

# ENVIRONMENTAL ASSESSMENT



THE PROPOSED REMEDIATION OF:

## **WORTH PLACE PARK**

(Application Number 07\_0003)

Prepared for: Department of Planning

Prepared by: Hunter Development Corporation

Date: October 2008

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## Executive Summary

This Environmental Assessment (EA) for the proposed remediation of Worth Place Park is pursuant to Part 3A of the Environmental Planning and Assessment Act 1979, the State Environmental Planning Policy Major Projects 2005 and the Technical Manual for Newcastle City Council's Development Control Plan 2005.

The site is legally described as part Lot 8 of DP 883474 and has an approximate site area of 10,640m<sup>2</sup>. The site is zoned RE 1 Open Space and Recreation under the Newcastle City Centre Local Environmental Plan (LEP) 2008 and is proposed to be developed as recreational parkland. It lies adjacent to the Newcastle Harbour and to the north of Honeysuckle Drive and Worth Place (see Appendix B).

The site was previously used as a wharfing facility. It contained workshop buildings surrounded by asphalted areas with the old Wharf Road running along the southern portion of the site. By the 1990's the site had been abandoned.

In 2002 investigations were made as to determine if the site could be used as recreational parkland. Concentrations of TPH's, benzo(a)pyrene, and Total PAH's were found in excess of the relevant guidelines. In 2004 further investigations confirmed the nature of the contamination. Two rounds of excavations in 2005 removed the TPH and benzo(a)pyrene contamination from the site. The remediation of these contaminants was validated through testing and subsequent review by an accredited site auditor.

The remaining contaminant on-site is the Polycyclic Aromatic Hydrocarbon (PAH), which occurs at concentrations in shallow fill and at depth. The most appropriate remediation method for the PAH contaminants is the cap and contain strategy. This strategy involves placing a highly visible marker over the contaminated soil, followed by the placement of a clean fill capping, no less than 0.5m thick.

The capping layer will be integrated into the landscape of the parkland. A relevant Site Management Plan has been produced so that any risks associated with the future exposure of contaminants will be controlled. This method was chosen because it was the most appropriate (NSW EPA guidelines) and cost effective solution.

The EA will then highlight key environmental issues that may be affected by the proposed remediation works. These issues are detailed in terms of the potential impacts and a means to mitigate them. The key environmental issues are listed below.

- Soil management
- Groundwater management
- Stormwater management
- Air quality management
- Traffic management
- Noise management
- Odour management
- Occupational Health & Safety management
- Operational plans
- Contingency plans

# Table of Contents

---

<b>1.0 INTRODUCTION .....</b>	<b>4</b>
<b>2.0 SITE DESCRIPTION AND LOCATION .....</b>	<b>4</b>
2.1 HISTORICAL CONTEXT .....	4
2.2 SITE DESCRIPTION .....	5
2.2.1 Legal Description .....	5
2.2.2 Development Context.....	5
2.2.3 Surrounding Land Uses .....	6
2.2.4 Description of 'The Site' .....	7
2.3 PREVIOUS REMEDIAL WORKS .....	7
2.4 DESCRIPTION OF SITE CONTAMINATION .....	9
2.4.1 Characterisation of Soil.....	9
2.4.2 Characterisation of Groundwater Contamination.....	9
2.4.3 Assessment of the Possible Exposure Routes and Exposed Populations .....	10
<b>3.0 PROJECT DESCRIPTION.....</b>	<b>11</b>
3.1 NEED FOR THE PROJECT.....	11
3.2 ALTERNATIVE REMEDIATION METHODS.....	11
3.3 REMEDIATION STRATEGY .....	12
3.4 REMEDIATION METHOD RATIONALE .....	13
<b>4.0 STATUTORY PROVISIONS.....</b>	<b>14</b>
<b>5.0 KEY ENVIRONMENTAL MANAGEMENT ISSUES .....</b>	<b>15</b>
5.1 REMEDIATION .....	15
5.2 SOIL.....	15
5.3 GROUNDWATER .....	16
5.4 STORMWATER.....	16
5.5 AIR QUALITY - DUST.....	16
5.6 AIR QUALITY - GREENHOUSE GASES .....	16
5.7 TRAFFIC .....	17
5.8 HAZARDS .....	17
5.9 NOISE .....	17
5.10 ODOUR.....	17
5.11 FLORA & FAUNA.....	18
5.12 HERITAGE .....	18
5.13 OCCUPATIONAL HEALTH AND SAFETY .....	18
5.14 OPERATIONAL PLAN .....	18
5.15 CONTINGENCY PLANS.....	19
5.15.1 Stormwater.....	19
5.15.2 Excessive Noise.....	19
5.15.3 Excessive Dust.....	19
5.15.4 Odour.....	19
<b>6.0 STATEMENT OF COMMITMENTS .....</b>	<b>20</b>
6.1 REMEDIATION PROCESS .....	20
6.2 POST-REMEDATION PROCESS .....	20
<b>7.0 DIRECTOR-GENERAL'S REQUIREMENTS .....</b>	<b>21</b>

