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# City developer guidelines for incoming utility services

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city of london



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# 1.0 INTRODUCTION

As within any major city, the roads and pavements of the City of London are densely populated by many utility operators' distribution cabling, pipework, plant and equipment. The City offers excellent opportunities in terms of service availability, capacity and security, however early planning and coordination is paramount in ensuring that services to new developments can be accommodated efficiently.

This guidance document has been produced on behalf of the City of London to assist developers, consultants and construction industry professionals in planning utility investigations, diversions and new connections to City development sites.

This document includes best practice advice provided by individual Utility Companies and should be read in conjunction with other relevant statutory regulations/guidelines.

This document was drawn up in conjunction with the major utility infrastructure asset owners within the City of London, namely;

▪ EDF Energy	Electrical infrastructure
▪ National Grid & ▪ United Utilities	Gas infrastructure
▪ Fulcrum Infrastructure Services	New gas connections
▪ Thames Water	Potable water and drainage
▪ British Telecom	Telecommunications
▪ EON / City Gen	Owners of existing district heating system.

Whilst the document provides early scheme guidance, individuals should ensure that Utility Companies are consulted directly with respect to the details of each new development.

The document is structured in three principle sections;

- Existing infrastructure
- New supplies
- Co-ordination

## 2.0 EXISTING INFRASTRUCTURE

Prior to commencing any development the impact upon pre-existent utility infrastructure should be identified. This is imperative for a number of reasons, but primarily to protect service provider installations.

Often, within a utility company, different departments manage existing infrastructure to those planning new, hence this document is split accordingly.

Whilst most utility installations are within public footways and highways, some have had to cross private land and in such instances a legal access entitlement known as 'Wayleave' will be in place. This provides the service provider with 'unfettered' access rights to his plant when on a private property. These legal titles are normally held by the private land owner and would not normally become evident through the normal routes of enquiry, however the existence of a Wayleave agreement can have a significant impact on a development. Necessary checks should be made and where a wayleave is identified the asset owner should be contacted at the earliest opportunity to discuss the impact of your development.

In performing the searches it is as important to identify not only those services which impact the site directly, but also those running adjacent development sites. Restrictions exist regarding the proximity of new structures and construction activity adjacent pre-existent services which might need to be addressed by a developer.

### 2.1 UTILITY SEARCHES

There are several ways of identifying existing utility installations on, and around, a development site. Traditionally, enquiries are made directly to each known utility company via their records and mapping departments. A list of the appropriate departments are provided herein for each service provider.

With de-regulation and the utilities market becoming broader commercially, more service providers operate throughout the City than ever before, the records for who will also be required. Operators often change ownership, particularly in the telecommunications market, and plant physically identified on site may no longer be in the ownership of the operator as labelled.

To this end, a number of businesses now provide a full search enquiry service and will perform the sometimes onerous task of identifying local operators and retrieving records. Such companies are detailed below;

- Centre Maps – Malcolm Hughes Ltd
- Groundwise

### 2.2 VERIFYING RECORD INFORMATION

It is important to note that record drawings are mostly not to scale and are a representation of installations only. Precise locations for plant and equipment should only be

verified visually on site. Ground penetrating radar and 'cat' scan surveys can be of assistance in less densely populated locations.

Upon receipt of the record information the development site should be referenced against the existing installations, with any potential diversions, pinch points and development restrictions identified.

It is then recommended that trial digs are performed by approved contractors to precisely identify line and location of services at critical points. It is also worth doing the same at the proposed new service connection points to coordinate the provision of new chambers and the like.

Note that service providers have minimum depth and clearance requirements for their installations. As such the 'third dimension' should also be considered in these investigations, such that the impact of any surface level changes on infrastructure can also be assessed.

If infrastructure is found close or crossing the development a developer will need to agree with the asset owner the scope of diversions, costs and program prior to construction work commencing. In most cases the developer is liable for all diversion costs.

Generally, the asset owner will make these diversions however, some of the work may be contestable and can be undertaken by a licensed independent connections provider (ICP) within the Distribution networks operator (DNO's) region. For reference, a licenced Independent Distribution networks operator can run as an independent network within the DNO region.

### 2.3 INITIAL ENQUIRY UTILITY CONTACT DETAILS AND INDIVIDUAL REQUIREMENTS

The contacts below represent the five key asset owners within the City area. It should be noted there are a number of other providers likely to have infrastructure and these should be considered when performing a search.

Amongst these are a large number of telecom providers and the City of London offer an online search facility to ascertain providers within the vicinity of your development.

#### 2.3.1 EDF ENERGY

##### Records

EDF offers record search facility to enquiries made by developers their team and builders – a charge is made for this service.

Plan Provision  
EDF Energy Networks  
Fore Hamlet  
Ipswich  
Suffolk  
IP3 8AQ  
Tel 08701 963772

## 2.0 EXISTING INFRASTRUCTURE

### 2.3.2 NATIONAL GRID (GAS)

#### Records

National Grid  
Plant protection  
Block 1 Floor 2  
Brick Kiln  
Hinkley  
LE10 0NA  
Tel 0800 688 588  
[plantprotection@uk.ngrid.com](mailto:plantprotection@uk.ngrid.com)

### 2.3.3 BRITISH TELECOM (OPENREACH)

#### Records

A BT infrastructure record enquiry can be made either via their maps by email service (MBE) available by registering via [www.openreach.co.uk](http://www.openreach.co.uk)

Or contacting the BT new sites office covering the city of London who are at:

Romford  
0800 731 7346  
[newsite.romford@openreach.co.uk](mailto:newsite.romford@openreach.co.uk)

Very large schemes and more detailed paper copies are available from BT's National notice handling centre:

National Notice Handling Centre  
PP 3WW18, Telecom House,  
Trinity Street,  
Hanley,  
Stoke-on-Trent,  
ST1 5ND.

Freephone: 0800 800865

Freephone: 0800 800 865

#### Diversions

BT also offers a free 'dial before you dig' service and will come to site with 24hours notice to locate and mark out the location of their service

0800 917 3993  
[www.dialbeforeyoudig.com](http://www.dialbeforeyoudig.com)  
[dbyd@openreach.co.uk](mailto:dbyd@openreach.co.uk)

Liaise with the new sites team from then onwards who will work with the developer's team in relocating their services around the scheme.

If a service that does not feed the development site encroaches on the site boundary a wayleave will be required.

For way leave negotiations contact BT on 0800 581 525 option 4 or email [wayleaves.south@openreach.co.uk](mailto:wayleaves.south@openreach.co.uk)

### 2.3.4 THAMES WATER (POTABLE WATER)

Thames Water owns, operates and maintains the majority of water services within the City of London. The water industry has a limited competitive market through inset appointments or water supply licensing hence other service providers' infrastructure could be expected within the City of London.

For the purpose of this document only Thames water services and connections are considered.

#### Records

Thames Water Property insight department:

<http://www.twsearches.co.uk/>  
Telephone 0118 925 1504

Thames Water Property Insight  
PO Box 3189  
Slough  
SL1 4WW

#### Diversions

If it is established that their infrastructure may require input from Thames Water contact Thames Water Developer Services, via the following contact details:

Developer Services helpdesk on 0845 850 2777.

Thames Water  
1 Kew Bridge  
Brentford  
Middlesex  
TW8 0EF

[developer.services@thameswater.co.uk](mailto:developer.services@thameswater.co.uk)

### 2.3.5 THAMES WATER (DRAINAGE)

The adopted drainage system within the City of London is owned, operated and maintained by Thames water. Connections to main sewers are owned by either the City of London or the local development they serve.

Other connections to the main drainage system are often owned by the development they serve or are owned by the City of London mostly where they serve highway drainage systems.

For the purpose of this document Thames water services and connections are considered.

## 2.0 EXISTING INFRASTRUCTURE

Diverting an existing sewer or building over.

If the location of a public sewer prevents land development or property extension, it may be possible to divert the sewer(s) onsite via an adoption agreement (Section 104/116). However, Thames Water will divert strategic sewers, if practical, on a chargeable basis (Section 185).

Should the location of a public sewer prevent land development or a property extension, it may be possible to build over the sewer (Section 18 Building Act 1984). This will be subject to Thames Water approval. For all sewer classes, except class one domestic, survey will be required. This is usually undertaken by closed circuit television (CCTV). There are standard fees for this service based upon the size of sewer affected.

Specific requirements for diversion should be discussed with Thames water.

### Records

Thames Water Property insight department:

<http://www.twsearches.co.uk/>

Telephone 0118 925 1504

Thames Water Property Insight  
PO Box 3189  
Slough  
SL1 4WW

### Diversions

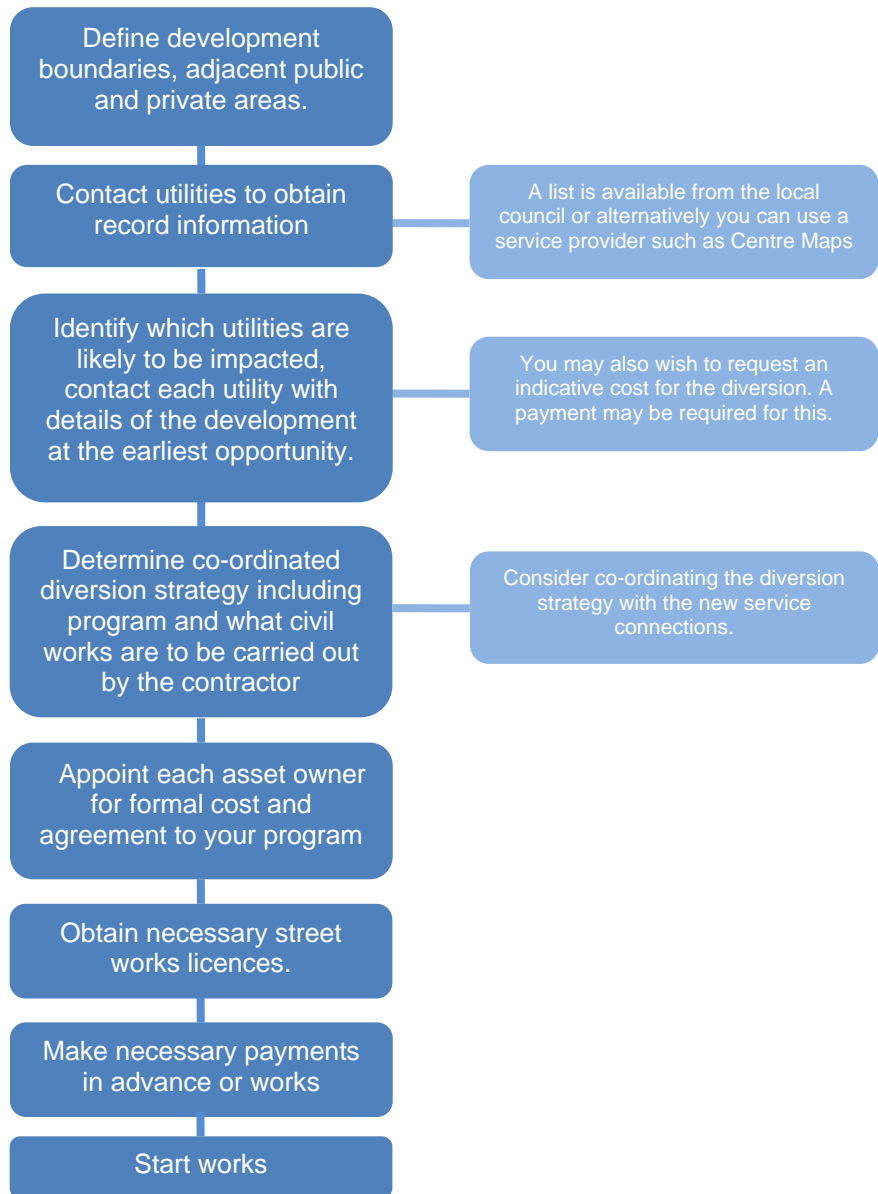
Developer Services helpdesk on 0845 850 2777.

