



AMSA Aid to Navigation Maintenance Coating Specification



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1 Scope

This specification sets out the minimum requirements for the surface preparation and application of protective coating systems for maintenance of the Australian Maritime Safety Authority (AMSA) network of marine Aids to Navigation (AtoN).

2 Application of the coating specification

The coating systems specified herein represent AMSA's minimum requirements, the final coating systems to be utilised must be agreed between AMSA, the Contractor and the relevant Coating Manufacturer prior to the commencement date of the contract.

3 Contractors Protective Coating Management Plan

The Contractor must develop for AMSA approval a Protective Coatings Management Plan that documents how this specification will be implemented throughout the period of the Contract.

The Contractor must gain manufacturers endorsement for the final coating systems to be utilised in the form of a manufacturers coating specification.

The Contractor must warrant that any amendments to the coating systems or requirements specified herein will meet AMSA's durability requirements (where specified).

4 Durability requirements

The coating systems and other requirements specified here in have been developed in line with AMSA's prior experience with lighthouse protective coatings (and the standard coating systems specified in AS2312 for ferrous substrates) to achieve:

- a "Very Long term" durability (15-25 years to first major maintenance) for the protective coating systems of recently refurbished structures taking into account an atmospheric corrosivity category of C5-M.
- a "long term" durability (5-10 years to first major maintenance) for the protective coatings applied as part of maintenance works for structures that have not recently been refurbished.

Any changes to the standard coating systems specified herein must take into account the durability requirement for the structure on which the coatings are to be applied.

5 Precedence of Documents

In the event of any inconsistency between documents the following order of precedence shall prevail:

- Legislation, Regulations, Codes of Practice
- The Contract
- This Specification
- Australian Standards
- International Standards
- The Contractors Protective Coatings Management Plan
- Specifications issued by contractors, subcontractors or materials suppliers



6 Referenced Standards

AMSA and the Contractor are bound by the Work Health and Safety (WHS) Act 2011.

Where there is inconsistency between relevant Commonwealth and State legislation, the higher legislative standard must be adopted.

All relevant duty holders should check the currency of Australian Standards, Commonwealth and State legislation and approved Codes of Practice for more comprehensive information to ensure they fulfil their legislative and broader community obligations.

Unless otherwise specified, the applicable issue of a referenced standard, legislation, regulation code of practice etc. shall be the issue current at the date one week before the date of issue of this specification. These include but are not limited to:

Australian Standards

AS 1627	Metal finishing – Preparation and pretreatment of surfaces
AS 1627.2	Power tool cleaning
AS1627.4	Abrasive blast cleaning of steel
AS1627.9	Pictorial surface preparation standard for painting steel surfaces
AS/NZS 2310	Glossary of paint and painting terms
AS/NZS2311	Guide to the painting of buildings
AS/NZS 2312	Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings
AS 3730.8	Guide to the properties of paints for buildings -Latex - Exterior – Semi-gloss
AS 3730.10	Guide to the properties of paints for buildings - Latex - Exterior – Gloss
AS3730.17	Guide to the properties of paints for buildings – Primer – Wood – Latex – Interior/Exterior
AS 3730.22	Guide to the properties of paints for buildings – Concrete and Masonry Sealer – Solvent-borne – Interior/exterior
AS/NZS 3750	Paints for steel structures
AS/NZS 3750.1	Part 1: Epoxy mastic (two-pack) – For rusted steel
AS/NZS 3750.6	Part 6: Full gloss polyurethane (two-pack)
AS/NZS 3750.14	Part 14: High build epoxy (two-pack)
AS/NZS 3750.17	Part 17: Etch primers (single pack and two-pack)
AS/NZS 3750.19	Part 19: Metal primer general purpose
AS3894	Site testing of protective coatings
AS3894.3	Determination of dry film thickness
AS3894.4	Assessment of degree of cure
AS3894.5	Determination of surface profile



AS3894.6	Determination of residual contaminants
AS3894.7	Determination of surface temperature
AS3894.8	Visual determination of gloss
AS3894.9	Determination of adhesion
AS3894.10	Inspection report - Daily surface and ambient conditions
AS3894.12	Inspection report - Coating
AS3894.13	Inspection report – Daily
AS/NZS 4233	High pressure water (hydro) jetting systems
AS/NZS 4548.1	Guide to long-life coatings for concrete and masonry – Wall coatings – Latex extensible
AS/NZS 4548.2	Guide to long-life coatings for concrete and masonry – Latex finish coatings – high-build, low profile
AS/NZS 4361.1	Guide to hazardous paint management, Part 1 – Lead and other hazardous metallic pigments in industrial applications
HB 84	Guide to concrete repair and protection

IALA Guidance Documentation

R0108	Surface Colours used as visual signals on marine aids to navigation
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Australian Government

Work Health and Safety Act (WHS Act)

Work Health and Safety Regulation (WHS Regulations)

Work Health and Safety (Abrasive Blasting) Code of Practice

Work Health and Safety (Managing Risks of Hazardous Chemicals in the Workplace) Code of Practice

National Environment Protection (Movement of Controlled Waste between State and Territories) Measure

Australian Government (Comcare) - Notification of Lead Risk Work

Australian Government (Comcare) – Notification of Removal of a Worker from Lead Risk Work

Australian Government (Comcare) - Guide to Lead Risk Work Notifications

7 Definitions

The definitions of painting terms contained within AS/NZS 2310 shall apply to terms used throughout this specification.

