Brookfield Johnson Controls

DEPARTMENT OF DEFENCE

DEFENCE SUPPORT AND REFORM GROUP

S6061 HAMMERHEAD CRANE REMOVAL – REPORT OF COMPLIANCE WITH TABLE 5.2

Report Register
The following report register documents the development and issue of this report, undertaken by Brookfield Johnson Controls.

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1	9 January 2014	First Draft
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Quality Assurance
This report has been reviewed and approved for issue.

Issue no.	Name	Position	Date	Signature
1	Esti Cogger	Project Manager	9.01.2014	
2	Esti Cogger	Project Manager	24.01.2014	
3	Esti Cogger	Project Manager	29.01.2014	

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Preface

Brookfield Johnson Controls (BJC) has been engaged by the Department of Defence to project manage the deconstruction of the Hammerhead Crane (HHC) at Garden Island in accordance with the conditions of consent issued by the then minister of SEWPaC (*Conditions of Consent*) as part of the approval for the Deconstruction of the Hammerhead Crane.

This report details the management tools, and methodology for the deconstruction of the Hammerhead Crane consistent with the measures and safeguards set out in table 5.2 of the Preliminary Documentation Report EPBC Ref 2012/6430. GI HHC proposed removal, Sydney NSW, 10 January 2013 *(Table 5.2),* as per condition 11 of the conditions of consent.

The report outlines each of the items identified in Table 5.2 and how these items are addressed by the deconstruction contractor referencing the associated documentation / management procedure/s to confirm compliance.

Introduction

Garden Island is the site of Fleet Base East of the Royal Australian Navy (*RAN*). Garden Island is the principal East Coast RAN Base and is the home port to many of the RAN fleet.

The Hammerhead Crane (*HHC*) is a tower crane with a fixed tower and top slewing jib. It is located at the Garden Island Defence Precinct (GIDP), near the northern end of Fleet Base East (*FBE*).

The HHC, constructed in the period circa 1944 – 1951, was originally designed to lift 250 ton (226.8 tonnes) at 118 feet (36m) from the centre of the tower and 120t at 162 feet (49.4m). The crane was intended to serve the ships of both the British and Australian Navies.

The HHC has not been in use since 1996 and is deteriorating due to corrosion and disuse. Defence determined that the proposed removal of the HHC was necessary to allow Garden Island to provide training and logistic support, maintenance facilities and berths for major RAN and visiting foreign warships.

In June 2012 Defence submitted an EPBC Act Referral for the removal of the HHC at Garden Island.
On 12 July 2012 the proposed action was determined to be a controlled action by the then Department of SEWPaC, and as such required assessment by Preliminary documentation (EPBC Decision 2012/6430)

On 17 July 2013 Defence received approval from the then Minister of SEWPaC to remove the HHC. (EPBC 2012/6430)

A series of conditions were stipulated as part of the consent (*Conditions of Consent*- refer Appendix A). This report confirms compliance with Condition 11 of the Conditions of Consent which states that:

"To minimize and mitigate the impacts to the environment, the person taking action must implement measures that are consistent with the proposed safeguards/ mitigation measures outlined in table 5.2 of the Preliminary Documentation Report EPBC Ref 2012/6430. GI HHC proposed removal, Sydney NSW, 10 January 2013. The measures that will be implemented must be documented in a plan or plans that demonstrate consistency with table 5.2 prior to the commencement of removal works. Any such plan or plans must be made available on the internet for the duration of the removal works"

Table 5.2 of the Preliminary Documentation Report EPBC Ref 2012/6430 is attached in Appendix B.

This report extracts each item from Table 5.2 and outlines how these items have been addressed by the Deconstruction Contractor and references the associated documentation / management procedure/s and licenses to confirm compliance.

Deconstruction Contractor

The Contractor engaged to deconstruct the HammerHead Crane is;

LIBERTY INDUSTRIAL

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Demonstration of Compliance

Below is Table 5.2 extracted from the EPBC Preliminary Documentation Report, which includes an overview of how the deconstruction contractor shall ensure on-site application/compliance, referencing each of the relevant supporting documentation.

Liberty Industrial has a number of management plans and systems in place to suitably manage each aspect of the Project and to ensure compliance.

These project specific site management plans will be used as a framework for undertaking the project. As the project progresses audits will be conducted to ensure that the proposed processes are strictly followed. If required, the management plans will be revised and updated.

The project specific plans include the following:

- Demolition Work Plan (DWP)
- Hazardous Paint Management Plan (HPMP)
- Quality Management Plan (QMP)
- Traffic management Plan (TMP)
- WHS Management Plan (WHSMP)
- Environmental Management Plan (EMP)

Compliance with the Requirements of Table 5.2 of the Preliminary Documentation Report EPBC Ref 2012/6430.