Thames Water  
1 Kew Bridge  
Brentford  
Middlesex  
TW8 0EF

developer.services@thameswater.co.uk

## 2.0 EXISTING INFRASTRUCTURE

### 2.1 EXAMPLE UTILITY DIVERSION PROCESS



# 3.0 NEW CONNECTIONS

## 3.1 ELECTRICAL SERVICE

Depending upon the size of the development and the condition of the local infrastructure, reinforcements to the pre-existent infrastructure may be required to support the additional load.

Invariably, reinforcement works will be at the developers cost. It is important, therefore, to ensure that loading assessments are as accurate as possible to ensure reinforcement costs are not attracted unnecessarily. As such it is recommended that loading analysis be performed by competent and experienced persons.

Competitive bids for network installation, adoption and operation can also be sought in particular instances. Professional counsel is recommended where developers are considering this route.

### 3.1.1 EDF ENERGY REQUIREMENTS

Other considerations at this stage should include:

- Secondary supply requirements. Alternative grid network supply for standby or life safety equipment (as opposed to local generator supply)
- Onsite generation proposals, such as Combine Heat and Power (CHP)
- Most appropriate supply voltage (400V or 11kV)

Note that utility electrical infrastructure plant typically has up to 9 months lead in from the point of order. Similarly, offsite, 'upstream' reinforcements to the electrical network can take up to 18 months to procure and implement having to work around planned networks outages, highways operational restrictions and the like.

### New Connections

EDF Energy Networks,  
Projects Gateway,  
Metropolitan House,  
Darkes Lane,  
Potters Bar,  
Herts,  
EN6 1AG

Tel : 08701 964 599  
Email :connections.projectsgateway@edfenergy.com

Further information and new supply application forms are available from EDF's web site [www.edfenergy.com](http://www.edfenergy.com)

## 3.1.2 SPACE PLANNING - LOW VOLTAGE CONNECTIONS

**Please note: diagrams provided are for general guide only and the correct details should always be obtained from your proposed DNO.**

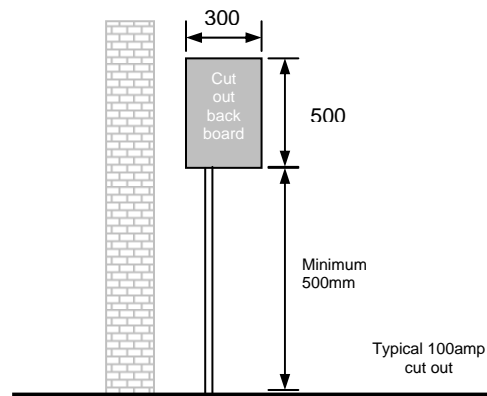
Low voltage network connections typically range from 100A up to 400Amps (400v).

Suitable access and space should be made for the following equipment depending on connection size.

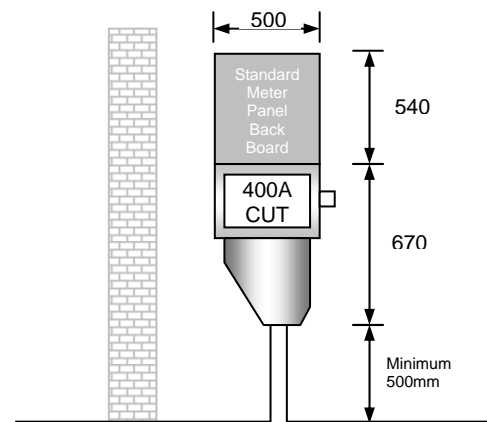
Cable access is usually via provision of cable ducts from the public footway, duct and cable entries should be sealed against water and gas ingress under pressure. The cut out location should ideally be above ground and accessible from the street level.

The cut outs should be kept clear and an access route for maintenance should be maintained.

### Connections up to 100Amp 3Phase



### Connections up to 400Amp 3 Phase



## 3.0 NEW CONNECTIONS

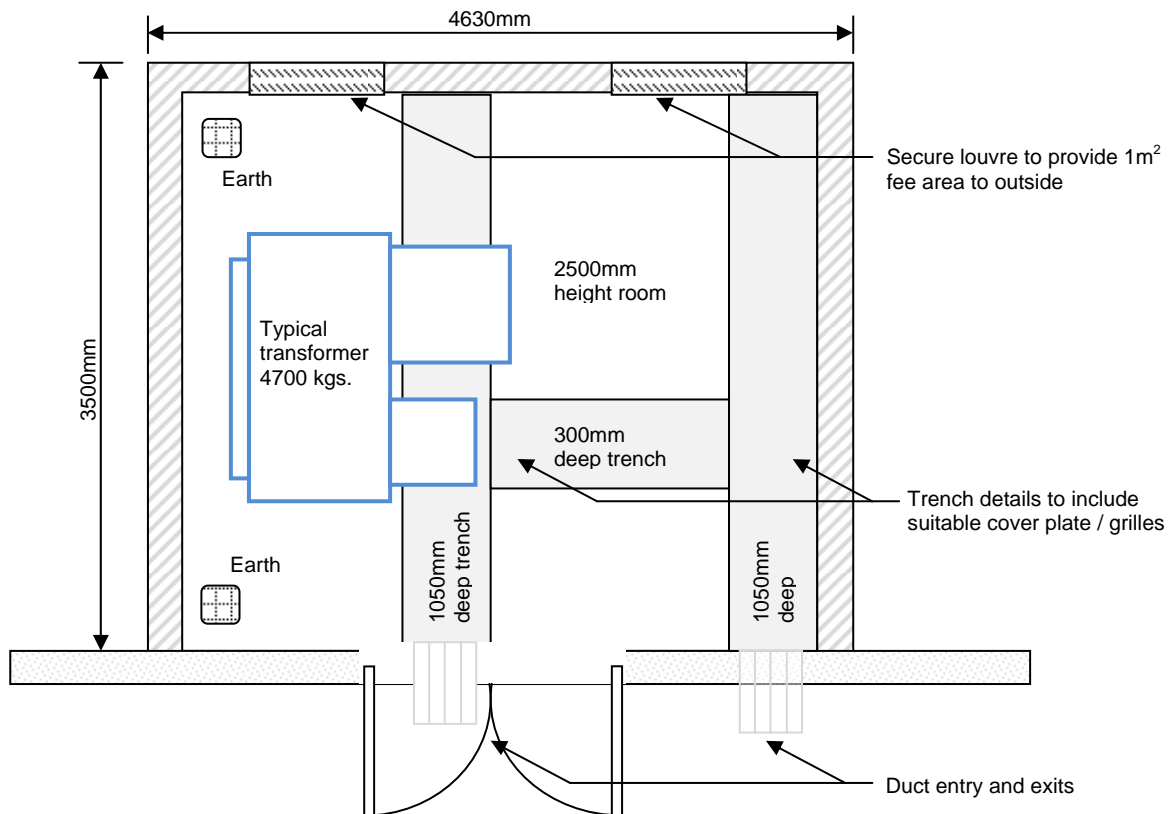
### 3.1.3 High Voltage supply and LV / HV substations

The optimum and preferred location for a 11kV substation is a room facing onto the street at ground floor level. This affords the best ventilation, access and reduces risk of flooding.

The developer is urged to engage the proposed provider on access, leasing and other legal issues early on as these can considerable time to resolve and power will not be switched on until all area resolved.

The developers main LV switchboard room should be adjacent to the substation to keep service cables as short as possible.

**Please note: diagrams provided are for general guide only and the correct details should always be obtained from your proposed DNO.**



*11kV utility owned intake and transformer 1MVA  
with Low Voltage distribution.  
For full details refer to EDF detail NP17*

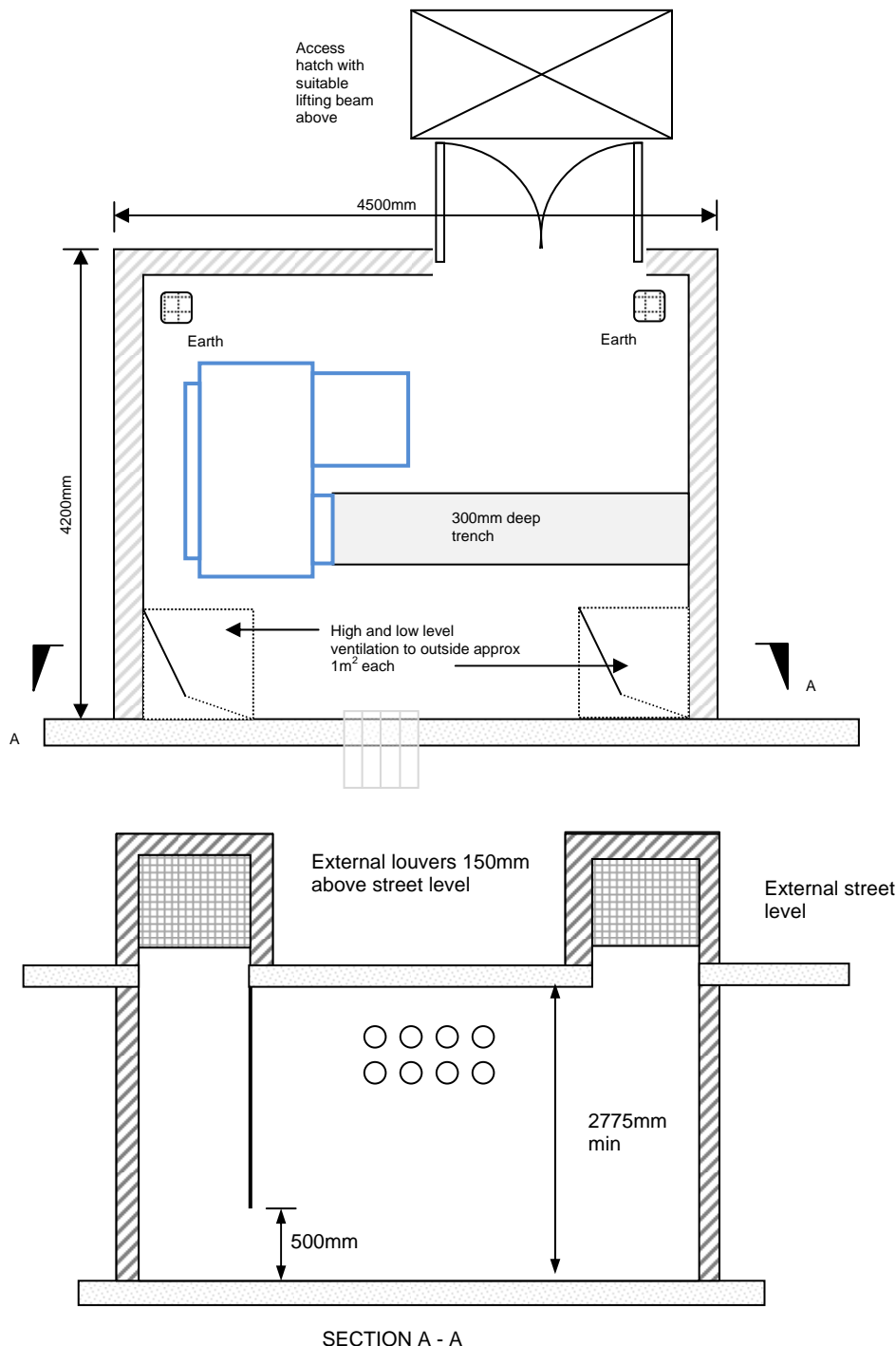
## 3.0 NEW CONNECTIONS

Most utility operators do not recognise that a ground floor location may not be possible to achieve due to listed facades etc. and can offer a below ground transformer solution considered on a individual site specific basis. The developer should be carefully considered this against a number of factors, including:

- Site based flood assessment, making use of the City of London's strategic flood risk assessment available through their web site (web link provided in the references)
- Does the transformer serve only the building it is in?

