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BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

Polypipe Civils Ltd
Union Works
Bishop Meadow Road
Loughborough
Leicestershire LE11 5RE
Tel: 01509 615100 Fax: 01509 610215
website: www.polypipecivils.co.uk

Agrément Certificate No 00/3746
*Second issue**

Designated by Government to issue European Technical Approvals

ECO-VAT RAINWATER HARVESTING SYSTEM

Système de moissonage de l'eau de pluie
Regenwasser Erntesystem

Product

Above ground installation

Below ground installation

- *THIS CERTIFICATE RELATES TO THE ECO-VAT RAINWATER HARVESTING SYSTEM, CONSISTING OF STORAGE TANK, PUMP UNITS, FILTERS, ELECTRICAL CONTROL BOX AND PIPE CONNECTIONS.*
- *The tank is available in a range of sizes.*
- *The product is suitable for use where a supply of non-potable water is required.*
- *This Certificate does not cover the end use of the harvested water.*

These Front Sheets must be read in conjunction with the accompanying Detail Sheets, which provide specific details of the product.

Regulations — Detail Sheet 1

1 The Building Regulations 2000 (as amended) (England and Wales)

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System is not subject to these Regulations.

2 The Building Standards (Scotland) Regulations 1990 (as amended)

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System is not subject to these Regulations.

3 The Building Regulations (Northern Ireland) 2000

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System, is not subject to these Regulations.

4 Construction (Design and Management) Regulations 1994 (as amended)
Construction (Design and Management) Regulations (Northern Ireland) 1995 (as amended)

Information in this Certificate may assist the client, planning supervisor, designer and contractors to address their obligations under these Regulations.

See sections: 2 *Delivery and site handling* and 7 *Installation* (7.1 to 7.4) of Detail Sheet 2 and 2 *Delivery and site handling* (2.1) and 8 *Installation* (8.1, 8.3 to 8.5, 8.7 and 8.8, 8.16 and 8.17) of Detail Sheet 3.

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5 Water Supply (Water fittings) Regulations 1999 England and Wales, Water Bylaws 2000, Scotland and the Water Regulations, Northern Ireland

England and Wales

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System satisfies the requirements of the Regulations, if used and installed in accordance with this Certificate.

Scotland

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System satisfies the requirements of the Water Byelaws, if used and installed in accordance with this Certificate.

Northern Ireland

In the opinion of the BBA, the Eco-Vat Rainwater Harvesting System satisfies the requirements of the Water Regulations, if used and installed in accordance with this Certificate.

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6 The Electrical Equipment (Safety) Regulations 1994 and the Electromagnetic Compatibility Regulations 1994

These Regulations implement the Low Voltage Directive 73/23/EEC (as amended by the CE Marking Directive 93/68/EEC) and the Electromagnetic Compatibility Directive 89/336/EEC and require manufacturers to carry out assessment of their products against the criteria given in the Directives. Declarations of Conformity have been provided by Polypipe Civils Ltd. The BBA has not assessed the product for compliance with these Directives.

Conditions of Certification

7 Conditions

7.1 This Certificate:

(a) relates only to the product that is described, installed, used and maintained as set out in this Certificate;

(b) is granted only to the company, firm or person identified on the front cover — no other company, firm or person may hold or claim any entitlement to this Certificate;

(c) is valid only within the UK;

(d) has to be read, considered and used as a whole document — it may be misleading and will be incomplete to be selective;

(e) is copyright of the BBA;

(f) is subject to English law.

7.2 References in this Certificate to any Act of Parliament, Regulation made thereunder, Directive or Regulation of the European Union, Statutory Instrument, Code of Practice, British Standard, manufacturers' instructions or similar publication, are references to such publication in the form in which it was current at the date of this Certificate.

7.3 This Certificate will remain valid for an unlimited period provided that the product and the manufacture and/or fabrication including all related and relevant processes thereof:

(a) are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA;

(b) continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine; and

(c) are reviewed by the BBA as and when it considers appropriate.

7.4 In granting this Certificate, the BBA is not responsible for:

(a) the presence or absence of any patent or similar rights subsisting in the product or any other product;

(b) the right of the Certificate holder to market, supply, install or maintain the product; and

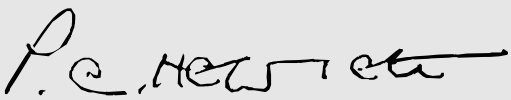
(c) the nature or standard of individual installations of the product or any maintenance thereto, including methods and workmanship.

