

Vinidex Pty Ltd

PRODUCT APPRAISAL REPORT 1605 Issue 2

LINX™ and ZAP™ PN 20, PN 35 and Flange Class ductile iron pipe

AS/NZS 2280:2014 Ductile iron pipes and fittings

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**WATER SERVICES
ASSOCIATION OF AUSTRALIA**

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Overview of WSAA

The Water Services Association of Australia (WSAA) is the peak industry body representing the urban water industry. Our members provide water and sewerage services to over 20 million customers in Australia and New Zealand and many of Australia's largest industrial and commercial enterprises.

Based around our vision of 'customer driven, enriching life', WSAA facilitates collaboration, knowledge sharing, networking and cooperation within the urban water industry. We are proud of the collegiate attitude of our members which has led to industry-wide approaches to national water issues.

WSAA can demonstrate success in the standardisation of industry performance monitoring and benchmarking, as well as many research outcomes of national significance. The WSAA Executive retains strong links with policy makers and legislative bodies and their influencers, to monitor emerging issues of importance to the urban water industry.

WSAA was formed in 1995 as a non-profit organisation to foster the exchange of information between industry, government and the community, and to promote sustainable water resource management.

The urban water industry is committed to anchoring its services to customers' values, and to enrich communities where water services have broad economic, environmental and social values. In line with this our main activities focus on four areas:

1. influencing national and state policies on the provision of urban water services and sustainable water resource management
2. promoting debate on environmentally sustainable development and management of water resources and the community health requirements of public water supplies
3. improving industry performance and establishing benchmarks and industry leading practices for water service processes; and
4. fostering the exchange of information on education, training, research, water and wastewater management and treatment and other matters of common interest.

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1 EXECUTIVE SUMMARY

Vinidex Pty Ltd, founded in 1960, is a leading manufacturer and distributor of thermoplastic pipeline systems in Australia. Its systems are used in the transportation of fluids for infrastructure development, agriculture, mining and building.

Vinidex is wholly owned by the Aliaxis Group, a leading global manufacturer and distributor of fluid handling systems used in residential and commercial construction, as well as in industrial and public infrastructure applications. Aliaxis operates in over 40 countries, has more than 100 manufacturing and commercial entities and employs over 14,000 people.

Suns Pipelines Co Ltd is an established manufacturer of ductile iron pipes, fittings and other pipeline components, located in Gaoping City, Shanxi, China. Suns has been manufacturing ductile iron pipes for the Australian market since 2010, having previously supplied Tyco Flow Control and subsequently Pentair.

This Appraisal covers a range of ductile iron spigot-socket cement lined pipes manufactured to AS/NZS 2280:2014 in sizes DN 100 to DN 750 and pressure classes PN 20, PN 35 and flange class. The effective length of the pipes is 5.7 m and the socket seal design is T-type. Gulf Rubber supply the elastomeric seals.

This Issue 2 includes a section to better address the estimated life expectancy of DI pipes. (see Section 7). A report to demonstrate conformance of DN 750 elastomeric seal joints to the performance requirements of AS/NZS 2280 has also been submitted and QA documentation has been updated.

LINX is the brand name for zinc coated pipe and is offered with either general purpose Portland cement linings (LINX-GP), for transport of drinking or recycled water, or high alumina cement linings (LINX-HAC), for transport of sewerage and aggressive water with pH >4<12. LINX-GP is offered with a seal coating option.

ZAP is the brand name for pipe coated with a zinc-aluminium alloy and is offered with the same lining options as LINX. The application of metallic Zinc-Aluminium alloy coatings may enhance the external corrosion protection of the coating in some buried applications. Vinidex recommends the commissioning of a thorough soil survey and corrosion analysis by a competent corrosion specialist before installing pipes without PE sleeving.

Both Suns and Vinidex hold ISO 9001 licences and the pipe is covered by AS/NZS 2280 StandardsMark ISO Type 5 product certification.

1.1 Recommendations

It is recommended that WSAA members, subject to any specific requirements of the member, accept or authorise the range of LINX and ZAP ductile iron pipes as detailed in this report for use in water supply and sewerage pipelines provided pipeline design, installation, acceptance testing and commissioning are in accordance with WSAA Codes and the manufacturer's requirements.

2 THE APPLICANT

Vinidex Pty Ltd is a leading Australian manufacturer and distributor of thermoplastic pipe and fittings used in the transportation of fluids for infrastructure development, agriculture, mining and building.

Founded in 1960, Vinidex has pipe manufacturing factories and distribution centres located in Sydney, Melbourne, Brisbane, Toowoomba, Townsville, Launceston, Perth, Adelaide, Darwin and Wagga Wagga. The company also has a significant presence in the Asia-Pacific Rim, with operations in New Zealand.

Vinidex is wholly owned by the Aliaxis Group which is a leading global manufacturer and distributor, of fluid handling systems used in residential and commercial construction, as well as in industrial and public infrastructure applications.

Aliaxis is present in over 40 countries, has more than 100 manufacturing and commercial entities and employs over 14,000 people. In addition to the well-established markets of Europe and North America, Aliaxis has operations in Latin and South America, Australasia and Asia.

Further information is available on Vinidex and Aliaxis websites at www.vinidex.com.au or www.aliaxis.com.

2.1 The Manufacturer

Suns Pipelines Company Ltd specialises in the manufacture of ductile iron pipes, fittings and other pipeline components with a capacity of 100,000 tonnes per annum. The main equipment includes a hot mould centrifugal casting machine with multiple working positions. Additional casting machines imported from Duker in Germany utilise water cooled metal moulds. Suns manufacture pipes to EN 545, ISO 2531 and AS/NZS 2280.

Suns also apply coating and lining systems within their facilities, except seal coating.

Suns has been manufacturing ductile iron pipes for the Australian market since 2010. Their pipes have previously been WSAA appraised under PA 10/16 published in May 2012. Suns was supplying Tyco Flow Control (and subsequently Pentair) with their range of ductile iron pipes. Vinidex ductile iron pipes are manufactured to the same technical requirements and standards.

The Suns Pipeline Company Limited manufacturing facility is located at No.8 Pangcun Village Cast Industry District, Gaoping City, Shanxi, China. The factory is licenced to ISO 9001.

3 THE PRODUCT

This appraisal applies to the Vinidex range of LINX™ and ZAP™ ductile iron pipes manufactured to AS/NZS 2280:2014 and as listed in the Schedule of certified products. (Refer to Appendix 'B').

The ductile iron spigot – socket cement lined pipes are designed for pressure applications for the conveyance of potable water, recycled water, raw water, irrigation and pressure sewerage. The pipes are available in PN 20, PN 35 and flange class. See Tables 1 and 2 for details. The effective length of the pipes is 5.7 m and the socket seal design is T-type.

