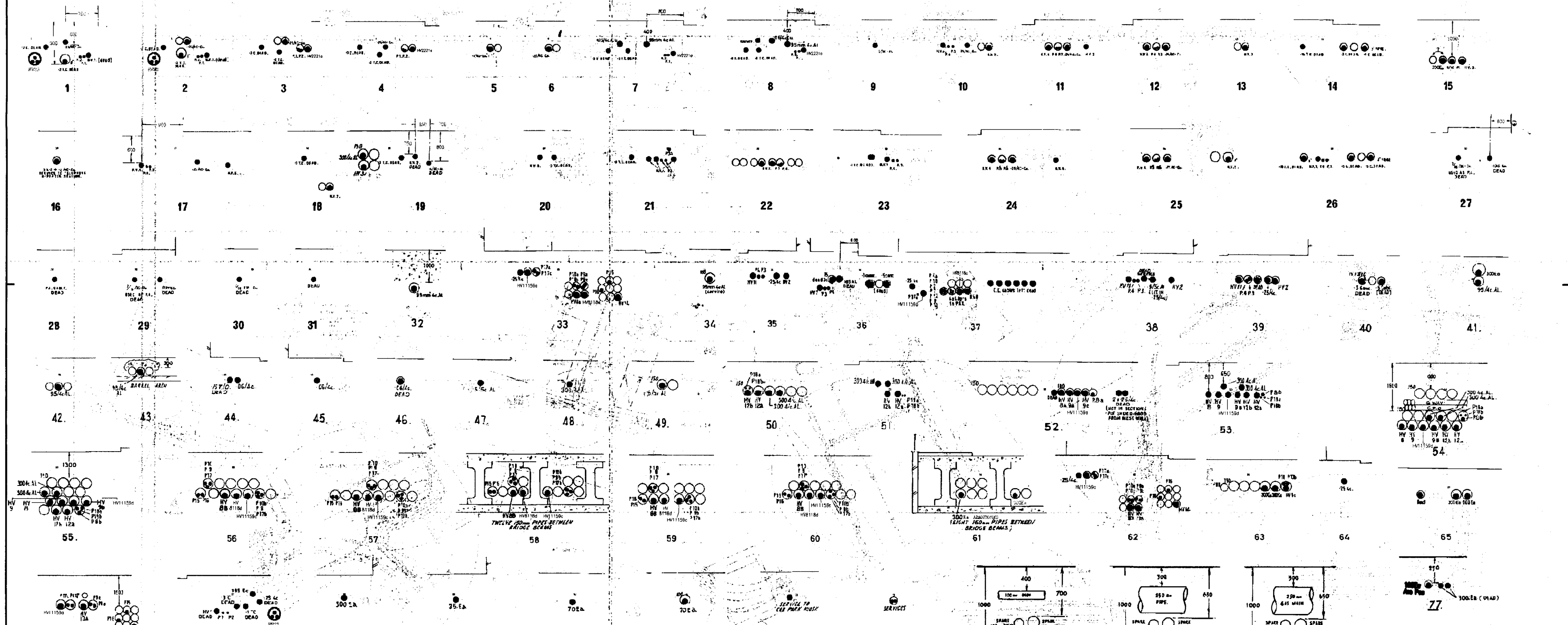
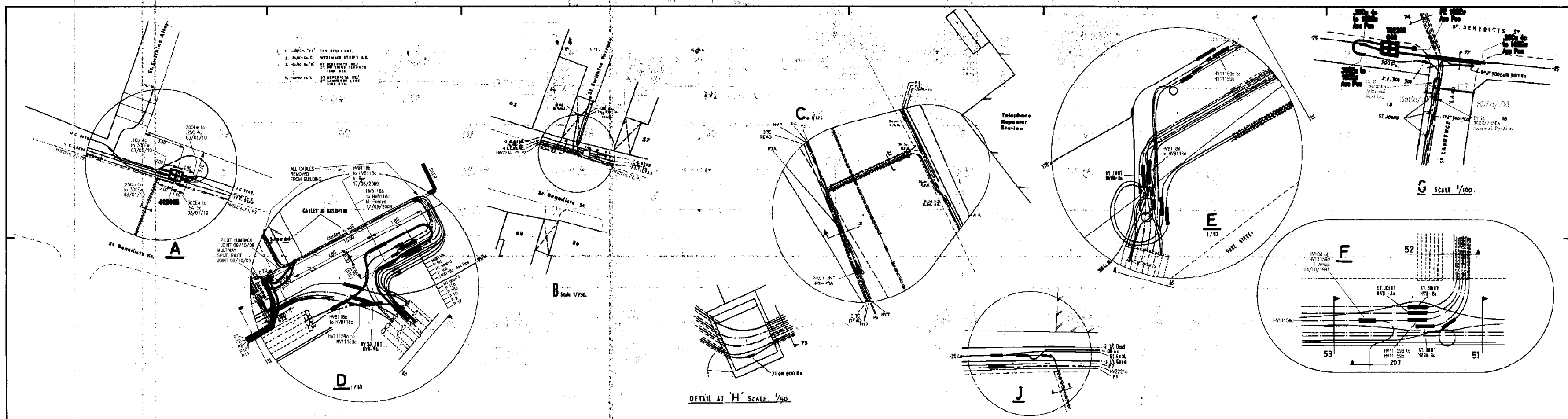
CROWN COPYRIGHT