- Provision of utility unfettered 24hour access  
Low loader access for transformer replacement.
- Natural ventilation requirements.
- Fire risk
- HV Cabling routes and ongoing Low Voltage cabling lengths
- Alternative / Essential supply intake position

**Please note diagrams provided are for general guide only and the correct details should always be obtained from your proposed DNO.**



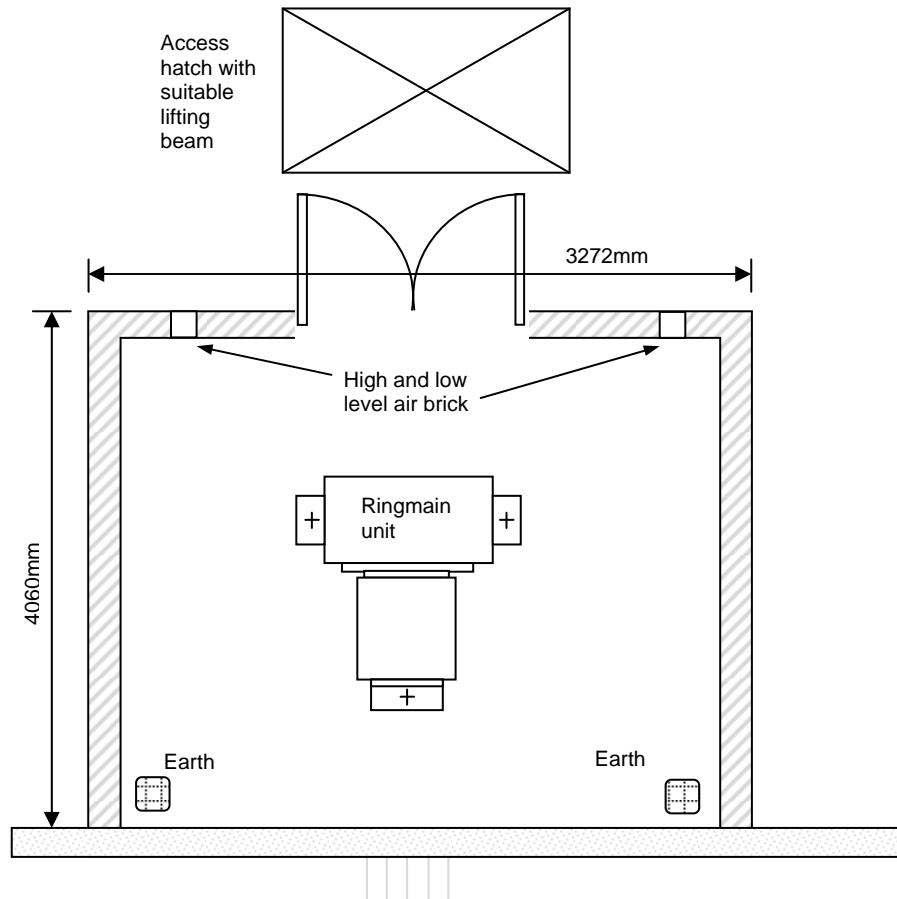
*11kV utility owned transformer installed below ground.  
For full details refer to EDF detail NP12*

## 3.0 NEW CONNECTIONS

### *11kV utility ring main unit only below ground*

Where the developer wishes to purchase electrical energy at 11kV meaning they own and operate the transformer. The developers' designer will be responsible for the transformer room design. Allowance will need to be made for the utilities ring main unit only.

**Please note diagrams provided are for general guide only and the correct details should always be obtained from your proposed DNO.**



### **3.1.4 132kV Utility owned Transformer**

It should be noted that the installation of a 132kV transformer on or under a building is complex. If the development requires a connection at this voltage level the DNO should be involved to determine space and access requirements.

# 3.0 NEW CONNECTIONS

## 3.2 BRITISH TELECOM

Depending upon the size of the development and the condition of the local infrastructure, reinforcements to the pre-existent infrastructure may be required to support the additional capacity.

BT typically provide reinforcement works as part of the connection charge. Estimation of the number of lines and data services required should be provided early within the scheme procurement to establish necessary off site reinforcement.

Competitive bids for network installation, adoption and operation can also be sought in particular instances. Professional counsel is recommended where developers are considering this route.

Of the many other telecom operators available within the city most will accept infrastructure designed and installed to the BT standards. Hence to permit further diversity these allowances should be duplicated.

Consideration could also be given to use of the City of London's own telecom duct infrastructure that can permit interconnections between buildings and other infrastructure.

### New connections

In the first instance for a new scheme, if using BT, is to contact their local new sites team with the city of London being covered by their Romford team.

Romford  
0800 731 7346  
newsite.romford@openreach.co.uk

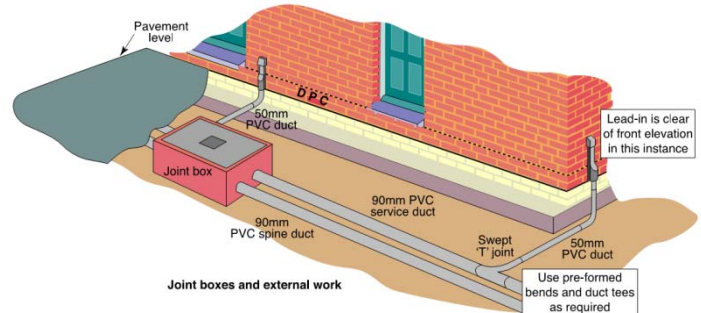
BT have produced a useful document called their 'Build Pack' which contains all necessary details for arranging and making allowance for new service connections (refer to link provided in the reference section for a copy).

The below information is given as a guidance for early planning of a scheme

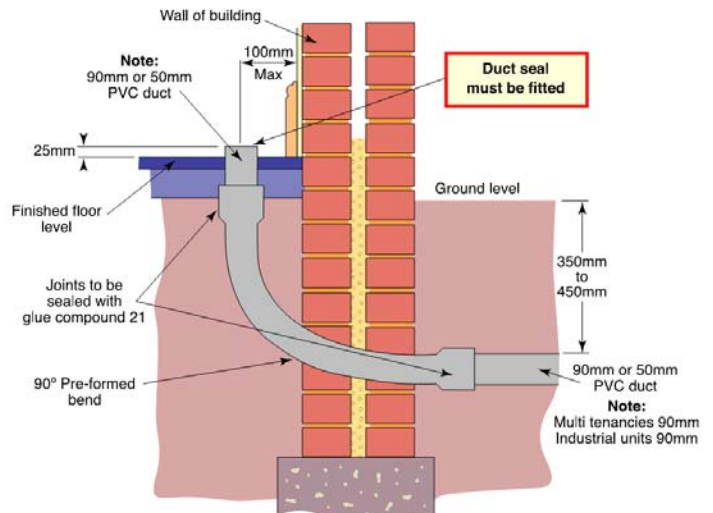
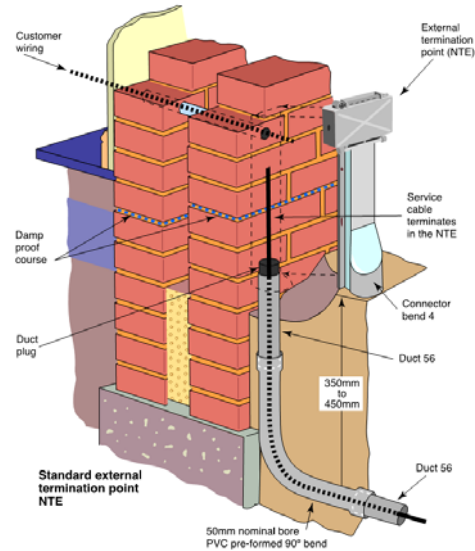
Each development will be unique and specifics should be discussed with the new sites team the details provided here are typical arrangements to aid an early planning.

### 3.2.1 TYPICAL CONNECTION ARRANGEMENTS

*Typical single occupancy retail or domestic connection (up to 20 lines)*

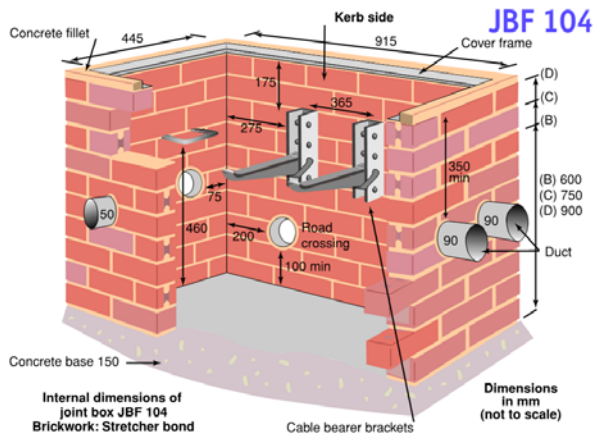


*Typical office or multiple occupancy tenancy building >20lines including blow fiber.*

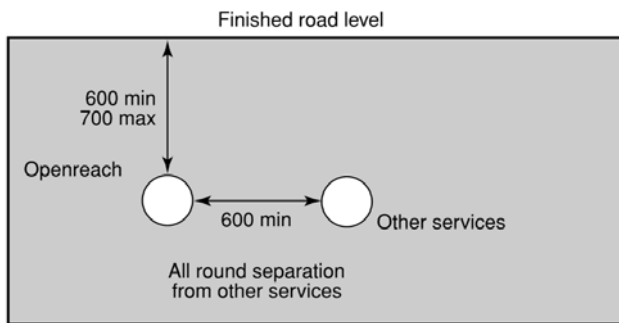


# 3.0 NEW CONNECTIONS

## Typical local chamber construction



For future safe excavation and to avoid interference with copper networks BT require a 600mm separation from other services, where this cannot be achieved BT should be consulted directly to review available alternatives.



Road crossing laid on new estates by a developer

## 3.0 NEW CONNECTIONS

### 3.3 GAS (FULCRUM)

Depending upon the size of the development and the condition of the local infrastructure, reinforcements to the pre-existent infrastructure may be required to support the additional demand.

Invariably, reinforcement works will be at the developers cost. It is important, therefore, to ensure that gas demand assessments are as accurate as possible to ensure reinforcement costs and infrastructure charges are not attracted unnecessarily. As such it is recommended that loading analysis be performed by competent and experienced persons.

Competitive bids for network installation, adoption and operation can also be sought in particular instances. Professional counsel is recommended where developers are considering this route.

#### 3.3.1 Establishing availability of gas capacity at the proposed development boundary

Understanding the impact that the new development will have on the existing network will enable the developer's team to plan and budget for any enhancements required.

The Primary gas distribution network in London is owned and operated by National Grid Gas which is regulated by ofgem. Connections to new developments can be via a number of options:

- i. via a licensed Utility Infrastructure Provider (details of whom are available on Ofgem's website [www.ofgem.gov.uk](http://www.ofgem.gov.uk)), or
- ii. through a gas supplier, or
- iii. via National grids connections department carried out by Fulcrum gas services limited if over 73,200kWh per annum.

Example Utility infrastructure enquiries for a new development:

Fulcrum Infrastructure Services Limited  
Customer Care  
Carr House  
Greasbrough Road  
Rotherham  
South Yorkshire  
S61 4QQ

Tel: 0845 641 3010  
Email : [enquiries@fulcrum.co.uk](mailto:enquiries@fulcrum.co.uk)

[www.fulcrum.co.uk](http://www.fulcrum.co.uk)

#### 3.3.2 Meter location and space allowances

The ideal location for a meter should be in a purpose built external meter box with suitable ventilation. Also considered are specifically constructed rooms to the outside of a building or internal to the building but on an external wall for natural ventilation.

Internal termination points for single supplies should be  $\leq 2\text{m}$  from entry into the building, ideally on the inside face of the external wall, with a pressure relief element incorporated. Ventilation should be 2% of internal floor area or notional equivalent – split between high and low level. The meter must not be on a means of escape route.

#### Physical meter dimensions

Once the building gas demand has been established the meter size can be determined. The table below identifies typical sizes up to  $160\text{m}^3/\text{h}$ .

