



# Policy for the self laying of water mains and service pipes



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## 1 INTRODUCTION

In accordance with the Water Industry Act 1991 as amended by the Water Act 2003, developers that need new water mains and service pipe connections may choose their own contractor to lay the mains and pipes. This provides developers with an alternative to the traditional method of requisitioning the water company to lay them. This alternative method is known as self-lay and the contractor who carries out the work is known as the self-lay organisation or multi utility provider. The water company will take over the responsibility (vest) in self-laid mains that meet the terms of its legal agreement with the developer. This policy describes the processes and procedures that need to be followed and sets out the terms on which Dee Valley Water (the Company) will enter into an agreement with a developer for the self-laying of mains and service pipes.

A location map of the Company's area of supply is on the website<sup>1</sup> or a copy can be provided on request.

The Office of Water Services (Ofwat) has issued guidance to water companies on self-lay policies that they should have in place<sup>2</sup> (Ofwat Guidance). The Company's policy is aligned with the Ofwat Guidance.

A Code of Practice<sup>3</sup> has been developed for developers wishing to undertake the self-laying of water mains and services (Code of Practice). The development of this Code of Practice has been supported by the House Builders Federation, Water UK, the Society of British Water and Wastewater Industries, Lloyds Register EMEA and Ofwat. The Company's policy and requirements in respect of self-laying of water mains and service pipe connections are based on this Code of Practice with supplementary Company-specific requirements, where appropriate, which form Appendix A of this document.

The Code of Practice is published by WRc. Developers and SLOs are responsible for obtaining the current copy of the Code of Practice and all other publications referred to in this policy and elsewhere.

Notwithstanding its statutory obligation to allow others to lay new water pipes, the Company retains responsibility for providing a safe, secure and reliable supply of water to its customers. In interpreting the Company's policy and requirements in respect of self-laying of water mains and service pipe connections, it shall be recognised that it is this responsibility that is the paramount consideration.

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<sup>1</sup> See <http://www.deevalleywater.co.uk/article.php?id=43>

<sup>2</sup> Ofwat, *Competition in providing new water mains and service pipes – Guidance to water companies*, version 3.0, March 2009.

<sup>3</sup> WRc, *Self-laying of water mains and services – A Code of Practice for England and Wales*, 2<sup>nd</sup> edition, May 2009.

## 2 CONTACT DETAILS

Enquiries about the Company's self-lay policy and self-lay applications should include 'self-lay' in the heading to aid processing and be directed to:

Developer Services  
Dee Valley Water  
Wrexham Road  
Rhostyllen  
Wrexham LL14 4EH

e-mail: [developer.services@deevalleygroup.com](mailto:developer.services@deevalleygroup.com)

## 3 APPROVAL OF SLOs

The Company recognises the Water Industry Registration Scheme (WIRS) for the accreditation of SLOs. It is a condition of the approval of any SLO and any sub-contractors by the Company that the SLO and sub-contractors have full or partial WIRS accreditation. Partial accreditation will exclude some activities an SLO can undertake.

To avoid possible delays, SLOs are encouraged to apply to the Company for approval in advance of enquiries or applications in respect of specific schemes.

Work carried out by a SLO that has not been specifically approved by the Company, or which is an element that the approval does not cover, will not be considered for adoption by the Company.

Regardless of accreditation of the SLO on WIRS, approval will be withdrawn by the Company at any time (even part way through a scheme) on the grounds of poor performance by the SLO in respect of any aspect of its responsibilities or obligations as SLO. If, for any reason, the Company withdraws approval of the SLO, such approval will not be reinstated until the SLO has completely satisfied the Company that it has taken appropriate steps to ensure that the reason for the disapproval has been addressed effectively and in full.

Approval for a SLO may be withheld or withdrawn by the Company if the SLO has unpaid bills from the Company.

It is important to the Company that no water is supplied to a property unless the Company has full details enabling it to trigger its billing process. Therefore, as a condition of the Company

approving a SLO to install service pipes with or without meters, the SLO shall satisfy the Company that it has effective procedures in place to ensure that this requirement is satisfied. The Company will monitor compliance with approved procedures by site supervision and any occurrence of unbilled water being supplied may result in instant withdrawal of approval of the SLO for installation of service pipes and meters or refusal to vest.

#### **4 THE AGREEMENT**

The Company will enter into and execute the legal Agreement with the Developer and the SLO (and landowners if applicable). The Agreement will cover the terms on which all the water mains and service pipes shall be laid and be transferred into Dee Valley Water's ownership.

