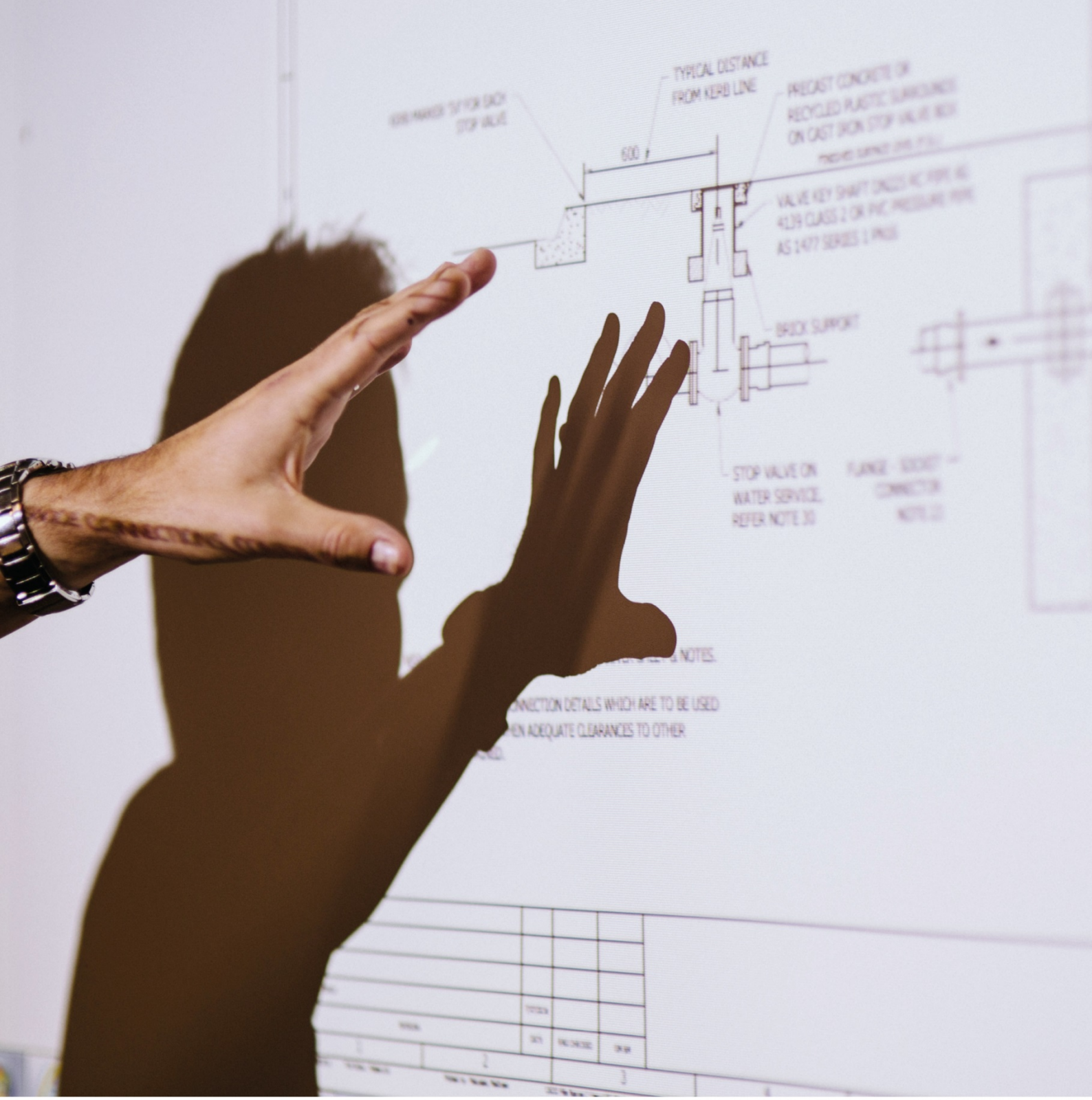

STD-SPE-G-005
SUPPLEMENT TO WSA 201
MANUAL FOR SELECTION AND APPLICATION OF PROTECTIVE COATINGS

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Document management

Document authorisation table

Issue	Date	Author	Reviewer	Approver
A	16/11/16	K. Danenbergsons	Various	D. Eager
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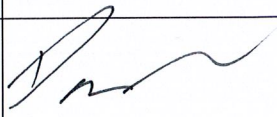
1	30/05/18	 K. Danenbergsons	Various	 D. Eager