K
Scale 1/64"

| | |
|----------------------------|------------------|
| EASTERN ELECTRICITY | |
| LOCATION NORWICH | |
| SHEET No. TG2208NEA.2 | ISSUE B |
| SUPPLEMENTARY SHEET No. | DATE 14-12-99 |

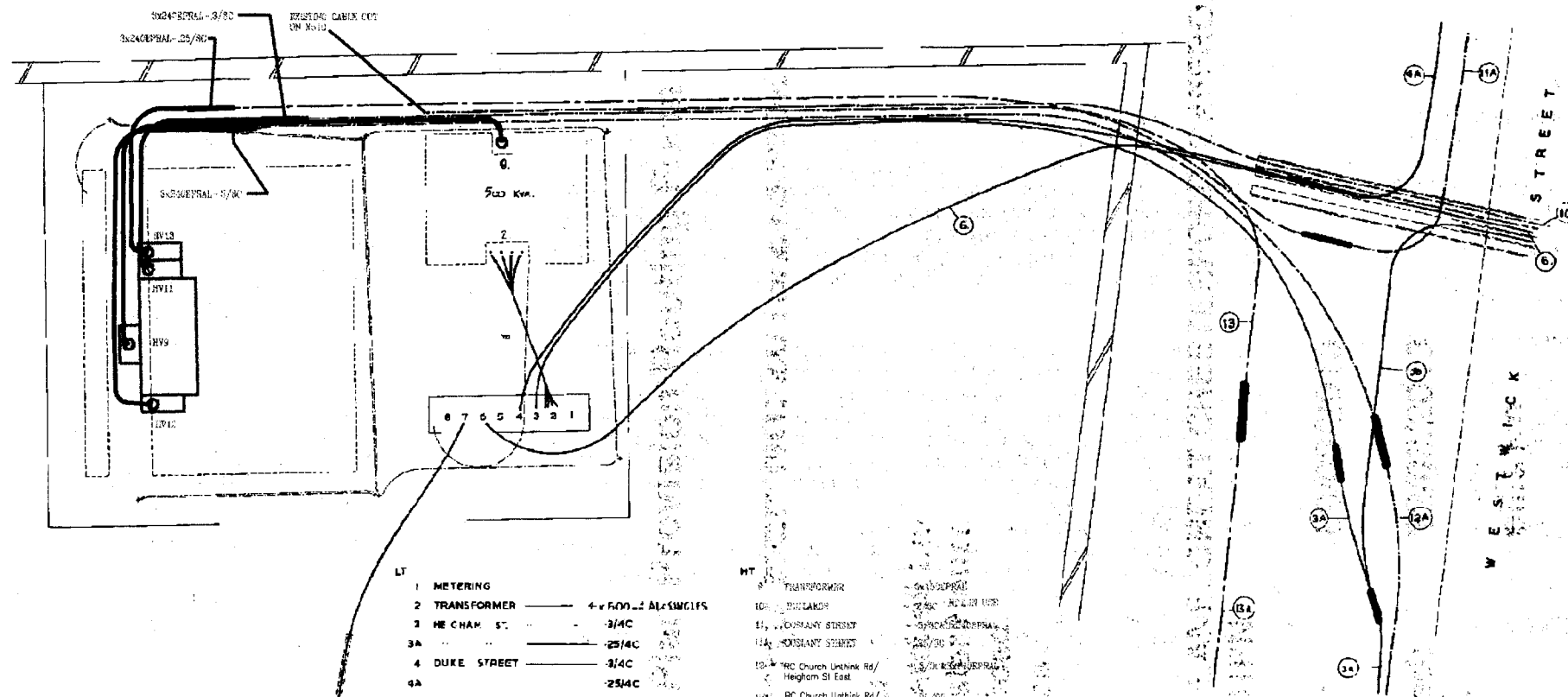
REPRODUCED FROM AND BASED UPON THE ORDINANCE SURVEY MADE WITH PERMISSION OF THE CONTROLLER OF H.M. STATIONERY OFFICE
CROWN COPYRIGHT
FOR DETAILS OF SERVICE CABLES AND SERVICE CARDS SEE THE SERVICE CARDS IN THE DRAWINGS