“Contractor” means any company or business contracted by AMSA to carry out the works of this specification.



“Manufacturer” means any company manufacturing and supplying the coatings and other products to be used in carrying out the specified works, and whose name appears on the product data sheets and safety data sheets (SDSs) for the relevant products.

“Worker” means a person who carries out work in any capacity for a person conducting a business or undertaking.

“Lead Process” – As per R392 of the WHS Regulations 2011. Lead is defined in schedule 19 of the regulation as meaning lead metal, lead alloys, inorganic lead compounds, and lead salts of organic acids.

“Shall” means a mandatory requirement.

8 Supervision and qualifications

All surface preparation and coating application must be supervised by a person with a current coating inspection ticket or demonstrated experience in the quality control and inspection of protective coatings. An Association for Materials Protection and Performance (AMPP) Level 1 or equivalent qualification is deemed to satisfy this requirement.

All surface preparation and coating application must be undertaken by tradespeople who are specialists in protective coatings. The Contractor must provide evidence of the tradespeople qualifications and/or experience. Certificate iii in Surface Preparation and Coating Application (MSM30216) is deemed to satisfy this requirement.

9 Environment

All surface preparation and paint application must be undertaken in accordance with the current Codes of Practice, Environment Acts and Regulations and Government body approvals applicable to the location at which the work is being performed. It is the Contractors responsibility to gain any approvals required for the surface preparation and paint application works.

For all surface preparation activities, the Contractor must not allow the release of waste and paint products to the environment. Any abrasive blasting over water must utilise an impervious encapsulation to contain waste product and spent abrasive. Wet abrasive blasting high pressure water jetting ($\geq 70\text{MPa}$) and high pressure water washing ($\geq 35\text{MPa}$) over water must as a minimum utilise an encapsulation that is capable of filtering the solid waste product and spent abrasive from the waste water.

For all coating application the Contractor must not allow the emission, spill or release of coating products to the environment.

10 Workplace Health and Safety

All surface preparation and coating application must be undertaken in accordance with the current WHS Acts, Regulations and Codes of Practice applicable to the location at which the work is being performed.

11 Hazardous Paint Management

Where hazardous paints have been identified the Contractor must undertake all works in compliance with Commonwealth, State and Local Legislation and Regulations and the relevant requirements of AS/NZS 4361.1 and Appendix A of this specification.



The Contractor must undertake testing for hazardous paints in all instances where it can be reasonably expected that hazardous paints may be present or adequate test records are not available.

12 Waste Management

The Contractor must carry out all site handling, storage and transport of wastes in accordance with Commonwealth, State and Local waste Legislation and Regulations.

The Contractor must provide waste tracking and disposal certificates for all hazardous wastes.

13 Paint Requirements

13.1 Manufacturer's literature

13.1.1 Product data sheets

The Contractor must obtain the Manufacturers current Product Technical Data Sheets for all products used; and these must be kept on site at all times during the works.

The Manufacturer's Product Technical Data Sheets and other written instructions shall form part of this specification and must be followed in all particulars relating to ambient conditions, surface temperature, mixing, application equipment, pot life and cure times.

13.1.2 Safety data sheets (SDS)

The Contractor must obtain the Manufacturers current Safety Data Sheet (SDS) for all products used; and these must be kept on Site at all times during the Works. SDS's must comply with the requirements of Commonwealth and relevant State Work Health and Safety legislation.

13.2 Colours

All paints used must be tinted to the required colour by the paint manufacturer.

All finish coat paints utilised for daymark purposes must:

- Comply with the requirements of IALA R0108 – Surface colours used as visual signals on marine aids to navigation
- Where available utilise, factory milled colours or a product with high durability with respect to colour and gloss retention

All finish coat paints utilised for heritage structures must be colour matched to the existing colour utilising the closest AS2700 or RAL standard colour unless advised or approved otherwise by AMSA.

14 Coating Application

14.1 Atmospheric conditions during application

Paint must not be applied under conditions of wind, temperature, humidity or atmospheric contamination that will adversely affect the performance or appearance of the applied system. Unless otherwise specified by the Coating Manufacturer in writing, products must not be applied if any one of the following conditions exists:

- the ambient temperature is below 10°C or above 40°C;
- the surface temperature is less than 10°C or above 40°C;



- the surface temperature is less than 3°C above the dew point;
- the relative humidity is above 85%;
- the weather is clearly deteriorating;
- Other condition as specified by the Coating Manufacturer.

14.2 Non-slip surfaces

Where non-slip surfaces are required, clean inert commercial grade aggregate must be cast into the finish coat and back rolled.

14.3 Protection of uncured paint

All freshly applied paint must be protected against damage or inclusion from wind-borne dust or spray, other debris or inclusions, and mechanical damage.