It is the Developer and not the SLO that carries most of the burden of responsibility under the Agreement. It is the responsibility of the Developer to ensure that his responsibilities under the Agreement and the SLOs compliance with the requirements of the Agreement are adequately covered through his contract with the SLO.

#### **5 THE PROCEDURE**

The Developer/SLO is required to submit information as follows:-

- At Capacity or Point of Connection enquiry stage (initial enquiry stage) information as detailed in Table 3 of the Code of Practice.
- At the detailed application stage when design is to be carried out by the Developer/SLO - information as detailed in Table 4 of the Code of Practice.

The developer/SLO needs to complete the Company's connection application forms for all new connections including connections and meters installed by the SLO or Company.

In the initial stages of schemes, it might not always be clear to the Company or the Developer whether the self-lay arrangements are to be used. As a consequence, the Company might receive enquiries or requests for information from any of the following:-

- Developers (who may already have acquired the site or who might just be interested in it).
- SLOs (who might already be appointed or who might be one of several submitting a tender to the Developer).
- Consultants working on behalf of the Developer.

The Company will respond to whoever makes the initial enquiry as long as any charges made by the Company<sup>4</sup> for the work it is asked to do are paid in advance. However, to avoid duplication of effort and costs which will be charged to the separate parties making the enquiries, the Company would prefer to deal with just one party before the Agreement between the Developer and the Company is entered into. The Developer is in the best position to organise this.

Before the Agreement is entered into, if the Company receives confusing or conflicting requests for information from more than one party about a proposed scheme, it might need to seek clarification or guidance from the Developer.

At an early stage in the process, the Company will arrange a meeting with the Developer and the SLO, if already selected, to clarify the respective roles and responsibilities of these three parties to the process. The involvement of the Company at key stages of the process and the need to keep the Company informed at all times about progress and programme will also be highlighted.

After the Agreement is entered into, the Company expects to communicate with the appointed SLO on technical and site matters and with the Developer on issues relating to the Agreement. Communication channels will be set out in the Agreement.

## **6 VESTING CERTIFICATE**

For most schemes, there shall be a single vesting certificate (or vesting declaration) covering the water mains. Issue of separate Vesting Certificates for phased developments will only be considered for large developments with discrete phases that are clearly separated in time. Any such phasing shall have been as defined in the Agreement.

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<sup>4</sup> In accordance with the Company's *Charges Scheme*.

## 7 FINANCES

### Charges

As explained in Section 5, in practice in the initial stages of schemes the Company might be asked to respond to enquiries or requests for information from a variety of parties. The Company will expect the party making the enquiry to pay the Company's charges for the work in advance unless an alternative arrangement for payment of the Company's charges is agreed beforehand.

From the time that the Agreement is entered into, the SLO and the Developer become legally responsible for payment of respective charges to the Company.

Under the terms of their contract with the SLO, the Developer may arrange for some of the Developer payments to the Company to be made by the SLO. The issue of which party will make the payments to the Company, and which will receive any asset value payment, is addressed in the Agreement.

If the SLO is to perform all the financial obligations as provided for in the Agreement, and SLO is to receive the asset value payment, the Developer shall confirm this in writing to the Company on signing the Agreement.

The Company's scheme of charges is available on request or on the Company's website. It is reviewed annually and updated as necessary.

### Asset value

Asset value is the amount payable by the Company to the Developer/SLO in recognition of the future revenue for supplies of water to customers connected to self-laid mains.

The asset value is calculated by the Company. It is a discounted offset amount based on estimates of the annual borrowing cost for the Company's estimate of the cost of the work if it had carried out the work itself, and the revenue that will be received from the connected properties following issue of the Vesting Certificate. The precise methodology for calculation of the asset value is set out in the Water Act 2003. A worked example of a calculation for asset value is set out in Appendix C.

The asset value will be calculated using estimates of cost and occupancy at the early stages in a project but will be calculated using actual costs and occupancy at the later project stages.

## Retentions/Deposits

The Developer/SLO is required to provide retentions or deposits where additional capacity is required or service pipes installed by the SLO. Any monies not used to rectify defects will be repaid on completion of the relevant Defects Liability Period together with interest in accordance with the *Water Industry Act 1991*.

## Payments

In general, the Company's charges to the Developer/SLO for services provided are payable in advance.

On issue of the Vesting Certificate, there shall be due a payment from the Company to the Developer/SLO, or *vice versa* depending on the amounts, which is the balance of the following:-

- the asset value payment to the Developer/SLO, if applicable, less retention;
- any outstanding charges for non-contestable work and for other services provided by the Company from the time that the Agreement was entered into;
- any outstanding charges relating to the scheme from before the Agreement was entered into;
- any outstanding charges.