7.5 Any recommendations relating to the use or installation of this product which are contained or referred to in this Certificate are the minimum standards required to be met when the product is used. They do not purport in any way to restate the requirements of the Health & Safety at Work etc Act 1974, or of any other statutory, common law or other duty which may exist at the date of this Certificate or in the future; nor is conformity with such recommendations to be taken as satisfying the requirements of the 1974 Act or of any present or future statutory, common law or other duty of care. In granting this Certificate, the BBA does not accept responsibility to any person or body for any loss or damage, including personal injury, arising as a direct or indirect result of the installation and use of this product.

BBA BRITISH BOARD OF AGRÉMENT
TECHNICAL APPROVALS FOR CONSTRUCTION

In the opinion of the British Board of Agrément, the Eco-Vat Rainwater Harvesting System is fit for its intended use provided it is installed, used and maintained as set out in this Certificate. Certificate No 00/3746 is accordingly awarded to Polypipe Civils Ltd.

On behalf of the British Board of Agrément



Date of Second issue: 3rd December 2003

Chief Executive

**Original Certificate issued on 30th March 2001. This amended version includes reference to the revised national Building Regulations, the addition of CDM Regulations, new* Conditions of Certification *and change of format to Detail Sheet style.*

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
website: www.bbacerts.co.uk

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TECHNICAL APPROVALS FOR CONSTRUCTION