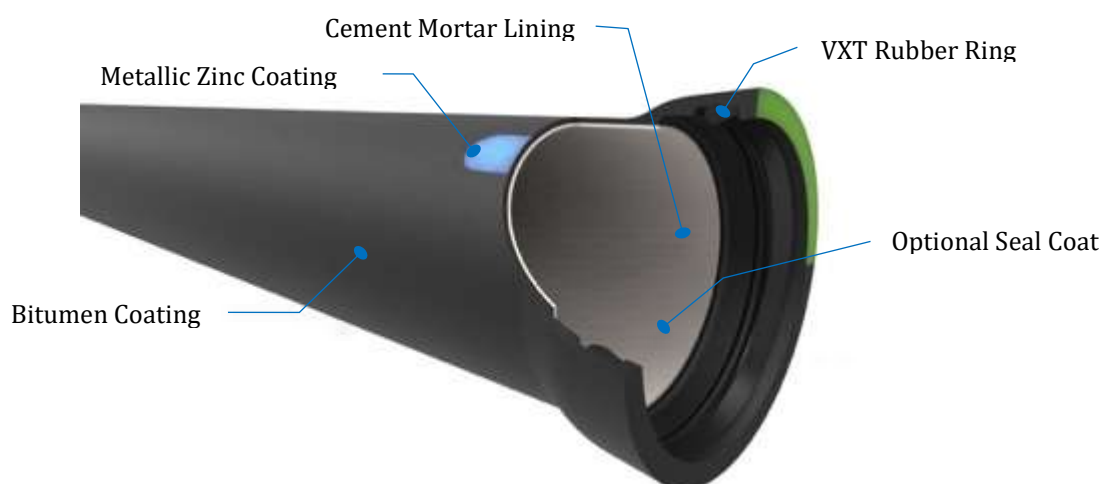


FIGURE 1 LINX PN 20 DI PIPE

The LINX range of pipes is externally coated with 200g/m² of metallic zinc with a finishing layer of bitumen paint or synthetic resin to a minimum of 100µm thickness.

The ZAP range of pipes is externally coated with 400g/m² of metallic zinc-aluminium alloy and a finishing layer of synthetic resin to a minimum of 100µm thickness. The application of metallic zinc-aluminium alloy coatings may enhance the external corrosion protection of the coating in some buried applications.

Cement mortar linings may be Type GP Portland cement for transport of drinking or recycled water or high alumina cement for transport of sewerage and aggressive water with pH >4<12. The GP cement lining is offered with a seal coating option.

Flange class pipes are also available in uncoated and unlined condition to allow for application of polymeric thermal bonded coatings after flanges are fitted.

TABLE 1 LINX RANGE OF DICL PIPES

PRESSURE CLASS		CEMENT LINING			
		UNLINED	GP PORTLAND CEMENT	GP PORTLAND CEMENT + SEAL COAT	HIGH ALUMINA CEMENT
		UL	LINX-GP	LINX-GPSC	LINX-HAC
PN 20	DN		DN 225-750	DN 225-750	DN 225-750
	EXTERNAL COATINGS		200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Red Finish Coat
PN 35	DN		DN 100-750	DN 100-750	DN 100-750
	EXTERNAL COATINGS		200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Red Finish Coat
FLANGE CLASS	DN	100-750	DN 100-750	DN 100-750	DN 100-750
	EXTERNAL COATINGS		200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Black Bitumen Finish Coat	200g/m ² Zinc + 100µm Red Finish Coat

TABLE 2 ZAP RANGE OF DI PIPES

PRESSURE CLASS		CEMENT LINING			
		UNLINED	GP PORTLAND CEMENT	GP PORTLAND CEMENT + SEAL COAT	HIGH ALUMINA CEMENT
		UL	ZAP-GP	ZAP-GPSC	ZAP-HAC
PN 20	DN		DN 225-750	DN 225-750	DN 225-750
	EXTERNAL COATINGS		400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Red Epoxy Finish Coat
PN 35	DN		DN 100-750	DN 100-750	DN 100-750
	EXTERNAL COATINGS		400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Red Epoxy Finish Coat
FLANGE CLASS	DN		DN 100-750	DN 100-750	DN 100-750
	EXTERNAL COATINGS		400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Blue Epoxy Finish Coat	400g/m ² Zinc/Al + 100µm Red Epoxy Finish Coat

4 SCOPE OF THE APPRAISAL

The Scope of this product appraisal application applies to the Vinidex range of LINX and ZAP ductile iron pipes as described in Section 3.

5 APPRAISAL CRITERIA

5.1 Quality Assurance Requirements

The WSAA Product Appraisal Technical Advisory Group accepts ductile iron pipes and fittings manufactured in compliance with AS/NZS 2280 *Ductile iron pipes and fittings* and duly certified by means of an ISO Type 5 product certification scheme undertaken by a JAS-ANZ accredited Conformity Assessment Body (CAB) or by an international accreditation system recognised by JAS-ANZ.

The manufacturer is generally expected to have a production management and control system that has been duly accredited in accordance with AS/NZS ISO 9001 as a prerequisite to undergoing a product certification audit.

The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08

5.2 Performance Requirements

The Vinidex range of ductile iron pipes has been appraised for compliance with AS/NZS 2280 *Ductile iron pipes and fittings*.

Appraisal criteria are also determined by the WSAA Product Appraisal Technical Advisory Group and regularly reviewed to ensure that the criteria reflect the requirements of WSAA members.

The following Product Specifications are also relevant to this application:

- WSA PS 200 - *Ductile Iron Pipes (CIOD) for Pressure Applications - Water supply and Sewerage*.
- WSA PS 320 – *Sleeving, Polyethylene (PE) for Ductile iron pipes and Fittings - Water supply and sewerage*
- WSA PS 312 - *Flange Gaskets and O-Rings*

Copies of the above Product Specifications can be found in Appendix C or downloaded from the WSAA website.

6 COMPLIANCE WITH APPRAISAL CRITERIA

6.1 Compliance with Quality Assurance Requirements

Vinidex has submitted the following quality certificates:

- ISO 9001:2015 Certificate of Registration No. 05315Q20881R0M issued to Suns Pipelines Company Ltd by Beijing NGV Certification Centre.
- ISO 9001:2015 Certificate of Registration No. QEC0570 issued to Vinidex Pty Ltd by SAI-Global.
- AS/NZS2280:2014 StandardsMark ISO Type 5 product certification Licence No. SMK 40456 issued to Vinidex Pty Ltd by SAI-Global.

Copies of the primary Quality Assurance and Product Certification licences have been included in Appendix B and are also available for downloading from the WSAA Members Website.

6.2 Compliance with Performance Requirements

6.2.1 Ductile iron

AS/NZS 2280 requires ductile iron to have a minimum tensile strength of 400 MPa, a minimum elongation of 10% and a maximum hardness of 230HB. The microstructure of ductile iron is required to have a minimum nodularity of 75% in forms V and VI and free carbides shall be a maximum of 5%.