Version control table

Issue	Date	Reason for issue
A	16/11/16	Issued for internal Icon Water and Downer review.
B	17/11/16	Re-issued with amendment made to pipeline colour banding requirements.
C	30/11/16	Issued for use.
1	30/05/18	Re-issued with amendment to pipework colour banding and additional/revised manufacturer's products in Table 6.1.

Document applicability table

Asset area	Applicable (Yes/No)	Asset area	Applicable (Yes/No)
Dams (DAM)	**Yes**	Water Network (WAT)	**Yes**
Bulk Water Supply (BWS)	**Yes**	Sewerage Network (SEW)	**Yes**
Water Treatment Plants (WTP)	**Yes**	Sewage Pump Stations (SPS)	**Yes**
Water Pump Stations (WPS)	**Yes**	Sewage Treatment Plants (STP)	**Yes**
Reservoirs (RES)	**Yes**	Recycled Water Systems (REC)	**Yes**

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Abbreviations

AS	Australian Standard
FBE	Fusion Bonded Epoxy
FPE	Fusion Bonded Medium Density Polyethylene
Icon	Icon Water Limited
LMWQCC	Lower Molonglo Water Quality Control Centre
STP	Sewage Treatment Plant
UV	Ultra Violet
WSAA	Water Services Association of Australia
WTP	Water Treatment Plant

1 Background

Icon has adopted WSAA codes and specifications as a basis for its own design and construction standards. This is to ensure consistency with the majority of the Australian municipal water industry thereby making it easier for engineering service providers to better understand Icon's specific requirements.

This specification is Icon's supplement to *WSA 201 Manual for Selection and Application of Protective Coatings*. WSA 201 is available from the WSAA bookstore. Refer to https://www.wsaa.asn.au for further details relating to purchasing (for non-members) or a free download (for members). Note: Icon is a member of WSAA.

This specification shall be read in-conjunction with WSA 201 and all details described within this specification are mandatory requirements and shall not be amended without the written consent of the an Icon Water Principal Engineer.

2 Scope

WSA 201 has been designed to be read in-conjunction with each water agency's requirements for (i) colour coding of assets, and (ii) approved protective coating products. As per the Document Applicability Table (detailed prior to the Table of Contents), this specification is applicable to all of Icon Water's network and facility assets without exception.

3 Purpose

The purpose of this specification is to provide:

- mandatory colour coding details for each asset type within Icon's networks and facilities, and
- a list of approved protective coating products from reputable Australian manufacturers and/or suppliers.

4 Referenced documents

The documents listed in Table 4.1 are either referenced by this specification, or shall be read in-conjunction with this specification.

Table 4.1 Referenced Documents

Item	Document number	Title
Australian standards		
1	AS 1345	Identification of the contents of pipes, conduits and ducts
2	AS 2419.1	Fire hydrant installations – Part 1: System design, installation and commissioning
3	AS 2700	Colour standards for general purposes
WSAA codes and publications		
4	WSA 02	Gravity sewerage code of Australia

Item	Document number	Title
5	WSA 03	Water supply code of Australia
6	WSA 04	Sewage pumping station code of Australia
7	WSA 201	Manual for the selection and application of protective coatings
Icon Water standards		
8	STD-SPE-G-010	Supplement to WSA 04, Sewage Pumping Station Code of Australia
9	STD-SPE-G-011	Supplement to WSA 02, Gravity Sewage Code of Australia
10	STD-SPE-G-012	Supplement to WSA 03, Water Supply Code of Australia
11	STD-SPE-M-002	Technical Specification, Piping and Valves