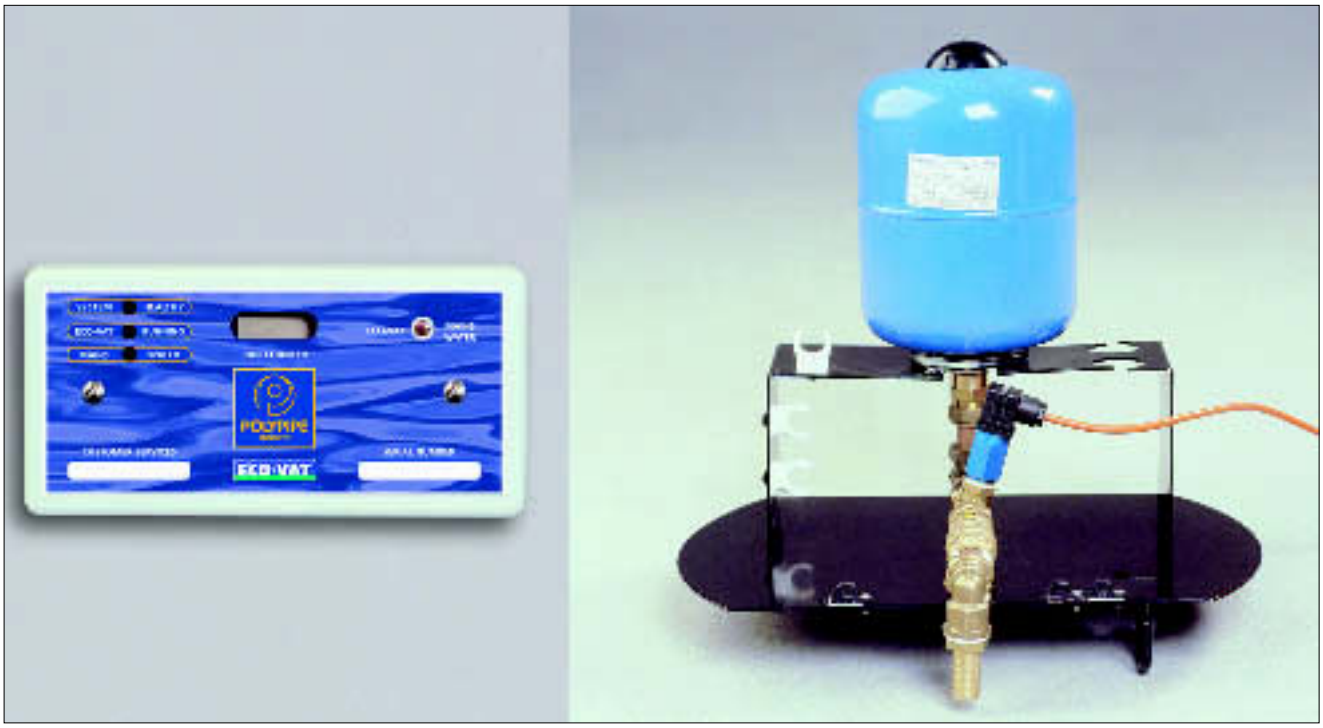
Polypipe Civils Ltd

Certificate No 00/3746

DETAIL SHEET 2

ECO-VAT RAINWATER HARVESTING SYSTEM

Product



- *THIS DETAIL SHEET RELATES TO THE ECO-VAT RAINWATER HARVESTING SYSTEM.*
- *The product is suitable for use where a supply of non-potable water is required.*
- *With additional filters, a higher quality of water is achievable. Contact the Certificate holder for more details.*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and Conditions of Certification.

Technical Specification

1 Description

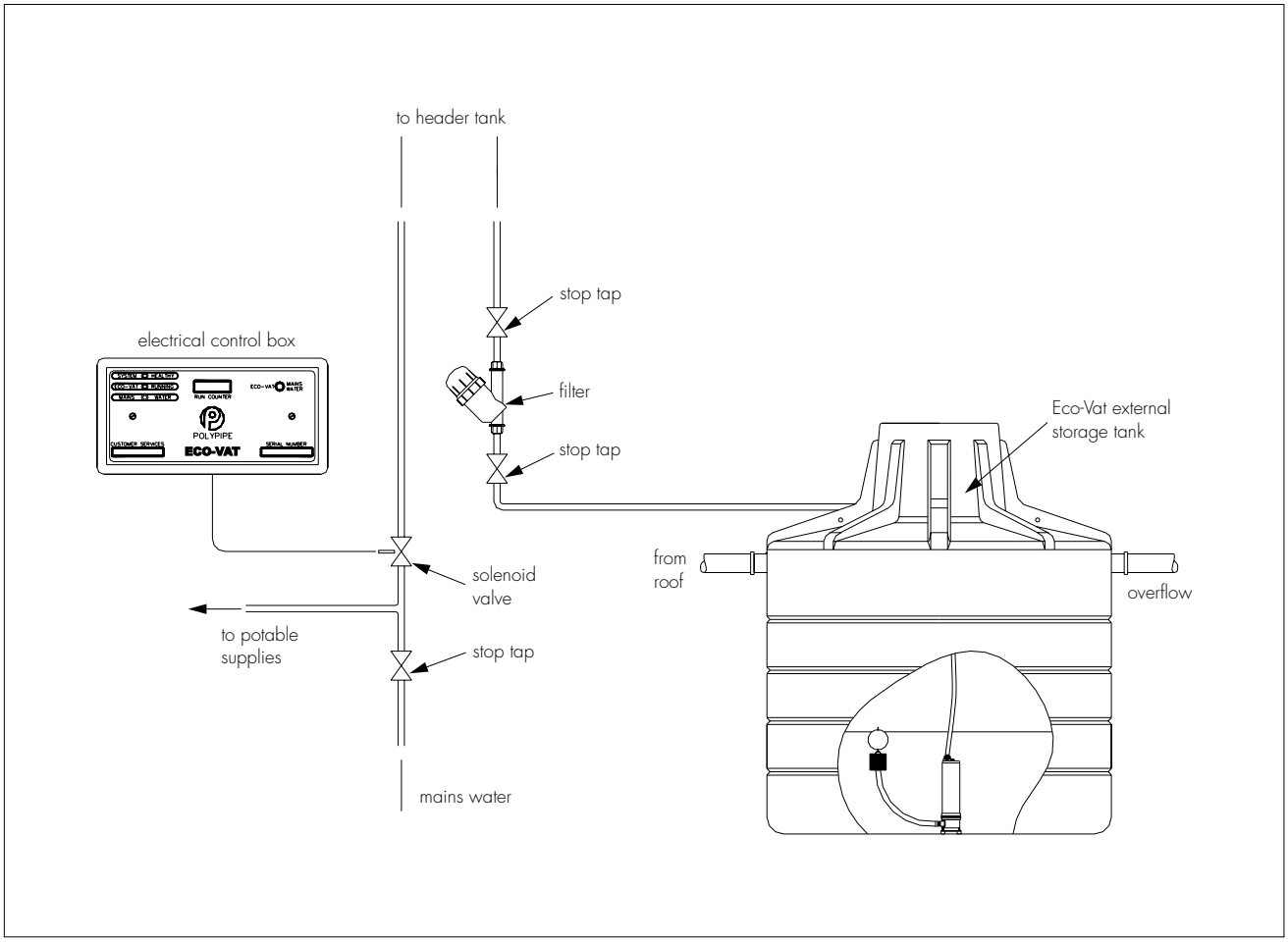
1.1 The Eco-Vat Rainwater Harvesting System consists of:

- storage tank, or tanks
- well-head service plate assembly
- submersible pump
- filter
- electrical control box
- ancillary items.

1.2 The tank receives rainwater in the 110 mm inlet connection. Water from the tank is pumped via a filter system for use as a non-potable supply of water. Excess water is discharged via the 110 mm tank outlet to the surface water drainage system. The plumbing layout for a typical installation is shown diagrammatically in Figure 1.

1.3 Details of the Eco-Vat Tanks are given in Detail Sheet 3.

Figure 1 Typical plumbing installation layout



1.4 The well-head service plate (see Figure 2) incorporates:

- tank coupler connector
- non-return valve
- stainless steel pump with 230 micron filter
- rot-proof lift cord
- pressure switch
- expansion vessel
- float switches.

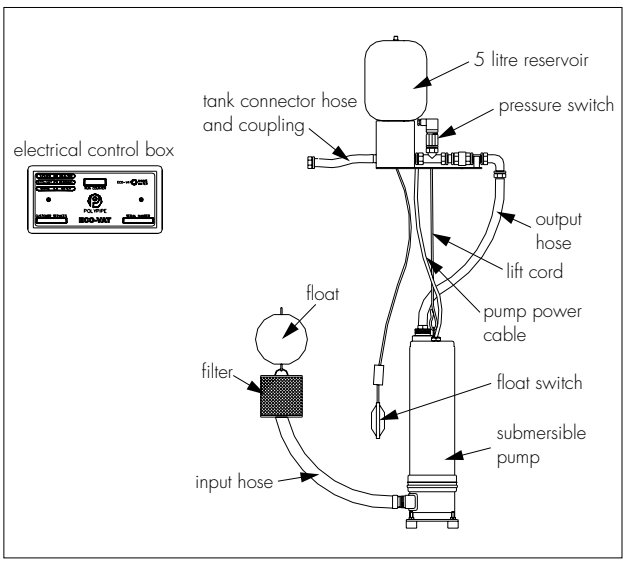
1.5 The system is remotely controlled from an electrical panel which has the following:

- status indicator
- mains water light
- run counter
- manual overide.

1.6 The supply pipe is copper pipe and connects directly to the tank connector. Final filtration is via a 130 micron in-line filter.

1.7 The system has a lockable, pedestrian duty composite, or cast-iron manhole cover, to enclose the well-head plate.

Figure 2 Well-head service plate



2 Delivery and site handling

The well-head service plate and control panel are pre-assembled and packed. They must be handled with care and should be stored in a safe area until ready for installation, so as not to get damaged by site traffic.

Design Data

3 General

3.1 The Eco-Vat Rainwater Harvesting System is suitable for the storage and reuse of rainwater. The BBA has not assessed the suitability of the water for any end use, this is site-dependent and should be discussed with the manufacturer prior to installation.

3.2 If any connection is made to the mains water supply, the correct level of backflow prevention must be adhered to. The Water Supply (fittings) Regulations 1999 give details of these requirements. Use of WRc listed products is recommended for backflow prevention and water header tanks. Guidance on installing and marking recycled water can be obtained from the Water Regulation Advisory Scheme (WRAS) under documents 9-02-04 and 9-02-05.

4 Strength

The system components, connections and cable, when installed in accordance with the Certificate and manufacturer's instructions, will withstand site handling, but care must be taken to avoid striking the components against hard, sharp objects.

5 Watertightness

Connections between the well-head and pipework, when made correctly, will be watertight. Wire connections use plugs approved to BS EN 60529 : 1992 IP65.

6 Cleaning and maintenance

Details of cleaning and maintenance are given in Table 1. The responsibility for the costs of cleaning and maintainance are the customers.

