Pressure Wastewater Network Approved Materials List

June 2023

Christchurch City Council

Introduction

The pressure wastewater network approved materials list covers all materials for projects on Christchurch City Council (Council) owned pressure wastewater infrastructure or pressure wastewater infrastructure to be vested in Council. The approved materials list both states the manufacturing standard, size and performance requirements for all commonly used pressure wastewater product types and lists specific products meeting the manufacturing, performance and quality assurance requirements.

This list applies only to the pressure sections of the wastewater network. Pressure wastewater consists of the rising mains from pump stations, discharging into the gravity wastewater network or another downstream pump station. Presence of uninterrupted sections of 80mm or larger diameter pipe with no connections, Tees, chambers or isolation valves typically indicates a pressure wastewater network.

Selection of materials and products for installation in a specific location shall consider the particular, site-specific design constraints in conjunction with Council's Infrastructure Design Standards (IDS), Construction Standard Specification (CSS) and approved materials list.

Where installation of materials or products not holding approval occurs, Council retains the right to require replacement with approved products at the cost of the designer, contractor or developer responsible.

Applying For and Maintaining Approval

Applying for Approval

Send applications for material approval to approvedmaterials@ccc.govt.nz

Each application for material approval must:

1. State the network or networks where the material is suitable for use
2. State the product type for each product. Product types should be those listed on the approved materials list
3. List the brand name, manufacturer and suppliers for each product
4. Include a third party certificate, complete with accompanying schedule, showing the product complies with the manufacturing standard for the product type as listed on the approved materials list.
5. Include a third party certificate showing the manufacturers quality assurance system complies with ISO 9001.

Material approvals expire on the earliest certification expiry date, that is whichever is earlier of the expiry dates of the manufacturing standard certification or the ISO 9001 certification. Where a certificate is open ended and has no expiry date, we will assume a one-year timeframe for that certificate.

The approved materials committee aims to meet monthly for discussion and consideration of new applications. Approval of applications for existing product types, where the application includes all required information, typically occurs within one to five weeks dependent on when we receive the application relative to the meeting. Where we need more information or approval requires creation of a new product type, longer timeframes will be involved.

Updating Expired Approvals

Approval expires due to certifications becoming out of date. To re-activate the approval and extend the expiry date, send new manufacturing certificates (including schedules) and/or ISO 9001 certificates to approvedmaterials@ccc.govt.nz

Updates do not require a committee meeting and therefore have shorter periods. Publishing and upload to the Council website of the updated approved materials list occurs eleven times a year on the last day of every month except December. For inclusion in the updated approved materials list new certificates must arrive a minimum of three working days before the end of the month.

Preferably updates should occur before approval expiry. On reaching 3 months past approval expiry, update is no longer possible and approval will require a new application.

Definitions

Approval Type Definitions

The approved materials list contains only those products that hold approval or restricted approval for use in Council networks or networks that will be vested in Council. For all approval types the approval applies only for the stated sizes/diameters, pressure ratings, materials and coatings. The following sub-sections list the approval types and conditions applying to each approval type.

Products listed below approved for use as permitted by IDS and CSS

Products with this approval type hold approval Where a product type has this approval type the specific models and brands listed may be installed where their use is in compliance with Council Infrastructure Design Standards (IDS) and Construction Standard Specifications (CSS).

This approval size only applies up to and including a diameter of 600mm. Sizes larger than 600mm nominal diameter require project specific approval as per section 2.1.2.

Project specific approval required to use products listed below

Use of products with this approval type requires approval from the Council project manager or subdivision engineer. Prior to issuing approval the Council project manager or subdivision engineer may require evidence showing that the proposed product type provides benefits over product types holding approval for general use as per 2.1.1. Use of these products shall comply with the IDS and CSS.

Where a product holds general approval as per 2.1.1 but the project requires sizes greater than 600mm nominal bore, Council project managers or subdivision engineers will assess the proposed size meets future network requirements and is consistent with sizes already in use.

Products listed below approved for use as specials only

Use of products approved for use as specials only is limited to short sections as required to avoid service clashes, avoid hazards, or required to be fabricated on-site. Use of these products shall comply with the IDS and CSS.

Products listed below approved for use during repairs only

Some products preferred for use when installing new infrastructure are not able to be used when conducting maintenance on the network due to the conditions in the trench. Products listed as for use during repairs only provide an alternative solution to permit completion of works.

Use of products approved for use during repairs only shall occur only when conducting planned or reactive works on the existing network. These products shall not be used during the installation of new infrastructure.

For all approval types only the listed makes and models are approved, and only up until the expiry date shown.

Product Type Definitions

A separate page lists approved makes and models for each product type. Terminology referring to the individual product types can be confusing, to remove confusion we give the following definitions of commonly used terms:

Adaptor

A straight-through fitting with different connection types at each end. Reducers and bends can also act as adaptors but are listed as a reducer or bend. Threaded fittings and fittings incorporating mechanical joints are listed separately.

Bend

Any fitting incorporating a directional change.

Branch Saddle

Electrofusion fitting that requires later tapping of the branch connection, using a separate tool.

Coupler

Straight-through fitting with no diameter change for connecting similar diameter pipes.

Diamètre Nominal/Durchmesser Nach Norm (DN)

Typically used in the designation of PE pipes or fittings, DN is used to indicate the nominal external diameter of pipe.

Double Check Valve Backflow Preventer

Backflow preventor for medium hazard protection. A double check valve Backflow Preventer incorporates two check valves in series and incorporates ports for testing.

Dual Check Device Backflow Preventer

Backflow preventor for low hazard protection. A dual check device backflow preventer incorporates two check valves in series but is not testable.

Gate Valve

Valve that closes by dropping a plate or wedge into the flow. A gate valve has a slot in the invert that the plate or wedge drops into.

Nominal Bore (NB)

NB is used to indicate the nominal or rounded internal diameter of the pipe.

Reduced Pressure Zone (RPZ)

Backflow preventor for high hazard protection. A RPZ incorporates two check valves separated by a pressure monitored chamber capable of venting excess pressure. RPZs incorporate test ports.

Reducer

Tapered or stepped fitting to change the pipe diameter.

Sluice Valve

Valve that closes by dropping a plate or wedge into the flow. A sluice valve has a continuous invert and the plate or wedge matches the shape of and seals against the invert.

Stop Cock

A ball valve specifically for the individual customer connection on each lateral.

Tapping Band

A ring clamped around a pipe allowing the connection of a branch pipe or fitting.

Tapping Saddle

Electrofusion fitting that incorporates a mechanism for tapping the branch connection.

Threaded Transition

Adaptor with a British Standard Pipe (BSP) thread at one end and an alternative connection type at the other. Threaded transitions may be straight-through or incorporate a change in direction.

Contents

Section 1
Pipes

Approved Materials List

Network: Wastewater (pressure)
Product Type: Pipe
Material: PVC-U Series 1

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 1477
Material Specification: Unplasticized Polyvinylchloride (PVC-U)

Coating Specification: Not applicable.
Pressure Ratings: PN12 or PN15
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 575NB.
Operational Life: 100 Years
Other Requirements:
- End caps to be retained on pipe until installation.
- Colour: Pipe shall be cream coloured or minimum 4 No. cream stripes, no lighter than RAL 080 90 20 and no darker than RAL 075 80 20.
- Refer to Appendix 2 - PVC Witness Mark memo.