Vinidex has provided a copy of a test report issued by SGS to indicate that the material properties meet the nominated requirements.

6.2.2 Wall thickness

The LINX and ZAP ductile iron pipes comply with the minimum wall thicknesses of PN 20, PN 35 and flange class ductile iron pipe specified in AS/NZS 2280. Vinidex has supplied copies of typical production test records to demonstrate compliance.

6.2.3 Coatings

The LINX range of pipes is externally coated with metallic zinc. The metallic zinc coating is applied by electric arc melting of zinc wire sprayed with compressed air. The mean mass per unit area is not less than 200g/m², applied in accordance with ISO 8179-1. The finishing layer for GP cement mortar lined pipes is black bitumen paint, applied to a minimum of 100µm thickness. The finishing layer for high alumina cement mortar lined pipes is a red coloured synthetic resin applied to a minimum of 100µm thickness.

The ZAP range of pipes is externally coated with metallic zinc-aluminium alloy. The metallic zinc-aluminium alloy coating is applied by electric arc melting of zinc-aluminium alloy wire sprayed with compressed air. The mean mass per unit area is not less than 400g/m². The finishing layer for GP cement mortar lined pipes is a blue coloured synthetic resin, applied to a minimum of 100µm thickness. The finishing layer for high alumina cement mortar lined pipes is a red coloured synthetic resin, applied to a minimum of 100µm thickness.

The ZAP range of pipes utilises a zinc-aluminium alloy coating, applied at higher than normal thicknesses, to provide an enhanced external corrosion protection for the pipes. Vinidex recommends the commissioning of a thorough soil survey and corrosion analysis by a competent corrosion specialist before installing pipes without PE sleeving.

Vinidex has supplied a Factory Approval Certificate issued to Suns by Bureau Veritas for application of coatings in accordance with ISO 8179-1.

6.2.4 Polyethylene sleeving

Polyethylene sleeving is manufactured for Vinidex by Integrated Packaging Pty Ltd. Integrated packaging is a Quality Endorsed Company and holds AS/NZS ISO 9001:2008 Certificate of Registration No QEC24241 issued by SAI Global for the design, manufacture, distribution and sale of flexible packaging.

Sleeving is available in blue, lilac or cream to accommodate drinking water, recycled water and sewerage applications.

6.2.5 Linings

The Vinidex LINX and ZAP ductile iron pipes are cement mortar lined by a centrifugal process at the Suns facility in accordance with the requirements of AS/NZS 2280. The raw materials are sourced locally from approved sub-suppliers in China.

Pipes suitable for transport of drinking water and recycled water are cement mortar lined using GP Portland cement complying with AS 3952-*Portland and blended cements*.

Pipes suitable for transport of sewerage and aggressive waters with pH values >4<12 are cement mortar lined using high alumina cement.

The thickness of cement mortar lining is specified in AS/NZS 2280 and Vinidex has provided typical test reports to confirm Suns' compliance.

6.2.6 Seal coating

Seal coating of cement mortar lined DI pipes may be considered for use in aggressive water situations, nominally less than 30 mg/litre, particularly in small diameter pipelines where flow rates are low and the residence time of water in the pipeline is long.

Where specified, Vinidex LINX and ZAP ductile pipes are seal coated in accordance with ISO 16132 *Ductile iron pipes and fittings – Seal coats for cement mortar linings* at a minimum thickness of 100µm. The seal coating is applied by IPCQ Pty Ltd, a recognised industrial coating applicator with over 20years experience applying seal coatings to potable water pipes in Australia.

6.2.7 Elastomeric seal joints

The Vinidex range of ductile iron pipes incorporates a T-type elastomeric seal joint design designated as VXT.



FIGURE 2 VXT ELASTOMERIC SEAL GASKET

Vinidex has submitted copies of Type Test reports for DN 300, DN 600 and DN 750 elastomeric seal joints, witnessed by SGS, to verify compliance with the requirements of AS/NZS 2280.

The elastomeric seal is manufactured by Gulf Rubber from EPDM to AS 1646. Gulf Rubber is a Quality Endorsed Company and a copy of their AS1646 StandardsMark licence has been submitted.

The bactericidal jointing lubricant is supplied by Thomas Grozier & Son Pty Ltd. Thomas Grozier has a WaterMark Licence No WMKA00103 issued by SAI Global for compliance to ATS 5200.014-2004 *Technical Specifications for plumbing and drainage products – Jointing materials*.

6.2.8 Joint deflection

AS/NZS 2280 specifies minimum joint deflection requirements as shown in Table 3.

TABLE 3 ELASTOMERIC SEAL JOINT DEFLECTIONS

Nominal Size DN	Min Joint Deflections Degrees
100-250	3.5
300-600	2.5
750	1

Vinidex has advised that whilst in-house testing has confirmed that their joints can accommodate larger deflections than the minimums specified in AS/NZS 2280, they recommend that the AS/NZS 2280 nominated deflections should not be exceeded.

6.2.9 Flanged joints

Flanges are screwed and glued on flange class pipe in accordance with AS/NZS 2280. Flanges comply with AS/NZS 4087 Fig 5 (PN 16) or Fig B6 (PN 35).

Vinidex supplies solid EPDM gaskets 3 mm thick complying with WSA PS 312 *Flanged Gasket and O-rings* for flanges rated at PN 16. For flanges rated at PN 35, 1.5 mm thick TEADIT compressed fibre gaskets are recommended.

6.2.10 Suitability for use with drinking water

Vinidex has supplied copies of AS/NZS 4020 Type Test reports from Australian Water Quality Centre for the following components:

- Cement mortar lining
- Interline 856 seal coat
- Zinc coating

The Gulf Rubber elastomeric seals are product certified and therefore compliant with AS/NZS 4020.

7 LIFE EXPECTANCY OF DI PIPE

7.1 Linings

Cement mortar lining is considered to be the default internal protection system for potable and recycled water applications.

Seal coating may be applied over cement mortar lining. The intended purpose of a seal coating is to reduce the contact between the cement mortar lining and the contents of the water main, thereby restricting lime leaching and consequent high pH levels when conveying soft (i.e. low carbonate alkalinity) water, especially in small diameter pipelines where flow rates are low and residence times are lengthy.

AS/NZS 2280 suggests that consideration should be given to the use of seal coatings where the total alkalinity of the water being conveyed is less than 30 mg/L.

Many Australian water utilities specify seal coatings as mandatory for pipes up to and including DN 300.

Calcium aluminate cement mortar linings are intended for aggressive water applications and are typically used in gravity and pressure sewerage mediums with pH between 4 and 12. For applications outside of this pH range consideration should be given to polymeric lining systems. Calcium Aluminate Cement is not AS/NZS 4020 compliant and is therefore not suitable for potable water applications.