Meter Model	Capacity $\text{m}^3/\text{h}$	Depth mm	Width mm	Height mm	Weight kg
U16	16	346	343	283	9.5
U25	25	308	406	415	16.4
U40	40	381	553	496	28
U65	65	385	614	545	41.8
U100	100	552	775	630	70
U160	160	552	775	660	75

Larger supplies are often metered using turbine flow meters, details of which are available from the developers' chosen gas supplier.

#### Ventilation

The meter compartment should have a natural means of outside ventilation. Louvred ventilators, or equivalent, should be distributed evenly across external walls at both high and low levels – as a guide the total ventilation area should at least be 3% of the floor.

Low level ventilators should be placed at a maximum height above floor level of 150mm.

High level ventilators should be positioned at a height from the ceiling of 10% of the height of the compartment/room/housing.

Further details on the location and enclosure are available from the developments chosen shipper.

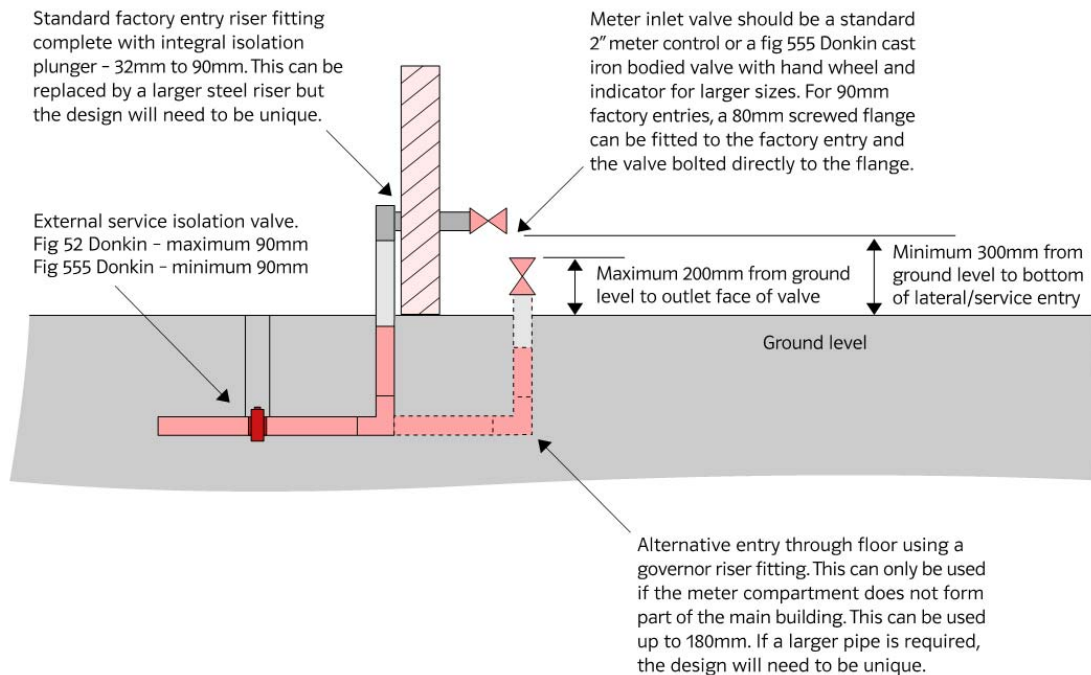
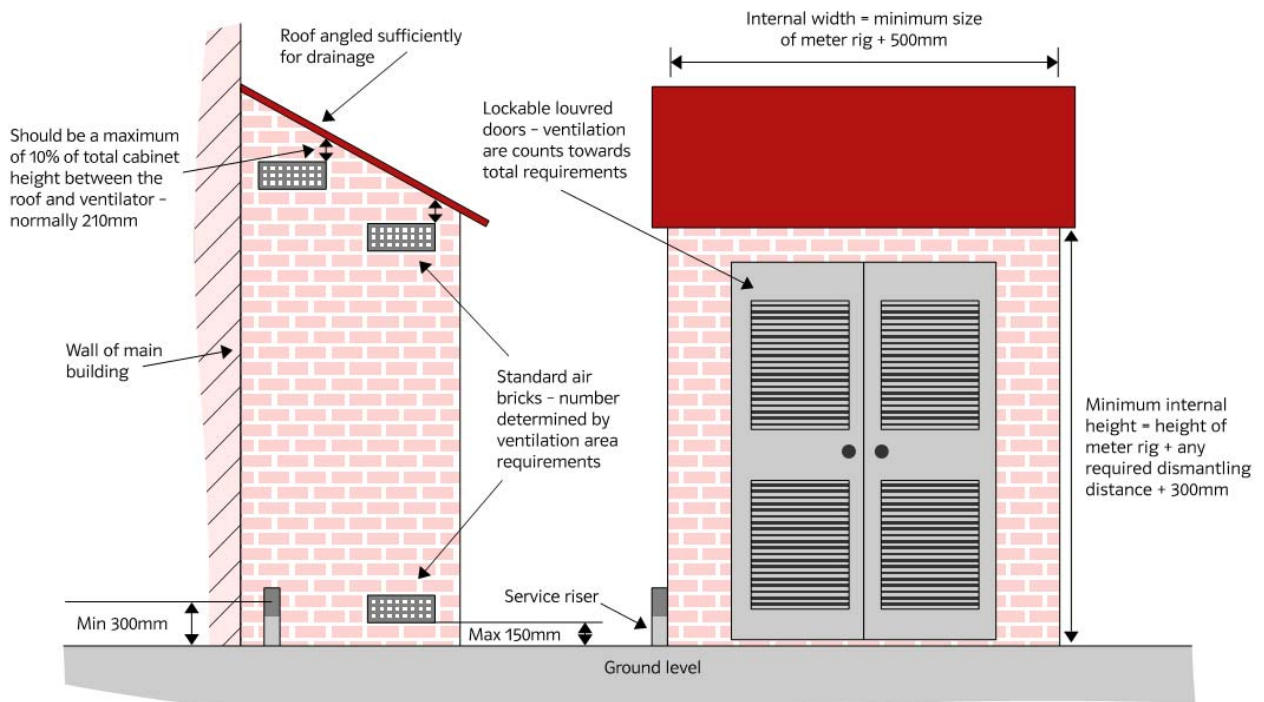
# 3.0 NEW CONNECTIONS

## 3.3.3 Typical details

Below is an external gas meter housing and incoming gas pipe detail. For guidance on installing a meter inside a building or in basement locations guidance should be sought from the chosen gas supplier.

**Please note: diagrams provided are for a general guide only and each installation will differ for the correct details should always be obtained from your proposed shipper.**

*Detail taken from E-on energy services guidance document*



## 3.0 NEW CONNECTIONS

### 3.4 POTABLE WATER (THAMES WATER)

Depending upon the size of the development and the condition of the local infrastructure, reinforcements to the pre-existent infrastructure may be required to support the additional demand.

Invariably, reinforcement works will be at the developers' cost. It is important, therefore, to ensure that water demand assessments are as accurate as possible to ensure reinforcement costs and infrastructure charges are not attracted unnecessarily. As such it is recommended that loading analysis be performed by competent and experienced persons.

Competitive bids for network installation, adoption and operation can also be sought in particular instances. Professional counsel is recommended where developers are considering this route.

#### 3.4.1 Establishing availability of water capacity at the proposed development boundary

Understanding the impact that the new development will have on our network will enable the developer's team to plan and budget for any enhancements required.

Thames can be appointed to provide information and recommend solutions for new developments.

##### *Seven-day pressure trend*

If building a tall property or installing pressure sensitive fittings, such as combi boilers, then understanding the pressure in the network will be crucial.

Thames Water provides a seven-day pressure trend to demonstrate the network pressure in the area adjacent to the site. This generally take 14days from receipt of a nominal fee.

##### *Clean water flow and pressure investigation*

If planning to develop a large or medium-sized site, or to build in a pressure-sensitive area, you will need to know if the existing water network is capable of taking on the new demand.

Thames Water will undertake flow and pressure investigation to with details of any enhancements required to the existing assets.

This takes 14days from receipt of a fee.

##### *Detailed hydraulic model analysis*

If the proposed development has more than 1,000 units, has an industrial use, or is in an area sensitive to water pressure or sewer flooding, a detailed hydraulic model analysis to assess the impact on the network is suggested, this will provide budget cost of any network enhancements.

An estimate for this service is provided following payment for a non-refundable deposit.

##### *Construction site temporary water supply*

If the existing supply is already metered, Thames Water must be notified before work commences. Details of the site address and the meter number will be required

Where an existing unmetered supply is used for building work or alterations to existing properties with a contract value of over £100,000 Thames Water charge 0.17% of contract value, plus VAT and may require evidence of the contract value.

Where the contract value is less than £100,000 the property will remain on the current domestic rate of charge

#### 3.4.2 The new water supply

Thames Water can design and lay the new water main and communication pipe, from the existing service main up to the street boundary, for developments within the City of London.

Using the design Thames Water provide, the developer may lay the supply pipe from the property to the street boundary, leaving it uncovered ready for an external water regulations inspection ensure the design complies with the Water Supply (Water Fittings) Regulations 1999.

##### *Thames Water new supply contact details*

For enquiries regarding the self-laying of water mains and services or any other questions relating to the building or development work, you can contact Thames Water on 0845 850 2777 weekdays from 8am to 5pm.

Thames Water Developer Services  
Self Lay Unit  
PO Box 78  
1 Kew Bridge Road  
Brentford  
Middlesex  
TW8 0EF

email:

[selflay.unit@thameswater.co.uk](mailto:selflay.unit@thameswater.co.uk)

## 3.0 NEW CONNECTIONS

### 3.5 DRAINAGE (THAMES WATER)

#### Definitions

**Public sewer** – pipe or structure owned by Thames Water, conveying the sewerage from two or more properties.

**Lateral drain** – pipework between buildings or premises and the public sewer.

**Connection** – the operation of joining the lateral drain to the public sewer

The City of London Corporation manages the local sewer network under contract on behalf of Thames Water. All applications should be made to the Director of Environmental Services, Contracts and Drainage Management Group as below.

Under section 106 of the Water Industry Act the property has the right to communicate with a public sewer. Any new lateral drain to the sewer network will need to be designed, approved and constructed in accordance with requirements of both the Building Regulations and the local bylaws as regulated by the Department of Environmental Services detailed below.

The drainage system in the City of London is a combined foul and surface water arrangement, with the two combining at the point of exit from the property. The lateral drain shall be constructed in heading by an experienced contractor employed by the developer at their expense. The actual connection into the sewer shall be carried out by the Corporation's term contractor.

The service provided by the City Of London consists of the approval of the proposals, inspection of the heading under the public highway, the connection arrangements, inspection and approval of the backfilling of the heading, removal of the bung after testing and the registration of the connection on behalf of the applicant with Thames Water. The cost for these actions will be dependant upon the size of the lateral drain.

Where the heading is wider than 900mm Approval in Principle will be required for the temporary works under the highway. the approval will need to be obtained via the Contracts and Drainage Management Group.

#### Contact details

By phone  
City Of London Contact Centre: 0207 606 3030. Lines are open weekdays from 8am to 5pm.

By post  
Department of Environmental Services  
P.O. Box 270  
Guildhall  
London EC2P 2EJ

By email  
drainage.services@cityoflondon.gov.uk

#### City of London Requirements

If you would like to connect your new or existing property to our public sewerage system, for both foul water and surface water (rainwater), you will need to apply for a Section 106 Sewer Connection.

The lateral drain link between the property and the sewer can be made by your choice of qualified contractors; however, the City of London must make the connection at the sewer as above.

The City of London's Department for environmental services has a number of requirements that will need to be followed by the developer governed by the City of London sewers act.

The following guidance is extracted from their standard requirements.