Brand Name	Manufacturer	Supplier	Approval Expires
Novakey	Iplex Pipelines NZ Ltd	Hynds, Humes	3/02/2024
Powerlock 800 RJ	RX Plastics Ltd	Marley	18/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Pipe
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4130
Material Specification: PE100 Polyethylene to AS/NZS 4131.

Coating Specification: Not applicable.
Pressure Ratings: PN10/SDR17, PN12.5/SDR13.6 or PN16/SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 Years
Other Requirements:
- End caps to be retained on pipe until installation.
- Colour: Pipe shall be cream coloured or minimum 4 No. cream stripes, no lighter than RAL 080 90 20 and no darker than RAL 075 80 20.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
Cream Jacket	Asmuss Ltd	Asmuss Ltd	24/05/2019
EnviroPressurePipe	Enviro Pipes Pty Ltd	Enviro Pipes Pty Ltd	21/02/2024
EnviroPressurePipe	Enviro Pipes Pty Ltd	Solo Plastics Ltd	21/02/2024
Poliplex (Cream)	Iplex Pipelines NZ Ltd	Humes, Hynds	3/02/2024
310 Series PE100	RX Plastics Ltd	Marley	18/03/2024
J-Pipe (Laterals only)	RX Plastics Ltd	Marley	18/03/2024
TUBI HDPE	Tubi Operations Pty Ltd	Tubi Group Pty Ltd	28/02/2018
Series 1	Waters & Farr Ltd	Hynds	24/08/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Pipe
Material: Ductile Iron (DI) / Mortar Lined Ductile Iron (MLDI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Ductile Iron to AS/NZS 2280

Coating Specification: Internal cement mortar lining and external bitumen or synthetic base coating.
Pressure Ratings: PN35
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB and 600NB
Operational Life: 120 years
Other Requirements:

- End caps to be retained on pipe until installation.
- End restraint joints only where required by specific design or where indicated for pipe laying on sloping ground.
- Pipe shall have a cream PE sleeve in accordance with AS3680. Sleeve shall be carefully applied and repaired when damaged.
- Standard Portland cement mortar not resistant to H2S attack. High alumina cement has improved resistance and shall be used at any high points or discharge points in the main.

Brand Name	Manufacturer	Supplier	Approval Expires
Hydrotite	Gillies Metaltech	Hynds	17/07/2023
Classic	PAM Saint-Gobain (Maanshan)	P & I	14/11/2023
TytonExcel	PAM Saint-Gobain	Asmuss	15/09/2018
TytonExtreme	PAM Saint-Gobain	Asmuss	15/09/2018
TytonXcel	Xinxing DI Pipes Co Ltd	Viadux Pty Ltd	31/07/2024
TytonXcel Z+	Xinxing DI Pipes Co Ltd	Viadux Pty Ltd	31/07/2024
TytonXceed Z+	Xinxing DI Pipes Co Ltd	Viadux Pty Ltd	31/07/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Pipe
Material: Cement Mortar Lined Steel (CLS)

Approval Type: Products listed below approved for use as specials only

Performance Requirements
Manufacturing Standard: NZS 4442 and AS 1579, Protection to AS/NZS 2312
Material Specification: Carbon steel

Coating Specification: Internal cement mortar lining. Exterior enamel or HDPE coating.
Pressure Ratings: PN16, PN20 or PN35
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 450NB and 600NB
Operational Life: 120 Years
Other Requirements:

- End caps to be retained on pipe until installation.
- Pipe shall have a cream PE sleeve in accordance with AS3680. Sleeve shall be carefully applied and repaired when damaged.
- Standard Portland cement mortar not resistant to H2S attack. High alumina cement has improved resistance and shall be used at any high points or discharge points in the main.

Brand Name	Manufacturer	Supplier	Approval Expires

Approved Materials List

Network: Wastewater (pressure)
Product Type: Pipe
Material: Glass Reinforced Plastic (GRP)

Approval Type: Project specific approval required to use products listed below

Performance Requirements
Manufacturing Standard: AS 3571.1
Material Specification: Glass reinforced plastic to AS 3571.1

Coating Specification: N/A
Pressure Ratings: PN12 or PN15
Approved Sizes: 300NB, 375NB, 450NB and 600NB
Operational Life: 100 years
Other Requirements:
- End caps to be retained on pipe until installation.

Brand Name	Manufacturer	Supplier	Approval Expires

Section 2
Valves and Hydrants

Approved Materials List

Network: Wastewater (pressure)
Product Type: Sluice Valve
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2638.2
Material Specification: Body: Ductile Iron (DI) to AS/NZS2280. Spindle: Minimum A276 431SS. Seal: EPDM or Nitrile Rubber.
Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB - 750NB.
Operational Life: 100 Years
Other Requirements:

- End Configurations: Flange-Flange.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.
- Operation: Clockwise to open.
- Spindle shall be extendable.
- Valves shall be supplied with a triangular spindle cap secured with a set screw.
- Name plate markings shall provide traceability of the valve.

Brand Name	Manufacturer	Supplier	Approval Expires
AVK Series 570	AVK Australia Pty Ltd.	Humes	14/02/2024
Derwent Resilient Seated Gate Valve	Derwent Industries Pty Ltd.	Derwent Industries Pty Ltd.	Expired
Sureflow - Fig 500	AVK Australia Pty Ltd.	Asmuss Water Systems Ltd	14/02/2024
Sureflow - Auslite	AVK Australia Pty Ltd.	Asmuss Water Systems Ltd	14/02/2024
Hawle E2	Hawle Armaturenwerke GmbH	Hynds/Hygrade	31/03/2024
Hawle E3	Hawle Armaturenwerke GmbH	Hynds/Hygrade	12/12/2023
DIMax Resilient Seated Gate Valve	WeFlo Valve Co Ltd.	Reece Group	23/12/2024
Flange-Flange Resilient Seat Gate Valve	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	16/01/2026

Approved Materials List

Network: Wastewater (pressure)
Product Type: Swing Check Valve (Non-Testable)
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS 4794
Material Specification: Body: Ductile Iron to AS/NZS2280. Disc & Stem: 316 or duplex Stainless Steel. Seals: Elastomeric to AS 1646.
Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 80, 100, 125, 150, 175, 200, 225, 250, 300, 375, 450 and 600 nominal bore.
Operational Life: 100 years
Other Requirements:
- End configuration: Flange-Flange OR lugged. Flanges: To meet full requirements of AS/NZS 4087 Figure B5.

Brand Name	Manufacturer	Supplier	Approval Expires
AVK 41/80-001	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/81-001	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/81-003	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/81-004	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/82-001	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/82-003	AVK Australia Pty Ltd.	Humes	14/02/2024
AVK 41/82-004	AVK Australia Pty Ltd.	Humes	14/02/2024
Ozkan Tilting Disc Check Valve	Ozkan Makina	Hygrade	24/10/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Ball Check Valve
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: BS 5153 or EN 12050-4
Material Specification: Body: Ductile Iron (DI) to AS/NZS2280. Disc & Stem: 316 or Duplex Stainless Steel. Seals: Elastomeric to AS1646.
Coating Specification: Thermally bonded polymeric coating to AS/NZS4158
Pressure Ratings: PN10 or PN16.
Approved Sizes: 50NB, 65NB, 80NB, 100NB, 150NB and 200NB.
Operational Life: 100 years
Other Requirements:
- End configuration: Flange-Flange OR lugged. Flanges to meet full requirements of AS/NZS 4087 Figure B5.