If service connections are to be installed by the SLO, the deposit shall be payable by the Developer or SLO at vesting.

## 8 DISPUTES

Actions to be taken in the event of a dispute between the Company and the Developer/SLO will be defined in the Agreement. Under the *Water Industry Act 1991*, Ofwat has powers to determine disputes<sup>5</sup>.

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<sup>5</sup> Ofwat, *Process for handling disputes and appeals: requisitioning of water mains and public sewers and/or lateral drains and adoption of self laid mains*, May 2004.

## 9 SITE SUPERVISION AND INSPECTION

The Company will supervise and inspect self-lay construction work to ensure that the specification is being complied with.

Charges for inspecting service pipes are set out in the Company's *Charges Scheme*, which is available on the Company's website.

## 10 SPECIFICATION

Procedures, design, construction, workmanship and materials for the self-laying of water mains and service pipes shall comply with the *Civil Engineering Specification for the Water Industry* (CESWI) supplemented by the Company-specific addendum in Appendix B.

Insofar as any additional clause in the addendum may conflict or be inconsistent with any provision of CESWI, the additional clause shall always prevail.

## **COMPANY SPECIFIC ADDENDUM TO THE CODE OF PRACTICE**

### **Note on clause numbering**

#### **Code of Practice**

Additional clauses in the addendum which relate to an existing clause in the Code of Practice are numbered as additional sub-clauses. Clauses which do not relate to an existing clause in the Code of Practice are new clauses numbered to follow the last existing clause of the appropriate section.

**APPENDIX A****PART 1 - GENERAL****1.5 COMPETENCE OF SELF-LAY ORGANISATIONS**

6. After 1 January 2006, any SLO wishing to be approved by the Company shall be registered on WIRS and shall have the appropriate accreditation. The accreditation shall cover all contestable activities that the SLO proposes to carry out.
7. The SLO will provide the Company and keep up to date details of any sub-contractors that it appoints for self-lay work including whether the sub-contractor has full WIRS accreditation in its own right or whether it operates under the SLOs own procedures.
8. The Company supports the *Water Industry Approved Plumbers Scheme* (WIAPS) and recommends that SLOs use plumbers and ground workers approved under the scheme.

**1.6 PROTECTION OF WATER QUALITY**

10. All work carried out on any potable water system or part thereof shall be treated as 'restricted operations'.
11. Any SLO personnel working on restricted operations shall have a valid National Water Hygiene Card.
12. Routine checks will be made on site personnel to establish their code of practice compliance. Any person found not in possession of a valid National Water Hygiene Card and who is engaged in any potable water activity will be instructed to cease contact with this system until such time that a card is issued to them.

**1.9 VESTING CERTIFICATE**

3. In addition to the criteria set out in sub-clause 2, issue of a Vesting Certificate shall be subject to the following:-
  - all backfilling to all mains, pipes and other equipment covered by the self-lay agreement has been completed to finished level;

**APPENDIX A**

- marker posts and plates have been installed to mark position of valves and other apparatus;
- as-built drawings submitted to the Company;
- specification has been complied with and all conditions met;
- a list of outstanding work to be completed by the SLO before the end of the Defects Liability Period has been agreed with the Company;
- where applicable, easements transferred for assets in private land;
- all Company's charges have been paid.

**1.10 DEFECTS LIABILITY PERIOD**

6. In addition to the criteria detailed in the foregoing sub-clauses, sign-off of the Defects Liability Period shall be subject to the following:-
  - all outstanding work agreed at the transfer of the water mains and the service connections has been completed to the satisfaction of the Company
  - all defects and damage coming to light since transfer of the water mains and the service connections have been completed to the satisfaction of the Company
  - all Company's charges have been paid.
10. The Defects Liability Period shall be twelve months from installation.

**1.11 FINANCES**

8. The Service Pipe Deposit shall be 25% of the Company's notional connection charges for the work due to be done by the SLO.
9. Service pipe deposits will be returned with interest, less fees where the Company undertakes remedial work.

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## PART 2 – SELF- LAY PROCEDURES

### 2.1 THE PROCEDURE

4. In addition to the information that the Developer/SLO is required to submit to the Company at the relevant application stage, the Developer/SLO shall also provide the following:-
- A statement of the contestable works that the SLO proposes to carry out including design, service pipe connections and installation of meters.
  - A statement agreeing to pay all costs incurred by the Company if the project is aborted for any reason before the Agreement is signed.
  - A CAD drawing of the site in a format that is compatible with the CAD software in use by the Company.