14.4 Gloss

The completed coating must have a uniform, even gloss level consistent with the manufacturer's stated gloss level for the finish coat.

14.5 Workmanship

The completed coating must be of uniform colour, opacity and finish with all surfaces free from runs, sags, inclusions and other defects. Localised repairs must be completed in a manner that minimises the visual impact and does not result in picture framing of the repair.

14.6 Protection of adjacent surfaces

All adjacent surfaces and any surfaces that are not to be prepared and painted must be protected during surface preparation and paint application to ensure they are not affected by the surface preparation, overspray or inadvertent paint application. Any affected surface must be rectified at the Contractors expense.

15 Quality Assurance and Inspection Requirements

The Contractor must retain quality assurance and inspection records for all surface preparation and coating application.

The Contractor must utilise daily reporting forms based on AS 3894.10, .12 and .13, to record climatic conditions, surface inspection and preparation, and all coating activities and must contain details (and results) of all testing.

Specific requirements for quality assurance and inspection are detailed in each coating specification detailed in section 16.

15.1 Test equipment

All test equipment must be fully functional and must have a current calibration certificate from a NATA accredited organisation.

15.2 Inspection and test plan

The Contractor must prepare and implement Inspection and Test Plans (ITP) sufficient to ensure that all preparation works and all coating application conform to the requirements of this specification.



15.3 Ambient conditions

The relative humidity, dew point and surface temperature must be determined at the start of each day, at three hourly intervals thereafter and again on completion of coating application. Ambient condition testing must be undertaken at the location or within the environment of surface preparation and coating application.

15.4 Surface preparation

15.4.1 Degree of surface cleanliness

The surface cleanliness of all cleaned surfaces must be determined by comparison to the relevant pictorial standards of AS 1627.9.

15.4.2 Surface profile

The surface profile for substrates must meet the requirements specified in the manufacturer's documentation for the first coat applied unless noted otherwise in this specification.

The surface profile of metallic surfaces must be determined using profile replicating tape in accordance with Method A of AS 3894.5.

15.4.3 Freedom from residual contaminants

The cleanliness of all prepared surfaces from dust must be determined using Method C of AS 3894.6. The acceptance criterion for surface dust shall be a rating of 1 or less.

The surface salt concentration of all prepared metallic surfaces must be determined using Method A of AS 3894.6. The acceptance criterion for surface salt shall be 50 mg/m² (5 µg/cm²).

15.4.4 Substrate moisture content

The moisture content for concrete, masonry, stone and timber substrates must be in accordance with the manufacturer's recommendations prior to application of coatings.

In the absence of specific manufacturers recommendations, the following limits maybe adopted:

- Newly placed concrete, renders and mortar must be greater than 28 days old
- Moisture content for concrete, masonry, stone and timber must be less than 6% or wood moisture equivalent of 16 or less.

15.5 Dry Film Thickness

15.5.1 Method of determination

The dry film thickness of the coatings on ferrous surfaces must be determined in accordance with Method B of AS 3894.3, except that for cast-iron surfaces (where prepared to bare substrate) the electronic film thickness gauge is to be field calibrated on the prepared cast iron substrate using certified thickness shims.

The dry film thickness of the coatings on non-ferrous surfaces must be determined in accordance with Method B of AS 3894.3 using an eddy-current gauge, field calibrated on either the prepared substrate or representative material coupons using certified thickness shims.



The dry film thickness of each coat of paint must be determined by measuring the total paint thickness and subtracting the average cumulative dry film thickness of all paint present prior to the application of that particular coat of paint.

The average dry film thickness of each coat of paint must conform with the specified average dry film thickness before proceeding to the application of the subsequent coats of paint.

15.5.2 Dry film thickness on non-metallic substrates

Coating thickness on non-metallic substrates where DFT's cannot accurately be measured do not require measurement but must be assured by strict compliance with the recommended spreading rate necessary to achieve the specified thickness of each coat and measured wet film thickness (where surface roughness allows). When wet film thickness measurements are undertaken photographic evidence must be maintained.



16 Coating Specifications

16.1 Compatibility of coating specifications

The Contractor must review available records including any applicable Site Coating Registers and project summaries to confirm the compatibility of the coating systems specified herein with the existing coatings. Where it is believed that the specified coating systems are incompatible the Contractor must propose an alternative coating system for AMSAs approval.

16.2 Previously painted ferrous surfaces – localised repairs

Surface Preparation	Primer	Intermediate Coat	Finish Coat
As outlined below	Surface tolerant two-pack epoxy	Two-pack epoxy	Two-pack gloss or matt polyurethane
Dry film thickness	175µm	175µm	100µm

16.2.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants in accordance with AS1627.1 with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Radius all sharp edges to a minimum of 2mm, where this is not possible provide a 1-2mm chamfer.

Prepare all corroded or bare ferrous substrate by localised very thorough hand and power tool cleaning to achieve surface cleanliness equivalent to AS1627.9 class Sa 2 ½ with a medium angular surface profile of 50-75 µm.