Brand Name	Manufacturer	Supplier	Approval Expires
AVK 53/35	AVK Australia Pty Ltd.	Humes	23/10/2022

Section 3
Mechanical Couplers & Adaptors

Approved Materials List

Network: Wastewater (pressure)
Product Type: Unrestrained Coupler
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4998 OR EN 14525
Material Specification: Body: Ductile Iron to AS1831. Seals: EPDM or Nitrile Rubber to AS1646. Bolts and nuts as per approved materials listing.
Coating Specification: Thermally bonded polymeric to AS/NZS 4158
Pressure Ratings: PN12 minimum.
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB and 600NB.
Operational Life: 100 years
Other Requirements:
- End configuration: Mechanical - Mechanical OR Mechanical - Flange. Flanges to meet full requirements of AS/NZS 4087 Figure B5.
- Stainless bolts, where used, shall have an anti-galling coating.
- Nominal size, maximum angle of deflection, nominal pipe setting gap and tightening torque shall be marked on each item.
- Unrestrained jointing of AC, CLS, CI, DI, PVC and Steel pipes 100 mm and above. Not to be used on PE pipe.

Brand Name	Manufacturer	Supplier	Approval Expires
Super-Gib Series 601	AVK Australia Pty Ltd.	Humes	14/02/2024
Series 603	AVK Australia Pty Ltd.	Humes	14/02/2024
MultiJoint 3000+	Georg Fisher Waga NV	Hynds	27/05/2024
MultiJoint 3050+	Georg Fisher Waga NV	Hynds	27/05/2024
MaxiFit Coupling	Viking Johnson	Hynds	25/08/2023
MaxiFit Adaptor	Viking Johnson	Hynds	25/08/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Restrained Coupler
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4998 OR EN 14525
Material Specification: Body: Ductile Iron to AS1831. Seals: EPDM or Nitrile Rubber to AS1646. Bolts and nuts as per approved materials listing.
Coating Specification: Thermally bonded polymeric to AS/NZS 4158
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB and 600NB.
Operational Life: 100 years
Other Requirements:
- End configuration: Mechanical - Mechanical OR Mechanical - Flange. Flanges to meet full requirements of AS/NZS 4087 Figure B5.
- Stainless bolts, where used, shall have an anti-galling coating.
- Nominal size, maximum angle of deflection, nominal pipe setting gap and tightening torque shall be marked on each item.
- Restrained jointing of AC, CLS, CI, DI, PVC and Steel pipes 100 mm and above. Not to be used on PE pipe.

Brand Name	Manufacturer	Supplier	Approval Expires
Super-Maxi Series 631	AVK Australia Pty Ltd.	Humes	14/02/2024
Super-MaxiSeries 633	AVK Australia Pty Ltd.	Humes	14/02/2024
MultiJoint 3007+	Georg Fisher Waga NV	Hynds	27/05/2024
MultiJoint 3057+	Georg Fisher Waga NV	Hynds	27/05/2024
Synoflex Coupler	E Hawle Armaturenwerke GmbH	Hynds	31/03/2024
Synoflex Adaptor	E Hawle Armaturenwerke GmbH	Hynds	31/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Restrained Coupler for PE Pipe
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use during repairs only.

Performance Requirements
Manufacturing Standard: EN 14525
Material Specification: Body: Ductile Iron to AS1831. Seals: EPDM or Nitrile Rubber to AS1646. Bolts and nuts as per approved materials listing.
Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158
Pressure Ratings: PN16
Approved Sizes: 100, 150, 200, 300, 375, 450 and 600 nominal bores.
Operational Life: 100 years
Other Requirements:
- End configuration: Mechanical - Mechanical OR Mechanical - Flange. Flanges to meet full requirements of AS/NZS 4087 Figure B5.
- Stainless bolts, where used, shall have an anti-galling coating.
- Nominal size, maximum angle of deflection, nominal pipe setting gap and tightening torque shall be marked on each item.
- Shall be designed specifically for use on PE pipes.
- Stainless steel support liners shall be installed in pipes.

Brand Name	Manufacturer	Supplier	Approval Expires
Super-Maxi Series 621	AVK Australia Pty Ltd.	Humes	14/02/2024
Super-MaxiSeries 623	AVK Australia Pty Ltd.	Humes	14/02/2024
System 2000 Coupler	E Hawle Armaturenwerke GmbH	Hynds	31/03/2024
System 2000 Adaptor	E Hawle Armaturenwerke GmbH	Hynds	31/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Dismantling Joint
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: N/A
Material Specification: Body: Ductile Iron to AS1831. Seals: EPDM or Nitrile Rubber to AS1646. Bolts and nuts as per approved materials listing.
Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158
Pressure Ratings: PN16
Approved Sizes: 100, 150, 200, 300, 375, 450 and 600 nominal bores.
Operational Life: 100 years
Other Requirements:
- End configuration: Flange - Flange. Flanges to meet full requirements of AS/NZS 4087 Figure B5.

Brand Name	Manufacturer	Supplier	Approval Expires
AVK Series 265/50	AVK Australia Pty Ltd.	Humes	14/02/2024
Hiwa	Fowry Tech (Shandong) Co. Ltd	Asmuss	26/12/2024

Section 4
Ductile Iron Fittings

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Bends
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:

- End configurations: Flange-Flange, Socket-Socket or Flange-Socket.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.
- Approved Deflections 11.25°, 22.5°, 45° and 90°.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Tees
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:

- End configurations: Flange-Flange-Flange.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.
- Branch may be a smaller diameter than the mainway.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Spools
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:
- End configurations: Flange-Flange.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.
- Spools for control of in-line thrusts shall have a puddle flange centrally placed and have minimum critical length of 3x thickness of thrust block.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Reducers
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:
- End configurations: Flange-Flange.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Adaptors
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:
- End configurations: Flange-Socket or Flange-Spigot.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: DI Crosses
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 2280
Material Specification: Body: DI to AS/NZS 2280. Seals: EPDM or Nitrile Rubber.

Coating Specification: Thermally bonded polymeric coating to AS/NZS 4158.
Pressure Ratings: PN16
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, 600NB.
Operational Life: 130 Years
Other Requirements:

- End configurations: Flange-Flange-Flange-Flange.
- Flanges shall be fully compliant with AS/NZS 4087 Figure B5.
- Branchs may be smaller diameters than the mainway.

Brand Name	Manufacturer	Supplier	Approval Expires
Asmuss	Asmuss	Asmuss	11/09/2023
AVK Series 718	AVK Australia Pty Ltd	Humes	14/02/2024
Tyton	AVK Australia Pty Ltd	Asmuss Water Systems Ltd	14/02/2024
Derwent DI Fittings	Derwent Industries Pty Ltd	Hynds, Derwent	4/07/2024
Gillies DI Fittings	Gillies Metaltech	Hynds	17/07/2023
DI Max	Himgiri Castings Pvt Ltd	Reece Group	3/09/2023
Mallet	Mallet Industries Pty Ltd	Kennilworth Plumbing	6/11/2023
NIBF	Northern Iron and Brass Foundry Pty Ltd.	Humes	2/06/2014
Ductile Iron Fittings	Dalian Reliable Industrial Co Ltd.	Daemco Australia Pty Ltd	27/03/2024