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Materials Handling	A material handling strategy will be implemented to limit onsite storage requirements, minimise disruption to Navy Activities, and maximise the geometrical size of the HHC structure pieces during removal that may be retained/ reconstructed for heritage purposes.	As per the Deconstruction Work Plan, section 8.5, all material handling will be processed in the defined area and loaded into a tipper trailer for removal off site on a daily basis complying with the daily TMP. Heritage items will be placed on a barge and transported to the designated site (Camellia). These will be stored in accordance with the Heritage Consultants requirements, until Defence can confirm a suitable location for the items to be commemorated.	DW P_ Item 8.5 Transportation and shearing to size barging out.
	A temporary lay-down area at the southern end of the site boundary is proposed for short term on site storage. It is anticipated that these materials will be removed from site on a daily basis if necessary.	As per the Deconstruction Work Plan, Section 7, a container will be placed on site for temporary storage of steel removed from the HHC. The container will be removed from site as it fills up and replaced with an empty container. The northern end of the site was selected as it was preferential in regards to site access and traffic risk management.	DW P_ Item 7- Site Set Up
	Larger items will be placed directly onto barges docked on the western side of the HHC structure, and transported to an offsite processing area for further treatment or heritage retention.	As per the Deconstruction Work Plan, section 8.5, the items for retention will be removed in their entirety, placed on a barge for transport to offsite processing and storage.	DWP_ Item 8.5 Transportation Barging out.

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	The offsite processing area will be subject to hazardous substances management controls.	As per the Deconstruction Work Plan, section 8.7, all steel, other than the salvage items, will be transported to a licensed recycling facility which will then apply their onsite hazard control methods. Suitable controls will also be in place in the offsite processing facility.	DW P_8.7_ Recycling. Recycling Company is T&T Metals and Asbestos Services Pty Ltd – EPA Licence Number 6291
Demolition	HHC removal activities will only be undertaken by persons holding a relevant/applicable demolition licence valid in the relevant jurisdiction.	Liberty Industrial are holders of a demolition licence. Licence number A211180 Liberty Industrial has notified both Comcare and WorkCover NSW of the proposed undertakings. See WorkCover NSW Approval.	Notification Status Update - Accepted. **Notification Type:** Notification of Intent to do Demolition Work **Notification Reference No:** 941R- 00053858-01 **Date Lodged:** 10/12/2013 2:31:54 PM **Comments:** ACCEPTED.
	Evidence of the contractor's capacity, experience and licence will need to be obtained prior to the removal works.	Liberty Industrial holds a current Unrestricted Demolition Licence (AD211180) Details of capacity and experience were provided at tender and verified.	Appendix D – Demolition Licence

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	Evidence of appropriate notifications and permits from statutory authorities will need to be obtained prior to works commencing.	Comcare and NSW WorkCover have been notified of Demolition Work and Lead Work commencing.	See Notification emails
	Safe Work Method Statements (SWMS) must specifically address risk control measures for identifying the presence of hazardous materials/ substances, preventing harm to adjacent personnel/ environments and isolation of relevant services etc.	A Demolition Risk Assessment Workshop (DRAW) has been developed to address (at a high level) all safety and environmental risks for the project. From this overarching Risk Assessment, WMS & JHA's are developed Safe Work Method Statements (SWMS) will address the processes to be followed when dealing with the lead chromate paint to mitigate associated environmental and safety risks. A JHA for each task being undertaken will be developed by the work crew prior to the work commencing which will also address the risks associated with the lead chromate paint.	DRAW SWMS JHA's
Demolition / safety	Permanent and temporary safe access elements (such as ladders, platforms, landings, walkways, guardrails, temporary scaffold stairs, and temporary catch platforms) will be used to facilitate safe access for workers to perform local removal of the protective coating system, installation of the temporary struts, and cutting of the steel structure at the predetermined locations during removal.	As per the Deconstruction Work Plan, Sections 4.5, 5.2 and 8.1, access and egress will be via scaffold stairs, and the existing scaffold and catch decks. A work box attached to a secondary crane will also be used to access the work area.	DW P_8.1 Staging and sequence_ Install required structural steel. DW P_4.5 Existing Scaffold stairs & Catch Decks DWP_5.2 Scaffold access stairs and catch decks beneath the crane jib are installed.

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	A temporary perimeter scaffold will be erected around the HHC towers from the wharf levels to facilitate the removal of the upper, middle and lower tower elements.	As per the Deconstruction Work Plan Section 5.2, the existing scaffold and catch decks will be maintained. Additional scaffold around the tower will not be erected so as not to hinder access to the tower during its deconstruction. Procedures will be in place to limit unnecessary access to the tower area during its deconstruction.	DWP_5.2 Scaffold access stairs and catch decks beneath the crane jib are installed.
	A detailed assessment of the permanent and temporary safe access infrastructure will be performed as part of the detailed Removal methodology, to determine the stability and structural capacity of each safe access element for all stages during the HHC removal phase.	A Safe Access Report has been undertaken and deemed that the majority of the existing access ways are unsafe. Access throughout the structure will consist of: • Existing Scaffold Stairs and Catch Decks • Additional Scaffold Work Platforms • EW P working off the existing scaffold deck (Structural Engineer to approve) • EWP working from the Wharf • Man Cage on a Tower Crane • Static Lines will be installed around the structure to provide a harness point hook-up as required to access certain areas	WMS's JHA's