Bulk surface preparation may be undertaken by other means however the final step for creating a profile on the bare ferrous substrate must be either Monti Power bristle blaster tool or AMSA approved equivalent unless physical limitations such as structure geometry prevents access to the substrate by the bristle blaster tool.

The Contractor may utilise abrasive blast cleaning, however it is not a specified requirement.

For discrete locations where access to the substrate is not possible by a bristle blaster the following order of precedence shall apply for the creation of a surface profile:

- Needle gun/scaler
- Powered rotary abrasive tool with suitable grit abrasive such as grinders, drill, die grinder etc
- Powered sander including random orbital and belt sander
- Hand preparation with sandpaper or other abrasive device

Feather back all remaining coating edges to remove ridges. Abrade the surrounding tightly adhered coatings to remove all gloss and provide a suitable key for the new coating. The coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.



Remove all residual dust by vacuum or sweeping with a clean brush. Avoid handling the prepared bare steel areas. The surface must be inspected prior to coating application to ensure there are no surface defects or contamination, otherwise rectification is required before any coating is applied.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.

16.2.2 Coating Application

The prime coat must be applied to the prepared ferrous surfaces before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced, particularly in marine environments.

A stripe coat must be applied by brush to all crevices, pits, edges, welds, rivets, bolts and at other surface irregularities or difficult-to-access locations prior to application of the prime and intermediate coats.

All crevices, rivets, fasteners etc must be sealed with a polyurethane sealant after application of the intermediate coat and prior to application of the finish coat.

16.2.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



16.3 Previously painted ferrous surfaces – overcoat

Surface Preparation	Primer – spot application to bare substrate	Intermediate – full coat	Finish – full coat
As outlined below	Surface tolerant two-pack epoxy	Two-pack epoxy	Two-pack gloss or matt polyurethane
Dry film thickness	Refer 16.3.2	125µm	100µm

16.3.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants in accordance with AS1627.1 with a free-rinsing, alkaline detergent according to the manufacturer’s written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Radius all sharp edges to a minimum of 2mm, where this is not possible provide a 1-2mm chamfer.

Prepare all corroded or bare ferrous substrate by localised very thorough hand and power tool cleaning to achieve surface cleanliness equivalent to AS1627.9 class Sa 2 ½ with a medium angular surface profile of 50-75 µm.

Bulk surface preparation may be undertaken by other means however the final step for creating a profile on the bare ferrous substrate must be either Monti Power bristle blaster tool or AMSA approved equivalent unless physical limitations such as structure geometry prevents access to the substrate by the bristle blaster tool.

The Contractor may utilise abrasive blast cleaning, however it is not a specified requirement.

For discrete locations where access to the substrate is not possible by a bristle blaster the following order of precedence shall apply for the creation of a surface profile:

- Needle gun/scaler
- Powered rotary abrasive tool with suitable grit abrasive such as grinders, drill, die grinder etc
- Powered sander including random orbital and belt sander
- Hand preparation with sandpaper or other abrasive device

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to remove all gloss and provide a suitable key for the new coating.

Remove all residual dust by vacuum or sweeping with a clean brush. Avoid handling the prepared bare steel areas. The surface must be inspected prior to coating application to ensure there are no surface defects or contamination, otherwise rectification is required before any coating is applied.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.



16.3.2 Coating Application

The prime coat must be applied to the prepared ferrous surfaces before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced, particularly in marine environments.

For structures that have been recently refurbished as listed in the table in Appendix B, the prime coat must be spot applied in one or more coats to a minimum DFT of 225 μm to areas prepared to bare substrate prior to application of the intermediate coat to the full surface. For all other structures the prime coat must be spot applied in one or more coats to a minimum DFT of 125 μm to areas prepared to bare substrate.

A stripe coat must be applied by brush to all crevices, pits, edges, welds, rivets, bolts and at other surface irregularities or difficult-to-access locations prior to application of the prime and intermediate coats.

All crevices, rivets, fasteners etc must be sealed with a polyurethane sealant after application of the intermediate coat and prior to application of the finish coat.

16.3.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



16.4 Previously painted non-ferrous metallic surfaces – Aluminium, Stainless steel, Copper, Brass, Bronze and galvanised steel

Surface Preparation	Primer – spot or full coat	Finish Coat – spot or full coat
As outlined below	Surface tolerant two-pack epoxy	Two-pack gloss or matt polyurethane
Dry film thickness	125 µm	100um

Note: this coating specification should only be applied to galvanised steel surfaces where the galvanising has not been depleted, where corrosion of the underlying steel is evident specification 16.2 or 16.3 must be utilised.

This specification is not for application to aluminium buoy towers refer to specification 16.17 and 16.18.

16.4.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants in accordance with AS1627.1 with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Prepare all bare substrate by hand and power tool cleaning utilising a method that removes corrosion product and establishes a uniform roughened surface profile without warping or damaging the substrate. Preparation of galvanised surfaces must create a uniform roughened profile without unduly removing the galvanised finish.