Section 5
Electrofusion Fittings

Approved Materials List

Network: Wastewater (pressure)
Product Type: Electrofusion Bends
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 63, 75, 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- Approved deflections: 11.25, 22.5, 45 and 90 degrees.
- End Configurations: Electrofusion socket - Electrofusion socket.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
AGRU	Agru Kunststoffechnik Gmbh	Hynds	9/02/2017
Frialen	Friatec Aktiengesellschaft	Humes	31/08/2023
Fusamatic	Fusion Group Ltd	Hynds	5/11/2023
+GF+	Georg Fisher Piping Systems Ltd	Hynds	27/05/2024
Plasson	Plasson Ltd, Israel	Humes, Hynds	3/02/2024
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023
SABfuse	SAB Spa	P & I	2/11/2016

Approved Materials List

Network: Wastewater (pressure)
Product Type: Electrofusion Tees
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:
- End configurations: EF socket-EF socket-EF socket.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
AGRU	Agru Kunststoffechnik Gmbh	Hynds	9/02/2017
Frialen	Friatec Aktiengesellschaft	Humes	
Fusamatic	Fusion Group Ltd	Hynds	
+GF+	Georg Fisher Piping Systems Ltd	Hynds	
Plasson	Plasson Ltd, Israel	Humes, Hynds	
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	
SABfuse	SAB Spa	P & I	

Approved Materials List

Network: Wastewater (pressure)
Product Type: Electrofusion Couplers
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, DN400, DN450, DN560, DN710.
Operational Life: 100 years
Other Requirements:

- End configurations: Electrofusion socket-Electrofusion socket.
- DN400-DN710 shall only to be used where butt-welding is not possible.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
AGRU	Agru Kunststoffechnik Gmbh	Hynds	9/02/2017
Frialen	Friatec Aktiengesellschaft	Humes	31/08/2023
Fusamatic	Fusion Group Ltd	Hynds	5/11/2023
+GF+	Georg Fisher Piping Systems Ltd	Hynds	27/05/2024
Plasson	Plasson Ltd, Israel	Humes, Hynds	3/02/2024
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023
SABfuse	SAB Spa	P & I	2/11/2016

Approved Materials List

Network: Wastewater (pressure)
Product Type: Electrofusion Reducers
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- Total reduction shall not exceed two sizes.
- End configurations: Electrofusion socket-Electrofusion socket.
- Reducers shall be tapered with a max flare angle of 45 degrees and not stepped.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
AGRU	Agru Kunststoffechnik Gmbh	Hynds	9/02/2017
Frialen	Friatec Aktiengesellschaft	Humes	31/08/2023
Fusamatic	Fusion Group Ltd	Hynds	5/11/2023
+GF+	Georg Fisher Piping Systems Ltd	Hynds	27/05/2024
Plasson	Plasson Ltd, Israel	Humes, Hynds	3/02/2024
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023
SABfuse	SAB Spa	P & I	2/11/2016

Approved Materials List

Network: Wastewater (pressure)
Product Type: Stub Flange for Electrofusion Connection to Pipe
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- End configurations: Spigot (long)-Flange.
- Backing rings shall be installed on each stub flange.
- Refer to Appendix 1 - PE Manufacturers Actions memo.
- Refer to Appendix 3 - CCC Stub Flange and Backing Rings Table.

Brand Name	Manufacturer	Supplier	Approval Expires
AGRU	Agru Kunststoffechnik Gmbh	Hynds	9/02/2017
Frialen	Friatec Aktiengesellschaft	Humes	31/08/2023
Fusamatic	Fusion Group Ltd	Hynds	5/11/2023
+GF+	Georg Fisher Piping Systems Ltd	Hynds	27/05/2024
Plasson	Plasson Ltd, Israel	Humes, Hynds	3/02/2024
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023
SABfuse	SAB Spa	P & I	2/11/2016
EnviroFab Long Spigot Stub Flange	Enviropipes Pty Ltd	Enviropipes Pty Ltd	21/02/2024
PE Slim flange	Solo Plastics	Humes	QA0066
Long Spigot Stub Flange	Strata Precision Plastics	Humes, Hynds, Plumbing World	QA0070

Section 6
Butt-Weld Fusion Fittings

Approved Materials List

Network: Wastewater (pressure)
Product Type: Butt-Weld Bends
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- Approved deflections: 11.25, 22.5, 45 and 90 degrees.
- End Configurations: Spigot - Spigot.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Fabricated Bend
Material: Polyethylene (PE)

Approval Type: Project specific approval required to use products listed below

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: PE100 to AS/NZS 4131

Coating Specification: N/A
Stiffness Ratings: PN16 following re-rating as per AS/NZS 4129
Approved Sizes: DN125 to DN710.
Operational Life: 100 years
Other Requirements:
- End configurations: spigot-spigot.
- Fabricated bends shall use AS/NZS4130 pipe that is either bent following heating or mitre cut and welded.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
EnviroFab Sweep Bends	Enviropipes Pty Ltd	Enviropipes Pty Ltd	21/02/2024
EnviroFab Segment Bends	Enviropipes Pty Ltd	Enviropipes Pty Ltd	21/02/2024
PN16 Segmented Bends	Strata Precision Plastics	Humes, Hynds, Plumbing World	19/08/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Butt-Weld Tees
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:
- End configurations: Spigot-Spigot-Spigot.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Butt-Weld Reducers
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- Total reduction shall not exceed two sizes.
- End configurations: Spigot-Spigot.
- Reducers shall be tapered with a max flare angle of 45 degrees and not stepped.
- Refer to Appendix 1 - PE Manufacturers Actions memo.

Brand Name	Manufacturer	Supplier	Approval Expires
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023

Approved Materials List

Network: Wastewater (pressure)
Product Type: Stub Flange for Butt-Fusion Connection to Pipe
Material: Polyethylene (PE)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Polyethylene (PE100) to AS/NZS 4131.

Coating Specification: N/A
Pressure Ratings: PN16 SDR11
Approved Sizes: 90, 100, 125, 160, 180, 200, 250, 315, 355, 400, 450, 560 and 710 OD.
Operational Life: 100 years
Other Requirements:

- End configurations: Spigot (short)-Flange.
- Backing rings shall be installed on each stub flange.
- Refer to Appendix 1 - PE Manufacturers Actions memo.
- Refer to Appendix 3 - CCC Stub Flange and Backing Rings Table.

Brand Name	Manufacturer	Supplier	Approval Expires
Short Spigot Stub Flange	Strata Precision Plastics	Humes, Hynds, Plumbing World	19/08/2023
PE Slim Flange	Strata Precision Plastics	Humes, Hynds, Plumbing World	19/08/2023
PE Buttweld Stub Flange	Solo Plastics	Humes	16/12/2023
Plastitalia	Plastitalia Spa	Water Supply Products Ltd	2/11/2023

Section 7
Compression Fittings

Approved Materials List

Network: Wastewater (pressure)
Product Type: Compression Couplers
Material: PP/POM

Approval Type: Products listed below approved for use during repairs only.

Performance Requirements
Manufacturing Standard: AS/NZS 4129
Material Specification: Body: Polypropylene (PP) or Polyoxymethylene (POM)
Seals: EPDM or Nitrile Rubber
Coating Specification: N/A
Pressure Ratings: PN16
Approved Sizes: DN40, DN63, DN75 and DN90.
Operational Life: 100 years
Other Requirements:
- End configurations: Mechanical socket-Mechanical socket.
- PP/POM support liner to be inserted in DN63 pipes before installing fitting.
- Stainless steel support liner to be inserted in DN125 and larger pipes before installing fitting.