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Contamination	Environmental safeguards/ mitigation measures to be adopted as part of the HHC removal could include: • Air monitoring equipment to be in place pre, during and post works to ensure that potential airborne contaminants such as asbestos fibres and flaking lead based paints are appropriately identified and controlled. Air monitoring locations are to be strategically located to ensure potential receptors are adequately covered.	As per the Deconstruction Work Plan section 4.13, air monitoring will be undertaken in the northern end of the exclusion zone and one at the southern end of the zone. Total Suspended Particulate (TSP) sampling shall be undertaken at all times that tasks are being carried out which will disturb lead or chromate paint or contaminated dust.	DW P_ 4.13 Air Monitoring HPMP_9.3 Ambient air monitoring
	• Treatment of hazardous substances (using a combination of on-site/ off-site treatments as required). Use of localised encapsulation techniques, vacuum shrouds for hand held tools and adhesives to bind substances to the HHC will be explored.	As per the Deconstruction Work Plan section 8.1, the flaking paint will be encapsulated using spray PVA / paint on the structure. The paint will be removed using a chemical peel- off method along the cut lines prior to cutting to avoid disturbing the hazardous coating. The processing area on the ground will be encapsulated to a height of 3-4 metres, and progressively vacuumed as required to remove any flakes of lead chromate paint created.	DW P_8.1 Staging and Sequencing DW P_8.6 Onsite Processing
	• Signs informing site personnel and other high risk receptor locations to be erected within and surrounding Garden Island to inform the public of works and alleviate potential concerns with airborne contaminants. Preparation of a hazardous materials and handling strategy report to be included in the CEMP and to be reviewed by Defence.	As per the Deconstruction Work Plan section 7.1, signs shall be erected within and surrounding Garden Island to inform the public of works to alleviate potential concerns with airborne contaminants. A Hazardous Substances Management Plan has been prepared and forms part of the proposed methodology.	DW P_7.1 Signs Hazardous Substances Management Plan

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Lead and Zinc Chromate paint removal	• Welding and flame cutting of HHC metal will generate heat that will result in the emission of hazardous fumes. It will therefore be necessary to locally remove the coating system at these locations.	As per the Deconstruction Work Plan section 8.6, the lead chromate paint will be chemically removed about the cut location and section.	DW P_8.6 Onsite Processing
	Lead based paint coating systems will be removed in accordance with AS4361.1- 1995: Guide to lead Paint Management- Part 1- Industrial Applications.	As per the Deconstruction Work Plan section 8.6, lead based paint coating systems will be removed in accordance with AS4361.1-1995: Guide to lead Paint Management- Part 1- Industrial Applications	DW P_8.6 Onsite Processing
Protective Coating management	To minimise the loss of the protective coating system into the local environment during the removal process, a resin rich primer will be applied during the removal and transportation process.	As per the Hazardous Paint Management Plan, all flaky paint on the structure shall be stabilised in-situ by the spray application of an approved high build flexible water-borne PVA or acrylic paint to a dry film thickness of not less than 200µm. The encapsulating paint will be approved by the principal hazardous substances consultant. Application shall be by airless spray to minimise disturbing the existing paint, with no surface preparation to be undertaken as this will disturb the existing paint.	Hazardous Paint MP_6.1
Dust Control	Based on a risk assessment undertaken in accordance with AS4361.1-1995 Appendix C, dust and debris will be contained under Emission Control Level A.	As per the Environmental Management Plan, Section 8, dust control using existing infrastructure and dust contained to Level " A";	EMP_8.0 Environmental Obligations.

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Dust Control	An asbestos containing material (ACM) identification inspection will be undertaken by an accredited assessor to identify the form and quantity of ACM present prior to any works commencing on the HHC structure.	BJC have undertaken this process and issued an asbestos survey report. The asbestos which was identified in the report was removed, and clearances received.	Refer to the asbestos survey report for the Hammerhead crane dated 28.02.08 Refer decontamination completion report 28-07-10
	Testing of suspected ACM will be performed in accordance with AS4964- method for the Qualitative Identification of asbestos in Bulk Samples by a National association of testing Authorities (NATA) approved laboratory.	BJC have undertaken this process and issued an asbestos survey report. The asbestos which was identified in the report was removed, and clearances received. However any suspected asbestos will be tested in accordance with AS4964 by an Authorised (NATA) approved laboratory.	Hygienist- CTI Consultants Lab- Envirolab Services , NATA accreditation number 2901.
	Removal of ACM will be undertaken by a licenced contractor in accordance with WorkCover NSW requirements.	Liberty Industrial holds current Friable Class “A” Asbestos Removal Licence and a Class “B” Non-Friable Removal Licence (AD211444). Liberty propose to undertake the removal if additional asbestos is discovered on site	Appendix E – Asbestos Licences
	Depending on the extent and location of ACM and methods adopted for removal: it may be necessary to obtain a clearance certificate prior to further work proceeding.	As BJC have already undertaken the identification process this will only be required if further asbestos is identified and removed.	S&A / PB’s Clearance Certificate from 2010.