### Levels of Service

5. The following sets out the Company's conditions that are applicable to and shall be read in conjunction with Ofwats required levels of service as defined in Appendix 7 of the *Code of Practice for the Self Laying of Water Mains and Services*.

OFWAT SERVICE LEVEL	COMPANY CONDITIONS
1	None
2 (up to 500)	2
2 (greater than 500)	1,3
2a	2,3,4
2b	3,4
3	5
4	2
5	7,8
6	7
6a	7, 9, 10, 11, 12, 13
7	7, 9, 10, 11, 14
7a	None
8	7, 9
9	None

**APPENDIX A****Conditions**

1. Or if significant off-site design is required or if there are changes to the Developer/SLOs prior notifications or if specialist advice or investigation is required.
  2. Response time measured from receipt of all information.
  3. Response time could be longer subject to the requirement to seek fire authority approval.
  4. For not greater than 500 domestic properties.
  5. If there are significant changes in housing layout, number of houses, programme for development, point of connection etc, service level 2b applies.
  6. from approval of construction drawings and programme.
  7. from receipt of written notice.
  8. Not applicable if subject to completion of off-site mains or NRSWA requirements.
  9. Subject to specified criteria being satisfied.
  10. Providing that there are no NRSWA or Traffic Management Act requirements.
  11. Subject to receipt of payment for the connection a minimum of three months in advance of the requested date for the connection.
  12. Subject to the requested date for the connection being in accordance with the Table 6 programme or any subsequent revision that the Company has been advised of.
  13. Subject to receipt of as laid drawings.
  14. Subject to receipt of completed (signed) Self Lay Agreement.
  15. Some new development will impose a demand on the distribution system for which extensive study of options for off-site reinforcement of the system is required. In some cases, the target timescales will not be achieved. The timescale in such cases will have to be by discussion between the Company and SLO or Developer.
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6. If off-site reinforcement of the system is required, the Company will justify the need for it on request of the Developer/SLO.

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## 2.3 DESIGN AND APPLICATION

### 2.3.1 Design by Developer/SLO

8. The Company will advise the Developer/SLO of any fittings such as flow meters, pressure or flow control valves or additional sluice valves that the Developer/SLO shall incorporate into the design for operational purposes.
9. The Company shall be responsible for liaising with the local fire authorities and others for fire supplies and the location of fire hydrants. We will advise of any apparatus required for fire suppression to enable the developer/SLO to include in its design.
10. Requirements for property rights in all lands not comprising the public highway in which the self-lay works are to be constructed shall be as instructed by the Company specific to the application.

### Sizing of Mains

11. Adequate provision shall be made in the capacity of mains for future additional demand either due to future developments that the Developer is planning, or that the Company advises the Developer/SLO to allow for.
12. If required by the Company, the Developer/SLO shall provide a copy of its design calculations for mains sizes, thrust blocks, air valves and the like.

### Sizing of Services

13. The head loss through a communication pipe, including fittings, should not exceed 2 metres head of water at a flow of 9 litres/minute. If part of a communication pipe is common to two or more houses, the 2 metres maximum head loss criterion shall be satisfied for the following flow rates:-

Number of Houses	Flow Rate (Litres/min)
2	18
3	20
4	22
5	24

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### Service Connections

14. Metering for flats and multiple occupancy premises shall be arranged to comply with the Company's metering policy.

### Materials Selection

15. Pipes shall be butt-fusion jointed polyethylene or ductile iron with spigot and socket joints complying with the Specification. Electro fusion joints can be used when jointing coil. For contaminated land, pipes shall be ductile iron with appropriate protective wrapping or polyethylene pressure pipe with an aluminium barrier complying with the Specification.
16. Pipe size (and material depending on availability) for polyethylene pipe shall match the Company's preferred size range as follows:-  
  
