PT/571/0226-AS (February 2026)

Assessment Schedule for the AquaSpira CSR (Composite Steel Reinforced) pipe for gravity drains, sewers and attenuation tanks as manufactured by AquaSpira Ltd

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1. SCOPE

This schedule specifies requirements for the AquaSpira CSR (Composite Steel Reinforced) pipe system as manufactured by AquaSpira Limited. It is applicable for underground gravity drains, sewers and flow attenuation in nominal diameters from 525mm to 2250mm and up to 6.5m in length.

Note the AquaSpira CSR pipe system refers to pipes and all fabricated CSR and stainless steel components.

The approval is not applicable to:

- Lateral Connectors (LTC).

2. PRODUCT DESCRIPTION

2.1 Introduction

The AquaSpira CSR pipe system is a structured wall pipe manufactured from polyethylene (HDPE) profile strip that has vertical external steel reinforcement ribs encapsulated within PE. The profile is helically wound and the seam is welded to form a continuous pipe. The pipes outer wall is ribbed and the internal bore is smooth.

The pipes can be manufactured in three fin height options: 20mm, 30mm and 40mm. Pipes can be supplied with stiffness ranges between 2 kN/m² (SN-2) and 8 kN/m² (SN-8).

The pipes for all diameters are spigot and socket connection and sealed by an elastomeric ring.

Pipes sections can be fabricated to include a bend or a change in nominal diameter.

Access ports and manifolds are bespoke single piece factory fabricated from AquaSpira pipes or stainless steel. Their stiffness is equivalent to the AquaSpira CSR pipe.

2.2 Applicable standards

At present there is no British or European standard for PE steel reinforced composite pipes.

2.3 Approval History

The AquaSpira CSR (Composite Steel Reinforced) pipe system was originally awarded WRc Approved® certification in February 2011:

- PT/317/0211 (as Integra Pipe and Integra store).
- PT/411/0216 (as AquaSpira CSR).
- PT/493/0221 (as AquaSpira CSR).

3. REQUIREMENTS AND TESTING

3.1 General

The AquaSpira CSR pipe system shall comply with the following requirements.

Materials: The polyethylene shall be High Density Polyethylene (HDPE) and shall meet the material requirements of Appendix 1 and the performance requirements detailed in Table 1:

Table 1 Performance requirements

Performance test	Requirement
Resistance to internal pressure 165 h and 1000 h.	No failure during the test period.

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Tel: 01793 865000 Web: www.wrcapproved.com, E-Mail: wrcapproved@wrcgroup.com

Melt mass-flow rate.	≤ 1.6 g/10 min.
Thermal stability.	≥ 20 min.
Reference density.	≥ 930 kg/m³.
Resistance to heating - oven test.	The pipe shall show no delamination, cracks or bubbles.

Steel for the ribs shall be DC04 mild steel in line with BS EN 10139:2016+A1:2020(1).

Elastomeric seals shall meet the requirements of BS EN 681-1:1996(2).

Steel manifolds shall be fabricated from 1.4401 stainless steel to BS EN 10088-1(3) and shall meet the requirements of BS EN 10088-4:2009(4) and BS EN 1090-2:2018(5).

Appearance and colour: When viewed without magnification the following requirements apply to the AquaSpira CSR pipes and fittings:

a) Visible surfaces shall be smooth, clean and free from grooving, blistering, visible impurities or pores and any other surface irregularity likely to prevent conformity to this assessment schedule.

b) Ends shall be cleanly cut square to the axis of the pipe, and within any cutting zone recommended by the manufacturer, or according to the profile geometry as specified by the manufacturer.

c) Edges on spirally formed pipes and fittings which become sharp when cut shall be rounded off.

d) The inner and outer layer of pipes and fittings shall be coloured throughout.

Geometric Characteristics: The pipe dimensions shall conform to the requirements of Table 2 in ASTM F2562(6).

3.2 Type Testing

Physical Characteristics: The AquaSpira CSR pipes shall meet the resistance to heating requirement detailed in Table 1.

Mechanical resistance: The AquaSpira CSR pipe shall meet the following mechanical requirements which are detailed in Table 2:

Table 2 Mechanical requirements

Test	Requirement
Ring stiffness.	≥ relevant SN.
Impact strength (round the clock method).	True Impact Rate ≤ 10%.
Ring flexibility.	During the test there shall be no decrease of the measured force or cracking in any part of the wall structure. After the test there shall be no wall delamination, other types of rupture in the test piece or permanent buckling in any part of the structure of the pipe wall including depressions and

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	craters in any direction.
Creep ratio	≤ 4 at 2 years extrapolation.
Tensile strength of seam	Minimum tensile force: 400 ≤ DN < 600 mm 510N. 600 ≤ DN < 800 mm 760N. DN ≥ 800 mm 1020N.
Leak-tightness	No leakage at water pressure 0.05 bar. No leakage at water pressure 0.5 bar. ≤ −0.27 bar at air pressure −0.3 bar.