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Asbestos Containing material	A clearance certificate, if required, will need to be issued by an occupational hygienist after air sampling results are assessed by a NATA approved laboratory.	This will be undertaken by a WorkCover Registered Hygienist.	Hygienist- CTI Consultants Lab- Envirolab Services , NATA accreditation number 2901**.**
Hazardous Substances	All hazardous substances (including fuel) introduced to site would include environmental safeguards such as:		
	• Be accompanied by a Material Safety Data Sheet (MSDS), less than 5 years old.	As per the Environmental Management Plan, all hazardous substances will be accompanied by a Material Safety Data Sheet (MSDS), less than 5 years old.	EMP_11.1 Chemical Substancesat the Deconstruction Site
	• Be approved for use by DoD, with confirmation that the hierarchy of controls (including use of non-Hazardous materials) was considered to reduce the risk.	All hazardous substances will be approved for use by DoD, with confirmation that the hierarchy of controls (including use of non-hazardous materials) was considered to reduce the risk.	Refer hazardous substances register
	• Be documented in a risk assessment/ safe work method statement prior to works commencing.	As per the project SWMS, all hazardous substances will be documented in a risk assessment/ safe work method statement prior to works commencing.	Refer SWMS
	• Be recorded on a hazardous substances register	All hazardous substances will be recorded on a hazardous substances register	Refer hazardous substances register

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Be appropriately stored and labeled in accordance with national standards, including during handling and transporting substances.	As per the Environmental Management Plan, section 11.1, all hazardous substances will be appropriately stored and labeled in accordance with national standards, including during handling and transporting substances.	EMP_ 11.1 Chemical Substances At The Deconstruction Site
	• Be managed by appropriately skills/ certified personnel for use and disposal	As per the Environmental Management Plan, section 11.1, all hazardous substances will be managed by appropriately skills/ certified personnel for use and disposal	EMP_ 11.1 Chemical Substances At The Deconstruction Site
	• Have minimum quantities required stored on site	As per the Environmental Management Plan, section 11.1, all hazardous substances will have minimum quantities required stored on site	EMP_ 11.1 Chemical Substances At The Deconstruction Site
	• Have appropriate spill management procedures in place for the substance and quantity available on site, including appropriate PPE (in accordance with the MASA	As per the Environmental Management Plan, section 11.1, all hazardous substances will appropriate spill management procedures in place for the substance and quantity available on site, including appropriate PPE (in accordance with the MASA requirements). All chemicals and fuels will be contained within an appropriate bunding to prevent spillage.	EMP_11.1 Chemical Substances At The Deconstruction Site
Hazardous Substances	• Have nominated personnel who can apply appropriate first aid arrangements consistent with those documented on the MSDS.	All hazardous substances will have nominated personnel who can apply appropriate first aid arrangements consistent with those documented on the MSDS.	Refer first aid certificate for relevant personnel

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	All hazardous substances brought to site must also be removed from site and disposed of appropriately so as not to pose a threat to site personnel and/or the environment	As per the Environmental Management Plan, Section 11.1, all hazardous substances brought to site must also be removed from site and disposed of appropriately so as not to pose a threat to site personnel and/or the environment.	EMP_11.1 Chemical Substances At The Deconstruction Site
Waste management	A hazardous materials survey and waste management plan will be undertaken as part of future environmental studies to identify and provide measures to suitably handle and dispose and recycle hazardous and non hazardous materials contained within the HHC. Early indications from Robert Bird Group (engineering consultants) note that up to 98% of the HHC structure can be recycled, and that contaminants such as zinc chromates and lead based paints will not hinder the recyclability of the HHC components.	As per the Environmental Management Plan, Section 10.1, all waste material will be recycled where practicable i.e. ferrous and nonferrous materials. This will achieve a projected 98% of recycled material	EMP_10.1 Disposal Process Waste/ recycling receipts
	Transportation of potentially hazardous goods is to be undertaken in accordance with applicable State legislation.	As per the Environmental Management Plan ,Section 9.10 the company shall provide, operate and maintain adequate facilities for the collection of leaking fuels, lubricants, oils, greases and the like, and for the transportation and lawful disposal of these materials off-site by a contractor licensed to undertake this task	EMP_9.10 Management of Hydrocarbons ToxFree – EPA Transportation Licence Number 7263

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Onsite storage of Hazardous Waste	The removed hazardous waste will be managed through appropriate handling and disposal: e.g. stored temporarily in labeled and sealed vessels of up to 200 litre capacity.	As per the Environmental Management Plan ,Section 11, the removed hazardous waste will be stored temporarily in labeled and sealed vessels of up to 200 litre capacity;	EMP_11 Storage and Use of Hazardous Materials DWP_7.4 7.4 Skip bin for storage of removed lead
	The temporary onsite storage area must be adequately signed and secure to prevent vandalism and unauthorised access.	As per the Environmental Management Plan, Section 11, temporary onsite storage area will be adequately signed and secured to prevent vandalism and unauthorised access.	EMP_11 Storage and Use of Hazardous Materials
	In addition to the above a contingency plan will need to be developed prior to the coating removal commencing. The contingency plan should identify potential risks and nominate contingency measures or controls that can be implemented in the event of an accident.	SWMS for the coating process will address any identified risks.	Demolition Risk Assessment WorkShop (DRAW) and SWMS
Transportation and Disposal	Transportation and disposal of collected hazardous waste will be implemented in accordance with the NSW office of Environment and Heritage (Environmental protection Agency)	As per the Environmental Management Plan, Section 8.6, In the event liquid waste is produced, the waste disposal shall be carried out by a licensed waste-water transporter who shall be alerted to the possibility of the waste water containing lead and chromates. Solid wastes will be stored temporarily on site in an enclosed environment, and then will be removed from site by a licensed transporter. All hazardous waste requires tracking, and shall be transported by a licensed hazardous transport company by a company licensed under state legislation to do so.	HDMP_8.6 Waste Disposal EMP_10 Waste management DWP_7.4 Skip bin for storage of removed lead chromate waste