<b>8.0 CONSULTATION .....</b>	<b>21</b>
<b>9.0 CONCLUSION.....</b>	<b>22</b>
<b>STATEMENT OF VALIDITY.....</b>	<b>23</b>
<b>REFERENCE.....</b>	<b>24</b>
<b>GLOSSARY.....</b>	<b>24</b>

## Appendices

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- Appendix A – Deposited Plan
- Appendix B - Site Photos
- Appendix C – Locality maps
- Appendix D - Previous Remedial Works
- Appendix E – Interim Site Audit Report
- Appendix F – Director General’s Requirements
- Appendix G – Dept. Energy and Water Consultation
- Appendix H – Hunter Water Consultation
- Appendix I – Newcastle City Council Consultation
- Appendix J – Contaminate Delineation and Revised Remedial Action Plan, 2006
- Appendix K – Environmental Management Plan 2006

## Figures

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- Figure 1.0 – The Honeysuckle Project
- Figure 2.0 – Existing and Proposed Land Uses
- Figure 3.0 – Previous Remediation Interpretive Plan
- Figure 4.0 – Worth Place Park Concept Drawing

# 1.0 INTRODUCTION

This Environmental Assessment (EA) has been prepared in the pursuit of obtaining development consent for the remaining works associated with remediation of Worth Place Park. It covers issues for consideration which were raised in the Director General’s Requirements dated 10/03/2007 (see Appendix F). It aims to provide the Department of Planning with enough information to make an accurate determination of the proposal.

The proposed remediation works aim to manage contaminated soil leftover from initial remedial works on the site. Following remediation the site can then be developed for its intended use as open space and recreation. This EA will outline the nature of the site as well as how the proposed remediation work will affect the local biological systems.

## 2.0 SITE DESCRIPTION AND LOCATION

### 2.1 Historical Context

#### Historical Timeline of Land use

1800’s	Part of the Harbour
1908	Reclaimed to develop timber cargo wharfs and later wharf/railway workshops
1954	Aerial photographs show the site being used as a wharfing facility with Wharf rd running along the southern edge of the site
1958	Metal Foundry closed
1978/9	Workshops abandoned and demolished
Mid 1990’s	Road and tram line realigned further south

(Source: derived from PB, 2002)

Worth Place Park was previously part of the Harbour and was reclaimed as part of the development of timber cargo wharves from 1908. The fill came primarily from dredging activities and was placed behind a retaining wall to create the wharf. Railway workshops operated in the area, and presumably on the site, up until 1978/1979. These workshops included machine shops, painting, blacksmiths and a metal foundry (which closed in 1958).

Aerial photographs from 1954 (PB, 2002) suggest that Worth Place Park was used as a wharfing facility. The old bitumen Wharf rd and a tram line ran parallel to the Harbour, passing east to west through the southern portion of the site until the mid 1990’s. It is likely that wharfing and workshop activities along with an extent of bituminous paving have contributed to the sites physio-chemical character (RCA 2006). The locations of the buildings and paved area can be seen in Figure 3.0.



## 2.2 Site Description

### 2.2.1 Legal Description

Worth Place Park is Lot 8 of DP883474 and is 10,640m<sup>2</sup> (1.064 ha) in area (see Appendix A). It is zoned RE 1, Public Recreation, under the Newcastle City Centre (LEP) 2008. The zone's objective is to enable public open space or recreational land use. It is also to provide a range of recreational settings and compatible land uses while protecting and enhancing the natural environment for recreational purposes. Worth Place Park is also described as 16, Worth Place, Newcastle.

### 2.2.2 Development Context

Worth Place Park is part of the NSW State driven Honeysuckle Redevelopment Project which began in 1993. The Honeysuckle objective was to transform ex-industrial state land into a mixed land use that encouraged people to live, work and play near the harbour and civic precincts. Since its beginning the redevelopment has typically moved from the east towards the west (Honeysuckle Precinct). At the same time redevelopment has progressed from the north toward the south (Linwood then Marina Precincts). Worth Place Park (circled in fig 1.0) is part of Cottage Creek Precinct, which is the only precinct that has yet to be redeveloped.