5 Mandatory Colour Coding

5.1 General Requirements

The following general colour coding requirements apply to all water supply and sewerage assets:

a) The following surfaces shall not be blasted or coated unless specifically directed:

i. Machined surfaces, bearings, seals, grease fittings, adjusting screws
ii. Equipment name plates, barcode plates and asset identification labels
iii. Valve stems, lubricators and positioners
iv. Pipe and equipment (raised) flange faces
v. Electrical cabling
vi. Instrumentation, gauges and sight glasses
vii. Titanium, Nickel alloys and stainless steel
viii. Galvanised steel
ix. UV stable plastic pipework
x. FBE or FPE coated items
xi. Brickwork

b) With the exception of plant, equipment and pipework located in water treatment plants and wastewater treatment plants, all above-ground/exposed plant, equipment and pipework shall be coated in a single colour chosen from Table 5.3.1 which is the most sympathetic to the local environment with the exception of those items specifically detailed in Table 5.3.3.

c) Water treatment plants and wastewater treatment plants shall have all aboveground and exposed plant, equipment and pipework painted a single colour as detailed in Table 5.3.2 with the exception of those items specifically detailed in Table 5.3.3.

d) All aboveground and exposed piping in Icon facilities shall be identified by fluid (family) type through the use of colour bands as a minimum requirement. Colour bands shall be applied in accordance with Section 5.2.6 of this specification. Additional fluid identification (e.g. labelling) requirements are provided in *STD-SPE-M-002*.

e) The manufacturer's standard colour shall not be accepted by Icon Water except when the equipment or plant item is provided with an "FBE" or "FPE" coating which cannot be over-coated. "FBE" or "FPE" coatings with a finish colour which can be defined as "red" shall only be used for fire services pipework and associated equipment.

f) Items of plant, equipment and pipework located at Icon's existing dams shall be coloured to match the existing items at these sites.

g) Refer to Section 5.2 for specific requirements.

5.2 Specific Requirements

5.2.1 Pipelines – Water Supply and Sewerage Networks

The following requirements shall be considered mandatory for the colour coding of Icon's pipelines within the water supply and sewerage networks:

a) Existing Pipelines – Above-ground/Exposed: Existing aboveground/exposed pipelines within Icon's water supply and sewerage networks shall be re-coated in a single colour to match the existing pipeline colour. This also applies to situations where the existing pipeline is augmented or retro-fitted with new items of plant and equipment. Colour bands shall also be applied in accordance with Section 5.2.6 at the next scheduled re-coating or asset augmentation, whichever occurs first.

b) New Pipelines – Above-ground/Exposed: Any aboveground/exposed pipeline which is to be (or has been) designed and constructed after 30 November 2016 shall be coated in a single colour listed from Table 5.3.1 unless directed otherwise by Icon Water. Colour bands shall also be applied in accordance with Section 5.2.6. Note: An alternative pipeline colour may be required for a specific project need if the asset is required to "blend in" and be sympathetic with the local landscape or streetscape.

c) Existing Pipelines – Buried: There is no specific requirement to colour code existing buried pipelines.

d) New Pipelines – Buried: WSA 02, WSA 03 and WSA 04 (as amended by Icon water in *STD-SPE-G-010, 011* and *012*) shall be complied with for potable water and sewerage network mains. Otherwise, there is no specific requirement to colour code new buried pipelines if underground marker tape has been used in accordance with Icon standards which identify the buried service. However, if buried pipe is coloured, it shall be as per the requirements of Table 5.3.4B.