WSA Technical Note 6 - *Guidelines for the use of cement mortar linings in sewerage applications* provides details of operating limits for different cements used for the cement mortar lining of DI and steel pipes for sewers. It reviews literature with regard to the use of cement mortar lining for sewerage conveyance and in particular focuses on the prime water chemistry constituents that need to be considered viz. sulphate(SO₄), pH, and hydrogen sulphide (H₂S) (which can be transformed to sulphuric acid). A copy of WSA Technical Note 6 is available for download from the WSAA website.

Polyurethane linings may also be considered for aggressive medium applications.

7.2 Coatings

The majority of Australian Water Agencies have adopted a policy of specifying loose polyethylene sleeving (LPS) for all ductile iron pipes as a corrosion protection measure, unless specialised coatings such as polyurethane or polyethylene, for example, are employed. Properly installed LPS provides a high degree of corrosion protection by creating a passive uniform environment around the pipe and limiting oxygen exposure. LPS should be installed in accordance with AS 3681 and only accredited pipe layers trained in the application of sleeving should be utilised.

The need for LPS depends on the type of soil and the required service life of the pipeline. Ductile iron pipes may be buried without extra external protection in soils that are not aggressive. In soils that are aggressive, and where either the time or the cost of soil assessment is prohibitive, LPS is the recommended solution.

The application of zinc coatings has not historically been utilised on ductile iron pipes in Australia, although they have been used in Europe for more than 60 years. Zinc coatings are now provided in Australia as a standard offering with 200 g/m² thickness complete with a finishing layer and are considered to enhance the external corrosion benefits of pipe in buried applications. In some soil applications it is considered acceptable to install zinc coated pipes without polyethylene sleeving.

Enhancements to zinc coatings are also available where 85/15 Zinc-Aluminium alloy, copper enhanced Zinc-Aluminium alloy and rare earth element enhanced Zinc-Aluminium alloys are offered with 400 g/m² thickness complete with a finishing layer. It is reported that these coatings provide improved corrosion protection over standard zinc coating and allows for installation in a wider range of soils, without the need for sleeving.

EN 545 nominates that DI pipes with zinc coating of 200 g/m² thickness and min 100µm thick finishing layer or enhanced zinc alloy coating with 400 g/m² thickness and min 100µm thick finishing layer can be buried without sleeving except:

For Zinc coatings

- soils with a resistivity less than 1500 Ω cm when laid above the water table, or less than 2500 Ω cm when laid below the water table
- mixed soils i.e. comprising two or more soil natures
- soils with a pH below 6 and a high reserve of acidity
- soils containing refuse, cinders, slags or polluted by wastes or industrial effluents
- areas where there are stray currents

For Zinc-Aluminium or enhanced Zinc-Aluminium alloys

- acidic peaty soils
- soils containing refuse, cinders, slag or polluted by wastes or industrial effluents
- soils below the marine water table with a resistivity lower than 500 Ω cm,
- areas where there are stray currents

EN 545 also advises that evidence of the long-term performance of the above-mentioned solution (e.g. tests and references) should be provided by the manufacturer.

It should be noted however that there has been no proven experience or data to support the extrapolation of European experience to Australian conditions and environments. It is considered imperative that testing be undertaken to ensure that the soil environment meets any necessary pre-conditions.

Manufacturers should be consulted for life expectancy estimates.

Refer to Appendix D for the manufacturers life expectancy estimates for the DI pipe considered in this Appraisal.

8 FITTING INSTRUCTIONS, TRAINING AND INSTALLATION

Pipes should be installed in accordance with well-established laying practices for ductile iron pipes and in accordance with the Pipeline Systems Handling and Installation Manuals provided by Vinidex and appropriate WSAA Codes.

Vinidex offers to provide personalised handling and installation training by their experienced pipeline professionals on a project by project basis, at no cost to the installer.

9 PRODUCT MARKING

Vinidex ductile iron pipes are marked in accordance with the requirements of AS/NZS 2280:2014 as per the following:

- Manufacturers Name: VINIDEX SUNS
- Nominal size: DN 100
- Pressure Classification: PN 20, PN 35, FC
- The standard number: AS/NZS 2280
- Standards Mark symbol – I>>>>I)
- Licence Number: SMK40456
- The words: “Suitable for Cutting” for pipes greater than DN 300, as applicable
- Pipes not complying with AS/NZS 4020: NOT SUITABLE FOR DRINKING WATER
- Colour coding of pipe classes: See Appendix A
-



FIGURE 3 EXAMPLES OF MARKING

10 PACKAGING AND TRANSPORTATION

The Vinidex range of ductile iron pipes are transported from China to Australia, either by break bulk shipping or containerised shipping.

Break bulk shipping has a project specialised stowage/ship loading plan that is developed by the shipping company in conjunction with Vinidex. Pipes are discharged at the most appropriate import port as determined by the pipeline project location. Pipes are generally stowed to a plan, protected with timber packing and secured by steel straps.

On arrival, the break bulk shipment or containers are offloaded and inspected by a Vinidex representative prior to despatch to the project site or into one of Vinidex’s distribution sites that are spread strategically around Australia.

Ductile iron pipes are packed for road freight on timber bearers to prevent damage and to comply with Australian road safety regulations. Pipes are loaded and secured to the trucks in accordance with Vinidex transport guidelines.

The loading of pipes and securing of loads are monitored at Vinidex sites by highly trained logistics supervisors. Vinidex has 60 years' experience in the transportation of pipes and ensures the pipe loading plan complies with national transport and safety requirements. Unloading at site shall be in accordance with Vinidex transport standard operating procedures.

Pipes damaged during transport should be reported to the local Vinidex representative who will arrange inspection and repair or replacement as deemed necessary.

11 PRODUCT WARRANTY

The products are covered by the normal commercial and legal requirements of the *Competition and Consumer Act 2010 (Cth)*, which covers manufacture to the relevant standard, and details of Vinidex's warranty is included in their terms and conditions of sale.

12 WATER AGENCY EXPERIENCE WITH THE PRODUCT OR FIELD TESTING REPORT

Ductile iron pipes are well established products and installation, operation and maintenance are well understood by experienced installers. Suns' ductile iron pipes have been supplied previously to Australia and it is considered unnecessary to conduct field trials.

13 DISCUSSION

Vinidex supplies a complete range of pipeline components to complement the installation of the ductile iron pipeline system. Products include a complete range of ductile iron fittings, mechanical couplings, repair clamps and tapping bands, however are not included within the scope of this Appraisal.

14 OUTCOMES OF EXPERT PANEL PRODUCT REVIEW

No additional requirements have been identified.

15 FUTURE WORKS

There are no future works items identified for this Appraisal.

16 DISCLAIMER

This Product Appraisal Report (Report) is issued by the Water Services Association of Australia Limited on the understanding that:

This Report applies to the product(s) as submitted. Any changes to the product(s) either minor or major shall void this Report.