Feather back all remaining coating edges to remove ridges. Abrade the surrounding tightly adhered coatings to remove all gloss and provide a suitable key for the new coating. Where localised repairs are being undertaken the coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

Remove all residual dust by vacuum or sweeping with a clean brush. Avoid handling the prepared bare steel areas. The surface must be inspected prior to coating application to ensure there are no surface defects or contamination, otherwise rectification is required before any coating is applied.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.

16.4.2 Coating Application

The prime coat must be applied to the prepared substrate before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced, particularly in marine environments.

A stripe coat must be applied by brush to all crevices, pits, edges, welds, rivets, bolts and at other surface irregularities or difficult-to-access locations prior to application of the prime coat.



Australian Government

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All crevices, rivets, fasteners etc must be sealed with a polyurethane sealant prior to application of the finish coat.

16.4.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



16.5 Previously painted ferrous surfaces – Pile structures

Surface Preparation	Primer – spot application to bare substrate	Intermediate	Finish
Sa 2 ½	Very high build two pack epoxy	Very high build two pack epoxy	Two-pack gloss polyurethane (only required where the pile is part of the daymark)
Dry film thickness	500 µm	500µm	100µm

16.5.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants in accordance with AS1627.1 with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Radius all sharp edges to a minimum of 2mm, where this is not possible provide a 1-2mm chamfer.

Prepare all corroded or bare ferrous substrate by dry abrasive blast cleaning to achieve a surface cleanliness of AS1627.9 class Sa 2 ½ with a medium angular surface profile of 50-75 µm.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to remove all gloss and provide a suitable key for the new coating.

Remove all residual dust by compressed air, vacuum or sweeping with a clean brush. Avoid handling the prepared bare steel areas. The surface must be inspected prior to coating application to ensure there are no surface defects or contamination, otherwise rectification is required before any coating is applied.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.

16.5.2 Coating Application

The prime coat must be applied to the prepared ferrous surfaces before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced.

The prime coat must be spot applied in one or more coats to areas prepared to bare substrate prior to application of the intermediate coat to the full surface.

A stripe coat must be applied by brush to all crevices, pits, edges, welds, rivets, bolts, plate edges and at other surface irregularities or difficult-to-access locations prior to application of the prime and intermediate coats.



Australian Government

Australian Maritime Safety Authority

16.5.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



16.6 Unpainted brick and concrete surfaces – sealer

Surface Preparation	Sealer
As outlined below	Silane/Siloxane water repellent
Dry film thickness	NA

16.6.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

High pressure water wash the external brickwork or concrete with clean water at pressure up to 10000psi to remove any thin film clear coatings or sealers.

Thoroughly inspect the surfaces and rectify:

- Eroded, cracked, damaged, discontinuous, or missing pointing and holes in the brickwork mortar with a suitable repair mortar
- Repair any holes, cracking, damage to the brickwork and concrete substrate with a suitable mortar

16.6.2 Sealer Application

The sealer must be a silane/siloxane specified as suitable by the manufacturer for aged brick and/or concrete.

The sealer must be applied by low pressure spray, brush or roller in two coats wet on wet.

16.6.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.7 Masonry – Trafficable

Surface Preparation	Primer	Finish
As outlined below	Surface tolerant two pack epoxy	Two-pack gloss polyurethane
Dry film thickness	125 µm	100 µm

Note: this coating specification is for application to walking surfaces such as internal floors and stairs only.

16.7.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to remove all gloss and provide a suitable key for the new coating.

For localised repairs the coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

16.7.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

Where nonslip properties are required a suitable grit must be cast into or backrolled into the wet finish coat.

16.7.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.8 Masonry – Trafficable membrane

Surface Preparation	Primer	Intermediate	Finish
As outlined below	Penetrating or epoxy primer for porous bare substrate As recommended by Manufacturer for non-porous or previously painted surfaces	Polyurethane membrane	UV and wear resistant finish coat
Dry film thickness	As specified by manufacturer	As specified by manufacturer	As specified by manufacturer

Note: this coating specification is for application to external walking surfaces that require a trafficable waterproof membrane such as lantern room balconies.

16.8.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating.

16.8.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

The membrane must be supplied with a fabric reinforcing tape at all substrate junctions, joints, cracks and any other locations of potential movement.

Prior to priming substrate junctions, structural and expansion joints must be provided with a fillet of suitable polyurethane sealant.

The extent of membrane application shall be nominally 50mm up the lantern room wall and terminating at the drip groove at the underside of the balcony or 100mm along the underside of the balcony if no drip groove exists.

16.8.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.9 Masonry – refurbished structures

Surface Preparation	Primer	Intermediate	Finish
As outlined below	Penetrating masonry and concrete primer	Acrylic elastomeric/membrane coating	Acrylic high durability finish coat
Dry film thickness	As specified by manufacturer	260 µm	150 µm

Note: refer to Appendix B for a list of structures where this coating systems is applicable.

16.9.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating. The coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

16.9.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

The prime coat must be spot applied to areas prepared to bare substrate.

The intermediate coat must be applied as a spot application to all areas prepared to bare substrate and other areas of damage or deterioration of the existing acrylic membrane.