Brand Name	Manufacturer	Supplier	Approval Expires
+GF+ iJoint	Georg Fisher Piping Systems L	Hynds	27/05/2024
EasyFit	Hansen Products NZ Ltd	Hansen Products NZ Ltd	29/07/2023
EasyFit ID	Hansen Products NZ Ltd	Hansen Products NZ Ltd	29/07/2023
Philmac	Philmac Pty Ltd	Marley	13/10/2023
Plassim	Plassim Fittings Ltd	Humes, RX Plastics	Expired
Plasson	Plasson Ltd, Israel	Humes, Hynds	3/02/2024
Hydroflow Blueseal	SAB Spa	Asmuss	2/11/2016
Supreme	SAB Spa	P & I	2/11/2016
Talbot	Talis-UK Ltd	Hynds	31/03/2020
Connecto Plus Ultra	Irritec SPA	Water Supply Products Ltd	8/04/2024
Epsilon Series Coupler	Elysee Irrigation Ltd	Waterworks NZ	17/01/2025
Epsilon Series Repair Coupler	Elysee Irrigation Ltd	Waterworks NZ	17/01/2025

Section 8
Surface Boxes

Approved Materials List

Network: Wastewater (pressure)
Product Type: Sluice Valve Box and Cover
Material: Ductile Iron (DI)

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 3996 or BS 5834-2
Material Specification: Ductile Iron to AS/NZS 2280

Coating Specification: N/A
Pressure Ratings: AS3996 Class D or EN 124 Class C minimum.
Approved Sizes: N/A
Operational Life: 50 years
Other Requirements:

- 225mm x 225mm minimum clear opening.
- Traffic Loading: Minimum AS/NZS 3996 Class D or EN 124 Class C.
- WW shall be permanantly marked on lid.
- Lid and cover design shall be secure under traffic loads.

Brand Name	Manufacturer	Supplier	Approval Expires
Warrior HB54-1WW	PAM Saint Gobain	Pipe and Infrastructure	29/11/2023
Slam Lock Valve Box	RockHan Technology Co.	Hynds/Hygrade	20/05/2024

Section 9
Miscellaneous

Approved Materials List

Network: Wastewater (pressure)
Product Type: Repair Clamp
Material: Ductile Iron (DI) or Stainless Steel

Approval Type: Products listed below approved for use during repairs only.

Performance Requirements
Manufacturing Standard: AS 4181
Material Specification: Body: 316 Stainless Steel or 450-10 Ductile Iron to AS/NZS 2280.
Seal: EPDM or Nitrile Rubber.
Coating Specification: DI: Thermally Bonded Polymeric to AS/NZS 4158. Stainless: N/A.
Pressure Ratings: PN16
Approved Sizes: To fit pipes 50-300NB.
Operational Life: 100 years
Other Requirements:
- Stainless units shall have stainless bolts, nuts and washers.
- For application to AC, CI, DI, Galv. and PVC pipes only. For repair of cracked or damaged pipes, shall not be used where pipe is broken or axial loads are present.

Brand Name	Manufacturer	Supplier	Approval Expires
Rapid	Cascade SA	Hynds	Expired
Kawandah	Derwent Industries Pty Ltd	Derwent Industries Pty Ltd	16/05/2024
Kawandah - Tapped	Derwent Industries Pty Ltd	Derwent Industries Pty Ltd	16/05/2024

Approved Materials List

Network: Wastewater (pressure)
Product Type: Steel Backing Ring
Material: Carbon Steel

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: AS/NZS 4087
Material Specification: Carbon steel to AS/NZS 3678 Grade 250.

Coating Specification: Thermally Bonded Polymeric to AS/NZS 4158
Pressure Ratings: PN16
Approved Sizes: For 100NB, 150NB, 200NB, 300NB, 375NB, 450NB, and 600NB flanges.
Operational Life:
Other Requirements:

- Minimum Thickness: As per AS/NZS 4087.
- Refer to Appendix 3 - CCC Stub Flange and Backing Rings Table.

Brand Name	Manufacturer	Supplier	Approval Expires

Approved Materials List

Network: Wastewater (pressure)
Product Type: Conversion Flange
Material: Carbon Steel

Approval Type: Products listed below approved for use as permitted by IDS and CSS

Performance Requirements
Manufacturing Standard: None applicable.
Material Specification: Carbon steel to AS/NZS 3678 Grade 250.

Coating Specification: Thermally Bonded Polymeric to AS/NZS 4158
Pressure Ratings: PN16
Approved Sizes: 250x200, 350x300, 400x300, 450x375, 550x450 and 700x600.
Operational Life: 100 years.
Other Requirements:

- Flange drilling shall be to AS/NZS 4087 Figure B7.
- Studs shall be sealed to flange.
- Studs shall be prevented from turning.
- Conversion flange shall be fabricated to CCC standard drawings in Appendix 3 - CCC Stub Flange and Backing Rings Table.

Brand Name	Manufacturer	Supplier	Approval Expires

Approved Materials List

Network: Wastewater (pressure)
Product Type: Nuts, Bolts and Washers
Material: Carbon Steel

Approval Type: Any product meeting the performance requirements may be used.

Performance Requirements
Manufacturing Standard: AS 4291.1
Material Specification: Carbon Steel

Coating Specification: Hot Dip Galvanising to AS/NZS 4680.
Pressure Ratings: N/A
Approved Sizes: N/A
Operational Life: 100 years
Other Requirements:
- Tensile Class: 8.8
- Washers shall be installed under nut and bolt head (where the heads are not encapsulated). Washer Thickness: 3mm minimum, 5mm minimum for M24 or larger bolts.
- All exposed metal surfaces including bolt heads and nuts shall be wrapped using a four part system including primer, mastic, petrolatum impregnated tape and tape overwrap.
- Bolt torque shall be between 60-65% of proof stress.

Network: Wastewater (pressure)
Product Type: Nuts, Bolts and Washers
Material: Stainless Steel

Approval Type: Any product meeting the performance requirements may be used.

Performance Requirements
Manufacturing Standard: AS 4291.1
Material Specification: 316 or A4 Stainless Steel

Coating Specification: N/A
Pressure Ratings: N/A
Approved Sizes: N/A
Operational Life: 100 years
Other Requirements:
- Washers shall be installed under nut and bolt head (where the heads are not encapsulated). Washer Thickness: 3mm minimum, 5mm minimum for M24 or larger bolts.
- All exposed metal surfaces including bolt heads and nuts shall be wrapped using a four part system including primer, mastic, petrolatum impregnated tape and tape overwrap.
- Bolt torque shall be between 60-65% of proof stress.

Approved Materials List

Network: Wastewater (pressure)
Product Type: Flange Gasket
Material: EPDM or Nitrile Rubber

Approval Type: Any product meeting the performance requirements may be used.

Performance Requirements
Manufacturing Standard: WSA 109
Material Specification: Ethylene Propylene Diene Monomer (EPDM) or Nitrile Butadiene Rubber (NB

Coating Specification: N/A
Pressure Ratings: N/A
Approved Sizes: 100NB, 150NB, 200NB, 300NB, 375NB, 450NB and 600NB.
Operational Life: 100 years
Other Requirements:
- Elastomeric gaskets shall be 3 mm or geater thick.
- Elastomeric gaskets shall be reinforced

Appendix 1
PE Manufacturers Action Memo

Polyethylene Pipe and Fitting Manufacturer Actions Memorandum

PE pipe and any approved striping shall only be manufactured from 100% virgin raw materials.