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	As appropriate, testing of the collected hazardous waste may be required to establish specific transportation and land filling restrictions.	As per the Environmental Management Plan, Section 8.6, all wastes generated by the work shall be disposed of in accordance with the all relevant environmental protection regulations and in some instances tested to ensure it is disposed of in the correct land fill due to some restrictions.	EMP_8.6 Waste Disposal EMP_10 Waste management
Contaminated soils	It is considered unlikely that there will be any requirement to excavate beneath the HHC Concrete wearing course. Any works requiring soil excavations (potentially required for land based tower crane if utilised) will need to ensure that excavated soils have been analysed for soil contaminants, and sustainable remediation management strategy is in place to treat possible contaminated soils.	As per the Hazardous Paint Management Plan, section 9.1, in the event that soil quality or if surrounding surfaces show dust contamination, the affected area will be remediated. Any excavation will ensure that soils are tested and analysed for soil contaminants, and sustainable remediation management strategy is in place to treat possible contaminated soils. If any excavation work is necessary reference will be made to the contamination survey and remediation actions taken during construction of the tower crane foundation before any work commences.	HPMP_9.1 Ground Surveys

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Soil Monitoring	Laboratory analysis of surrounding soil prior to commencement of work, and at the completion of lead based coating removal to establish the need for remediation. The samples should be method 3050 analysed in accordance with US EPA	As per the Hazardous Paint Management Plan, section 9.1, and because there is no abundance of soil in the vicinity, the survey shall include 4 soil samples in lieu of the 8 soil samples initially estimated, and a minimum of 10 surface dust samples, with the exact sampling locations recorded by a suitably qualified hygienist at the time of the survey.	HPMP_9.1 Ground Surveys
	A minimum of eight (8) sample locations will be required. These locations will be positioned in accordance with the recommendations of AS4361.1-1995.	As per the Hazardous Paint Management Plan, section 9.1, and because there is no abundance of soil in the vicinity, the survey shall include 4 soil samples in lieu of the 8 soil samples initially estimated, and a minimum of 10 surface dust samples, with the exact sampling locations recorded by a suitably qualified hygienist at the time of the survey.	HPMP_9.1 Ground Surveys
Water Quality	In the unlikely event of any below- wharf demolition activities water quality mitigation measures to be implemented include:		

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Turbidity (silt) curtains will be installed prior to the commencement of below wharf HHC works to confine suspended particulate in the water column. The silt curtain would be installed to encapsulate the proposed impact area. The curtains would be appropriately managed throughout the duration of the works. The curtains would continually be monitored for visible signs of breaches at the commencement of each work day and following each rainfall event. Curtains would be repaired/ replaced where necessary prior to resuming removal operations. Particulates contained within the containment area are to be scooped up an as needs basis (dependent on effectiveness of dust suppression mitigation measures) and are to be collected and treated as contamination/hazardous material and stored in appropriately sealed containers.	As per the Hazardous paint Management Plan, Section 9.2, during the deconstruction water sampling will be undertaken adjacent to the crane pursuant to AS 4361.1 Appendix H and analysed for lead and chromium. Under wharf demolition is not part of the project scope	HPMP_ 9.2
	Trucks/ barges used for the transport of demolition materials will be fitted with covers to minimise the loss of materials and contaminants during the loading / unloading and transport.	As per the Deconstruction Work Plan, Section 8.5, the processed sections are progressively loaded into a semi tipper trailer adjacent the “landing and processing area”, and covered with a tarpaulin when not in use. The use of a tarpaulin introduced further risks including those associate with the installation and the risk of ‘sailing’. It is the professional opinion of Liberty Industrial that the encapsulating paint will adequately prevent lead flakes from being released.	DW P_8.5 Transportation

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	Sediment controls will be installed in all storm water outlets within the project impact area, in accordance with the EPA requirements. Controls will be monitored on an as needs basis (minimum weekly inspection, and after every rainfall event) and collected material is to be treated as contaminated / hazardous material.	As per the Environmental management Plan, Section 8.5, silt socks shall be used in the materials handling / processing area and all drains shall be covered with geotextile fabric. The missing sections in the gutters will be replaced with a suitable material to prevent potentially contaminated water from flowing over the side of the wharf.	EMP_9.3 Water Monitoring
	All floating plant (if required and where practical) is to be fitted with sewerage and waste systems to prevent discharge of waste into Sydney Harbour.	As per the Environmental management Plan, Section 10.2.7, tug boats for barges will be fitted with sewerage and waste systems as required (Note: Barges will not have this fitted)	EMP_10.2.7 Floating Plant Waste
	All floating plant (if required and where practical) will control ballast water while within Sydney Harbour.	As per the Environmental management Plan, Section 10.2.7, barges and tug boats will control ballast water while within Sydney Harbour.	EMP_10.2.7 Floating Plant Waste
	Clean water diversion away from works area will be undertaken where practicable.	As per the Environmental management Plan, Section 9.3, every attempt will be made to divert water away from the works where reasonably practical.	EMP_9.3 Water Monitoring