5.2.2 Reservoirs – Water Supply Network

The following requirements shall be considered mandatory for the colour coding of Icon's reservoirs within the water supply network:

a) Existing Water Supply Reservoirs: All tankage and associated above-ground/exposed plant, equipment and pipework shall be coated in either a single or two colour palette to match the existing colours. This also applies to situations where the existing facility is augmented or retro-fitted with new items of plant and equipment.

b) New Water Supply Reservoirs: Any new reservoir facility which is to be (or has been) designed and constructed after 30 November 2016 shall have all tankage and associated above-ground/exposed plant, equipment and pipework coated in either a single or two colour palette selected from the colours listed in Table 5.3.1 so that the reservoir facility is sympathetic to the local environment and "blends in".

c) Pipework Identifying Colour Bands: Colour bands in accordance with Section 5.2.6 shall be direct painted on to all pipework located within reservoir facilities. If the facility is existing and such colour bands do not currently exist, they shall be applied at the next scheduled surface treatment re-application or when the facility is upgraded, whichever occurs first. Fluid/direction labelling in accordance with *STD-SPE-M-002* shall also be applied for any service which is not Potable Water.

5.2.3 Treatment Plants

Existing water and wastewater treatment plants use a single colour for all exposed items of major plant and equipment. The selection of a single colour provides for a better visual appeal when viewed from neighbouring properties or public spaces. Table 5.3.2 details the single colours for existing treatment plants (i.e. those built prior to 30 November 2016) as well as the requirements for all new treatment plants which have been or will be designed and constructed after November 2016. It should be noted that all new plant and equipment shall be provided to an existing plant in a colour to match the existing colour scheme.

Additional requirements are:

a) All pipework shall have identifying colour bands in accordance with Table 5.3.4A and fluid/direction labelling in accordance with *STD-SPE-M-002*.

b) Specific plant and equipment shall be colour coded in accordance with Table 5.3.3.

c) New treatment plant facilities shall be colour coded in accordance with Table 5.3.2.

5.2.4 Pump Stations

All plant, equipment and pipework located within existing pump stations shall be coated in colours to match the existing colours. This also applies to situations where the existing facility is augmented or retro-fitted with new items of plant and equipment. New pump station facilities shall be colour coded in accordance with Table 5.3.2.

Additional requirements are:

a) All pipework shall have identifying colour bands in accordance with Table 5.3.4A and Table 5.3.4B as applicable. Note: Sewage shall be "Y34 Cream" to AS 2700 as per Table 5.3.4B. Fluid/direction labelling in accordance with *STD-SPE-M-002* shall also be applied for fluids other than that which the pump station is intended to convey (e.g. chemical dosing pipework).

b) Specific plant and equipment shall be colour coded in accordance with Table 5.3.3.

5.2.5 Buildings/Structures Located Within the Water Supply and Sewerage Network

The choice of finish colour palette for the external surfaces of buildings located within the water supply and sewerage network shall be determined on a case-by-case basis so that the building is sympathetic to the local environment and streetscape as applicable. Finish colours shall be chosen from Table 5.3.1. The finish colours for specific structures shall also be chosen from Table 5.3.1.

5.2.6 Exposed Pipeline and Pipework Identification Colour Bands

Where exposed pipelines and pipework is not required to be completely coated with a specific fluid service finish colour to AS 1345 then such pipework shall retain its single finish colour (e.g. X42 Biscuit for LMWQCC) but shall be identified through the use of colour bands (as specified in Table 5.3.4A and 5.3.4B). Fluid service and direction identification labels (as per *STD-SPE-M-002*) shall also be applied at the same location of each colour band.

The requirements for colour bands are as follows:

a) Aboveground and/or exposed pipelines within Icon's water supply and sewerage network shall have colour bands at each exposed valve and flowmeter. This requirement includes valves and flowmeters installed in belowground chambers however only one colour band is required per chamber. Colours shall be as per the requirements of Table 5.3.4B.

b) Aboveground and/or exposed piping within Icon's facilities shall have colour bands at no greater than 6000 mm centres and shall be applied close to pumps and valves wherever practicable. Colours shall be as per the requirements of Table 5.3.4A except for sewage pump stations where "sewage" shall be denoted as "Y34 Cream" as per Table 5.3.4B.

c) Colour band widths shall be (i) 25 mm for pipe diameters less than or equal to DN100 (ii) 50 mm for pipe diameters greater than DN100 but less than or equal to DN250 (iii) 100 mm for pipe diameters greater than DN250 but less than or equal to DN500, and (iv) 150 mm for pipe diameters greater than DN500.

d) For pipelines and pipework exposed to direct sunlight, the colour bands shall be direct-painted on to the pipe. For pipelines and/or pipework located indoors or in chambers, self-adhesive labels may be used as an alternative to direct painting.