1. All lateral drains to the sewer outfall **must** be provided with a cast iron intercepting/disconnecting trap which has a cascade, with access to the crown of the trap and have rodding access through to the sewer as BSS figure 26 or equivalent (for rodent control measures). See sectional detail 2 below.
2. The lateral drain pipework should be laid in straight lines in the vertical and the horizontal alignments and with no other pipe connections. (e.g. at a self cleansing velocity and in a straight line from interceptor to the sewer).
3. The interceptor should be located inside the property boundary and adjacent to the buildings curtilage. There is a requirement for an external access chamber/ MH for pipes sizes over 375mm.
4. There should be provision to provide ventilation to the low invert level of a drainage system this should normally be at the intercepting trap. It may be difficult to evaluate air movement precisely and therefore as guidance you should allow for the vent pipe to be half diameter at the size of the intercepting trap. This vent should be discharged to a safe outlet at roof level atmosphere.

#### Notes:

- a) The sewage system within the City historically vents to atmosphere via low level vents and any increases of discharge velocity (e.g. pumped drainage) of building effluent to the sewers results in the incidences of smells being reported. As justified smell complaints are treated as a statutory nuisance by this Department. It is **strongly recommended** where practicable and safe to do so all drainage should discharge via gravity.
- b) In the view of this authority there are rodents present within the sewers and special rodent control is

# 3.0 NEW CONNECTIONS

therefore required, historically the measures this authority accepts is both by means of an interceptor trap and a sealed drainage system. You should discuss this matter with your Building Control body.

- c) There is a requirement under Section 62 of the Building Act 1984 for any person who carries out works which result in any part of a drain becoming permanently disused that they shall seal the drain at such points as the local authority may direct. You should therefore make arrangements to seal off any redundant communication drains connecting to the Thames Water Utilities (TWU) sewer at the point of communication with the local sewer and at the buildings curtilage.
- d) The City Of London is current asking new developments when installing new sewer connections to install a vent pipe from the sewer, to further vent the sewers and help reduce the current sewer smells occurring in the streets. This vent should be discharged to a safe outlet at roof level atmosphere. See sectional detail 3 below.

- e) On new developments, when pumping discharge to sewers from basements, below the gravity sewer, a sewer vent should be installed. See sectional detail 3 below.

**Note** – These vents should be discharged to a safe outlet at roof level atmosphere

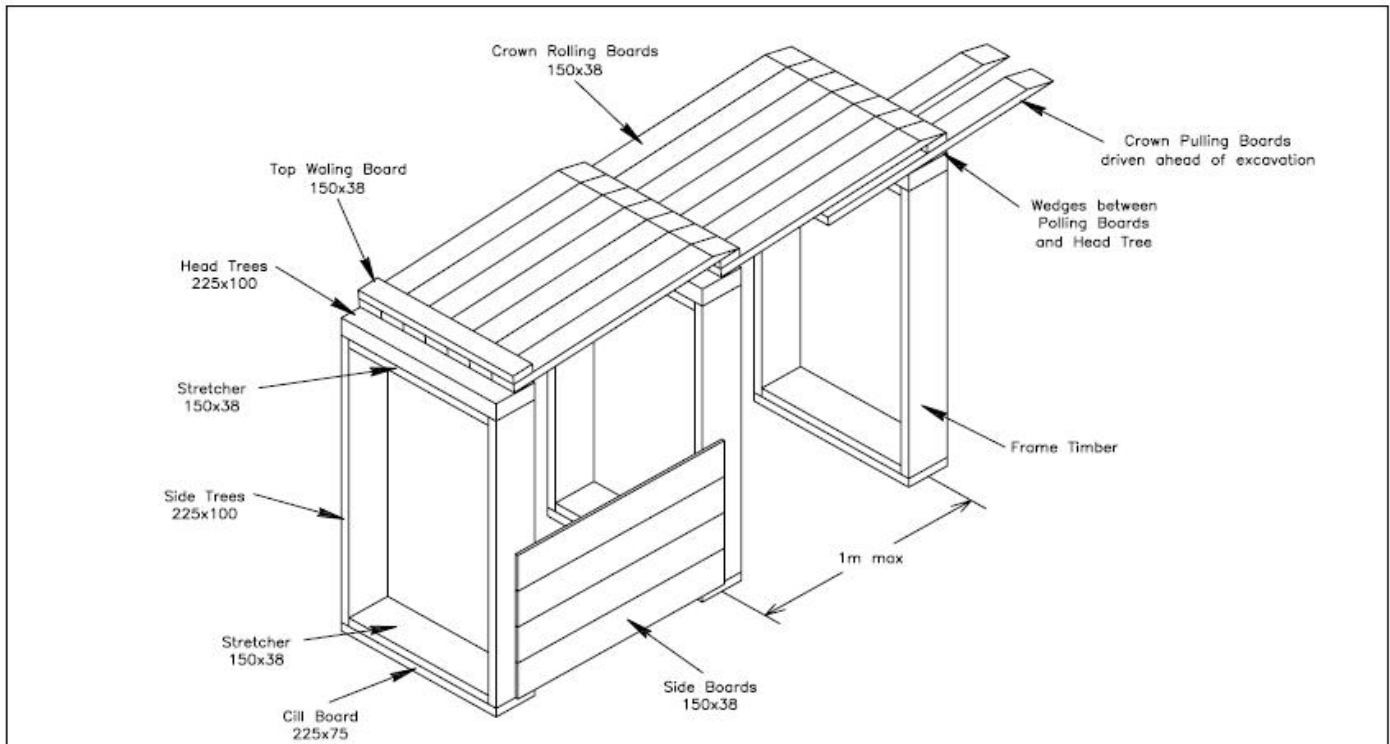
A failure in respect of these requirements may result in: -

1. Charging of costs and expenses involved in attending site and auditing works.
2. Copies of documents concerning any default being placed on our Land Charges Register and disclosed to all subsequent enquiries
3. Charging for remedial works done in default and costs recovered from responsible person(s) which may be substantial in terms of cost and delays to the project.

You are advised to submit proposals in writing, concerning these matters to the address detailed above.

If you require any further advice or information, City of London can be contacted on 0207 332 3630 or email [des.enquires@cityoflondon.gov.uk](mailto:des.enquires@cityoflondon.gov.uk)

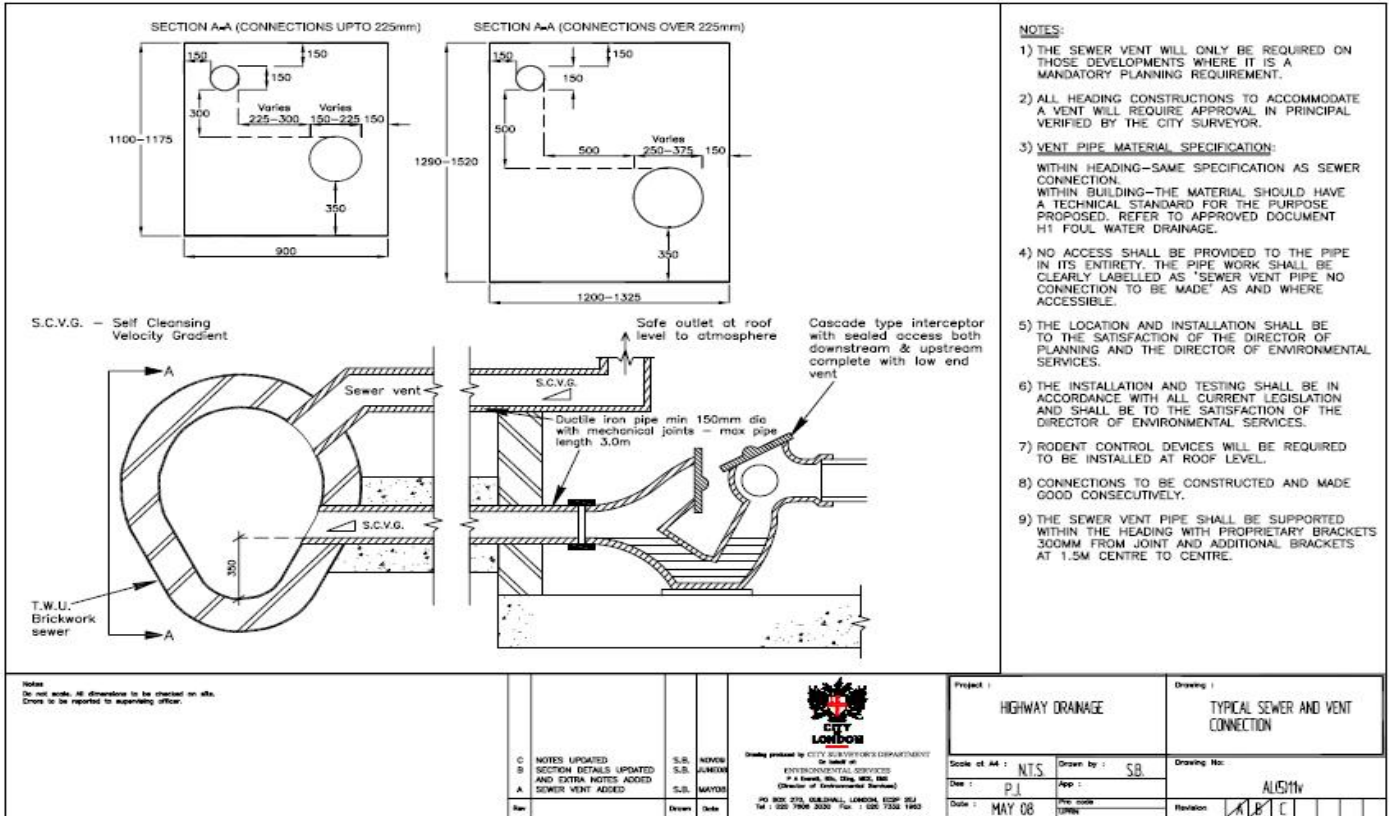
Detail 1



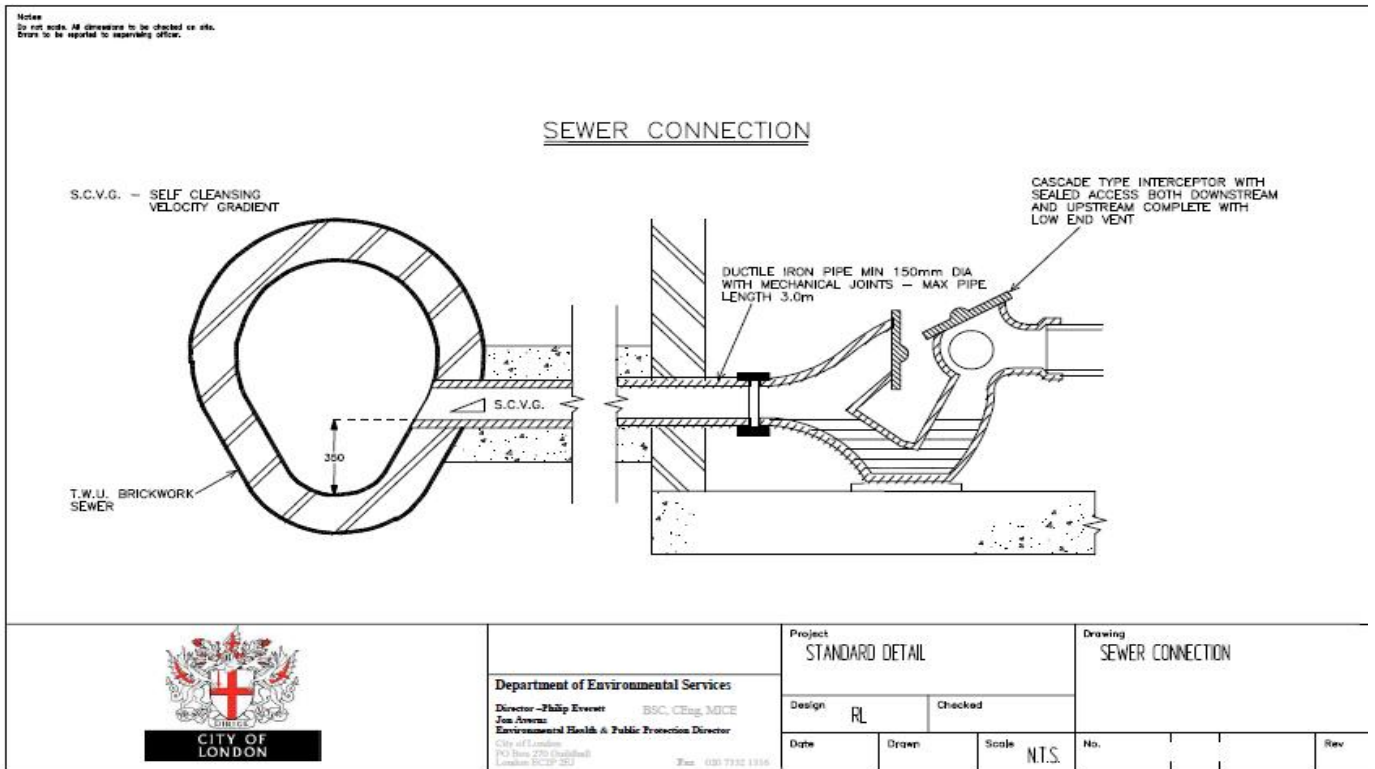
<p>Notes Do not scale. All dimensions to be checked on site. Errors to be reported to supervising officer.</p> <p>1) THE FRAMES ARE NOT TO BE SET AT MORE THAN 1 METRE FROM EACH OTHER.</p>		<p>City of London Drawing produced by CITY SURVEYORS DEPARTMENT in hand of ENVIRONMENTAL SERVICES in a drawing No. 0207 332 3630 (Director of Environmental Services)</p>		<p>Project : HIGHWAY DRAINAGE</p> <p>Drawing : TYPICAL HEADING SPECIFICATION 2 OF 2</p>	
<p>A ADDITIONAL NOTES ADDED</p>		<p>S.B. NOV08</p>		<p>Scale of A4 : N.T.S.    Drawn by : S.B.</p>	
<p>Date : MAY 08</p>		<p>App : AL15/2</p>		<p>Date : MAY 08    Rev: none</p>	
<p>Rev:    Drawn:    Date:</p>		<p>Revision: A</p>		<p>Revision: A</p>	