To maintain the recommendations of this Report any such changes shall be detailed and notified to the Product Appraisal Manager for consideration and review of the Report and appropriate action. Appraisals and their recommendations will be the subject of continuous review dependent upon the satisfactory performance of products.

WSAA reserves the right to undertake random audits of product manufacture and installation. Where products fail to maintain appraised performance requirements the appraisal and its recommendations may be modified and reissued. Appraisal reports will be reviewed and reissued at regular intervals not exceeding five (5) years.

The following information explains a number of very important limits on your ability to rely on the information in this Report. Please read it carefully and take it into account when considering the contents of this Report.

Any enquiries regarding this report should be directed to the Program Manager, Carl Radford, Phone: 03 8605 7601 email carl.radford@wsaa.asn.au.

16.1 Issue of Report

This Report has been published and/or prepared by the Water Services Association of Australia Limited and nominated Project Manager and peer group of technical specialists (the Publishers).

The Report has been prepared for use within Australia only by technical specialists that have expertise in the function of products such as those appraised in the Report (the Recipients).

By accepting this Report, the Recipient acknowledges and represents to the Publisher(s) and each person involved in the preparation of the Report that the Recipient has understood and accepted the terms of this Disclaimer.

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Neither the Publisher(s) nor any person involved in the preparation of the Report accept(s) any liability for any loss or damage suffered by any person however caused (including negligence or the omission by any person to do anything) relating in any way to the Report or the product appraisal criteria underlying it. This includes (without limitation) any liability for any recommendation or information in the Report or any errors or omissions.

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The Water Services Association of Australia Limited does not undertake any assessment of whether the importation, manufacture, sale or use of the Product the subject of this Report infringes the intellectual property rights or proprietary rights of any person. Recipients of the report should undertake their own assessment of whether (as relevant) the importation, manufacture, sale or use of the relevant Products infringe the intellectual property rights or other proprietary rights of any person. If the Product infringes intellectual property rights or other proprietary rights there is potential for the supply of the Products to be interrupted.

From time to time the Water Services Association of Australia Limited and the other Publishers may receive notice of allegations that the importation, manufacture, sale or use of the Product infringes intellectual property rights or other proprietary rights. The Water Services Association of Australia Limited's policy is to not refer to such allegations in its reports or take any other steps to put Recipients on notice of such allegations, unless and until it is aware that the allegations have been admitted or proved in Court. As such, Recipients acknowledge, agree and accept that the Water Services Association of Australia Limited may have information in its possession about intellectual property rights infringement allegations or other infringement allegations in relation to the Product which are not referred to or disclosed in this Report and which are not otherwise communicated to Recipients.

16.2.3 Need for independent assessment

The information and any recommendation contained (expressly or by implication) in this Report are provided in good faith (and subject to the limitations noted in this Report). However, you should treat the information as indicative only. You should not rely on that information or any such recommendation except to the extent that you reach an agreement to the contrary with the Publisher(s).

This Report does not contain all information that a person might require for the purposes of assessing any product discussed or appraised within it (Product). The product appraisal criteria used in preparing this Report may not address all relevant aspects of the Product.

Recipients should seek independent evidence of any matter which is material to their decisions in connection with an assessment of the Product and consult their own advisers for any technical information required. Any decision to use the Product should take into

account the reliability of that independent evidence obtained by the Recipient regarding the Product.

Recipients should also independently verify and assess the appropriateness of any recommendation in the Report, especially given that any recommendation will not take into account a Recipient's particular needs or circumstances.

WSAA has not evaluated the extent of the product liability and professional indemnify insurance that the provider of the product maintains. Recipients should ensure that they evaluate the allocation of liability for product defects and any professional advice obtained in relation to the product or its specification including the requirements for product liability and professional indemnity insurance.

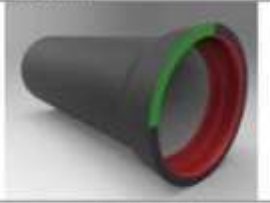

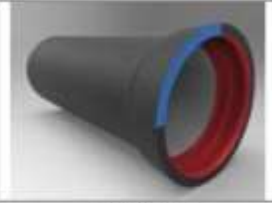
16.3 No Updating

Neither the Publisher(s) nor any person involved in the preparation of this Report [has] [have] any obligation to notify you of any change in the information contained in this Report or of any new information concerning the Publisher(s) or the Product or any other matter.

16.4 No Warranty

The Publisher(s) do[es] not, in any way, warrant that steps have been taken to verify or audit the accuracy or completeness of the information in this Report, or the accuracy, completeness or reasonableness of any recommendation in this Report.

APPENDIX A – PRODUCT LITERATURE

LINX PIPE – POTABLE WATER			
Application	Potable Water and Irrigation		
Standards	AS/NZS 2280, 1646, 4020, 1831 - ISO8179-1, 16132		
Nominal Diameter	100, 150, 200, 225, 250, 300, 375, 450, 500, 600, 750		
Effective Length	5700mm		
Colour Identification			
	Green Band	Red Band	Blue Band
	PN20	PN35	Flange Class
Pressure Class	Elastomeric Rubber Rings – "T-LINX" (Push – On) EPDM		
Joint Type	DN100 – DN250 3.5° DN300 – DN600 2.5° DN750 1°		
Deflection	First Layer	Zinc	200g/m ²
External Coating	Topcoat	Bitumen - Black	100µm
Internal Lining	Cement Mortar AS3972 type GP		
Internal Socket Coating	Red Epoxy		
Seal Coating (optional)	Interline 876		

LINX PIPE – SEWER & AGGRESSIVE FLUIDS			
Application	Gravity and Pressure Sewers		
Nominal Diameter	100, 150, 200, 225, 250, 300, 375, 450, 500, 600, 750		
Effective Length	5700mm		
Colour Identification			
	Green Band	Red Band	Blue Band
	PN20	PN35	Flange Class
Pressure Class	Elastomeric Rubber Rings – "T-LINX" (Push – On) EPDM		
Joint Type	DN100 – DN250 3.5° DN300 – DN600 2.5° DN750 1°		
Deflection	First Layer	Zinc	200g/m ²
External Coating	Topcoat	Red Epoxy	100µm
Internal Lining	Cement Mortar - High Alumina AS3972 type HAC		
Internal Socket Coating	Red Epoxy		
Seal Coating (optional)	Interline 876		

ZAP GP PIPE – POTABLE WATER			
Application	Potable Water and Irrigation		
Standards	AS/NZS 2280, 1646, 4020, 1831 - ISO8179-1, 16132		
Nominal Diameter	100, 150, 200, 225, 250, 300, 375, 450, 500, 600, 750		
Effective Length	5700mm		
Colour Identification			
	Green Band	Red Band	Blue Band
	Pressure Class PN20	Pressure Class PN35	Flange Class
Joint Type	Elastomeric Rubber Rings – "T-LINX" (Push – On) EPDM AS1646		
Deflection	DN100 – DN250	3.5°	
	DN300 – DN600	2.5°	
	DN750	1°	
External Coating	First Layer	Zinc - Aluminium	400g/m ²
	Topcoat	Epoxy - Blue	100µm
Internal Lining	Cement Mortar AS3972 type GP		
Internal Socket Coating	Epoxy - Blue		
Seal Coating (optional)	Interline 876		