PE80:- 25mm, 32mm, 63mm  
PE100:- 90mm, 125mm and 180mm

## 2.4 CONSTRUCTION STAGE

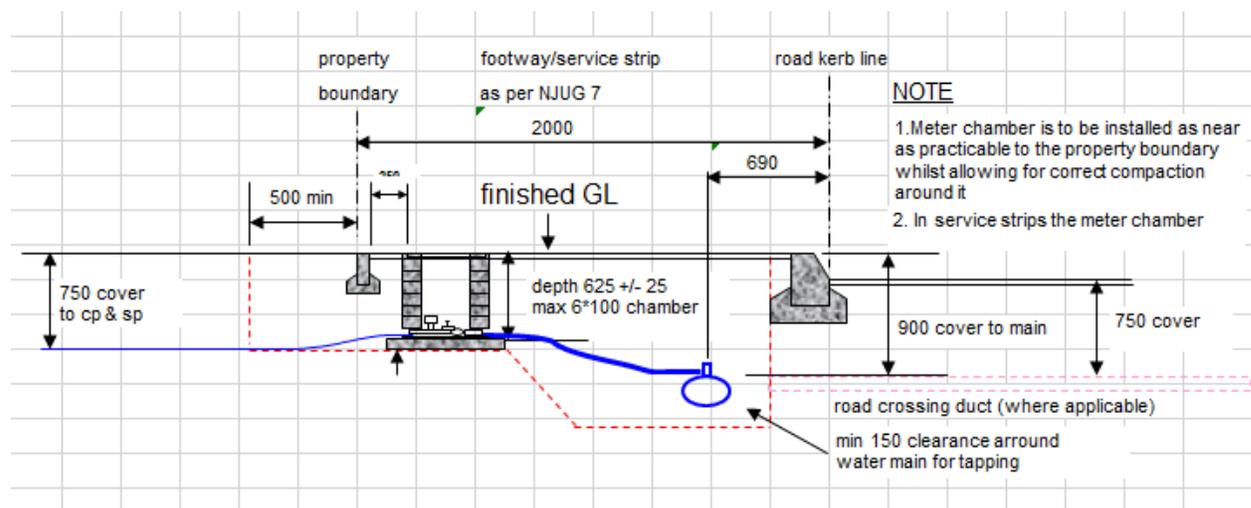
### 2.4.1 Notification of Start

4. Further to sub-clause 3, the Developer/SLO shall keep the Company updated about any changes to the overall programme or any of the dates of key activities listed. Being kept informed about programme and key dates in advance is a condition of the Company being able to achieve the response times for the levels of service set out in Appendix 7.

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### 2.4.4 Service Pipe Installation

8. On completion of the connection of each premises the developer/SLO shall leave the connection shut off until the water meter is fitted and the property that it supplies clearly identified.
9. Communication and service pipe shall be installed with 750mm cover and depths of meters shall be 625mm +/- 25mm.



### 2.4.5 General

1. Under no circumstances shall the Developer/SLO operate any valves, pumps, air vessels or other fittings without prior approval from the Company. The Company's staff shall operate such equipment.
2. The Company shall be responsible for operating valves for the isolation of mains, and for draining down, charging up and flushing out mains in connection with all self-lay work.
3. The Developer/SLO shall comply with the guidance on the use of temporary earth safety loops as given in the *Code of Practice on Electrical Earthing 1991* by WRc for WSA and WCA, or any subsequent revision.
4. The Developer/SLO shall take all necessary precautions to prevent blockages occurring in service pipes and internal pipework. The Developer/SLO shall be responsible for clearing blockages to ferrules, communication pipes, stop taps, meters, customers' supply

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and internal pipework and appliances following his operations on the mains and service pipes supplying the premises. The Developer/SLO shall take immediate steps to clear any blockages using a qualified plumber as necessary.

5. Where any reinstatement carried out by the Developer/SLO is declared by the Highway Authority to have failed to meet the Performance Requirements laid down in the *New Roads and Street Works Act 1991*, the Developer/SLO shall immediately rectify the faults. If the defects result in the guarantee period starting again, the Developer/SLO shall be held liable for the period of the new guarantee.

**Meter Boxes**

6. The boundary box shall be installed outside the property it serves, as close to the boundary of the property as practicable, and preferably to one side of the driveway entrance.
7. Provision for the installation of revenue meters shall be such that they are installed externally, in accordance with the Company's policy.

**Data Capture/As Constructed Drawings**

8. The Developer/SLO shall maintain on site accurate records of services and apparatus of others and ground conditions encountered in the course of the Developer/SLO work. Changes in arrangement or detail from the design drawings, for whatever reason, shall be recorded. The information shall be submitted to the Company in a format approved by the Company.