Quality Assurance records

The manufacturer shall provide quality assurance records, particularly Melt flow rate and Thermal stability testing results, to the Engineer with each batch of pipe and fittings.

The Melt flow rate (MFR) test shall be determined in accordance with ISO 1133. A batch is as defined in clause A3.2 of AS/NZS 4130. The results can be for the resin from which the pipe batch was manufactured.

The MFR of the black or coloured compound shall not deviate by more than 30% from the value nominated by the compound manufacturer in accordance with cl 4.1.2 AS/NZS 4131.

Thermal stability shall be confirmed by determining the oxidation induction time (OIT) of a test specimen taken from the inside surface of the PE pipe and tested in accordance with ISO 11357-6 using oxygen at a test temperature of 200 deg C.

The OIT shall be equal to or greater than 20 minutes in accordance with cl 10.3 AS/NZS 4130.

Pre-supply Compatibility testing

Prior to the delivery of pipes and fittings, the manufacturer or supplier shall have the following complying tests undertaken by an accredited laboratory with all test results being forwarded to the Engineer.

The tests will apply to each pipe batch (and batch of fittings as applicable) and include two butt fusion welds, two electrofusion joint welds, two electrofusion saddle joint welds and two stub flange butt weld joints, with results being identified by pipe batch number. Where the weld type is not required by the project, testing for that weld type is not required.

- Tensile tests shall be in accordance with ISO 13953
- Peel decohesion tests shall be in accordance with ISO 13954 for pipe diameters 90mm and larger.
- Crushing decohesion tests shall be in accordance with ISO 13955 for pipe diameters smaller than 90mm.
- Saddle decohesion test shall be in accordance with ISO 13956

Compatibility Statement, welding parameters and witness mark measurements for electrofusion couplers

The following information shall be supplied by the manufacturer or supplier to the Engineer prior to delivery of pipe and fittings.

- The manufacturer shall state which fittings and batches of fittings have been tested as compatible with their PE pipe with reference to pipe batch numbers. This testing can apply to more than one project if the two projects are supplied from the same batch.
- Welding parameters for butt fusion and electrofusion couplers which have been confirmed by testing as applicable and compatible for the pipe and fittings shall be supplied, along with the welding plant model details.
- Witness mark measurements for the supplied electrofusion couplers shall be supplied by the manufacturer.

Appendix 2
PVC Witness Mark Memo

PVC Witness Mark Memorandum

Background

During restoration of the pressure sewer system wastewater and waste water infrastructure following the September and February earthquakes it has become apparent that the design of the socket and spigot joints between pipes is critical to the pipe's seismic performance.

It has been observed that joints which allow a greater range of movement are better able to accommodate ground movements. Essentially socket dimensions control the amount of elongation or compression that can be accommodated within the joint.

AS/NZS 1254 PVC-U pipes and fittings for stormwater and surface water applications and *AS/NZS 1260 PVC-U pipes and fittings for drain, waste and vent application* specify the Effective Sealing Length to be equal to the insertion depth plus the clearance between the end of the spigot and the base of the socket. Clause 4.7 also states: "the witness mark shall be provided for the full circumference of the pipe at a distance from the pipe end equivalent to the insertion depth +0-5 mm". (..) NOTE: The insertion depth/witness mark location may vary from manufacturer to manufacturer depending in the socket/joint design".

Purpose of this Memorandum

The purpose of this memorandum is to specify minimum socket dimensions and to clarify for suppliers and contractors what is required by Christchurch City Council (Council) for minimum socket dimensions and witness marking on approved Polyvinylchloride (PVC) pipes.

Performance Required

Witness marks on PVC pipes are required under AS/NZS 1254 and AS/NZS 1260 and are an established construction technique for ensuring the correct depth of engagement of socketed pipes. The correct alignment and insertion of the spigot into the socket allows the pipe to expand and contract under test and operating pressures, and allows the pipe to elongate and contract due to changes in operating temperature. Adopting a suitable insertion depth and clearance (gap between end of spigot and base of socket) will allow the pipe to elongate and compress when ground movement occurs.

Council require that socket dimensions be standardised to provide the deepest insertion length and clearance that can reasonably be formed by all manufacturers.

Recommendation for Witness mark

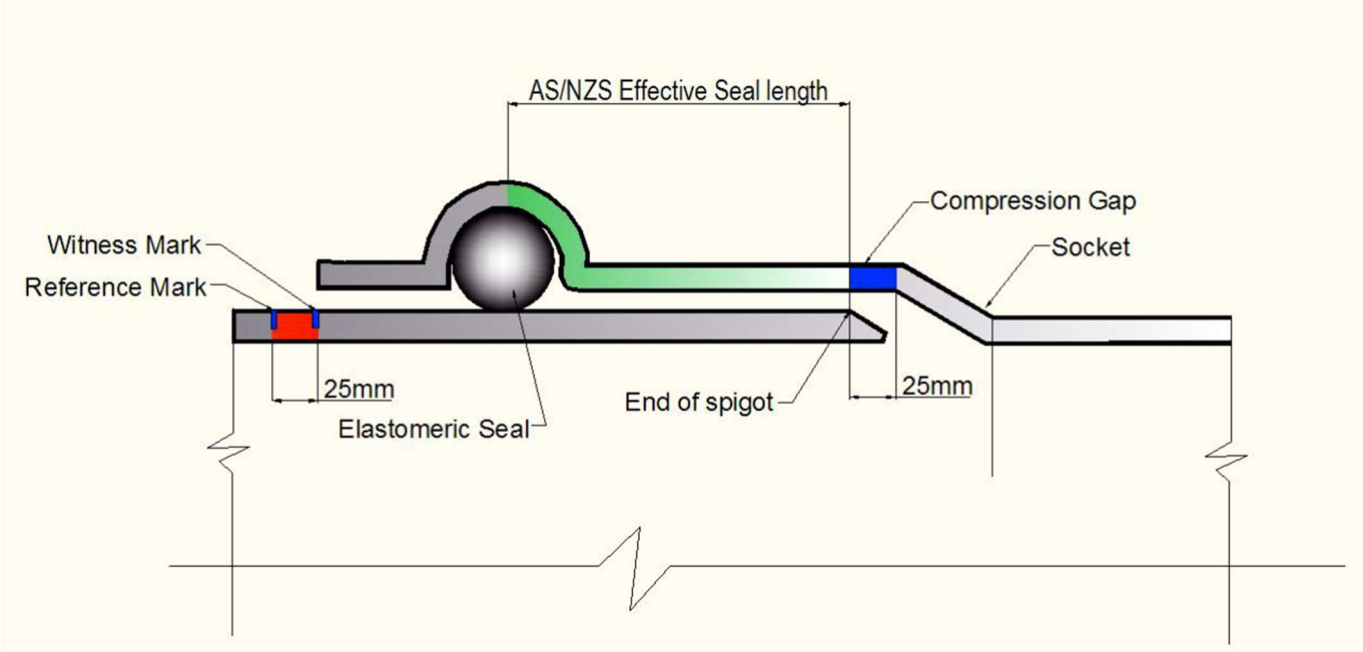
After consultation with the industry Council has adopted socket dimensions that are 25 mm longer than the minimum Effective Sealing Length specified by AS/NZS 12540 and AS/NZS 1260 (see sketch below).

The **Witness Mark** shall be placed so that there is a clearance (to act as a compression gap) of 25 mm between the end of the spigot and base of the socket.