The intermediate coat must be brushed into all crevices, pores, cracks etc in rough surfaces to ensure a continuous film with no pin holes misses etc.

16.9.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.10 Masonry – overcoat

Surface Preparation	Primer – spot application	Intermediate	Finish
As outlined below	Penetrating masonry and concrete primer	Acrylic	Acrylic high durability finish coat
Dry film thickness	As specified by manufacturer	75 µm	75 µm

Note: this coating system is applicable to masonry structures that have not been refurbished.

16.10.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating.

16.10.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

The prime coat must be spot applied to areas prepared to bare substrate.

The coatings must be brushed into all crevices, pores etc in rough surfaces to ensure a continuous film with no pin holes misses etc.

16.10.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.11 Internal Timber – Decorative

Surface Preparation	Primer	Intermediate	Finish
As outlined below	Oil or water based enamel primer	Oil or water based enamel	Oil or water based enamel
Dry film thickness	As specified by manufacturer	As specified by manufacturer	As specified by manufacturer

Note: this coating system is applicable for application to internal timber such as doors, cabinetry, tongue and groove lining panels etc however should not be used for trafficable surfaces (refer to 16.12 for trafficable timber surfaces).

16.11.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions or solvent wiping.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating.

16.11.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

16.11.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Photographic record only



16.12 Internal Timber – structural

Surface Preparation	Primer	Finish
As outlined below	Surface tolerant two pack epoxy	Two-pack gloss polyurethane
Dry film thickness	125 µm	100 µm

Note: this coating specification is for application to internal structural timber such as framework and where a hard wearing surface is required such as stair treads.

16.12.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to remove all gloss and provide a suitable key for the new coating.

For localised repairs the coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

16.12.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

Where nonslip properties are required a suitable grit must be cast into or back rolled into the wet finish coat.

16.12.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content



16.13 Timber – clear

Surface Preparation	Primer	Finish
As outlined below	Oil or water based polyurethane clear	Oil or water based polyurethane clear
Dry film thickness	As specified by manufacturer	As specified by manufacturer

Note: the contractor must select a product that is suitable for the exposure i.e. an exterior clear polyurethane must be used for exterior timber work or interior locations that receive full sun exposure.

16.13.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions or solvent wiping.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating.

16.13.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

16.13.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Photographic record only



16.14 Exterior Timber

Surface Preparation	Primer	Intermediate	Finish
As outlined below	Exterior acrylic primer	Exterior acrylic	Exterior acrylic
Dry film thickness	25µm	25 µm	25 µm

16.14.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions or solvent wiping.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to provide a suitable key for the new coating.

Fill any holes, cracks etc with a suitable filler.

16.14.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

16.14.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Photographic record only



16.15 Glass (and cement sheet blanking panels)

Surface Preparation	Primer	Finish
As outlined below	Surface tolerant two pack epoxy	Two-pack gloss or matt polyurethane
Dry film thickness	75 µm	100 µm

16.15.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions or solvent wiping.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the bare substrate and remaining tightly adhered coatings to provide a suitable key for the new coating.

16.15.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

16.15.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Photographic record only



16.16 Fibreglass

Surface Preparation	Primer	Finish
As outlined below	Surface tolerant two pack epoxy	Two-pack gloss polyurethane
Dry film thickness	75 µm	100 µm

16.16.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Feather back all coating edges surrounding areas prepared to bare substrate to remove ridges. Abrade the remaining tightly adhered coatings to remove all gloss and provide a suitable key for the new coating.

For localised repairs the coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

16.16.2 Coating Application

The surface must be clean and dry prior to application of the coatings.

16.16.3 Quality Assurance and Inspection Requirements

The following records must be maintained:

- Ambient conditions
- Substrate moisture content
- Surface areas and spreading rates



16.17 Aluminium buoy towers – infield repair/touch-up

Surface Preparation	Primer – spot or full coat	Finish – spot or full coat
As outlined below	Rapid curing surface tolerant two-pack epoxy	Two-pack gloss Polysiloxane
Dry film thickness	125 µm	75 um

16.17.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants by high pressure water washing with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Remove any loose or flaking coatings. Ensure that all remaining coatings are tightly adhered to the substrate by method A knife test of AS3894.9. If existing coating fails adhesion test rating greater than 3, it must be removed.

Prepare all bare substrate by hand and power tool cleaning utilising a method that removes corrosion product and establishes a uniform roughened surface profile without warping or damaging the substrate.

Radius all sharp edges to a minimum of 2mm, where this is not possible provide a 1-2mm chamfer.

Feather back all remaining coating edges to remove ridges. Abrade the surrounding tightly adhered coatings to remove all gloss and provide a suitable key for the new coating. Where localised repairs are being undertaken the coatings must be abraded to a suitable area surrounding the repair locations to ensure that the newly applied coatings can be feathered/blended into the existing coatings to minimise the visual impact.

Remove all residual dust by vacuum or sweeping with a clean brush.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.

16.17.2 Coating Application

The prime coat must be applied to the prepared substrate before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced, particularly in marine environments.

