Conservation of the Cairns Cenotaph – Guns Component

5 inch BL Gun

Controlled high pressure water blasting in progress

Conservation Treatment Report for Cairns City Council

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June 2001
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Introduction

The maintenance treatment of the 5” BL Gun was carried out using the process detailed below:
1. removal from site
2. high pressure water cleaning
3. garnet grit blasting of the base section
4. application of a coating system to the base section
5. treatment of shield, barrel and recoil system
6. repairs
7. installation of new support system and surround.

1.0 Removal from site

The gun was successfully removed from its position on the Esplanade and transported by flat bed truck to Spiller's Quality Corrosion Control in Buchan Street, Cairns (figs. 1, 2) for high pressure water cleaning and garnet grit blasting of the base section.

2.0 High Pressure Water Blasting

Controlled high pressure water blasting at 3,000psi was used to remove badly corroded surfaces, dirt, mould and old paint from the base section, shield, barrel and recoil system (fig. 3). Graffiti in the form of paint letters was removed using Wattyl paint stripper.

3.0 Garnet Grit Blasting

Surface corrosion was further removed from the badly corroded base section using controlled garnet grit blasting at a pressure of 80-100psi. At the same time, high pressure air lancing (without the blasting media) was utilised to remove debris build up (stones, bottles and cans) from the inside of the barrel.

4.0 Application of a Protective Coating System to the base section

4.1 Zinc phosphate epoxy

This was applied in two applications - the first as a hold coat to prevent flash rusting, the second as a build coat (fig. 4).

4.2 High build epoxy mastic

This was applied to the whole surface. Special attention was given to the badly corroded section along the outer rim of the circular base (Fig. 5)
5.0 **Treatment of Shield, Barrel and Recoil System**

After painting, the base section of the gun was removed from Spillers to the Cairns City Council Depot at Strafford where further treatment of the gun’s surface took place.

5.1 **Iron Alloy Components (Shield, Gun Barrel, gear wheels)**

All the components were first surface cleaned using mechanical wire brushes, followed by surface detailing with stainless steel scourers and fine wet and dry carborundum paper (600 grit). The barrel was surface cleaned using 800 wet and dry paper. Old surface grease and dirt build up was removed from the underside of the gear mechanisms using small sharp wooden tools. Two coats of Corrostop were applied to all the surfaces to give a protective layer against further surface deterioration (figs. 6, 7).

5.2 **All bronze components – recoil system**

The bronze components of the recoil system were first hand cleaned with nylon scourers, followed by an inhibition treatment with Benzotriazole (BTA) and surface protection and enhancement using Dussek Campbell’s 2095 microcrystalline wax in white spirits, applied to a heated surface. After cooling, the newly waxed surface was highlighted with soft lint free cloths. Figs. 8-10 show the gun in its finished state.

6.0 **Repairs**

6.1 The broken end of the small wheel which aids the elevation of the barrel was sealed using lead.

6.2 The internal ram section of the recoil system was sealed with Sikaflex.

6.3 The gear wheels, axles and rotation handle were resecured with new nuts and pins. This work was carried out by Cairns City Council staff.

7.0 **New Support System**

Site Plan Cairns Pty Ltd Landscape Architects were engaged to design a new support system for the guns. Once manufactured, these were installed by Council staff during the concreting process of the new footing and new base (slab) (see drawings – appendix 1).

8.0 **Installation**

The 5 inch B.L. Gun was reinstalled into the new support system. Between the contact points of the gun’s base and the six support points Marine Guard was used.

9.0 **Maintenance**
• At 12-month intervals, check paint system. Re-apply Corrostop to iron alloy components
• At 12-month intervals, check support system as in 6.0 above.
• At 3-month intervals, check inflation of tyres
• Every 6-months, wash gun down to remove surface dirt and grime. The use of a mild detergent in the wash water will aid this process. Wash off detergent solution with clean water, and dry with clean cloths.
• Check the barrel daily for debris and remove immediately to prevent build up of rubbish.
10.0 **Figure Legend**

Fig. 1: Gun lifted from site on Cairns Esplanade.
Fig. 2: Underside of gun base after removal prior to treatment.
Fig. 3: Controlled high pressure water blasting in progress.
Fig. 4: Zinc Phosphate Epoxy coating applied to base.
Fig. 5: High Build Epoxy Mastic Coating - Base
Fig. 6: Barrel and Proper right hand side of shield treated with Corrostop. Proper left hand side untreated.
Fig. 7: Front section of shield and barrel after treatment with Corrostop.
Fig. 8: Proper right side of gun with bronze component treated and gear wheels and covers resecured.
Fig. 9: Proper left side and rear of gun with bronze component treated.
Fig. 10: Rear view after treatment of all components.
Fig 1: Gun lifted from site on Cairns Esplanade.
Fig 2: Underside of gun. Base after removal prior to treatment.
Fig 3: Controlled high pressure water blasting in progress.
Fig 4: Zinc phosphate epoxy coating applied to base.
Fig 5: High build epoxy mastic coating applied to base.
Fig 6: Barrel and proper right hand side treated with Corrostop. Proper Left hand side untreated.
Fig 7: Front section of shield and barrel after treatment with Corrostop.
Fig 8: Proper right side of gun with bronze components treated and gear wheels and covers resecured.
**Fig 9:** Proper left side and rear of gun with bronze components treated.
Fig 10: Rear view after treatment of all components.
Appendix 1 – Drawings for new gun support system

Notes
- Existing concrete base and footings to be removed as per client's requirements.
- New slab and footing concrete to be 40 Mpa.
- 50mm cover to all reinforcement.
- New base (slab) to be 150mm deep, with 300mm deep x 300mm wide edge thickenings (3-8 T.M. bottoms).
- New footings of support brackets to dimensions as shown.
- Base to be isolated from surrounding concrete paving.
- Concrete base to consist of one panel only, no pigments to be added, to have broom finish and tool edge.
- During construction, set-out accuracy is of great importance.
- All steel to be HD galvanized, finish to client's specification.

SECTION A

SECTION AA

5 Inch – Gun (1887) – Base Rim Support Detail 1: 10 (A3)
Overall weight (approx.) 6 tonnes

OVE ARUP & PARTNERS – CAINRUM

22 JUN 2001

In association with
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Gun Refurbishment
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