**Installation of meters with remote meter readers**

9. No water shall be supplied to a new property until a remote meter has been installed.
10. Before any meter is installed, backfilling to the service pipe including the boundary box shall be completed up to finished level.
11. For meters installed by the SLO, meter fixed card shall be submitted to and received by the Company within 48 hours of the installation. The details to be provided on the meter fixed card shall include the following:-

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- customer's name
  - full postal address including post code
  - date of occupation
  - any other information necessary to identify the property supplied by the connection
  - description of meter location
  - meter serial number, type, size and make
  - initial meter reading
  - name of installer and date of meter installation.
12. If for any reason a meter is installed before the name of the customer is known, the Developer will be deemed to be the customer and will be liable for water bills until the Company is notified of the name of the customer occupying the property.
13. If the Company is to install the meter where the communication pipe has been installed by the SLO, the Company will only install it if full details of the customer and the address to which water bills are to be directed are immediately available.
14. Where it is established that a customer has been billed for consumption registered on a meter that is subsequently found not to supply the property that the SLO has indicated, the Developer/SLO will be liable for the charges for all consumption up to the date the supply details have been rectified by the Company.

## **COMPANY SPECIFIC ADDENDUM TO THE CIVIL ENGINEERING SPECIFICATION FOR THE WATER INDUSTRY (CESWI)**

### **Note on clause numbering**

Additional clauses in this addendum which relate to an existing clause in the CESWI are numbered as additional CESWI sub-clauses. Clauses which do not relate to an existing clause in CESWI are new clauses numbered to follow the last existing clause of the appropriate section.

**APPENDIX B****SECTION 2****MATERIALS****2.36 Ductile Iron Pipes and Fittings**

10. The standard joint system to be used shall be either Tyton spigot and socket (until it is phased out) or Rapid spigot and socket, both with the appropriate elastometric sealing rings to BS EN 681-1. Flanged joints rated and drilled in accordance with BS 4504 Part 1 NP16 to metric sizes with bolts, gland and gasket shall also be specified for appropriate situations.
11. The standard protection pipes shall be cement mortar lining internally with a seal coat according to BS EN 545 (System XL or equivalent). Externally, protection shall be a zinc-aluminium coating (at minimum mass of 400g/m<sup>2</sup>) with a blue epoxy coating or, as an alternative, pipe shall be wrapped with polyethylene sleeving conforming to BS 6076. Where required due to aggressive ground conditions, pipe shall be provided with additional protection as approved in writing by the Company.

**2.48 Gaskets for Flanged Joints**

4. Gaskets for flanged pipe joints shall be 'double lugged' inside-bolt-circle type for pipes less than 300mm diameter and full face type for pipes 300mm or more in diameter.

**2.60 Hydrants**

8. Hydrants shall comply with the following specification:-
  - 80mm Euro Type 2
  - GM Screwed Outlet
  - 80mm flange to NP16/universal flange
  - stainless steel spindle
  - fixed stopper - flat type seat for swabbing
  - epoxy coated internally and externally to WIS specification
  - automatic frost plug
  - flange protector supplied as standard.

**APPENDIX B****2.77 Mechanical Couplings for Pipelines and Fittings**

6. Gaskets and joint seals shall comply with the requirements of Clause 2.48
7. For dedicated couplings and flange adaptors manufactured for a specific pipe material and size, the pressure rating shall be that of the maximum operating pressure of the pipe or its integral jointing system, whichever is the lesser. For wide tolerance couplings and flange adaptors designed to adapt to a range of pipes and materials/sizes, the pressure rating shall be a minimum of 16 bar.
8. The couplings shall be of quick fit design (i.e. can be fitted without dis-assembly with captive bolts) and rated for a working pressure of 16 bar.
9. Couplings shall be capable of allowing angular deflection to accommodate:-
  - pipe misalignment or lateral displacement
  - ground settlement
  - laying pipes to a radius
  - expansion.

**2.84 Nuts, Screws, Washers and Bolts**

7. Nuts, bolts and washers shall be corrosion resistant coated to WIS 4-52-03.

**2.88 Pipe Surround**

2. Pipe surround material shall be sand, or gravels or crushed rock graded down to sand size, with 10mm maximum particle size and conforming to BS 882.

**2.95 Polythene Pipes and Fittings**

5. Polyethylene barrier pipe for mains and services in contaminated land shall comply with WIS4-32-19. Any approvals must cover the entire barrier pipe system (i.e. the pipe, fittings, and tapping ferrules/straps where appropriate/necessary).