| | | | |
|----------------------------|--------------|-------|----------|
| EASTERN ELECTRICITY | | | |
| LOCATION NORWICH | | | |
| SHEET No. | TC2208NDA 61 | ISSUE | DATE |
| SUPPLEMENTARY SHEET No. | | 5 | 14-12-89 |

INSITUATED FROM AND BASED UPON THE ORDINANCE SURVEY MAP WITH PERMISSION OF THE CONTROLLER OF R.M. STATIONARY OFFICE

FOR DETAILS OF SERVICE CABLE REFER TO THE SERVICE CARDS IN THE WORK OFFICE



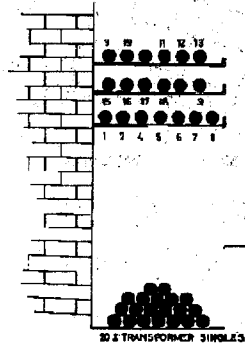
- LV**
- 1 METERING
 - 2 TRANSFORMER — 4 x 500 V. 25/0.4 K.V.
 - 3 WE CHAK ST. — 314C
 - 4 DUKE STREET — 314C
 - 5 — 2544C
 - 6 BY BENEDICTS STREET — 6/4c
 - 7 SERVICE TO T.R.S. — 3/3-2
 - 8 SERVICE TO B&O — 304c
 - 9
 - 10
- Des for phase rotation in LV.
piller is from bottom to top.