ZAP® PIPE – SEWER WATER			
Application	Potable Water and Irrigation		
Standards	AS/NZS 2280, 1646, 4020, 1831 - ISO8179-1, 16132		
Nominal Diameter	100, 150, 200, 225, 250, 300, 375, 450, 500, 600, 750		
Effective Length	5700mm		
Colour Identification			
	Green Band	Red Band	Blue Band
	Pressure Class PN20	Pressure Class PN35	Flange Class
Joint Type	Elastomeric Rubber Rings – "T-LINX" (Push – On) EPDM AS1646		
Deflection	DN100 – DN250	3.5°	
	DN300 – DN600	2.5°	
	DN750	1°	
External Coating	First Layer	Zinc	400g/m ²
	Topcoat	Epoxy - Red	100µm
Internal Lining	Cement Mortar AS3972 type GP		
Internal Socket Coating	Blue Epoxy		
Seal Coating (optional)	Interline 876		

APPENDIX B - QUALITY CERTIFICATIONS

Copies of the following Quality Certification Certificates are available for downloading from the WSAA members only website.

TABLE B1 VINIDEX PTY LTD – The ISO Type 5 Product Certification Scheme shall meet the criteria described in WSA TN-08MANAGEMENT SYSTEM

224 Musgrave Road Coopers Plains QLD 4108	
Quality Systems Standard	ISO 9001:2015
Certification licence no.	QEC0570
Certifying agency	SAI-GLOBAL
First date of certification	19 February 1991
Current date of certification	24 November 2017
Expiry date of certification	21 November 2020

TABLE B2 SUNS PIPELINES COMPANY LIMITED – MANAGEMENT SYSTEM

8 Pangcun Casting Industrial Park, Gaoping City, Shanxi, China	
Quality Systems Standard	ISO 9001:2015
Certification licence no.	05315Q20881R1M
Certifying agency	Beijing NGV Certification Centre
First date of certification	25 June 2009
Current date of certification	18 May 2018
Expiry date of certification	4 May 2021

TABLE B3 VINIDEX PTY LTD– PRODUCT CERTIFICATION

224 Musgrave Road Coopers Plains QLD 4108	
Product Standard/Spec.	AS/NZS 2280:2014
Certificate No.	SMK40456
Issuing certification body	SAI-Global
First date of certification	6 August 2015
Current date of certification	5 December 2018
Expiry date of certification	5 August 2020



CERTIFICATE OF REGISTRATION

This is to certify that:
Vinidex Pty Ltd

ABN 42 000 664 942

Level 4 26 College Street Darlinghurst NSW 2010 AUSTRALIA
(Refer to Attachment to Certificate of Registration dated 24 November 2017 for additional certified sites)

operates a

QUALITY MANAGEMENT SYSTEM

which complies with the requirements of

ISO 9001:2015

for the following scope

The design, manufacture and distribution of polyethylene, polypropylene and unplasticised PVC pipes, conduits and associated fittings for the water supply, sewerage, drainage, electrical, mining, gas, rural and communications industries.

Certificate No: QEC0570

Issued: 24 November 2017

Originally Certified: 19 February 1991

Expires: 21 November 2020

Current Certification: 22 November 2017

Nicole Grantham
General Manager SAI Global Certification Services



Registered by:
SAI Global Certification Services Pty Ltd (ACN 106 716 669) 680 George Street Sydney NSW 2000 Australia with SAI Global Pty Limited 680 George Street Sydney NSW 2000 Australia ("SAI Global") and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out this assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. To verify that this certificate is current please refer to SAI Global On-Line Certification register at <http://www.sai-global.com>





ATTACHMENT TO CERTIFICATE OF REGISTRATION

These sites are registered under certificate No: QEC0570 issued on 24 November 2017.

Vinidex Pty Ltd

Extrusion 254 Woodpark Road Smithfield NSW 2164 AUSTRALIA

Injection Moulding 254 Woodpark Road Smithfield NSW 2164 AUSTRALIA

101 Bymes Road Wagga Wagga NSW 2650 AUSTRALIA

3846 Marjorie Street Berrimah NT 0828 AUSTRALIA

49 Enterprise Street Bohle QLD 4818 AUSTRALIA

14 Enterprise Street Bohle QLD 4818 AUSTRALIA

224 Musgrave Road Coopers Plains QLD 4108 AUSTRALIA

Lot 2, Witmack Road Wellcamp QLD 4350 AUSTRALIA

9 - 11 Kauma Avenue Edinburgh SA 5111 AUSTRALIA

15 Thistle Street South Launceston TAS 7249 AUSTRALIA

Unit 1 10 Duerdin Street Notting Hill VIC 3168 AUSTRALIA

231 - 245 St Albans Road Sunshine VIC 3020 AUSTRALIA

Sainsbury Road O'Connor WA 6163 AUSTRALIA

These registrations are dependent on Vinidex Pty Ltd maintaining their scope of registration to ISO 9001:2015.

Registered by:

SAI Global Certification Services Pty Ltd (ACN 106 716 669) 680 George Street, Sydney NSW 2000 Australia with SAI Global Pty Limited 680 George Street Sydney NSW 2000 Australia ("SAI Global") and subject to the SAI Global Terms and Conditions for Certification. While all due care and skill was exercised in carrying out this assessment, SAI Global accepts responsibility only for proven negligence. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. To verify that this certificate is current please refer to SAI Global On-Line Certification register at <http://www.sai-global.com>





The Authentication Certificate of Quality Management System

Suns Pipelines Company Limited

Registered/Production/Business/Office Address: No.8 Pangcun Village Cast Industry District, Gaoping City, Shanxi, China.