Table 1 Cleaning and maintenance

Component	Timescale	Maintained by
Expansion vessel on well-head	two years	Polypipe Civils (Service Team)
Floating filter	two years	Polypipe Civils (Service Team)
In-line filter	every six months	owner

Installation

7 System connections

Drainage connection

7.1 The 110 mm diameter connection from the collection area to the tank should be via trapped gullies and adaptors, not open grates, to reduce contaminants from the ground level. The outlet pipe should be taken to the surface water drain or soakaway via a 'U' trap to prevent odour from entering the Eco-Vat system. Where a surface drain is not available and the ground is unsuitable for a soakaway an optional pumped overflow may be fitted.

Underground water pipework

7.2 The tank connector is suitable for 25 mm MDPE water-service pipe. The pipework should be laid in a trench a minimum of 450 mm deep to protect against the effect of frost. Any water requirements should be taken from this 25 mm supply.

Electrical connection

7.3 To be completed according to the *Eco-Vat Instruction Manual* by a suitably-qualified electrician. A 40 mm diameter duct is laid from the building to the tank in the same trench as the water supply pipe. The duct is inserted into the 40 mm diameter hole provided in the side of the tank. The duct should terminate inside the building.

Internal plumbing

7.4 All internal plumbing components within the building structure must comply with the Water Regulations. Requirements for WRc listed non-return valves and type A protection level devices must be assessed for each installation. Advice from the manufacturer is available. All pipework must be labelled or marked to show that it contains recycled or reclaimed water and that it is not suitable for drinking (marker tape is supplied by the Certificate holder). WRAS document 9-02-05 gives guidance on marking.

Technical Investigations

The following is a summary of the technical investigations carried out on the Eco-Vat Rainwater Harvesting System.

8 Tests

Tests were carried out on the tank and connections to determine:

- joint integrity
- endurance testing of the control equipment
- filtration of solids.

9 Investigations

9.1 The manufacturing process was examined including the method adopted for quality control, and details obtained on the quality and composition of the material used.

9.2 An assessment of the system was made in relation to:

- water hygiene
- material properties
- resistance to chemicals
- pump performance
- system efficiency including filtration.

9.3 A user survey was carried out to assess the installation and 'in use' reports of Eco-Vat systems.

9.4 Site visits were made to assess the practicability and ease of installation and connection.

Bibliography

BS EN 60529 : 1992 *Specification for degrees of protection provided by enclosures (IP code)*

BBA BRITISH BOARD OF AGRÉMENT
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On behalf of the British Board of Agrément

Date of issue: 3rd December 2003

Chief Executive

British Board of Agrément
P O Box No 195, Bucknalls Lane
Garston, Watford, Herts WD25 9BA
Fax: 01923 665301

e-mail: mail@bba.star.co.uk
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BBA BRITISH BOARD OF AGRÉMENT
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Polypipe Civils Ltd

ECO-VAT RAINWATER ROTATIONALLY MOULDED POLYETHYLENE TANK

Certificate No 00/3746

DETAIL SHEET 3

Product

- *THIS DETAIL SHEET RELATES TO THE ECO-VAT RAINWATER ROTATIONALLY MOULDED POLYETHYLENE TANK.*
- *The tank is available in sizes of 3000 litre and 5000 litre.*

This Detail Sheet must be read in conjunction with the Front Sheets, which give the product's position regarding the Building Regulations and Conditions of Certification.