**2.122 Surface Boxes and Guards**

11. All materials and components must comply with DWI Reg 31 (2000).

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12. Surface boxes and lids for valves shall comply with the following specification:-
  - heavy duty single hinged lid
  - size 150 x 150 x 100 for sluice valves, badged "SV"
  - size 380 x 230 x 125 for sluice valves ("SV"), fire hydrants ("FH"), washouts ("WO") and air valves ("AV")
  - black bitumen coated ductile iron
  - wide flange pattern.
13. Meter boxes (boundary boxes), single or double, shall have inlet and outlet 25mm MDPE “push home” joints for each meter port. From January 2016, inlet and outlets will need to be 32mm in size due to the introduction of domestic fire sprinklers. This condition only applies to properties in Wales.
14. Manifold boxes (multi meter boxes) shall have a maximum of 6 ports per box. Inlets shall have a single 63mm MDPE “push home” inlet joint capable of being adapted to 50mm or 32mm. Outlets shall have 25mm MDPE “push home” joints for each port.
15. For contaminated ground, meter boundary boxes shall have manifolds in gunmetal with inlets and outlets in ¾” BSP female iron adaptor.
16. Boundary boxes Class 1 (watertight) and Class 2 (non-watertight) are both acceptable.
17. Boundary box chamber assemblies, lids and manifolds can be purchased from the Company’s stores at Packsaddle only by prior arrangement in writing.

**2.128 Valves and Penstocks**

5. Sluice valves shall comply with the following specification for valves up to and including 300mm diameter:-
  - NP16 flanges
  - resilient seat
  - stem in stainless steel to BS EN 10088
  - external and internal coating to WIS 4-52-01 A/B
  - false tops/stem caps to BS 5163 secured with set screw

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- clockwise to open
- 16 bar rated.

**2.132 Water**

2. All water used for testing shall be of potable quality and obtained from the Company's supply.
3. Should it be necessary for the Company to introduce a hosepipe ban due to a water shortage or drought, the Developer/SLO shall take appropriate steps to reduce the amount of water being used.

**2.142 Meters**

1. Itron Aquadis + Composite 15mm screw-in Class D domestic meter is compliant with MID-Directive 2004/22/EC, European Standard EN14154-2005 for water meters.
2. The Itron Aquadis+ Composite comes complete with pulse wired Cyble HRF G2 transmitter to enable remote reading.
3. The RMR meters are available to be purchased and collected from the Company's Stores at cost price by prior arrangement.
4. Where required meters can be purchased directly from the approved supplier, details can be obtained from the Company
5. The meters shall fit into all standard water industry meter boundary boxes.
6. All materials and components must comply with DWI Reg 31 where appropriate.
7. A specification for larger meters can be obtained upon application to the Company

**APPENDIX B****SECTION 3****EXCAVATION BACKFILLING AND RESTORATION****3.1 Excavation**

9. Excavations shall be protected from, as far as reasonably practicable, from the ingress of water and water running into them shall be drained or pumped to an approved disposal point.
10. For mainlaying works the trench width shall be the minimum practical to carry out the work in a safe and workmanlike manner.
11. If, after excavating, it is found that any part of the formation is unsuitable to provide a satisfactory foundation, such portion shall be further excavated and refilled to original formation level with mass concrete or granular material as directed by the Company.
12. Where the base of the trench excavation is in rock, a further 150mm of rock shall be excavated below the intended bedding line for the pipe barrel and this excavation shall be refilled with pipe surround material or with concrete as agreed with the Company.

**APPENDIX B****SECTION 5****CONSTRUCTION OF PIPELINES AND ANCILLARY WORKS****5.1 Pipelaying generally**

7. Pipelines crossing watercourses shall, unless otherwise agreed, be laid beneath the watercourse. The pipeline shall be laid in duct and protected with either a 150mm minimum thickness in situ concrete surround or precast concrete slabs over. The top of the protection shall be at least 300mm below the true cleaned bottom of the watercourse.
8. To ensure that the minimum cover from finished ground level to pipes and other apparatus is achieved and not exceeded, excavation for pipelaying shall be carried out after kerb races have been installed. If finished ground levels are to be altered for any reason, landscaping for example, the depth of excavation shall be adjusted accordingly by use of profile boards.
9. The Developer/SLO shall indemnify the Company against all claims connected to any pollution incident relating to or occurring as a consequence of the Developer/SLO work. This indemnity includes prosecution by the Environment Agency.

**5.2 Pipe Bedding**

2. No hard support blocks shall be used, or left in place if used as temporary supports to pipes.

**5.6 Thrust Blocks**

6. The Developer/SLO shall be responsible for the design of thrust restraint for temporary works and temporary arrangements of pipework for whatever reason.