- MV**
- 11 TRANSFORMER
 - 12 — 25/0.4 K.V.
 - 13 — 25/0.4 K.V.
 - 14 — 25/0.4 K.V.
 - 15 — 25/0.4 K.V.
 - 16 — 25/0.4 K.V.
 - 17 — 25/0.4 K.V.
 - 18 — 25/0.4 K.V.
 - 19 — 25/0.4 K.V.
 - 20 — 25/0.4 K.V.
 - 21 — 25/0.4 K.V.
 - 22 — 25/0.4 K.V.
 - 23 — 25/0.4 K.V.
 - 24 — 25/0.4 K.V.
 - 25 — 25/0.4 K.V.
 - 26 — 25/0.4 K.V.
 - 27 — 25/0.4 K.V.
 - 28 — 25/0.4 K.V.
 - 29 — 25/0.4 K.V.
 - 30 — 25/0.4 K.V.
 - 31 — 25/0.4 K.V.
 - 32 — 25/0.4 K.V.
 - 33 — 25/0.4 K.V.
 - 34 — 25/0.4 K.V.
 - 35 — 25/0.4 K.V.
 - 36 — 25/0.4 K.V.
 - 37 — 25/0.4 K.V.
 - 38 — 25/0.4 K.V.
 - 39 — 25/0.4 K.V.
 - 40 — 25/0.4 K.V.
 - 41 — 25/0.4 K.V.
 - 42 — 25/0.4 K.V.
 - 43 — 25/0.4 K.V.
 - 44 — 25/0.4 K.V.
 - 45 — 25/0.4 K.V.
 - 46 — 25/0.4 K.V.
 - 47 — 25/0.4 K.V.
 - 48 — 25/0.4 K.V.
 - 49 — 25/0.4 K.V.
 - 50 — 25/0.4 K.V.
 - 51 — 25/0.4 K.V.
 - 52 — 25/0.4 K.V.
 - 53 — 25/0.4 K.V.
 - 54 — 25/0.4 K.V.
 - 55 — 25/0.4 K.V.
 - 56 — 25/0.4 K.V.
 - 57 — 25/0.4 K.V.
 - 58 — 25/0.4 K.V.
 - 59 — 25/0.4 K.V.
 - 60 — 25/0.4 K.V.
 - 61 — 25/0.4 K.V.
 - 62 — 25/0.4 K.V.
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 - 69 — 25/0.4 K.V.
 - 70 — 25/0.4 K.V.
 - 71 — 25/0.4 K.V.
 - 72 — 25/0.4 K.V.
 - 73 — 25/0.4 K.V.
 - 74 — 25/0.4 K.V.
 - 75 — 25/0.4 K.V.
 - 76 — 25/0.4 K.V.
 - 77 — 25/0.4 K.V.
 - 78 — 25/0.4 K.V.
 - 79 — 25/0.4 K.V.
 - 80 — 25/0.4 K.V.
 - 81 — 25/0.4 K.V.
 - 82 — 25/0.4 K.V.
 - 83 — 25/0.4 K.V.
 - 84 — 25/0.4 K.V.
 - 85 — 25/0.4 K.V.
 - 86 — 25/0.4 K.V.
 - 87 — 25/0.4 K.V.
 - 88 — 25/0.4 K.V.
 - 89 — 25/0.4 K.V.
 - 90 — 25/0.4 K.V.
 - 91 — 25/0.4 K.V.
 - 92 — 25/0.4 K.V.
 - 93 — 25/0.4 K.V.
 - 94 — 25/0.4 K.V.
 - 95 — 25/0.4 K.V.
 - 96 — 25/0.4 K.V.
 - 97 — 25/0.4 K.V.
 - 98 — 25/0.4 K.V.
 - 99 — 25/0.4 K.V.
 - 100 — 25/0.4 K.V.

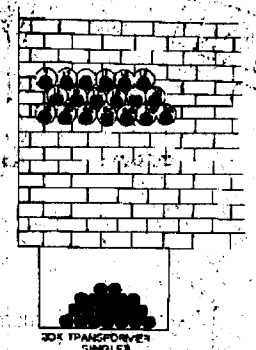
**WESTWICK STREET
SUB-STATION**

| | |
|----------------------------|----------|
| EASTERN ELECTRICITY | |
| LOCATION | |
| SHEET No. | ISSUE |
| TG2208A.85 | B |
| SUPPLEMENTARY SHEET No. | DATE |
| | 14-12-96 |