Is in conformity with
GB/T19001-2016/ISO9001:2015 standard requirements

The certificate is valid for the following scope:

**Production of centrifugal ductile cast pipe and pipe fittings
(excluding sintering and iron refining process, except for permitted requirements)**

Registration No. of Certificate:	05318Q31211R1M
Date of the Awarded Certificate:	18-05-2018
Term of the Certificate's Validity:	18-05-2018-04-05-2021
Date of the First Authentication:	25-06-2009
Enterprise Organization Code:	91140581746036405L

This certificate in the provisions of the state's administrative license, qualification within the scope of used together shall be valid
The certificate information can be in the Certification and Accreditation Administration of the People's Republic of China web site inquiries (www.cncb.gov.cn)
If not stick the laser surveillance mark after the date of surveillance expires, this certificate is invalid
This Certificate is issued in both Chinese and English. In the event of any discrepancy between the two versions, the Chinese version shall prevail

The first surveillance	Mark stick here	The second surveillance	Mark stick here
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中国认可
国际互认
管理体系
MANAGEMENT SYSTEM
CNAS C053-M

General Manager: *Zhaotang*

Registered Address of Certification Authority: 701, No. 7 Jianguomennei Street, Dongcheng District, Beijing.
Mailing Address of Certification Authority: Rm. 701, Block 1, Guanghua Chang'an Building, No. 7 Jianguomennei Street, Dongcheng District, Beijing. Tel: 010-50981300 P.C.: 100005 Http://www.ngv.org.cn



STANDARDSMARK LICENCE

SAI Global hereby grants:

VINIDEX

ABN 42 000 664 942

224 MUSGRAVE ROAD, COOPERS PLAINS, Brisbane, QLD 4702, Australia

StandardsMark Licence

Manufactured to:

AS/NZS 2280:2014 - Ductile iron pipes and fittings

"the StandardsMark Licensee" the right to use the STANDARDSMARK as shown below only in respect of the goods described and detailed in the Schedule which are produced by the Licensee or on behalf of the Licensee* and which comply with the appropriate Standard referred to above as from time to time amended. The Licence is granted subject to the rules governing the use of the STANDARDSMARK and the Terms and Conditions for certification and licence. The Licensee covenants to comply with all the Rules and Terms and Conditions.

Licence No: SMK40456

Issued : 5 December 2018

Expires : 5 August 2020

Originally Certified : 6 August 2015

Current Certification : 3 December 2018

Kevin Goodwin
General Manager Technical Services
SAI Global Assurance



* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI Global") 680 George Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to www.saiglobal.com, for the list of product models.



SCHEDULE TO STANDARDSMARK LICENCE

SAI Global hereby grants:

VINIDEX

224 MUSGRAVE ROAD, COOPERS PLAINS, Brisbane, QLD 4702, Australia

StandardsMark Licence

Manufactured to:

AS/NZS 2280:2014 - Ductile iron pipes and fittings

Model identification of the goods on which the STANDARDSMARK may be used:

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
100	ZAPDP 10035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
100	LINKDP 100FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
100	LINKDP 100FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
100	ZAPDP 100FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
100	LINXDP 10035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

Licence No: SMK40456

Issued Date: 5 December 2018

This schedule supersedes all previously issued schedules



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SCHEDULE TO STANDARDSMARK LICENCE

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
100	LINKDP 100FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
100	ZAPDP 10035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
100	LINXDP 10035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
100	LINKDP 100FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
100	ZAPDP 10035.GP	35	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
100	LINXDP 10035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
100	LINKDP 100FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	ZAPDP 15035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

Licence No: SMK40456

Issued Date: 5 December 2018

This schedule supersedes all previously issued schedules



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SCHEDULE TO STANDARDSMARK LICENCE

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
150	ZAPDP 150FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	LINXDP 150FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	LINXDP 15035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	LINXDP 150FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
150	ZAPDP 150FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI CL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
150	LINXDP 150FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	ZAPDP 15035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
150	ZAPDP 15035.GP	35	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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SCHEDULE TO STANDARDSMARK LICENCE

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
150	ZAPDP 150FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
150	LINXDP 15035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
150	LINXDP 15035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
200	LINXDP 200FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	ZAPDP 20035.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
200	LINXDP 20035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	LINXDP 200FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
200	LINXDP 20035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
200	ZAPDP 200FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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Issued Date: 5 December 2018

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SCHEDULE TO STANDARDSMARK LICENCE

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
200	ZAPDP 20035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
200	ZAPDP 200FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	ZAPDP 20035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	LINXDP 20035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	LINXDP 200FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
200	ZAPDP 200FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	ZAPDP 22520.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	ZAPDP 22535.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018

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Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
225	ZAPDP 225FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	ZAPDP 225FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	LINXDP 22520.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	ZAPDP 22520.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 22535.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 22520.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	ZAPDP 22535.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	ZAPDP 225FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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225	ZAPDP 22520.GP	20	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
225	LINXDP 22535.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 225FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 22535.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 225FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 225FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
225	LINXDP 22520.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
250	ZAPDP 25020.GP	20	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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250	LINXDP 250FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 25035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 25020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	ZAPDP 250FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
250	LINXDP 25020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 25035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 250FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	ZAPDP 250FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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250	ZAPDP 25035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	ZAPDP 25020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 250FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
250	LINXDP 25020.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
250	ZAPDP 25035.GP	35	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
250	ZAPDP 250FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
250	ZAPDP 25035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
250	ZAPDP 25020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DI CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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250	LINXDP 25035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	ZAPDP 30035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	ZAPDP 30020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	ZAPDP 300FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	ZAPDP 300FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI/CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
300	ZAPDP 30035.GP	35	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
300	ZAPDP 30020.GP	20	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
300	ZAPDP 300FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI/CL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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300	ZAPDP 30020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
300	LINXDP 300FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 300FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 30020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 30035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 30035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 30020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018

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300	LINXDP 30035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
300	LINXDP 30020.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 375FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
375	ZAPDP 37520.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 37520.GP	20	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
375	ZAPDP 37520.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
375	LINXDP 37535.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018

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375	LINXDP 37520.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 37535.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
375	LINXDP 375FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 37535.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 375FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 375FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
375	LINXDP 37535.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	LINXDP 375FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
375	LINXDP 375FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	LINXDP 37520.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	ZAPDP 37535.GP	35	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
375	LINXDP 37520.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
375	LINXDP 37535.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DI/CL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 45020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 45020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DI/CL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
450	ZAPDP 45035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DI/CL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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450	LINXDP 45035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	LINXDP 450FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	LINXDP 45020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
450	LINXDP 45020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	LINXDP 45035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 450FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	LINXDP 45020.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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450	LINXDP 45035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 450FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
450	LINXDP 450FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 45035.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
450	LINXDP 450FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
450	ZAPDP 450FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
500	LINXDP 50035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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500	LINXDP 50035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	LINXDP 50020.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
500	ZAPDP 500FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
500	LINXDP 500FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
500	LINXDP 500FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50035.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

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500	ZAPDP 500FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
500	LINXDP 500FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 500F.C.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	LINXDP 50020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
500	ZAPDP 50020.GP	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
500	LINXDP 50020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
500	LINXDP 50035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018

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600	LINXDP 60035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
600	ZAPDP 60035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	ZAPDP 600FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 600FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 60035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 60020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 600FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	ZAPDP 60020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN- ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 600FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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600	ZAPDP 600FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
600	ZAPDP 60020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
600	ZAPDP 60035.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
600	ZAPDP 60020.GP	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
600	LINXDP 60020.GP	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/GREEN, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 60020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
600	LINXDP 60035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018