The AquaSpira CSR pipe shall meet the requirements of WIS-4-35-01 Issue 2[7]: Appendix C Longitudinal bending.

The AquaSpira CSR pipe shall meet the requirements of WIS-4-35-01 Issue 2: Appendix A Resistance to Internal Puncture.

Serviceability: The AquaSpira CSR pipe shall meet the requirements of WIS-4-35-01 Issue 2: Appendix B Resistance to Water Jetting.

Leak-tightness: The elastomeric joints of the AquaSpira CSR pipe system shall meet the leak-tightness requirement detailed in Table 2.

Marking: Pipe markings shall include Manufacturer's name and/or trademark, DN/OD, DN/ID and stiffness class.

3.3 Manufacture

To ensure the quality and performance of the AquaSpira CSR pipe/fabrications and stainless steel fabrications, the manufacturing process shall include appropriate systems for the:

- Specification of component materials;
- Verification component materials received are to specification;
- Handling and storage of all component materials and finished units;
- Detailed drawing / schedule for manufacture;
- Manufacture / assembly of AquaSpira CSR pipe/fabrications and stainless steel fabrications, and;
- Fabrication and quality control of workmanship.

The production of the AquaSpira CSR pipe/fabrications and stainless steel fabrications and related quality control procedures shall comply with requirements to ensure the stated performance of the product is reliably achieved.

3.4 Installation

When installed in accordance with the installation documentation[8], the AquaSpira CSR pipe/fabrications and stainless steel fabrications shall be reasonably expected to perform as described.

Contact: WRc Ltd, Frankland Rd, Blagrove, Swindon SN5 8YF
Tel: 01793 865000 Web: www.wrcapproved.com, E-Mail: wrcapproved@wrcgroup.com

4. APPROVAL

The AquaSpira CSR pipe/fabrications and stainless steel fabrications have been audited and successfully met all the requirements stated within this assessment schedule.

Signed:

Valid until 7th February 2031.

5. REFERENCES

1. BS EN 10139:2016+A1:2020 Cold rolled uncoated low carbon steel narrow strip for cold forming. Technical delivery conditions.

2. BS EN 681-1:1996 Elastomeric seals. Material requirements for pipe joint seals used in water and drainage applications. Vulcanized rubber.

3. BS EN 10088-1:2023 Stainless steels. List of stainless steels.

4. BS EN 10088-4:2009 Stainless steels. Technical delivery conditions for sheet/plate and strip of corrosion resisting steels for construction purposes.

5. BS EN 1090-2:2018+A1:2024 Execution of steel structures and aluminium structures. Technical requirements for steel structures.

6. ASTM F2562 / F2562M – 15 (2019) Specification for Steel Reinforced Thermoplastic Ribbed Pipe and Fittings for Non-Pressure Drainage and Sewerage.

7. WIS 4-35-01 Issue 2 October 2008: Specification for thermoplastics structured wall pipes – supplementary test requirements.

8. Site Handbook, document number 1.2, dated 04/04/25.

Technical Manual, revision number 1.1, dated 27/06/24.

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Appendix 1 Material Requirements

The virgin material shall be HDPE to which are added additives needed to facilitate the manufacture of components conforming to the requirements of this standard. Coated calcium carbonate (CaCO3) conforming to a) or talcum conforming to b) may be added as mineral modifiers under the following conditions. When calculated on the basis of a known formulation or, in case of dispute/not known formulation, determined in accordance with EN ISO 3451-1 the HDPE content shall be at least 75% by mass for pipes and 80% by mass for injection-moulded fittings.

Specification	Requirement
Specification for $CaCO_3$	1) Composition of the $CaCO_3$, before coating, shall conform to the following: • Content of $CaCO_3$ ≥ 96% by mass; • Content of $MgCO_3$ ≤ 4% by mass; • Content of $CaCO_3$ and $MgCO_3$ in total ≥ 98% by mass. 2) Physical properties of the material shall conform to the following: • Mean particle size, D50 ≤ 2.5 µm; • Top cut, D98 than ≤ 20 µm.
Specification for talcum	1) Content of magnesiumsilicate, $Mg_3Si_4O_{10}(OH)_2$ shall be at least 97% by mass. 2) Physical properties of the talcum shall conform to the following: • Mean particle size, D50 ≤ 7 µm; • Top cut, D98 ≤ 30 µm.

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