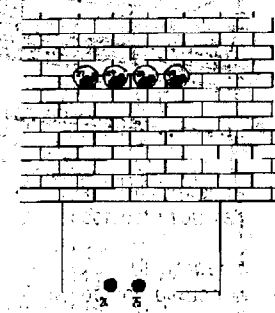
REPRODUCED FROM AND BASED UPON THE ORDINANCE
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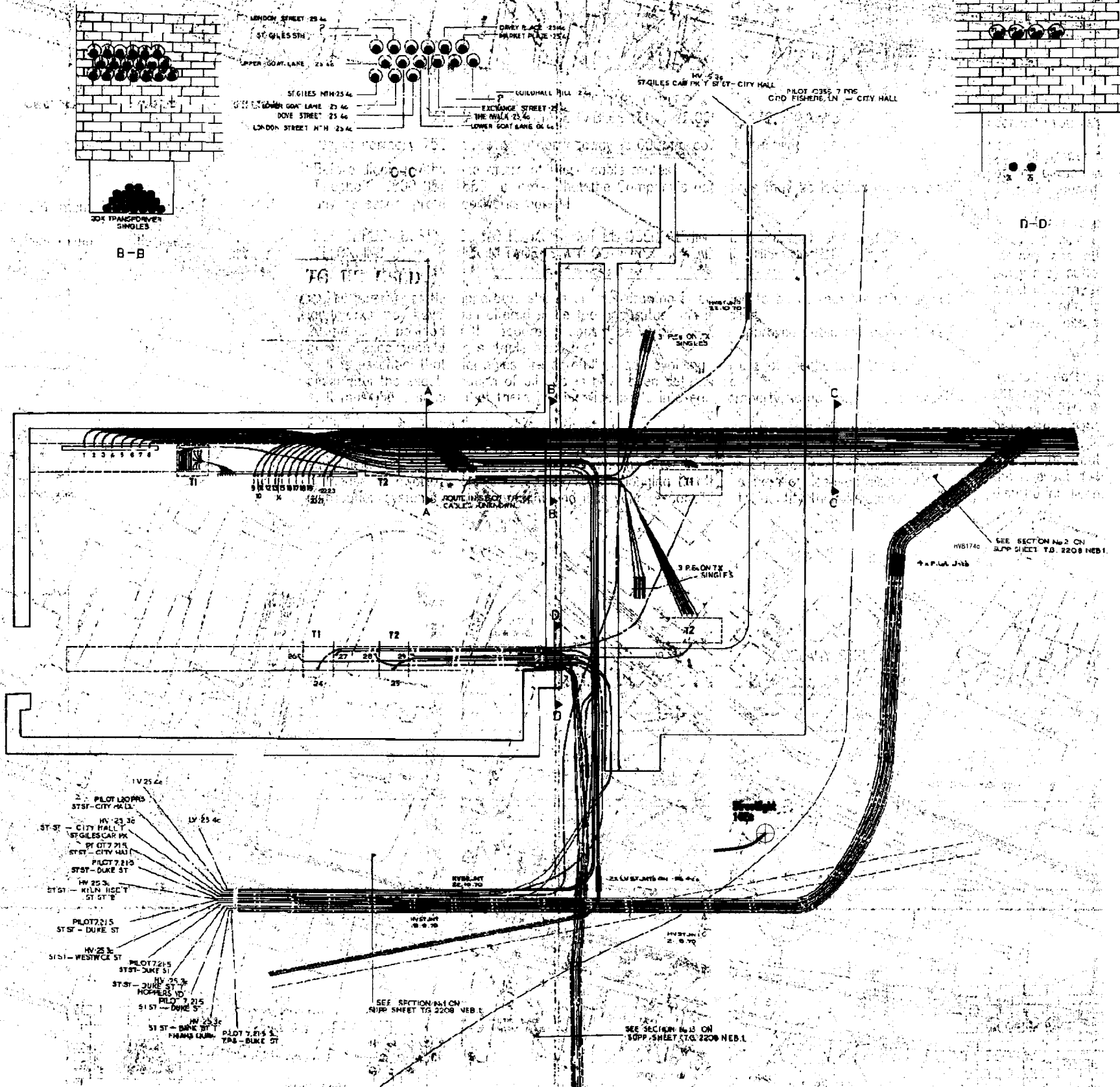
A-A