5.3 Colour Tables

The colours detailed in Table 5.3.1 shall be used for assets which are required to be installed in Icon Water's water supply network or sewerage network – typically within the urban or rural environment unless specifically directed otherwise.

Table 5.3.1 Approved Environmental Colours

Item	Application or Asset Type	Colour Specification		
		AS 2700	RAL	Colorbond™
1	Aboveground / exposed pipelines within the water supply network	N45 Koala Grey	N/A	N/A
2	Aboveground / exposed pipelines within the sewerage network	Y34 Cream		
2	Reservoir facilities within the water supply network	N45 Koala Grey G52 Eucalyptus		N/A
3	Buildings and general structures within the water supply and sewerage networks	B33 Mist Blue G52 Eucalyptus G62 Rivergum G66 Environment Green N11 Pearl Grey N15 Homebush Grey N45 Koala Grey X32 Magnolia X33 Warm White X42 Biscuit Y45 Manilla Y63 Khaki		Classic Cream Deep Ocean Pale Eucalypt Paperbark Woodland Grey Bushland Windspray Mangrove
4	Vent stacks within the sewerage network	Y34 Cream		N/A
5	Odour control units and chemical dosing units within the sewerage network	Y34 Cream		N/A

The colours detailed in Table 5.3.2 shall be used as the single (i.e. main) colour for plant, equipment and pipework located within Icon Water's treatment plants.

Table 5.3.2 Approved Single Colours – Water and Sewage Treatment Plants

Item	Treatment Plant	Colour Specification		
		AS 2700	RAL	Colorbond™
1	LMWQCC (Existing)	X42 Biscuit	N/A	N/A
2	Fyshwick STP (Existing)	G52 Eucalyptus		
3	Uriarra STP (Existing)	Not applicable		
4	Googong WTP (Existing)	B25 Aqua		
5	Stromlo WTP (Existing)	N/A		Bushland
6	New Water Treatment Plants (post 30 November 2016)	N45 Koala Grey	N/A	N/A
7	New Sewerage Treatment Plants (post 30 November 2016)	Y34 Cream		

The colours detailed in Table 5.3.3 shall be used for specific items of piping, plant and equipment in Icon's facilities and networks and shall take precedence over the (general/main) colours detailed in Tables 5.3.1 and 5.3.2. All items shall be coated completely across the full (exposed) surface area.

Table 5.3.3 Approved Colours for Specific Plant, Equipment and Pipework

Item	Application	Colour Specification		
		AS 2700	RAL	Colorbond™
1	Cranes, gantries and other mechanical lifting equipment	Y14 Golden Yellow	N/A	N/A
2	Handrails, ladders, platforms and bollards which are not constructed of stainless steel or galvanised steel	Y14 Golden Yellow		
3	Internal surfaces of tanks and vessels	N14 White		
4	Internal surfaces of electrical cabinets/kiosks, instrumentation cabinets and mechanical equipment cabinets (including escutcheon panels)	N14 White		
5	External surfaces of electrical cabinets and kiosks which are located within the water supply or sewerage network within an urban or rural environment (and not constructed of stainless steel)	G52 Eucalyptus		

Item	Application	Colour Specification		
		AS 2700	RAL	Colorbond™
6	External surfaces of electrical cabinets and kiosks which are located within a pump station, treatment plant or reservoir facility (and not constructed of stainless steel)	N/A	7032 Pebble Grey	
7	Fire Services (including hydrants, booster cabinets and exposed pipework)[1]	R13 Signal Red	N/A	
8	Conduits - Electric Power	X15 Orange		
9	Conduits – Communications	N14 White		

Notes:

1. There is no requirement to overcoat “FBE” coated fittings with “R13 Signal Red”. The piping designer shall make sure that at least the straight sections of pipe are coloured appropriately.