A stripe coat must be applied by brush to all crevices, pits, edges, welds, rivets, bolts and at other surface irregularities or difficult-to-access locations prior to application of the prime coat.

16.17.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



16.18 Aluminium buoy towers – Repaint

Surface Preparation	Primer	Finish
As outlined below	Surface tolerant two-pack epoxy	Two-pack gloss Polysiloxane
Dry film thickness	125 µm	75 µm

Note: this coating system is currently being trialled at Melanie Rock (installed 2021) and Breaksea Spit (installed 2022), pending findings following the 4 year service this specification may be amended.

16.18.1 Surface Preparation

Remove grease, oil, dirt, salts, and all other contaminants by high pressure water washing with a free-rinsing, alkaline detergent according to the manufacturer's written instructions.

Prepare the substrate by dry abrasive blast cleaning to remove all existing coatings and corrosion product and establish a uniform roughened surface profile of 25-50 µm without warping or damaging the substrate.

Radius all sharp edges to a minimum of 2mm, where this is not possible provide a 1-2mm chamfer.

Remove all residual dust by dry compressed air, vacuum or sweeping with a clean brush.

The prepared surface is to be tested in accordance with AS3894.6 method A for soluble salts prior to coating. Surface salt reading must be below 5 micrograms /cm² (50mg/m²) before coating application can be commenced.

16.18.2 Coating Application

The prime coat must be applied to the prepared substrate before any surface deterioration occurs. The maximum time period between surface preparation and prime coating will be FOUR (4) hours. This time is dependent on prevailing conditions and may need to be reduced, particularly in marine environments.

A stripe coat must be applied by brush to all crevices, pits, edges, welds and at other surface irregularities or difficult-to-access locations prior to application of the prime coat.

Additional coats of the finish coat may be required to achieve full colour opacity.

16.18.3 Quality Assurance and Inspection Requirements

Full extent of all requirements specified in section 15.



Appendix A – Hazardous Paint Management



A1 Hazardous paint compliance plan

The Contractor must prepare a Hazardous Paint Compliance Plan (HPCP) in accordance with the requirements of AS/NZS 4361.1.

A2 Emissions

Where hazardous paints are present all surface preparation must be carried out utilising a method that will allow the collection of all wastes and debris generated.

Containment/encapsulation of the work area must be established to prevent the contamination of surrounding surfaces or release of hazardous waste and debris.

A3 Emissions monitoring

Where applicable the Contractor must undertake emissions monitoring in accordance with the requirements of AS/NZS 4361.1. The Contractor must undertake a risk assessment as outlined in AS/NZS 4361.1 and undertake all emissions monitoring requirements identified as being required by the risk assessment.

If emission levels are exceeded, the encapsulation and/or work processes must be modified to prevent further emissions

A4 Ground survey

The Contractor must undertake a background survey for lead in soil surrounding the lighthouse. The survey must use the procedures as per Appendix G of AS/NZS 4361.1.

The number and location of soil samples for the ground survey must be in accordance with AS/NZS 4361.1 Appendix G. On completion of the work a further set of soil samples must be taken at the same locations.

All soil samples must be analysed for lead content in accordance with the US EPA SW-846 Method 3050B or approved equivalent at a NATA registered laboratory to a practical quantitation level of 5ppm or better.

The results of the soil survey before and after the works must be interpreted according to the guidelines set out in AS/NZS 4361.1 and the following criteria:

1. A visual assessment shows that debris (paint chips, spent abrasive, other wastes from paint removal operations) is visible on the ground throughout and around the site. Where this is evident additional soil samples must be collected to determine the extent of contamination and to allow the remediation to be monitored and assessed.
2. The average soil lead concentration increases by more than 100ppm above the pre-commencement average.
3. An individual post-completion soil lead concentration increases by more than 200ppm above the pre-commencement average.
4. An individual post-completion soil lead concentration increases to a level that exceeds the National Environment Protection Measure (NEPM) health investigation level for lead in soil.

Where any of the above criteria have been met the site will be deemed to have been contaminated by the works and the Contractor shall be liable for any site remediation required.

The NEPM land-use category for AMSA sites shall be determined as follows:

- Publicly accessible – land use category C
- No public access – Land use category D



The results of the ground survey must be provided to AMSA along with the Contractors interpretation of the results.

A5 Worker health and safety

All work involving the disturbance of hazardous paint must be carried out in accordance with Australian Standards, the Commonwealth and State laws and Codes of Practice.

A6 Risk assessment

The Contractor must undertake a risk assessment that identifies all activities that are known or presumed to be a lead process and ascertain whether or not the proposed work is a lead-risk job as defined in specified regulatory requirements.

A7 Health surveillance

The Contractor must ensure health surveillance regulatory requirements are met including health risk assessment, medical examinations and exposure monitoring.

Health surveillance and notification must be undertaken where inorganic lead is present which may result in possible health effects from exposure or exposure is likely to be in excess of the national exposure standard for lead.

The Contractor must provide AMSA with written confirmation that all health surveillance for relevant workers has been undertaken and completed.