B-B



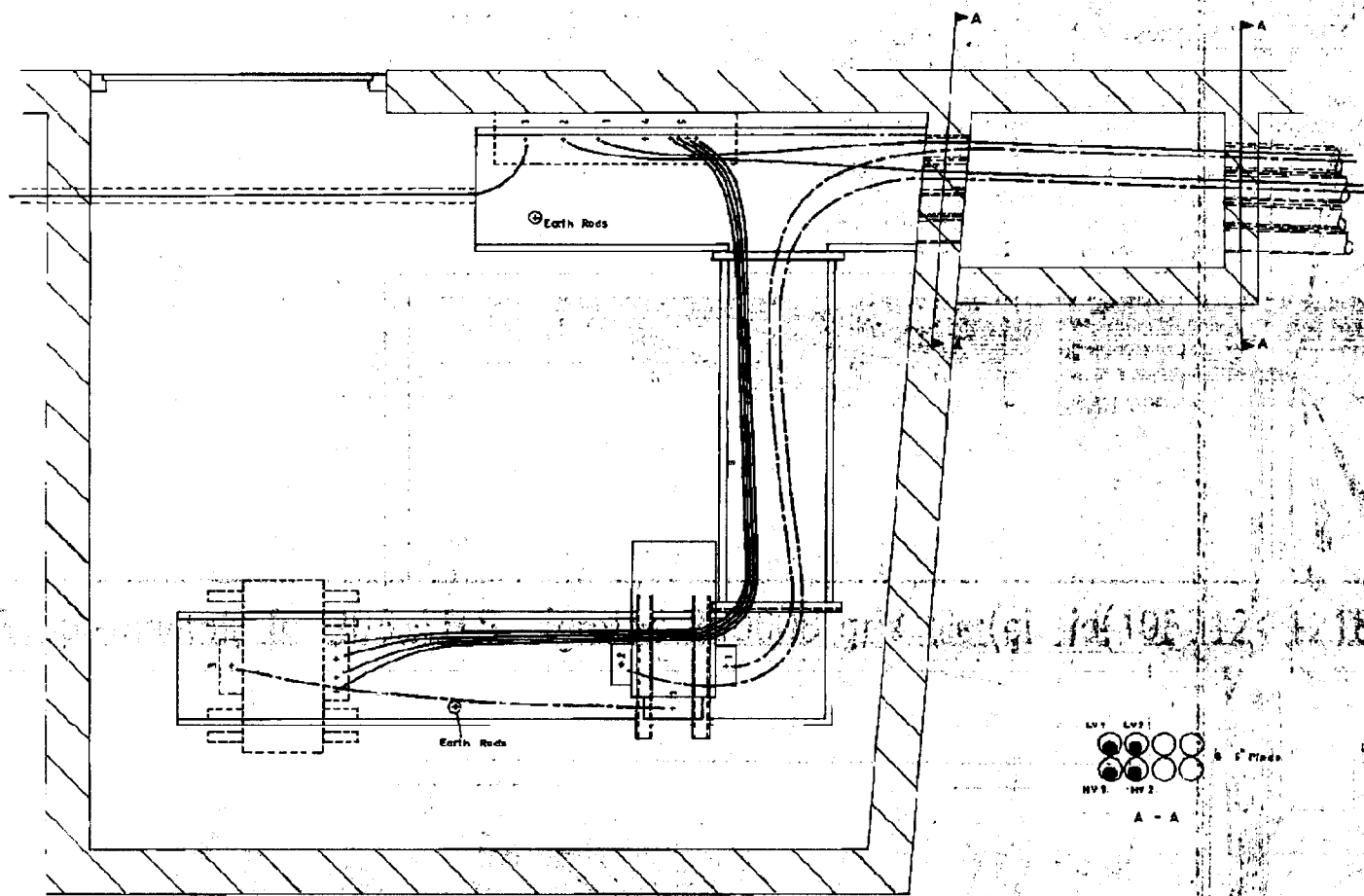
D-D



CITY HALL
NORWICH
Scale - 1/50

- LV.
1. 300 VA 670 VOLT CAR PARK
 2. 300 VA 670 VOLT CAR PARK
 3. 300 VA 670 VOLT CAR PARK
 4. 300 VA 670 VOLT CAR PARK
 5. 300 VA 670 VOLT CAR PARK
 6. 300 VA 670 VOLT CAR PARK
 7. 300 VA 670 VOLT CAR PARK
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 9. 300 VA 670 VOLT CAR PARK
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 17. 300 VA 670 VOLT CAR PARK
 18. 300 VA 670 VOLT CAR PARK
 19. 300 VA 670 VOLT CAR PARK
 20. 300 VA 670 VOLT CAR PARK
 21. 300 VA 670 VOLT CAR PARK
 22. 300 VA 670 VOLT CAR PARK
 23. 300 VA 670 VOLT CAR PARK
- HV.
24. 25 30 TRANSFORMER No 1