# 3.0 NEW CONNECTIONS

## Detail 2



## Detail 3



## 3.0 NEW CONNECTIONS

### 3.6 ACCOMMODATING FUTURE SERVICES

Decentralised energy generation is likely to become more commonplace in the future as planning requirements and building regulations require low carbon energy strategies.

In a decentralised energy scheme electricity is produced at or near its point of use. Consequently, energy losses through electricity distribution cables are substantially reduced. In addition, with a decentralised energy scheme, potential exists to utilise the thermal energy produced during the electricity generation process (normally rejected to atmosphere by traditional power stations) through the supply of heated and chilled water to nearby buildings. As a result decentralised energy schemes are significantly more fuel efficient than traditional 'centralised' energy systems producing far less carbon dioxide emissions.

A number of buildings within the City of London area are currently served by the 'Citigen' decentralised energy scheme. These include the historic Guildhall, the Barbican Arts Centre, the Guildhall School of Music and Drama, the Museum of London and London Central Markets (Smithfield). The 'Citigen' scheme's combined heat and power plant has an electrical output of 25MW and produces 28MW of heated and chilled water. Enquiries relating to the possible use of the existing Citigen system should be made to:

Andrew Crafter  
group engineer at the City of London.  
[Andrew.Crafter@cityoflondon.gov.uk](mailto:Andrew.Crafter@cityoflondon.gov.uk)  
0207 3321252.

The City of London has an established network of pipe subways which already exist below the level where infrastructure services are normally routed. The existing pipe subways were constructed between 1869 and 1995 and are currently used to transport gas, electricity, water, low temperature hot water, chilled water and telecommunication services. The pipe subways are built of brick or concrete with access through managed street level entrance points. Enquiries relating to the possible use of the pipe subways should be made to the City of London.

#### 3.6.1 Connecting to a decentralised energy scheme

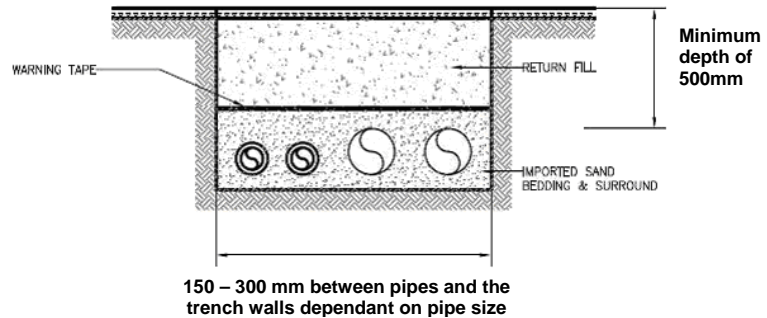
In a decentralised energy scheme water is circulated from the heating or cooling source, commonly referred to as an 'Energy Centre', to a building's 'substation' via the primary pipework distribution network.

Whilst there are a number of pipe materials on the market in the majority of cases the primary distribution pipework will be a pre-insulated type comprising of a steel carrier pipe covered with polyurethane foam insulation and sealed in a polyethylene outer casing.

The primary distribution pipework connection to the building may be located within a sub terranean service

duct but is more commonly buried directly in the ground as illustrated in detail below.

The decentralised energy primary distribution pipework may enter the building from above or below ground from where it enters or is routed to a plantroom referred to as a decentralised energy 'substation'.



Typical Pre-insulated pipe trench details

The temperature and pressure of the decentralised energy primary heating and chilled water supplies are fixed by the decentralised energy scheme operator and are likely to be in the following ranges:

	Primary Supply Temp (°C)	Primary Return Temp (°C)	Pressure (Bar)
Heating	70 - 95	40 - 65	3-8
Cooling	4 - 8	14	3-8

A decentralised energy scheme's operating temperature and pressure must be considered when selecting and designing a building's heating, domestic hot water and cooling services in order to ensure that these secondary systems can meet their performance requirements.

Typically, the decentralised energy scheme operator will install, own and maintain the primary distribution pipes inside the building up to the consumer's substation.

#### 3.6.2 Decentralised energy scheme substations

Ideally, the decentralised energy scheme operator should be consulted regarding the location of a building's substation plant room as this may be influenced by the proximity of the existing decentralised energy primary pipework. As a rule the substation plant room should be located adjacent to an external wall to avoid lengthy runs of primary pipework within the building. A substation may be located in each building served by the decentralised energy scheme or in some cases a group of buildings may be served by one substation.

## 3.0 NEW CONNECTIONS

The decentralised energy scheme may be connected either directly or indirectly to a building's heating or cooling systems. In the UK it is more common to employ an indirect connection using heat exchangers located within the substation as the secondary systems are not always compatible with the decentralised energy schemes operating temperatures or pressures. Where this is the case the heat exchangers provide hydraulic separation between the decentralised energy scheme's primary pipework and the building's secondary systems.

The dimensions of a decentralised energy substation plant room are dependant on the thermal energy demands of the building or buildings served by the substation. The key components of the substation plantroom generally include:

1. Shut-off valves on the primary distribution pipework
2. Controls to regulate flow required to meet the building's energy demand and maintain the decentralised energy scheme's return temperatures.
3. Energy (heat) meters.
4. Separate heat exchangers for domestic hot water, space heating and space cooling.

These key components may be supplied as a prefabricated packaged unit as illustrated in image below or supplied as separate items and connected together on site.