A8 Training

All Workers must have undergone appropriate lead awareness and site hygiene training for lead paint management, as set out in Appendix I of AS 4361.1.

A9 Regulated/controlled area

The contractor must ensure, so far as reasonably practicable, that contamination by lead is confined to a lead process area at the work site. The boundaries of the controlled area/s must be identified by appropriate signs and barriers.

If these works are being conducted at a site accessible to the public, additional exclusion zones may be required to further limit public access nearby controlled areas.

The controlled area must be kept clean and the cleaning methods used to clean this area must not create a risk to health of persons in the immediate vicinity or have the potential to spread the contamination of lead.

A10 Site hygiene facilities

The contractor must provide appropriate hygiene options so as to minimise secondary lead exposure from contaminated clothing, minimise ingestion of lead, and avoid the spread of lead.

The contractor must ensure, so far as reasonably practicable, that clothing and equipment likely contaminated with lead is removed and workers wash their hands and faces, before entering an eating or drinking area at the workplace.

The Contractor must ensure laundering, disposal, and removal of personal protective equipment is in accordance with specified regulatory requirements.

The Contractor must provide workers with an eating and drinking area away from a controlled area that, so far as is practicable, cannot be contaminated from a lead process.



A11 Responsible Person

The Contractor must appoint a Responsible Person for all hazardous coatings works as defined in AS 4361.1. The Responsible Person must be on-site at all times during hazardous dust producing operations to implement and maintain compliance to the HPCP.

The Responsible Person must have appropriate training and experience in all aspects of recognising and managing hazards associated with the removal of lead paint and must have the authority to act on any matters relating to emissions of lead or other breaches of specification HPCP.

A12 Residual Surface Contamination

The Contractor must thoroughly clean the lighthouse or structure on completion of the site works to remove the dust created as part of the works. The Contractor must ensure that all lead dust, spent abrasive and waste products are removed from all surfaces and crevices.

On completion of cleaning, the Contractor must undertake surface dust sampling on a representative selection of hard non-absorbent surfaces including:

- Nominally two samples per internal level of the lighthouse/structure and one additional sample per hard surface such as desks, tables etc.
- Nominally one sample per discrete component of the lighthouse or structure such as roofs, balconies, walls etc.

Residual lead in surface dust must not exceed the following criteria:

AtoN Category	Acceptance Criterion	Description
Publicly Accessible	0.4 mg/m ² (as lead)	All interior surfaces.
	8 mg/m ² (as lead)	Exterior surfaces
Non-Accessible	2 mg/m ² (as lead)	All interior surfaces
	8 mg/m ² (as lead)	Exterior surfaces

The Contractor must undertake any additional cleaning required to meet the lead in surface dust criteria.

All residual surface contamination must be undertaken by appropriately trained personnel in accordance with a documented procedure included in the HPCP. Analysis of the surface dust samples must be undertaken by a NATA accredited organisation with results reported to AMSA. Where sites are open to tourists the Contractor must complete the sampling and arrange expedited laboratory testing without delay, the results of the laboratory testing must be provided to AMSA as soon as they are made available.

A13 Compliance Report

The Contractor must submit a hazardous paint compliance report documenting compliance with the HPCP.



Australian Government

Australian Maritime Safety Authority

Appendix B – Recently refurbished sites list



AN#	Project Description	Project Year
AN376 North Reef	Repaint of all surfaces internal and external	2009
AN046 Charles Point	Repaint of all surfaces of the lighthouse excluding internal of lantern room	2013
AN113 Cape Hotham	Repaint of all surfaces of the lighthouse excluding internal of lantern room	2013
AN356 Cape Don	Repaint of external surface of concrete structure	2013
AN363 Double Island Point	Repaint of all surfaces internal and external	2014
AN381 Sandy Cape	Repaint of all surfaces internal and external	2014
AN344 Booby Island	Repaint of all surfaces internal and external	2016
AN351 Cape Leveque	Repaint of all surfaces internal and external	2018
AN021 Nobbys Head	Repaint of all surfaces internal and external	2018
AN141 Point Quobba	Repaint of all surfaces internal and external	2018
AN342 Cape Morton	Repaint of internal accessways and lantern room	2018
AN358 Cape Naturaliste	Repaint of all surfaces internal and external	2019
AN343 Cape Wickham	Repaint of all surfaces internal and external excluding the external stone structure that was overcoated	2019
AN374 Point Moore	Repaint of all internal surfaces only	2020
AN069 Table Cape	Repaint of selected surfaces: <ul style="list-style-type: none">• Internal basement to underside of lantern room• External bridge and handrails	2020
AN383 South Solitary Island	Repaint of all surfaces internal and external	2020
AN108 Breaksea Island	Repaint of all surfaces internal and external	2020
AN347 Cape Byron	Repaint of internal surfaces of lantern room only	2020
AN261 Goods Island Rear	Repaint of all surfaces internal and external	2021
AN380 Rottnest Island	Repaint of all surfaces internal and external	2022
AN350 Cape Leeuwin	Repaint of all surfaces internal and external	2022