 25. 25 30 TRANSFORMER No 2
 26. 25 30 TRANSFORMER No 3
 27. 25 30 TRANSFORMER No 4
 28. 25 30 TRANSFORMER No 5
 29. 25 30 TRANSFORMER No 6

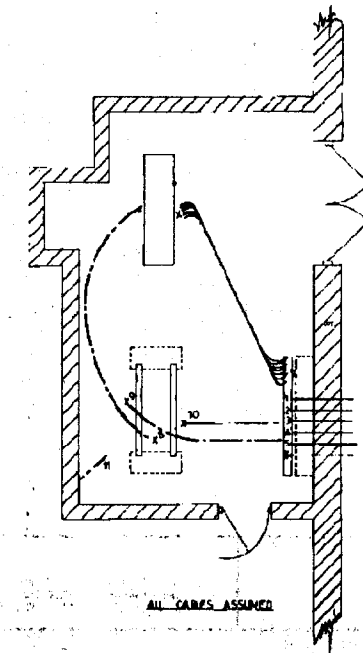
| | | | |
|----------------------------|------------|------------------|-------------------------|
| EASTERN ELECTRICITY | | | |
| LOCATION NORWICH | | | |
| SHEET No. TG2208NEB.s6 | ISSUE E | DATE 23-12-00 | SUPPLEMENTARY SHEET No. |



ST GILES CAR PARK
NORWICH
Scale - 1/25



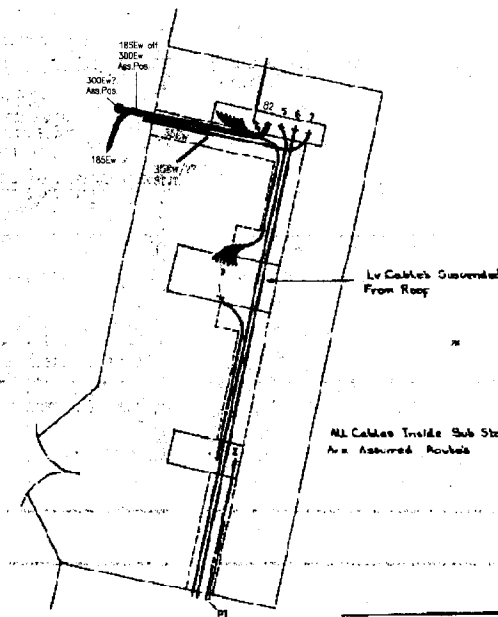
- LV
- 1 300mm Al. Al. - St Giles (West)
 - 2 300mm Al. Al. - St Giles (East)
 - 3 95mm Al. Al. - Car Park
 - 4 Metering
 - 5 Transformer: Single (size ?)