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750	ZAPDP 600FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	ZAPDP 60020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	ZAPDP 60035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN-ALUM400 HAC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 60035.GPSC	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 600FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 60020.HAC	20	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/GREEN, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 60020.GPSC	20	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC + SEAL COAT 5.7m L	ZN200g/m ² BITUMEN COATED, PORTLAND CEMENT + SEAL COAT	VINIDEX LINX	H1	27 Nov 2018

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750	LINXDP 60035.GP	35	SOC-SP	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/RED, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 600FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR WATER	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² BITUMEN BLACK/BLUE, PORTLAND CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	LINXDP 60035.HAC	35	SOC-SP	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/RED, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	ZAPDP 60020.GPSC	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
750	ZAPDP 60035.GPSC	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT+ SEAL COAT	VINIDEX ZAP	H1	27 Nov 2018
750	ZAPDP 600FC.GPSC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC + SEAL COAT 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
750	ZAPDP 600FC.GP	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE	DICL PIPE ZN-ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/BLUE, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

Licence No: SMK40456

Issued Date: 5 December 2018

This schedule supersedes all previously issued schedules



* For details of manufacture, refer to the licensee

The STANDARDSMARK is a registered certification trademark of SAI Global Pty Limited (A.C.N. 050 644 642) and is issued under licence by SAI Global Certification Services Pty Limited (ACN 108 716 669) ("SAI Global") 680 George Street, Sydney NSW 2000, GPO Box 5420 Sydney NSW 2001. This certificate remains the property of SAI Global and must be returned to SAI Global upon its request. Refer to the Schedule for the list of product models.

SCHEDULE TO STANDARDSMARK LICENCE

Nominal Size (DN)	Model Identification	Nominal Pressure (PN)	Joint Designation	Product Type	Product Description	Coating / Lining	Brand Name	Appendix H Ref	Date Endorsed
750	LINXDP 600FC.HAC	FLANGE CLASS	SOC-PL	DUCTILE IRON PIPE FOR SEWAGE	DICL PIPE ZN200 OPC 5.7m L	ZN200g/m ² + EPOXY RED/BLUE, HIGH ALUMINA CEMENT MORTAR	VINIDEX LINX	H1	27 Nov 2018
750	ZAPDP 60020.GP	20	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/GREEN, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018
750	ZAPDP 60035.GP	35	SOC-SP	DUCTILE IRON PIPE	DICL PIPE ZN- ALUM400 OPC 5.7m L	ZN-ALUM 400g/m ² +EPOXY BLUE/RED, PORTLAND CEMENT MORTAR	VINIDEX ZAP	H1	27 Nov 2018

End of Record

Licence No: SMK40456

Issued Date: 5 December 2018

This schedule supersedes all previously issued schedules



* For details of manufacture, refer to the licensee

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APPENDIX C - WSA PRODUCT SPECIFICATION

WATER SERVICES ASSOCIATION of Australia

PRODUCT SPECIFICATION

WSA PS - 200 DUCTILE IRON PIPES (CIOD) FOR PRESSURE APPLICATIONS - WATER SUPPLY AND SEWERAGE

200.1 SCOPE

This specification covers ductile iron pipes having "cast iron outside diameters" (CIOD) for pressure applications in water supply¹ and sewerage.

Pipes without flanges may be used with pipelines up to and including PN 35. Pipes with flanges may be used up to the maximum pressure rating of the flange, generally PN 16.

200.2 REQUIREMENTS

- (a) Ductile iron spigot-socket pipes shall comply with AS/NZS 2280:2014/Amdt 1:2015.
- (b) Pipes shall be cement mortar lined² to AS/NZS 2280:2014/Amdt 1:2015.
- (c) Pipes shall be externally coated with bituminous or synthetic resin coating to AS/NZS 2280:2014/Amdt 1:2015.
- (d) Elastomeric joint seals shall be EPDM complying with AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (e) Pipes, joint seals, flange gaskets³ and jointing lubricant shall comply with AS/NZS 4020:2005.
- (f) Where pipes do not comply with AS/NZS 4020:2005, they shall be marked with 'NOT SUITABLE FOR DRINKING WATER' in accordance with Clause 1.8.4 of AS/NZS 2280:2014/Amdt 1:2015.

200.3 QUALITY ASSURANCE

- (a) Ductile iron pipes shall have product certification (ISO Type 5) to AS/NZS 2280:2014/Amdt 1:2015.
- (b) Elastomeric joint seals shall have product certification (ISO Type 5) to AS 1646:2007 and AS 681.1:2008 (EN 681-1:1996).
- (c) Flange gaskets shall have certificates of compliance to WSA 109:2011.
- (d) All products shall be marked in accordance with the conformity assessment body's requirements.

200.4 AGENCY OR PROJECT SPECIFIC REQUIREMENTS

Pressure Class ⁴	
Seal coating of the cement mortar lining	
Alternative type of cement for cement mortar lining ²	
Specialised external coatings	
Restrained joint seals	
Alternative elastomeric material for joint seals	

NOTES:

- 1 Includes drinking water and recycled water supply.

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WATER SERVICES ASSOCIATION of Australia

- 2 For applications where the sewage being conveyed has a sulphate content >500 mg/L, Type SR cement should be used.
- 3 Flange gaskets and O-rings should be supplied to [WSA PS-312](#).
- 4 PN 35 is the standard Pressure Class for many pressure applications. PN 20 may be a suitable alternative in some applications, but should only be used with Water Agency approval. Flange Class pipes may be required for structural purposes as specified in the Project Specification or on the Design Drawings.

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APPENDIX D - ESTIMATED LIFE EXPECTANCY

The following estimated life expectancies have been provided by Vinidex.

Life expectancy estimates are indicative only and may increase or decrease as a result of the system operating conditions, preventative maintenance programs, operating environment and other geographical and site-specific factors.

It should be noted that service life for a pipeline is not necessarily defined as the time to first failure but as the typical service life achievable before major rehabilitation is required.

TABLE D1
ESTIMATED LIFE EXPECTANCY OF DI PIPE – VINIDEX

COATING AND LINING OPTIONS	ENVIRONMENT		
	BENIGN	MODERATELY AGGRESSIVE	AGGRESSIVE
INTERNAL LINING			
Portland Cement	>100 years	>100 years	>50years
Portland Cement + Seal Coat	>100 years	>100 years	>75 years
Calcium Aluminate Cement	>100 years	>75 years	>50 years
EXTERNAL COATING			
200 g/m ² zinc + finishing layer	>100 years	>50 years	>20 years
200 g/m ² zinc + finishing layer + PE sleeving	>100 years	>100 years	>75 years
400 g/m ² Zn-Al + finishing layer	>100 years	>50 years	>20 years
400 g/m ² Zn-Al + finishing layer + PE Sleeving	>100 years	>100 years	>75 years

APPENDIX E - SUPPLIER CONTACTS

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