A **Reference Mark** shall be placed 25 mm from the witness mark so that when the pipe is pushed home in the socket the reference mark is visible and 25 mm from the end of the pipe socket. The reference mark may be a band of clearly legible colour 25 mm wide and bordering the witness mark.

PVC Pipe Sizes NB (mm)	Minimum Effective Sealing Length (mm)
150	55
225	75
300	85
375	95

The following sketch illustrates the requirements.



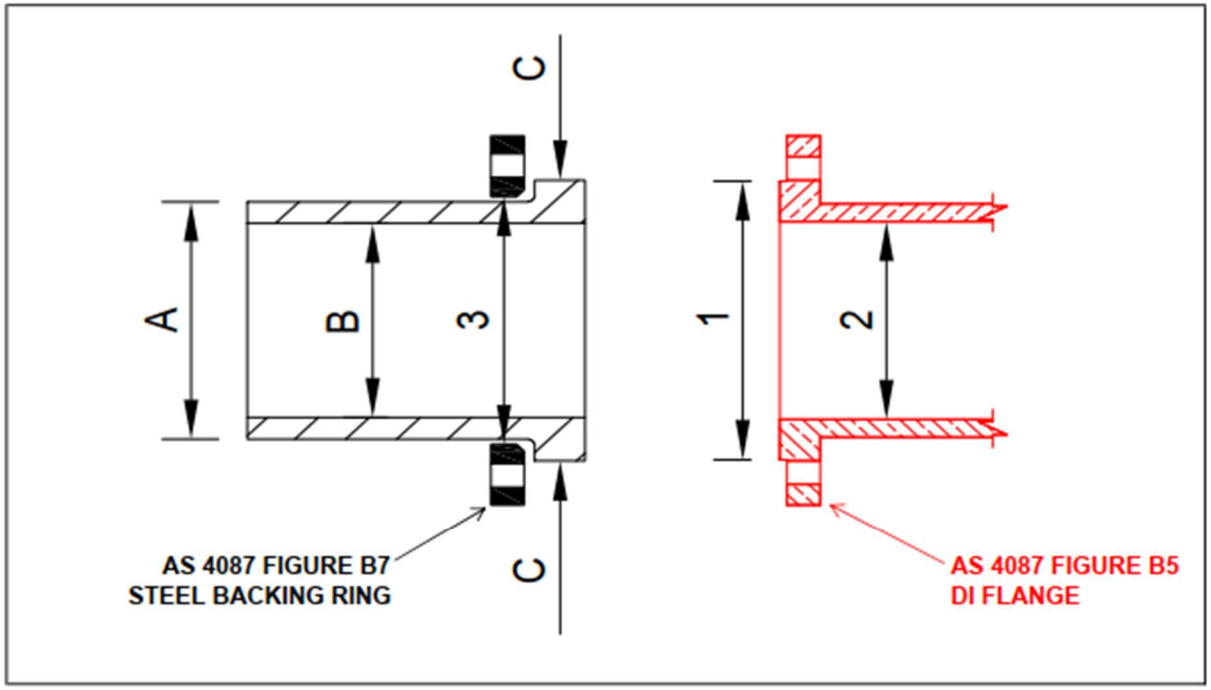
Additional information to assist pipe installers:

- Each witness mark must be placed around the circumference of the pipe barrel.
- All socketed/pipe connections must have a specific witness mark to match the correct socket depth.
- Each pipe spigot shall not be over-inserted or pushed beyond the witness mark (make sure the reference mark can be seen).
- Placing a witness mark around the circumference of the pipe barrel after pipe insertion is not permitted.

Appendix 3
Stub Flange and Backing Ring Table

Stub Flange and Backing Ring Tables

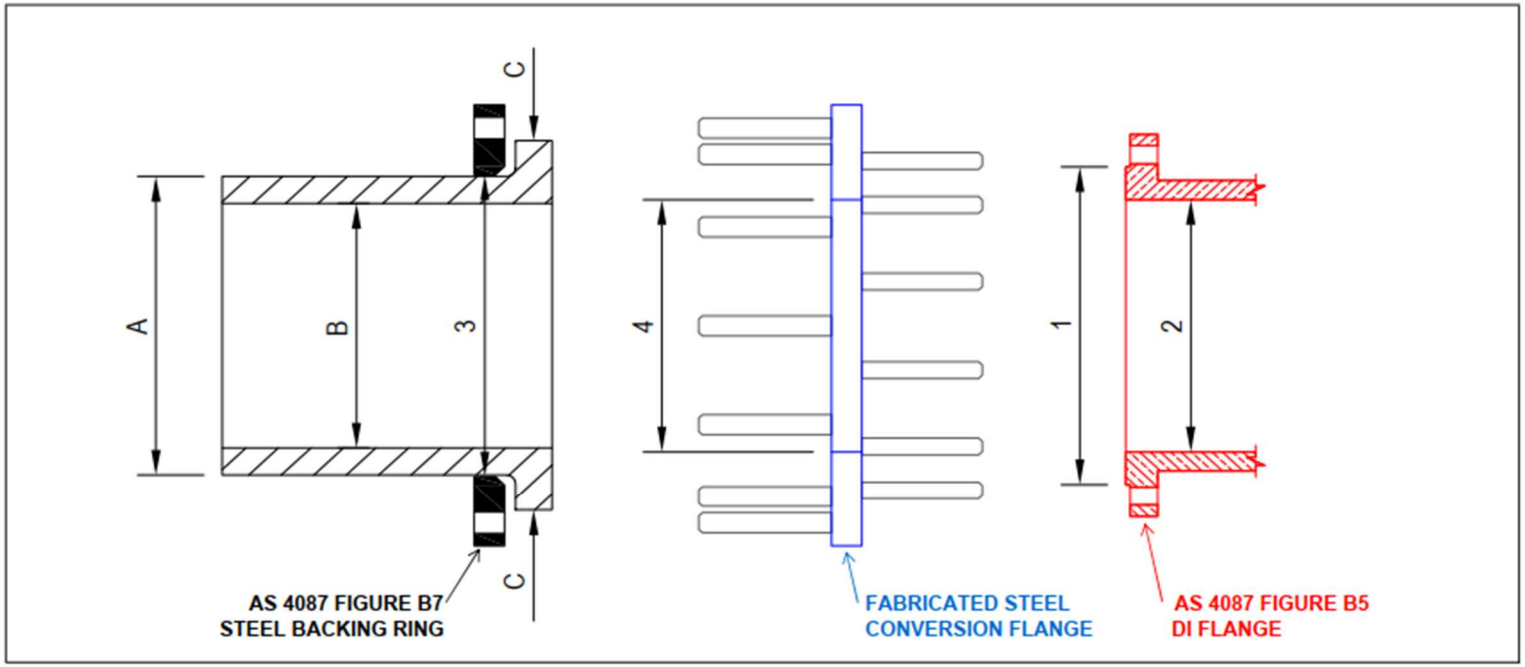
Conventional PE Stub Flange and Backing Ring



Nominal Bore	A (OD of PE)	SDR	B (ID of PE)	Back. Ring Flange Size* (see notes)	C (OD of PE Flange)	1 (OD of 4087 Raised Face)	% of Raised Face Engaged by PE Flange	2 (ID of Fitting)	Step in Bore	3 Backing Ring ID (from POP007)
100	125	13.6	106.6	100	164	154	99%	100	negligible	135
100	125	11.0	102.3	100	164	154	99%	100	negligible	135
150	180	13.6	153.5	150	220	211	99%	150	negligible	188
150	180	11.0	147.3	150	220	211	100%	150	negligible	188