**5.7 Pipe Jointing Generally**

5. For ductile iron pipes and fittings in accordance with Clause 2.36 with Sheraplex-coated nuts, bolts and washers in accordance with Clause 2.84, additional external protection at pipe joints and fittings will not generally be required. At other joints where, in the opinion of the Company or as recommended by the manufacturer, additional external protection is required, it shall be completed by the use of plastic muffs or moulding putty

**APPENDIX B**

and tape wrapping, as appropriate to the factory applied protection system on the pipes supplied. Bolted joints shall be cleaned, primed and wrapped by a petrolatum blanket. All protection shall be applied in accordance with the manufacturer's instructions.

6. Notwithstanding Sub-clause 3, the deflection at any joint shall not exceed 50% of the maximum value for the size and type of joint as specified by the manufacturer. The maximum penetration of a spigot into a socket shall not exceed the manufacturer's recommendation less 10mm. The minimum penetration of a spigot into a socket shall exceed the manufacturer's recommendation by 10mm.
7. After installation, each bolt shall show between one and five threads past the nut.

**5.8 Welded Joints in Polyethylene Pipes**

4. Where not otherwise specified, all PE pipes shall be jointed using butt-fusion jointing. For closing lengths and where indicated on the Drawings electrofusion couplings shall be used.

**APPENDIX B****SECTION 7****TESTING AND DISINFECTION****7.9 Testing of Ductile Iron, PVC, GRP and Steel Pressure Pipelines**

6. On completion of mainlaying and sectional testing and before leaving the site, the whole pipeline shall be subjected to an overall comprehensive pressure test.
7. Test pressure shall be as specified by the Company.
8. If a pressure pipeline fails to pass the pressure test for any reason, the Developer/SLO shall uncover, repair, retest and reinstate until it shall have passed the pressure test.
9. Results of each pressure test carried out by the Developer/SLO shall be passed to the Company immediately after the test, regardless of whether the test was successful or not.

**7.11 Swabbing of Water Mains**

3. The insertion of swabs is to be done under the supervision of the Company with a unique marking to be embossed onto the swab so that its ultimate recovery can be verified.
4. All attendance on site by Company personnel shall be subject to at least 48 hours advance written notification.
5. Swabs shall only be used once and then disposed of appropriately.

## APPENDIX C

## WORKED EXAMPLE OF CALCULATION FOR ASSET VALUE

Input data				Total scheme					
<b>Please note, these figures are examples only</b>									
TOTAL No OF PROPERTIES =				114					
Total scheme cost				£98,000					
BORROWING INTEREST RATE =		PER ANNUM		6.75%					
DISCOUNT RATE=		PER ANNUM		5.00%					
REPAYMENT PERIOD		YEARS		12					
OCCUPATION PROFILE		YEARS		4					
FIRST CHARGING YEAR =				2007					
ANNUAL COST OF CAPITAL		ANNUITY TABLE		£12,175					
ANNUAL WATER REVENUE PER PROP =		PER ANNUM		£96.00					
DEVELOPMENT OCCUPANCY				97%					
ANTICIPATED RPI GROWTH ON INCOME				3.0%					
		CALCULATED OCCUPANCY	CUMULATIVE OCCUPANCY OF PROPERTIES	PROJECTED FUTURE REVENUE	ANNUAL REPAYMENTS OF THE LOAN	PROJECTED RELEVANT DEFICIT	INCOME ALLOWANCE	COMMUTED SUM	ASSET PAYMENT
				£	£	£	£	£	£
<u>YEAR</u>					12,175				
				inflated	annuity table			NPV	NPV
YEAR +	1	28	28	2,655	12,175	9,519	2,655	9,066	2,529
YEAR +	2	28	55	5,470	12,175	6,704	5,470	6,081	4,962
YEAR +	3	28	83	8,451	12,175	3,723	8,451	3,216	7,301
YEAR +	4	28	111	11,607	12,175	568	11,607	467	9,549
YEAR +	5	0	111	11,955	12,175	220	11,955	172	9,367
YEAR +	6	0	111	12,313	12,175	0	12,175	0	9,085
YEAR +	7	0	111	12,683	12,175	0	12,175	0	8,652
YEAR +	8	0	111	13,063	12,175	0	12,175	0	8,240
YEAR +	9	0	111	13,455	12,175	0	12,175	0	7,848
YEAR +	10	0	111	13,859	12,175	0	12,175	0	7,474
YEAR +	11	0	111	14,275	12,175	0	12,175	0	7,118
YEAR +	12	0	111	14,703	12,175	0	12,175	0	6,779
TOTALS		111		£134,489	£146,094	£20,734	£125,360	£19,003	£88,903