The colours detailed in Tables 5.3.4A and 5.3.4B shall be used as colour bands for exposed pipework not specifically covered by the requirements of Table 5.3.3.

Table 5.3.4A shall be used for all pipework except for water supply pipelines, recycled water pipelines and raw sewage pipelines within Icon Water’s water supply network and sewerage network. Refer to Table 5.3.4B for these services.

Table 5.3.4A Approved Colours for Exposed Pipework Colour Bands - Facilities

Item	Fluid	Colour Specification		
		AS 2700	RAL	Colorbond™
1	Raw Water	G21 Jade	N/A	N/A
2	Potable Water	G21 Jade		
3	Recycled Water	P23 Lilac		
4	Acids and Alkalis	P23 Lilac		
5	Steam	N24 Silver Grey		
6	Gases	Y44 Sand		
7	Air	B25 Aqua		
8	Sewage, Waste[1]	N61 Black		
9	Oils and Flammable Liquids	X53 Golden Tan		
10	Chlorine	Y21 Primrose		
11	Fluoride	P11 Magenta		

Table 5.3.4B Approved Colours for Exposed Pipeline Colour Bands – Water Supply & Sewerage Networks

Item	Service	Colour Specification		
		AS 2700	RAL	Colorbond™
1	Potable Water	B24 Harbour Blue		
2	Recycled Water	P23 Lilac		
3	Raw Water	G21 Jade		
4	Sewage[1]	Y34 Cream		

Notes:

1. For "facilities" such as sewage treatment plants, the colour band for sewage is denoted by "N61 Black" but in the "sewage" network, sewage pipelines are denoted by "Y34 Cream". This has been done to maintain consistency with polyethylene pipeline sleeving colours to AS 3680 (in Icon Water's networks) as well as to maintain consistency with AS 1345 for "in-plant" piping (in Icon Water's facilities).
2. Colour bands are not a mandatory requirement for exposed pipelines within Icon Water's networks. Refer to Section 5.2.6 for details.

6 Approved Protective Coating Products

Table 6.1 details approved protective coatings from various reputable industry manufacturers/suppliers which meet the requirements of the product specifications provided in Table 6.1 of WSA 201.

Where a particular coating system requires multiple applications (e.g. primer, intermediate coat and top coat) then all products used within that system must originate from a single manufacturer/supplier and be compatible with each other.

All coatings must be applied in strict accordance with WSA 201 and the manufacturer's instructions.

The manufacturer's standard coating will not be accepted without written approval of an Icon Water Principal Engineer if it does not fully comply with the relevant WSA 201 coating specification.

Table 6.1 Approved Protective Coating Products

WSA 201 Coating Code	WSA 201 Description	Manufacturer/Supplier					
		Akzo Nobel (Note 1)	Jotun	PPG	Dulux	Wattyl	Other
P1	Zinc rich epoxy primer	Interzinc 52 Interzinc 5285	Barrier Barrier Plus		Zincanode 402 Zincanode 202	Galvit EP100	
P2	Epoxy zinc phosphate primer	Intercure 200	Penguard Special Penguard Express ZP		Duremax GPE Zinc Phosphate		
P3	Non-inhibitive epoxy primer	Interline 982 Intergard 269	Jotaprime 505		Luxepoxy 4 White Primer		
P4	Concrete epoxy primer	Ceilcote 680 Ceilcote 680MM Polibrid 670S Interplus 1180	Penguard ClearSealer		Durebild STE		
P5	Waterborne acrylic primer/sealer	Intercryl 853		Taubmans Ultraprep Pro	One Step Acrylic Primer, Sealer & Undercoat	Acrylic Sealer Undercoat	
P6	Vinyl ester primer	Ceilcote 380	Chemflake Clear				
P7	Water based epoxy primer				DURATION P23		
P8	Alkyd zinc phosphate metal primer	Interprime 1068	Jotaprime 250		Premium Luxaprime ZP		
P9	Galvanised iron primer		Jotun Galvanite	Taubmans Prep Right	DULUX All Metal Primer	Galva-Link	
P10	Inorganic zinc silicate		Resist 86 AU		Durezinc I90	Aquagalv	Altex Carbozinc 11 WB
C1	Surface tolerant epoxy	Interplus 356 Interplus 1180	Jotamastic 87 Jotamastic 90		Durebild STE		
C2	High build epoxy	Interplus 1180	Jotacote 605		Duremax GFX		
	High build epoxy (drinking water contact)	Interline 850			Duremax GPE		