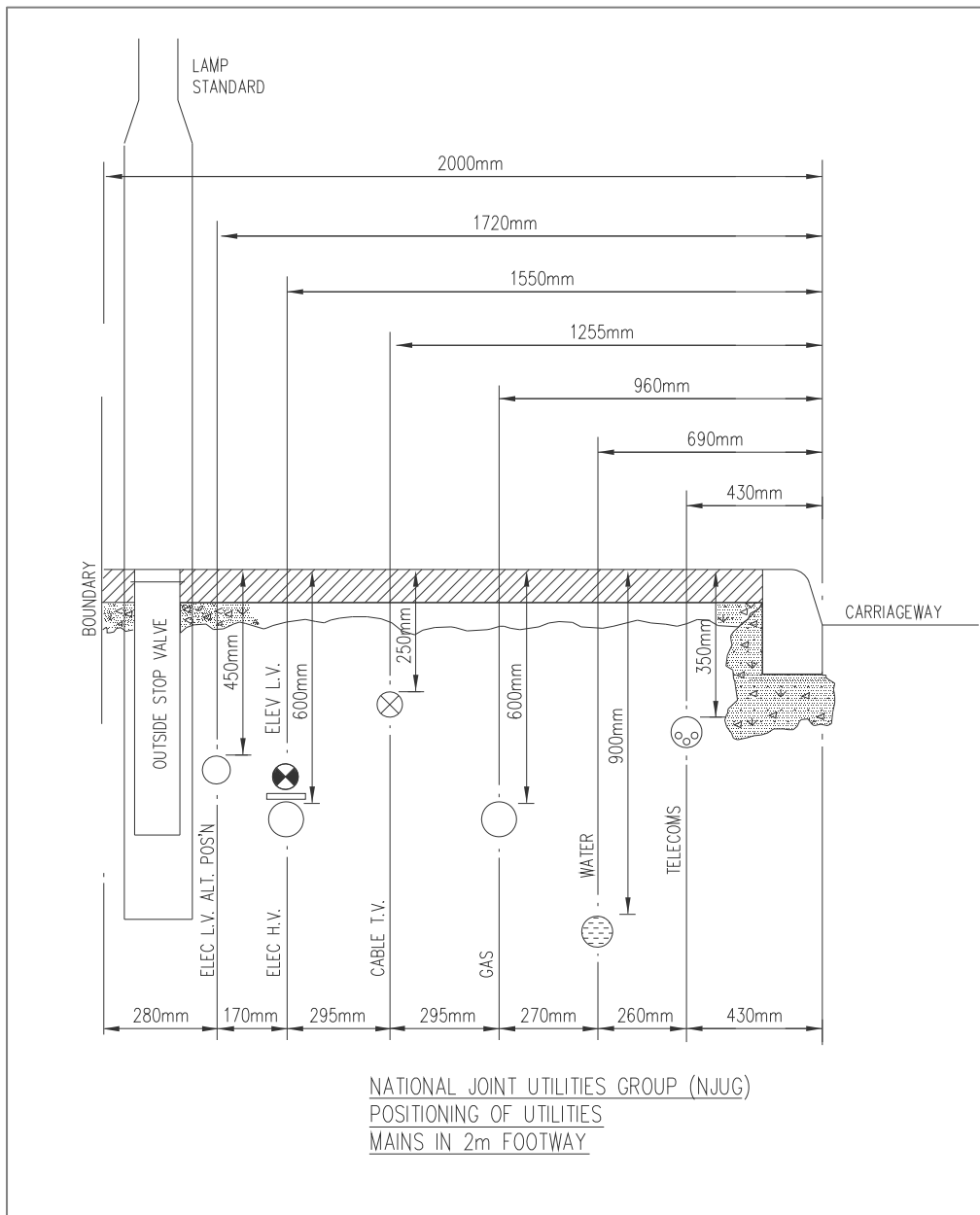


**Prefabricated packaged substation**

# 4.0 COORDINATION

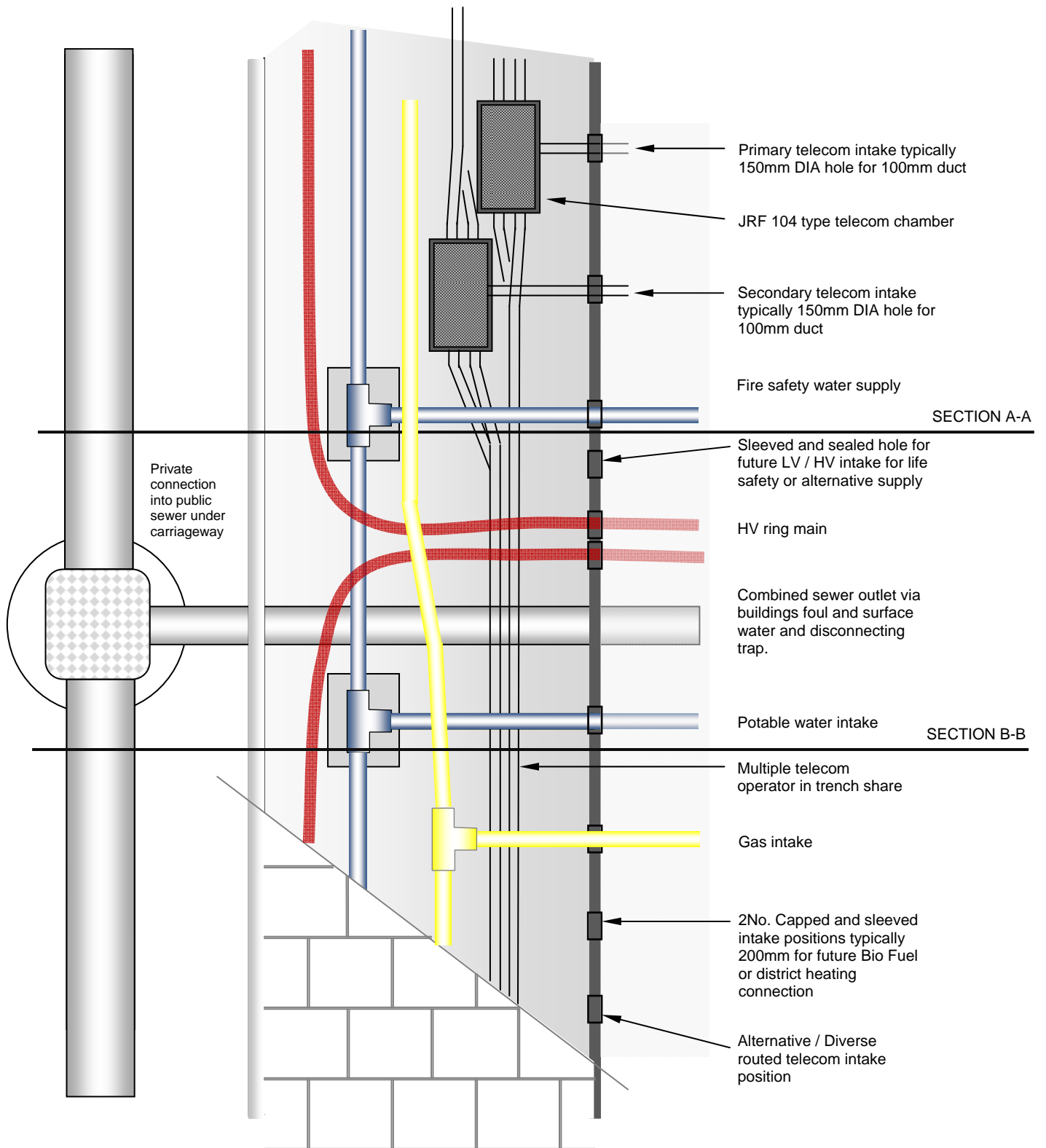
## 4.1 BEST PRACTICE

The below HAUCA diagram is the ideal spacing of services within a pavement. Where these minimum space requirements cannot be achieved because of physical footpath constraints alternatives should be negotiated directly with the utility organisations involved.



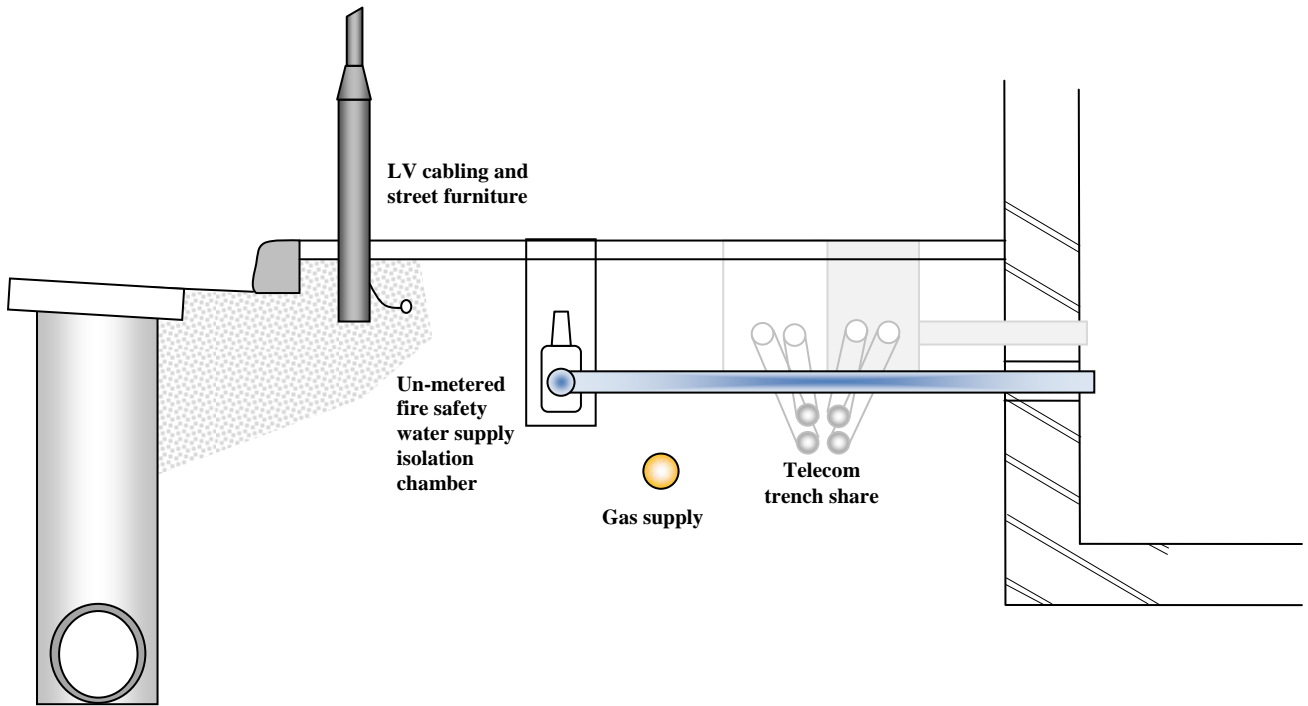
# 4.0 COORDINATION

## 4.2 TYPICAL BUILDING CONNECTION ARRANGEMENT

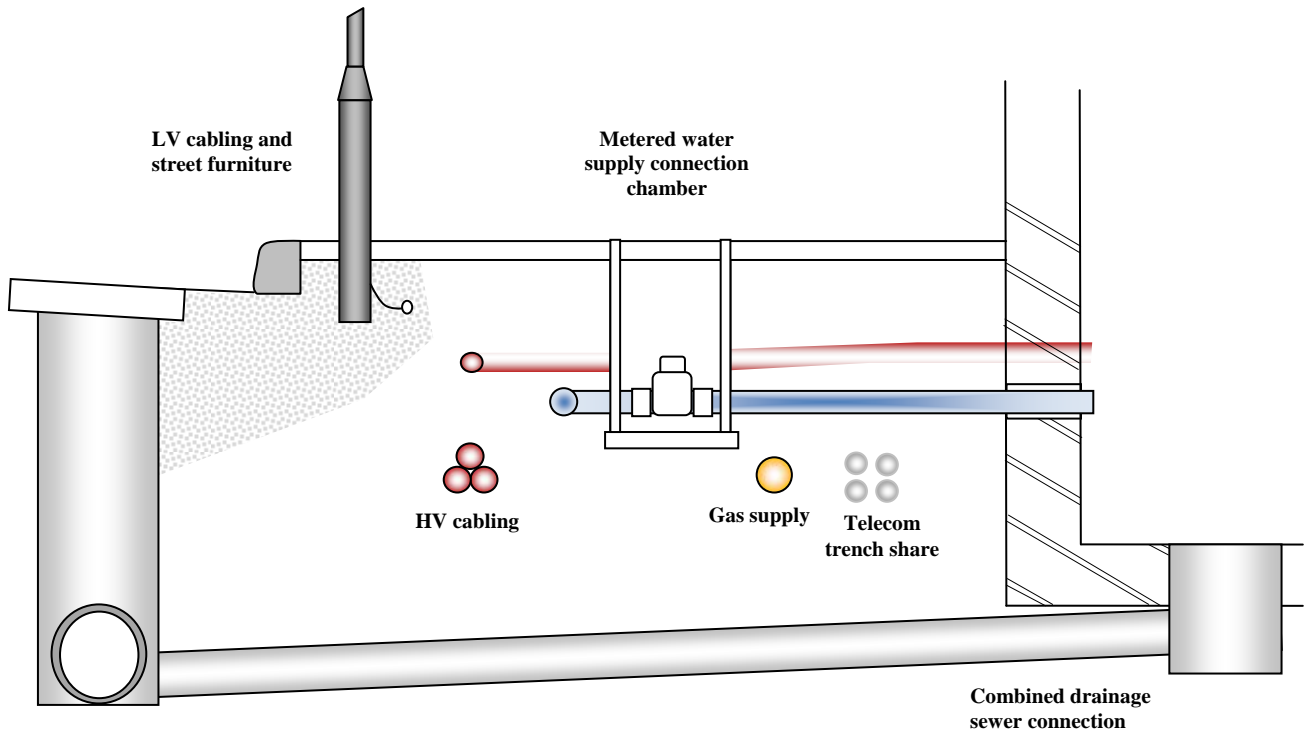


# 4.0 COORDINATION

## SECTION A - A



## SECTION B - B



## 4.0 COORDINATION

### 4.3 Incoming utility good practice planning

Early programming and coordination of service connections is paramount in ensuring supplies are installed and operational for the developments on time and on budget.

Very often the actual location points will be dictated by the available space within a footpath to make the connection. Determining these locations should include where ever trial pit excavations of the existing footpath to ascertain available space to make a connection or place a chamber. The primary roads are usually more congested with larger services and street furniture. When planning the buildings intake positions it is recommended where ever possible service intake positions are on an elevations not on a primary roads. As indicated in the diagram below.

Open trenches attract fees, early planning and coordination of services can keep dangerous excavations to a minimum, reduce program and costs.

#### 4.3.1 Street works coordination

The Highways Division of the Environmental Services department at the City of London work closely with utilities in trying to minimise the disruption of works on

the highway by promoting initiatives such as trench sharing and the deployment of spare ducts nests.