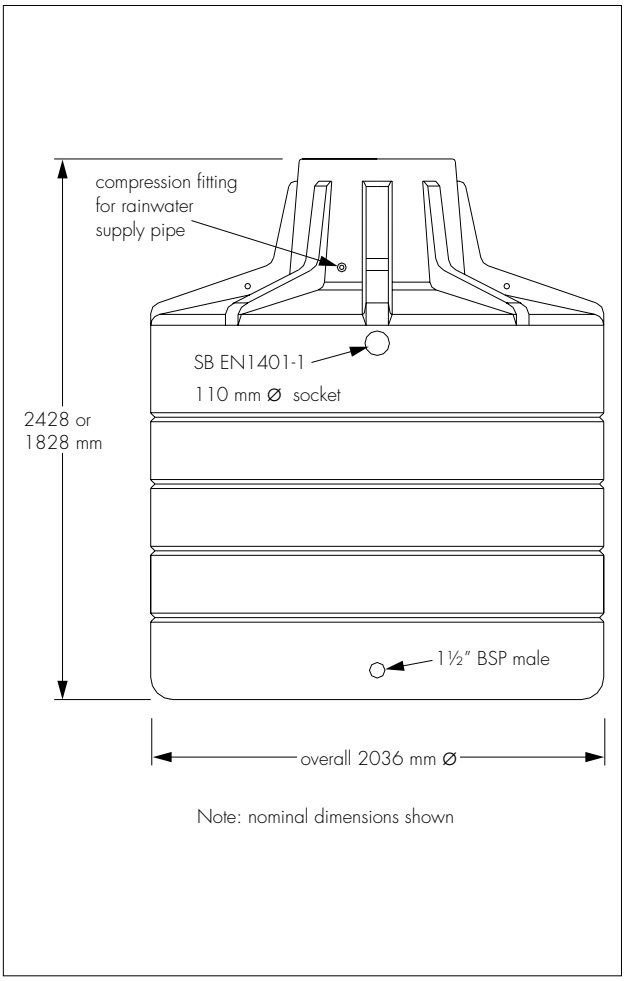
Technical Specification

1 Description

1.1 The Eco-Vat Rainwater Rotationally Moulded Polyethylene Tank (see Figure 1) is rotationally moulded and supplied in a variety of colours, typically blue, black, red, orange, green and yellow. The tank can be used on its own or in series with other Eco-Vat tanks. 1½" BSP connectors are fitted to the lower section of the tank for the connection of balancing pipes in multi-tank applications.

1.2 The top inlet and outlet connections of the system are designed to connect to 110 mm diameter underground drainage pipe to BS EN 1401-1 : 1998. A stainless steel vermin guard is placed on the 110 mm outlet. The two 1½" BSP threaded connectors are fitted to the lower section of the tank for use as inlet or outlet connections as required.

Figure 1 Eco-Vat Rainwater Tank



2 Delivery and site handling

2.1 The tank must be handled with care to avoid damage and should be moved and sited using only the lifting points provided on the tank. The tank must not be rolled into position and should be stored upright on level ground.

2.2 Each tank bears the manufacturer's name, pipe position labels and the BBA identification label incorporating the number of this Certificate.

Design Data

3 General

3.1 The Eco-Vat Rainwater Harvesting System is suitable for the storage and reuse of rainwater. The BBA has not assessed the suitability of the water for any end use, this is site-dependent and should be discussed with the manufacturer prior to installation.

3.2 If any connection is made to the mains water supply, the correct level of backflow prevention must be adhered to. The Water Supply (fittings) Regulations 1999 give details of these requirements. Use of WRc listed products is recommended for backflow prevention and water header tanks. Guidance on installing and marking recycled water can be obtained from the Water Regulation Advisory Scheme (WRAS) under documents 9-02-04 and 9-02-05.

4 Strength

The tank has adequate strength for use when installed in accordance with this Certificate. The tank has adequate resistance to withstand impacts during handling, but care must be taken to avoid striking the tank against hard, sharp objects.

5 Resistance to chemicals

The tank is resistant to chemicals found in rainwater and uncontaminated groundwater.

6 Watertightness

When installed correctly, the tank will not permit seepage either into or from the surrounding soil. Correctly-made joints between pipes and the tank will be watertight.

7 Durability

The structural properties of polyethylene, from which the tank is made, will deteriorate with time and this has been taken into account in the manufacturer's Design Code. In the opinion of the BBA, the tank, when used in accordance with this Certificate, will have a life in excess of 50 years when buried. When installed above ground the life expectancy will be significantly less.

Installation

8 Procedure

8.1 The system can be installed above or below ground. Either installation must be in accordance with the Certificate holder's installation instructions and the contents of this Certificate.