DOVE STREET
NORWICH
Scale - 1/50

- LV
- 1 OWNER GOLF LANE - CITY HALL
 - 2 LEYFORD STREET
 - 3 CITY STREET
 - 4 CITY HALL
 - 5 OFFICE
 - 6 TOWER
 - 7 TRANSFORMER 7.5 SINGLE
- MV
- 8 TRANSFORMER
 - 9 300 AL
 - 10 300 AL
 - 11 HV ASSUMED OF AD

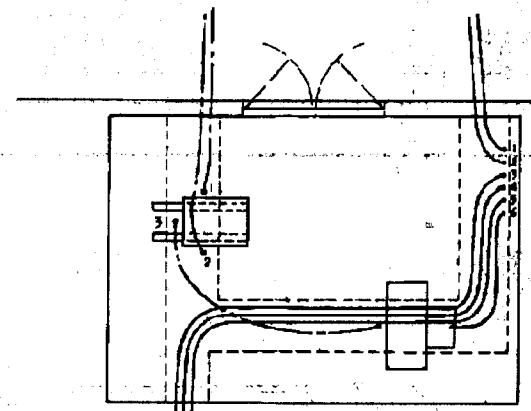
ALL CABLES ASSUMED



FISHERS LANE
G.P.O.
NORWICH
Scale - 1/50

- MV
- 1 7 Transformer
 - 2 1/2" To St Giles Car Park 35
- LV
- 3 7x Single
 - 4 2/5" Al. To Fullergate
 - 5 2/5" Al. To City Hall
 - 6 2/5" Al. To Wellington Lane
 - 7 1/2" Al. To 105
- PLANS
- PL 6236/77 To City Hall

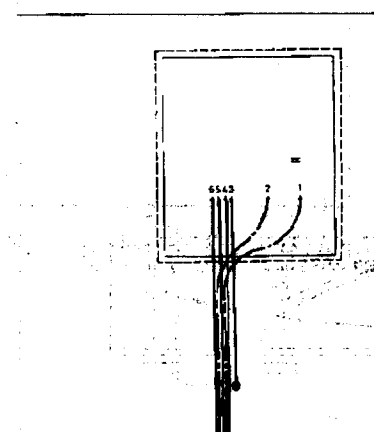
NOT TO BE USED
FOR OPERATIONAL
PURPOSES



KILN HOUSE
POTTERGATE
NORWICH
Scale 1/50

- HV CABLES
- 1 500mm Al. To ST. STEPHENS
 - 2 500mm Al. To St. Benedicts Street
 - 3 95mm Al. To TRANSFORMER

- LV CABLES
- 1 300 Ea. To ST. BENEDICTS ST
 - 2 300 Ea. To P.E. POTTERGATE
 - 3 120 Ea. To TENANT
 - 4 120 Ea. To TELANT
 - 5 300 Ea. To LIMEWOOD
 - 6 7 x 125 Ea. To TRANSFORMER



EXCHANGE STREET
NORWICH
Scale 1/50

- HV
- 1 33 110KV AL ST. ANDREW'S HILL POWER ST
 - 2 33 110KV AL ST. ANDREW'S HILL POWER ST
- LV
- 1 300 Ea. To ST. ANDREW'S HILL POWER ST
 - 2 300 Ea. To EXCHANGE ST NORTH
 - 3 300 Ea. To EXCHANGE ST SOUTH
 - 4 300 Ea. To MILL

EASTERN ELECTRICITY

LOCATION

REPRODUCED FROM AND BASED UPON THE RESONANCE
SERVICE MAP WITH PERMISSION OF THE
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SERVICES

SHEET No.

TG2208NEB.s5

SUPPLEMENTARY SHEET No

ISSUE

C

DATE

07-04-03