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	A water quality management program would need to be detailed in the Construction EMP prior to Defence approval to initiate the works.	As per the Environmental management Plan, Section 9.3, during the background environmental survey, water samples shall be collected from the water adjacent to the crane, for analysis of lead and chromium content (unfiltered). Routine water quality sampling shall be carried out at 3 monthly intervals, and on completion of the works. Additional water sampling shall be carried out during the works if mishaps or spillages occur	EMP_9.3 Water Monitoring
Air Quality	All removal equipment will be properly maintained and serviced to minimize exhaust emissions.	As per the Deconstruction Work Plan, Section 22.1, plant Maintenance Records will be accompanying the plant and will be certified as meeting current exhaust emissions. Plant will be maintained to manufacturer's specifications.	DW P_22.1 Green Procurement and Energy Efficiency
	All vehicles used during the removal works will not be left running idle.	As per the Environmental Management Plan, Section 22.1, plant will not be left idling when not in use;	DW P_22.1 Green Procurement and Energy Efficiency

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	Trucks/ barges used for the transport of materials would be fitted with covers to minimise the loss of material and contaminants during loading/ unloading and transport.	As per the Deconstruction Work plan, Section 7.5, the trailers are progressively loaded with the processed steel, covered with a tarpaulin when not being loaded for lead chromate containment. As the trailer becomes full, it will be covered for transportation offsite and replaced with an empty trailer. The items transported by barge will have been painted in a 200um thickness film to stabilize flaking paint and will be secured to the barge deck.	DW P_7.5 Semi Tipper Trailer DW P_7.8 Barge for Transport of Large Salvage Items
	Appropriate dust suppression measures to be implemented during removal works. (including stockpiling materials) treatment methods include:		
	• Minimum storage and appropriately contained storage of waste materials on site	As per the Deconstruction Work plan, Section 7.3, a materials processing areas as identified in the site drawing is established with perimeter scaffold (3m – 4m high) encapsulated with shade cloth	DW P_7.3 Material Processing Area

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Use of vacuum shrouds on hand held power tools	As per the Hazardous Paint Management Plan, Section 6.2, where steel members are to be oxy-cut, a 100mm wide strip of paint about the cut line (i.e. 100mm wide strip either side of the cut line) shall be completely removed using a chemical paint stripper and scraper or vacuum-shrouded Rotapeen and Blast 'n' Vac	HPMP_6.2
	• Use of paint strippers and/ or spray adhesives to remove/ secure flaking paints before the removal and	As per the Hazardous Paint Management Plan, Section 6.1, all flaky paint on the structure shall be stabilised in-situ by the spray application of an approved high build flexible water-borne PVA or acrylic paint to a dry film thickness of not less than 200µm. (Note: Approval for the encapsulating paint shall be sought from the principal hazardous substances consultant).	HPMP_6.1 Stabilisation of Paint with PVA
	• Encapsulation of HHC components prior to air sample collection will occur prior to commencement of protective coating removal to establish boundaries around the regulated work area.	As per the Hazardous Paint Management Plan, Section 9.3, background monitoring shall be carried out for days prior to commencement of lead work	HPMP_9.3.2 Total Monitoring

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	Air sample collection will be undertaken at monthly intervals as a minimum to determine if it is necessary to reposition the location of the regulated area boundaries.	As per the Hazardous paints Management Plan, Section 9.3.2, as a minimum air sampling will occur continuously until sufficient data is collected to confirm the correct location of the air sampling pumps and that the level of dust particles have not exceeded the background testing results.	HPMP_9.3.2 Total Monitoring
	All work within the regulated area will be performed with the appropriate protective clothing and respirators.	As per the Hazardous paints Management Plan, Section 7.4, all workers shall wear the following minimum PPE: • Disposal overalls • Disposable P2 masks Gloves Where oxy-cutting is undertaken, a half-face respirator fitted with a P2 dust cartridge shall be worn.	HPMP_7.4 Personal Protective Equipment
	Visual monitoring in accordance with AS4361.1-1995 Appendix F is required.	As per the Hazardous paints Management Plan, Section 9.3.1, monitoring of visible emissions for all aspects of the works pursuant to AS 4361.1 Section F of the standard will be undertaken.	HPMP_9.3.1 Visible Emissions
	Any visible emissions will require the immediate suspension of work causing the emission, and reassessment of work practices.	As per the Deconstruction Work plan, Section 4.1.3, work shall cease in the event that visual emissions are observed which have the potential to harm the environment.	DW P_4.13 Air Monitoring