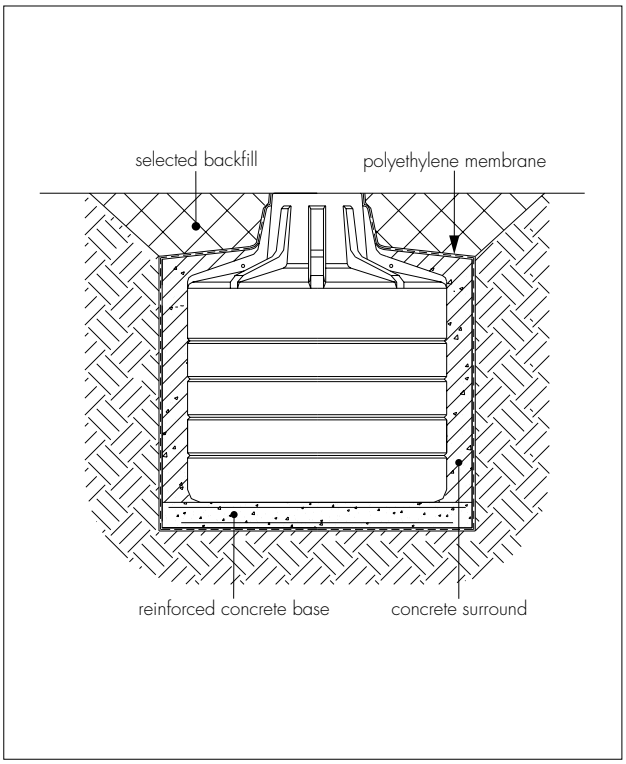
Above-ground installation

8.2 For an above-ground installation, the tanks should be positioned on a flat, soft sand or pea gravel base and the base should be surrounded by a low bund wall approximately 250 mm high. It is recommended that external tape heating should be put around the external outlet pipe from the tank and any exposed pipes should be kept as short as possible.

Below-ground installation

8.3 The system (see Figure 2), should be installed only in areas without vehicular access, with soft landscaping or with pedestrian loading only. Installations in areas, which contain greater loads, either from installation depth or from vehicular traffic, must be designed by a suitably-qualified structural engineer.

Figure 2 Typical installation details



8.4 Installation of the tank should be programmed to commence at the foundation stage of the work to ensure that the surface water drainage pipework matches the invert level of the inlet to the tank.

8.5 Where the Eco-Vat tank is constructed below ground and the excavation lies within a zone of influence of the foundation of a building, guidance should be sought from the Building Regulation Control authorities.

8.6 An oversized hole is excavated, square shape in plan with sides 2.5 m in length plus additional dimensions for any temporary works requirements. The excavation must be kept free from water.

8.7 The ground-bearing capacity at the formation level must be sufficient to resist the operational loading applied from the tank. A suitably-qualified engineer should be consulted if in doubt.

8.8 A 0.4 mm thick polyethylene membrane is installed, suitably lapped where joints are required. The membrane can be installed against excavated surfaces, if stable, or to framework.

8.9 The C30 concrete base slab, 200 mm thick, is cast, reinforced with two layers of A393 mesh reinforcement (one layer in top, and one layer in bottom with 50 mm cover).

8.10 When the base has achieved an initial set, the tank is placed in position, it must be vertical, and all pipework must line up. The tank is then filled with water.

8.11 Where pipework passes through the membrane, the membrane must be sealed with waterproof tape.

8.12 When the base slab has set, the lean mix concrete surround and shoulder should be formed in layers not exceeding 200 mm.

8.13 The membrane is folded onto the concrete shoulder and up the sides of the turret to ground level, and is taped to the funnel at ground level.

8.14 Duct and service pipes to the turret are installed using:

- electric duct — WP36 Polypipe waste tank connector
- pumping main — Polypipe 42525 25 mm by ¾" BSP tank connector.

Technical Investigations

The following is a summary of the technical investigations carried out on the Eco-Vat Rainwater Rotationally Moulded Polyethylene Tank.

9 Tests

Tests were carried out on the tank and connections to determine:

- dimensional accuracy
- resistance to loading of the tank.

10 Investigations

10.1 The manufacturing process was examined including the method adopted for quality control, and details obtained on the quality and composition of the material used.

10.2 An assessment was made of the resistance to internal and external pressure exerted on the tank when installed in accordance with the recommended installation details.

10.3 An assessment of the system was made in relation to material properties.

Bibliography

BS EN 1401-1 : 1998 *Plastics piping systems for non-pressure underground drainage and sewerage. Unplasticized poly(vinylchloride) (PVC-U) — Specifications for pipes, fittings and the system*

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