*** Note: Steel Backing Rings Shall Comply With AS 4087 Figure B7**

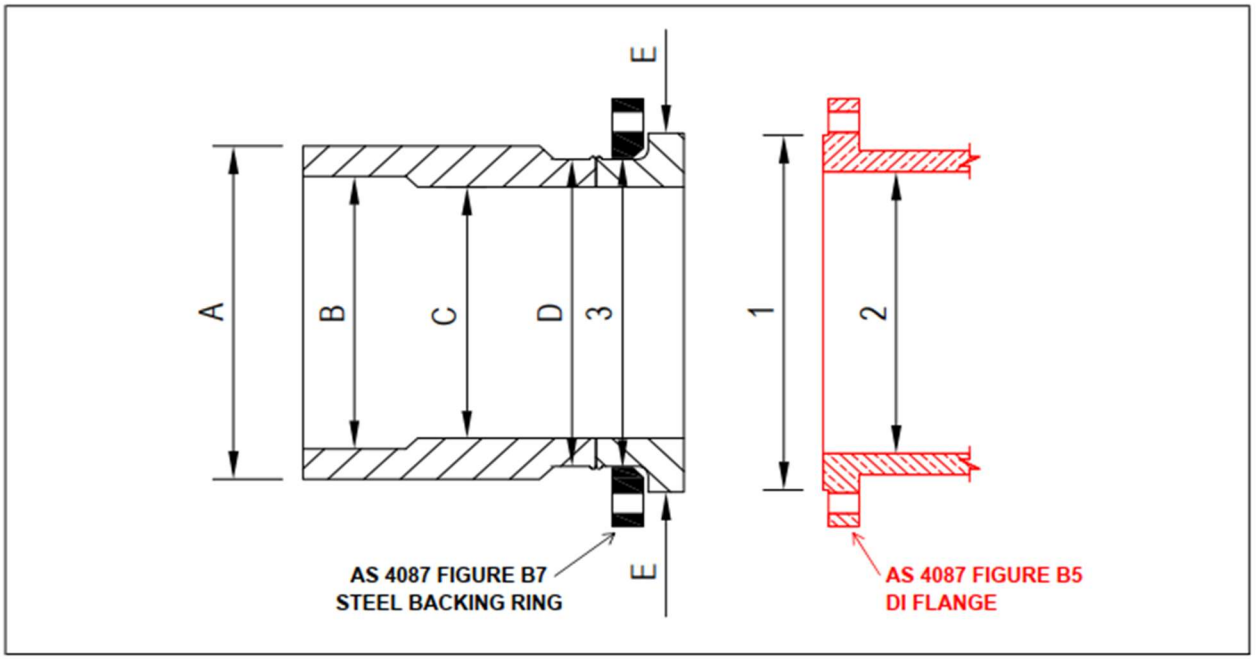
Conventional PE Stub Flange and Backing Ring with Conversion Flange



Nominal Bore	A (OD of PE Pipe)	SDR	B (ID of PE Pipe)	Back. Ring Flange Size* (from POP007) (see notes)	3 Back. Ring Flange ID (from POP007)	C (OD of PE Flange)	4 (ID of Conversion Flange)	Thickness of Conversion Flange	1 (OD of 4087 Raised Face)	% of Raised Face Engaged by PE Flange	Backing Ring ID (from POP007)	2 (ID of Fitting)	Step in Bore	Conversion Flange
100	125	13.6	106.6	100	135	164	N/A	N/A	154	99%	128	100	negligible	not required
100	125	11.0	102.3	100	135	164	N/A	N/A	154	99%	128	100	negligible	not required
150	180	13.6	153.5	150	188	220	N/A	N/A	211	99%	188	150	negligible	not required
150	180	11.0	147.3	150	188	220	N/A	N/A	211	100%	188	150	negligible	not required
200	250	13.6	213.2	250	288	332	200	30 mm	268	100%	288	200	approx. 12 mm	250 x 200
200	250	11.0	204.5	250	288	332	200	30 mm	268	100%	288	200	approx. 10 mm	250 x 200
300	355	13.6	302.8	350	376	442	300	30 mm	378	100%	376	300	negligible	350 x 300
300	355	11.0	290.5	350	376	442	300	30 mm	378	100%	376	300	approx. 10 mm	350 x 300
300	400	13.6	341.2	400	430	491	300	30 mm	378	100%	430	300	approx. 30 mm	
300	400	11.0	327.3	400	430	491	300	30 mm	378	100%	430	300	approx. 25 mm	
375	450	13.6	383.8	450	470	556	375	30 mm	463	100%	470	375	negligible	
375	450	11.0	368.2	450	470	556	375	30 mm	463	100%	470	375	negligible	

*** Note: Steel Backing Rings Shall Comply With AS 4087 Figure B7**

TYCO Pattern Slimline PE Stub Flange and Backing Ring



Nominal Bore	A (OD of PE Pipe)	SDR	B (ID of PE Pipe)	D (OD of Stub Flange - Flange End)	C (ID of Stub Flange - Flange End)	E (OD of PE Flange)	Back. Ring Flange Size* (see notes)	1 (OD of 4087 Raised Face)	% of Raised Face Engaged by PE Flange	3 Backing Ring ID (from Tyco)	2 (ID of Fitting)	Step in Bore	Conversion Flange
100	125	13.6	106.6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	125	11.0	102.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
150	180	13.6	153.5	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
150	180	11.0	147.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
200	250	13.6	213.2										
200	250	11.0	204.5	233.0	190.6	271.0	200	268	100%	237	200	approx. 10 mm	not required
300	355	13.6	302.8										
300	355	11.0	290.5	327.0	267.5	382.0	300	378	100%	331	300	approx. 30 mm	not required
300	400	13.6	341.2										
300	400	11.0	327.3	327.0	267.5	382.0	300	378	100%	331	300	approx. 30 mm	not required
375	450	13.6	383.8										
375	450	11.0	368.2	439.0	359.0	465.0	375	463	100%	443	375	approx. 16 mm	not required

Note: red text indicates size is estimated by GHD - not designed by Tyco

*** Note: Steel Backing Rings Shall Comply With AS 4087 Figure B7**

PE to DI Conversion Flange

DN		OD - Flange		OD - Raised Face		PCD		Number of Bolts		Fastener		Hole Size	
		AS 4087	BS10 Table D	AS 4087	BS10 Table D	AS 4087	BS10 Table D	AS 4087	BS10 Table D	AS 4087	BS10 Table D	AS 4087	BS10 Table D
100		215	215	154	154	178	178	4	4	M16	M16	18	18
150		280	280	211	211	235	235	8	8	M16	M16	18	18
200		335	335	268	268	292	292	8	8	M16	M16	18	18
250	[1]	405	405	328	328	356	356	8	8	M20	M20	22	22
300		455	455	378	378	406	406	12	12	M20	M20	22	22
350	[2]	525	525	438	438	470	470	12	12	M24	M24	26	26
375	[3]	550	N/A	463	N/A	495	N/A	12	N/A	M24	N/A	26	N/A
400		580	580	489	489	521	521	12	12	M24	M24	26	26

Notes:
[1] used with DN 250 stub flange
[2] used with DN355 stub flange
[3] there is no DN375 in BS10 Table D

Christchurch
City Council