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	Stop work procedures will need to be in place during inclement weather and when wind gusts are in excess of acceptable limits (to be identified by engineering consultants and prime contractor engaged to perform the removal works) when undertaking dust generating activities.	As per the Deconstruction Work plan, Section 5.4, in the event the wind reaches levels where the work is deemed to be unsafe (both crane lifts and lead paint management) or when the debris cannot be effectively contained or captured, all work shall cease.	DW P_5.4 Weather
	Signs informing site personnel and other high risk receptor locations are to be erected within and surrounding Garden Island to inform the public of works and alleviate potential concerns with airborne contaminants.	As per the Deconstruction Work plan, Section 7.1, signs informing site personnel and other high risk receptor locations shall be erected within and surrounding Garden Island to inform the public of works to alleviate potential concerns with airborne contaminants.	DW P_7.1 Signs and Barricading
	An air quality management program would need to be detailed in the Construction EMP prior to Defence approval to initiate works.	As per the Hazardous paints Management Plan, Section 9.3, ambient are quality monitoring will be carried for Total Suspended Particulates (TSP) using high volume air sampler pursuant to AS 4361.1. TSP will be undertaken at all times that lead is being disturbed.	HPMP_9.3 Ambient Air Monitoring
Odour	The proposed works are unlikely to result in the release of odorous emissions from marine sediments (as works are not to impact on HHC footings/ sea bed floor).		EMP_9.6 Odour Control

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	The release of odours from trucks and barges has the potential to affect air quality. The odours could be limited by ensuring that;		
	• All removal equipment will be property maintained and serviced to minimise exhaust emissions	As per the Environmental Management Plan, Section 9.6, all removal equipment is property maintained and serviced to minimise exhaust emissions. This will be audited regularly.	EMP_9.6 Odour Control
	• All trucks / barges used during the removal works will not be left running idle	As per the Environmental Management Plan, Section 9.6 all trucks / barges used during the removal works will not be left running idle	EMP_9.6 Odour Control
	• Transportation of materials is done in a manner that will minimise the number of vehicle movements through the local community.	As per the Environmental Management Plan, Section 9.6 transportation of materials is done in a manner that will minimise the number of vehicle movements through the local community.	EMP_9.6 Odour Control
	Odour emissions caused by metal cutting and fabrication works to be controlled using industry best practice techniques to ensure minimal impacts to surrounding environments.	As per the Environmental Management Plan, Section 9.6 odour emissions caused by metal cutting and fabrication works to be controlled using industry best practice techniques to ensure minimal impacts to surrounding environments.	EMP_9.6 Odour Control

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Noise	Noise levels will not be a significant factor during the removal process. Elevated noise levels may be experienced from time to time during periods of the HHC removal as a result of increased heavy vehicle movements and use of machinery and equipment. Periods of loud noise will be infrequent and of short duration. Any disturbance will be managed and mitigated to an acceptable level by the implementation of the following mitigation measures;		
	• Works being undertaken during normal base operation hours (between 7am to 7pm, Monday to Friday).	As per the Environmental Management plan, Section 9.5.6, noisy work will be undertaken during the base operation hours of 6am to 6pm Monday to Saturday.	EMP_9.5.6 Available Control Measures
	• Notification of residents to occur as part of community engagement process, to highlight potential noise events (when noise impacts are likely to occur).	Defence is arranging for neighbouring resident notification about the upcoming Hammerhead Crane Deconstruction Works. No noisy work is anticipated; however should this change, interested parties will receive an update.	The initial notification is being undertaken by Defence. Subsequent updates to interested parties will be undertaken by Brookfield Johnson Controls.
	• Implementation of buffers and/or localised enclosures to surround equipment.	As per the Environmental Management plan, Section 9.5.6 localised Barriers or screens can be an effective means of reducing noise. Barriers can be located either at the source or receiver.	EMP_9.5.6 Available Control Measures
	An acoustic management plan will form part of the construction EMP to be review by Defence.	As per the Environmental Management plan, Section 9.5 and acoustic management plan is provided.	EMP95 Noise Management

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Visual	Potential mitigation measures will include:		
	• Still curtains installed as appropriate, to contain the dispersal of surface particulates within Sydney Harbour, which may impact on visual amenity	Silt socks shall be used in the materials handling/ processing area and all drains shall be covered with geotextile fabric in order to divert water away from the works. The wharf surface will be monitored for paint flakes on a daily basis. Any evidence of paint flakes on the wharf will be an indication of whether the water is also contaminated.	EMP_9.3 Water Monitoring
	• Impact mitigation as identified within the Heritage Mitigation Measures	A heritage consultant has been engaged to oversee the process and ensure that it complies with the heritage requirements.	
	• Works program schedule to undergo rigorous review by Defence to ensure minimum program duration, and to minimise potential visual impacts.	Program of works has been submitted and approved for the project.	Contract Program

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
Traffic and Transport	Preparation of a Traffic Management Plan will form part of the Construction EMP. The Traffic Management Plan will identify preferred vehicle routes in order to reduce local traffic congestion. The removal of HHC will require multiple heavy vehicles to transport machinery and HHC components to and from Garden Island contributing to temporary traffic congestion within the Garden Island internal road network and possible increased congestion of the access road to Garden Island (Cowper Wharf Road). The duration, timing and level of traffic disturbance will vary throughout the period of removal of HHC but is expected to be relatively steady (i.e. without peaks) because of the proposal to remove materials on a daily basis rather than providing a bottle neck approach of using large vehicles to remove large volumes of materials at once. Measures to minimise disruption on the internal and local road network could include;		
	• Consideration for use of barges to transport HHC waste materials and minimise impacts to internal and local road networks	As per the traffic Management Plan, barges will be used transport Heritage Salvage Items that are too large to transport on truck. The truck movements required to transport the demolished steel materials have been considered and we believe will have no significant impact on the local roads or the Defence base (average 2 truck movements per day).	TMP