For further enquiries regarding street works coordination in the City of London please send an e-mail to

[highwaysmanagement@cityoflondon.gov.uk](mailto:highwaysmanagement@cityoflondon.gov.uk)

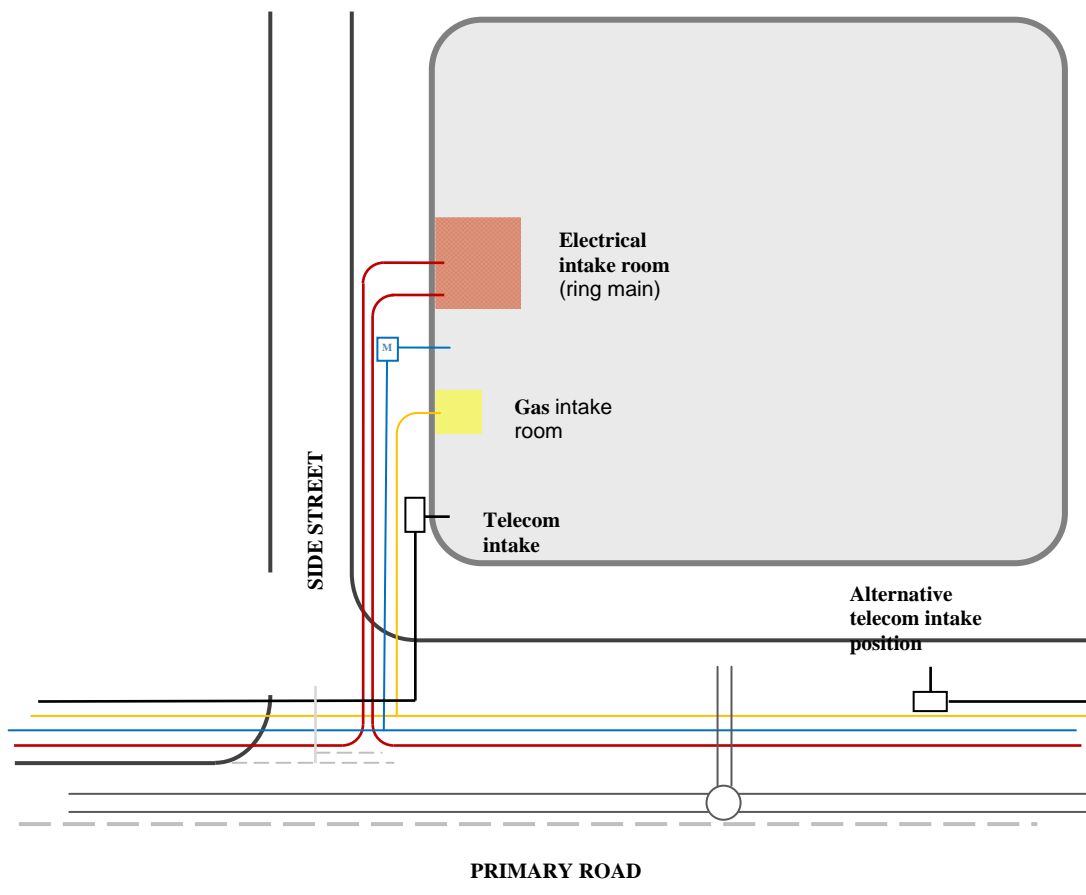
#### 4.3.2 City of London Considerate Contractor's Scheme

The Considerate Contractor Scheme is designed to create a safer and cleaner environment for all those who use the highways on a daily basis.

Sites are judged on four basic criteria. Cleanliness, consideration, co-operation and care, with annual awards presented to those companies that achieve the standards set in the Code of Practice.

For more information on the City's Considerate Contractor Scheme please send an e-mail to:

[CCS@cityoflondon.gov.uk](mailto:CCS@cityoflondon.gov.uk)



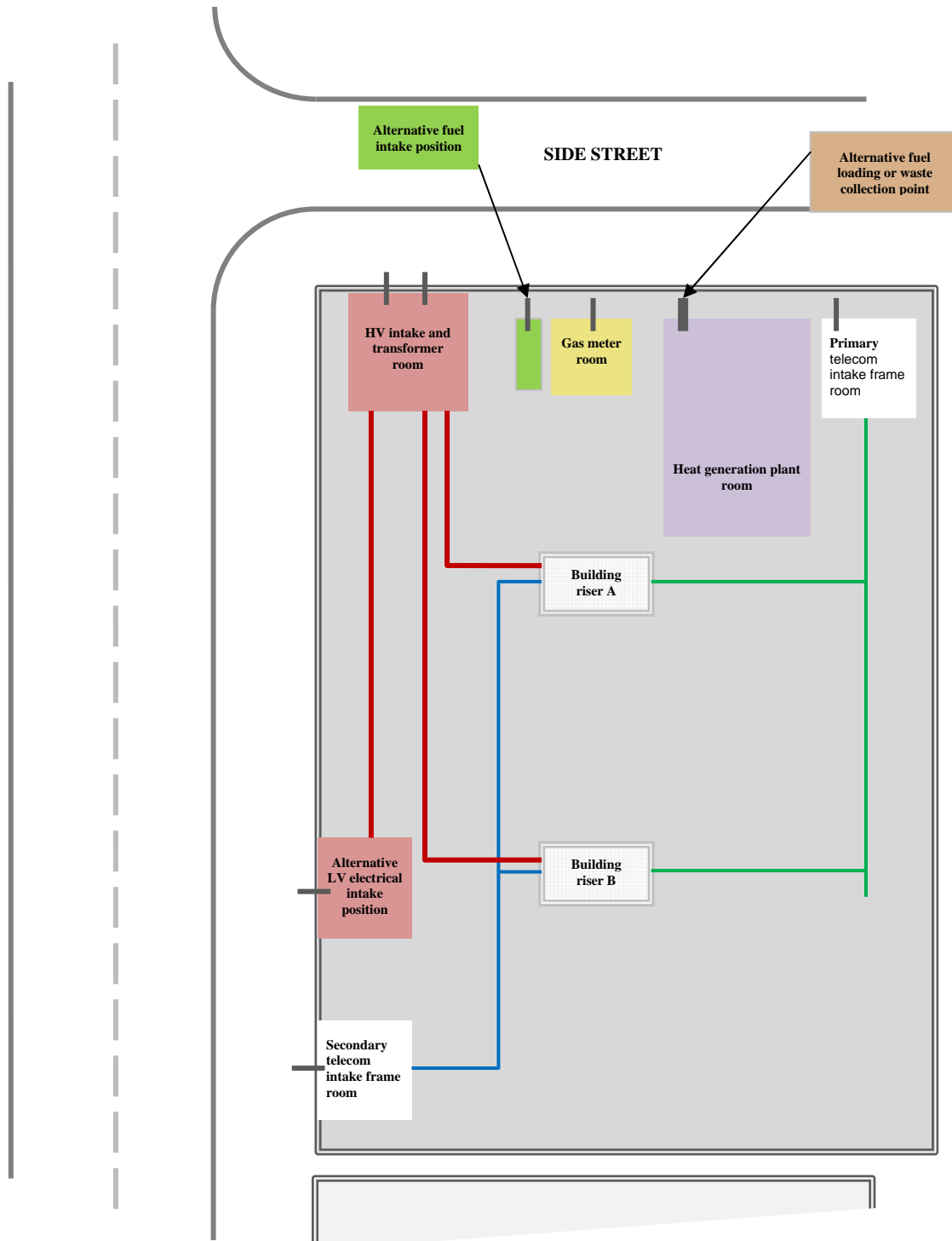
# 4.0 COORDINATION

## 4.4 BUILDING INTERNAL / BASEMENT UTILITY SERVICE LAYOUT

When planning utility connections and the associated internal plant layout consideration should also be given for future connections for either the current or future tenants these could include:

- Alternative Telecom intake positions with segregation for divers routing.
- Alternative Electrical intake position with segregation distance from existing

- CHP hot water.
- District heating / cooling



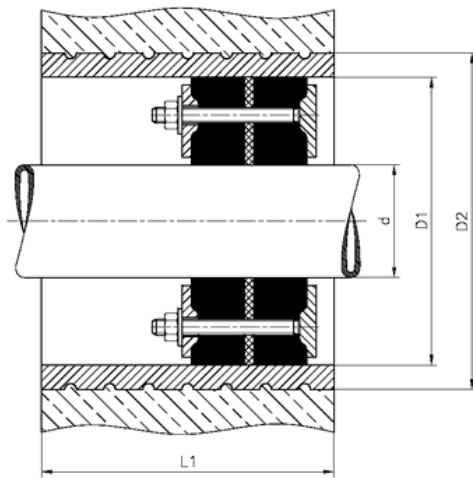
## 4.0 COORDINATION

### 4.5 SERVICE ENTRY DETAILS

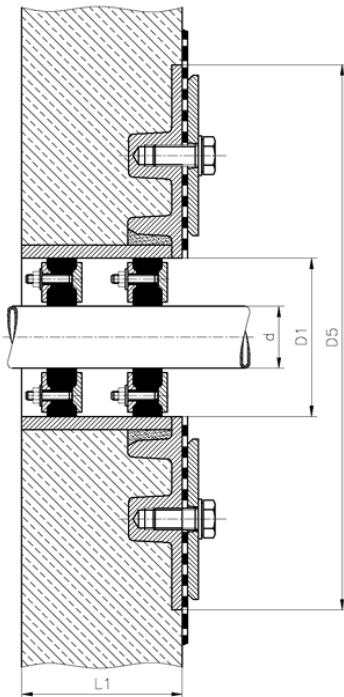
It is recommended that all building entries are sealed against both gas and water ingress where under street level. With the varying water table in the city region, sealing should be rated to withstand water pressure to 150mm above the external carriageway surface level.

A number of proprietary systems available are suitable for this application. The type used will depend on the building construction.

#### *Non membrane service duct entry*



#### *Membrane protected service duct entry*



## 5.0 REFERENCE DOCUMENTS

- NJUG Guidelines on the Positioning of Underground Apparatus for New Development
- NJUG Guidelines on the Positioning and Colour Coding of Underground Utilities' Apparatus
- NJUG Guidelines for the planning, installation and maintenance of Utility services in proximity to trees.
- Highways Authorities & Utilities Committee: Practical Guide to Street Works
- BS 6400 – 1, BS 6400 – 2, BS 6700 2006
- British Telecommunications plc LN 550 Issue 2
- TGN(T)43 General Requirements for the installation of Optical Cable in Protective ducts
- City of London Strategic flood risk assessment  
[http://www.cityoflondon.gov.uk/Corporation/LGNL\\_Services/Environment\\_and\\_planning/Planning/Local\\_Development\\_Framework/core\\_strategy\\_sust\\_app.htm](http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Planning/Local_Development_Framework/core_strategy_sust_app.htm)
- The City's Street Scene Manual which outlines the standards required for City streets is at:  
[http://www.cityoflondon.gov.uk/Corporation/LGNL\\_Services/Environment\\_and\\_planning/Urban\\_design/Urban+design+publications.htm](http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Urban_design/Urban+design+publications.htm)
- BT newsite build pack:  
<http://www.openreach.co.uk/org/networkinfo/downloads/newsitesfinal.pdf>
- City of London Archaeology information  
[http://www.cityoflondon.gov.uk/Corporation/LGNL\\_Services/Environment\\_and\\_planning/Archaeology/Archaeology-local\\_information.htm](http://www.cityoflondon.gov.uk/Corporation/LGNL_Services/Environment_and_planning/Archaeology/Archaeology-local_information.htm)

# 6.0 PLANNING CONSIDERATIONS

## 6.1 PLANNING CONSIDERATIONS

If any development work necessitates alterations to the external fabric of the building or affects the fabric of a listed building or Scheduled Ancient Monument, the developer should confirm whether the works require planning permission, listed building consent or scheduled monument consent.

The Department of Planning & Transportation at the City of London, will provide advice in respect of planning matters, including listed buildings, monuments and where any ground works are proposed as these may affect archaeological remains.

The City of London Corporation's Planning & Transportation department can be contacted by sending an e-mail to:

[plans@cityoflondon.gov.uk](mailto:plans@cityoflondon.gov.uk)

## 6.2 TREES, PARKS, GARDENS & OPEN SPACES

Trees, parks, gardens and open spaces are an essential part of London's character and identity, and their presence in the Square Mile is more important than ever. The City of London is responsible both as an owner and a local planning authority for maintaining the existing tree population, and to ensure continuity of trees for the enjoyment of future generations.

Where works affect street trees or are close to street trees, the Open Spaces Department should be contacted prior to commencement of any works. Some trees have Tree Preservation Orders (TPO's) or are protected due to their location within a conservation area. Others may be subject to planning conditions or be at risk from redevelopment works. For details of such trees and advice concerning works which may affect them, the Department of Planning & Transportation should be contacted.

All works must adhere to the City of London's Tree Strategy, relevant guidance and legislation. Any trees in the vicinity of a development site should be adequately protected and works, including the removal of roots, should not be undertaken until the relevant consents have been obtained. In addition to complying with any planning requirements, all works to any trees must adhere to the "City of London's Tree Strategy."

The Open Spaces department at the City of London Corporation can be contacted by sending an e-mail to:

[parks.gardens@cityoflondon.gov.uk](mailto:parks.gardens@cityoflondon.gov.uk)