WSA 201 Coating Code	WSA 201 Description	Manufacturer/Supplier					
		Akzo Nobel (Note 1)	Jotun	PPG	Dulux	Wattyl	Other
C3	High build solvent free epoxy	Interzone 954 Interline 975	Jotacote 412		Luxepoxy STL		
	High build solvent free epoxy (drinking water contact)	Interline 975	Tankguard 412		Luxepoxy STL		
C4	Ultra-high build epoxy		Jotacote UHB				
	Ultra-high build epoxy (drinking water contact)	Interline 975	Jotacote UHB		Luxepoxy UHB		
C6	Ultra-high build vinyl ester	Ceilcote Flakeline 242	Baltoflake		Steelshield 2000		
C7	High build chlorinated rubber		Jotacote 740		Luxachlor HB		
C8	Ultra-high build epoxy / elastomeric polyurethane	Polibrid 705E			Flexituff		Fernco Ultracoat Hychem TL5
C9	Water based epoxy				Enviropoxy WBE		
C10	Alkyd aluminium leafing grade	Intertherm 891			Industrial Aluminium		
C11	Polymer modified bitumen or cementitious membrane	Intercrete 4840[Note 2] Intercrete 4841 Intercrete 4842					Liquid Rubber
C12	Calcium aluminate cement	An alternative to CAC is Intercrete 4840 applied at a thickness of 2.0 mm					BASF Shotpatch 80 SP Kerneos Sewpercoat Parchem Sewpercoat
C13	Anti-abrasion ceramic-filled epoxy						Belzona 1321 CeramAlloy CL
	Anti-abrasion ceramic filled epoxy (drinking water contact)						Belzona 1341 Chemclad XC

WSA 201 Coating Code	WSA 201 Description	Manufacturer/Supplier					
		Akzo Nobel (Note 1)	Jotun	PPG	Dulux	Wattyl	Other
T1	Gloss 2-pack acrylic polyurethane	Interthane 990 Interthane 870 (Semi-Gloss)	Imperite 300 Hardtop AS		Weathermax HBR		
T2	Polysiloxane	Interfine 878 Interfine 979	Hardtop Optima				
T3	Waterborne gloss acrylic	Intercryl 853	Jotun Acrylic Gloss	Taubmans All Weather	Weathershield X10	Wattyl Solagard Wattyl Sunfast	
T4	Flexible high build acrylic	Intercryl 988		Taubmans Armawall	Acrashield HB		
T5	Anti-graffiti topcoat	Interfine 878	Imperite 300	PSX 700 Amershield Clear	Qantum Clearcoat	Poly U400	
T6	Alkyd enamel	Interlac 665	Jotacote QD	Taubmans Ultra Enamel	Metalshield Premium Enamel		
T7	Novolac Epoxy	Ceilcote Flakeline 2000	Tankguard SF				Sikagard 63N
T8	HDPE/PVC liner						AKS Plastiline
T9	Petrolatum / bitumen / visco-elastic tape wrap						Denso Tape PetroGard Tape Densopol Tape Stopaq Wrappingband
T10	Heat shrinkable polyolefin coatings						Denso 50HSS Canusa Wrapid Tape

Notes:

1. Akzo Nobel was formerly known as “International”.
2. Intercrete 4840 is used when chemical resistance is the deciding factor. This product is not drinking water compatible whereas Intercrete 4841 and Intercrete 4842 are drinking water compatible.

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