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Site access arrangements to be made for use of the Fleet Base East entrance to Garden Island.	In accordance with the Traffic management Plan, section 4 and 7, all workers will access and egress the FBE site via either the Main gate off Cowper Wharf St, or the secondary gate at FBE5 off Cowper Wharf roadway. All workers involved in the project will have the appropriate security clearances and Defence passes, including an AFP background clearance check, and will have undergone the relevant site inductions. All vehicles will access and egress the FBE site via either the Main gate off Cowper Wharf St, or the secondary gate FBE5 off Cowper Wharf roadway. Alternative vehicle routes will available at any given time through Garden Island in the case of obstruction of the main route. Weekly consultation (or as required) with Brookfield Johnson Controls and Defence will held to determine the applicable routes each day. All drivers who have to alight from their vehicle to carry out work are required to be Site inducted. Deliveries requiring going past the security post will be escorted by an inducted worker with a relevant access pass. Prior to entering the site, the Project Manager or delegate must be contacted to arrange access. Drivers will remain within their vehicles at a location specified until they are escorted into the site.	TMP_4.2 Worker Access/Egress TMP_4.3 Vehicle Site Access/Egress TMP_7 Access & Egress Routes

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Designated loading areas for HHC waste materials to minimise disruptions to the internal road network.	In accordance with the Deconstruction Work plan, section 7, all loading and unloading will take place in a defined area on the site.	DWP_7 Site Setup
	• Compliance with designated speed limits and load limits specified for heavy vehicles.	As per the Traffic management Plan, section 4.10, all vehicles to comply with the designated signposted speed limits or in the absence the signs, 15km/hr. All vehicles to comply with the approved load limits.	TMP_4.10 Speed Limit
	• Interfaces with public and other roads will be risk assessed and managed using barricading and/or accredited traffic control personnel (if required).	As per the Traffic management Plan, section 4.11, a designated Traffic Controller will be used for all vehicle movements accessing the site via the secondary gate at FBE5 off Cowper Wharf roadway . As per the Traffic management Plan, section 8, existing manned boom security gates will be utilised for all movements through the main gate.	TMP_4.11 Traffic Control TMP_8 Traffic Control Plan
	• The use of existing workforce car parking within Garden Island to • minimise impacts to the internal road network	Work Crew will be bussed to and from site (Bus will be parked within the work site boundary).	NA
	• Appropriate signage and other communications at the entrance to Garden Island to ensure site personnel have awareness of impacted roads / zones	The site specific induction includes details on access to the site.	Site Specific induction

Environmental Aspects	Proposed Safeguard/ Mitigation Measures	On site application	References
	• Involvement with RAN Port Services and the Harbour Master to ensure that all barge operations are undertaken in accordance with maritime notices and navigational requirements.	The contractor and BJC will liaise closely with Defence to coordinate barge access to and from the site. This will be undertaken by the Barge contractor who operates on Sydney Harbour under these controlled conditions.	NA
	• Early and continued involvement with RAN Port Services to ensure that ship berthing operations are programmed to minimise potential delays with HHC removal requirements	Regular meeting to be held between Liberty Industrial, BJC and Defence to co-ordinate the works.	NA
	• Transportation of materials is done in a manner that will minimise the number of vehicle movements through the community.	The truck movements required to transport the demolished steel materials have been considered and we believe will have no significant impact on the local roads or the defence base (average 2 truck movements per day).	NA
	• Application of permits as required from the road owner for heavy vehicle movements above the accepted road capacity.	To be undertaken by the contracted float company. Ultimately, vehicle movements attributable to removal of the HHC activity will constitute a small percentage of all traffic on the local road network and traffic impacts will cease at the completion of the crane's removal	NA

Conclusion

The above table demonstrates that the environmental mitigation measures which have been outlined in table 5.2, have been addressed in the project specific management plans. The processes outlined in the plans will be strictly adhered to, and this will be verified throughout the project.

Thus, the information in this report confirms that measures that are consistent with the proposed safeguards/ mitigation measures outlined in table 5.2- are being implemented to minimize and mitigate the impacts to the environment.

APPENDIX A
Conditions of Consent

APPENDIX B

Table 5.2 of the Preliminary Documentation Report EPBC Ref 2012/6430

APPENDIX C
Demolition Work Plan

APPENDIX D
Demolition Licence

APPENDIX E
Asbestos Licence

APPENDIX F
Traffic Management Plan

APPENDIX G
Environmental Management Plan

APPENDIX H
Hazardous Paint Management Plan

APPENDIX I
Demolition Risk Assessment Workshop (DRAW)

APPENDIX K
Decontamination Completion Report

APPENDIX L
Contract Program