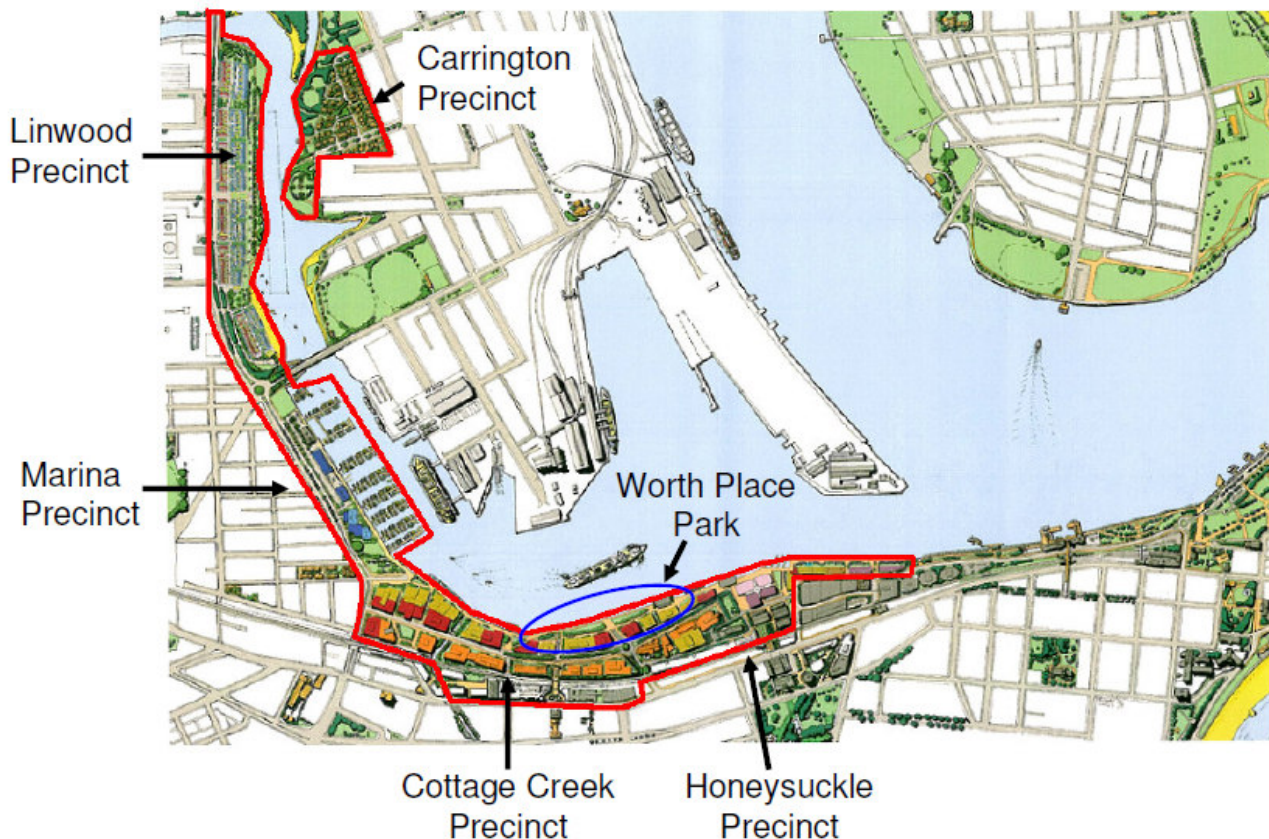


Figure 1.0 – The Honeysuckle Project (outlined in red) including Precinct Areas

## 2.2.3 Surrounding Land Uses

Worth Place Park is adjacent to the Newcastle Harbour and is bordered by the areas known as Lee 4, Lee C, Lee 3 and Park Residential. When developed it aims to link the public domain of surrounding developments both existing and proposed. Figure 2.0 (below) illustrates the parks proximity to existing and proposed developments.



Figure 2.0 – Existing and Proposed Land Uses

- Lee 4: Lee 4 is proposed to be a residential development with potential for ground floor retail. The residential component is expected to comprise of approximately 90 units.
- Lee C: The Lee C Building is listed as a state significant heritage building. It is proposed that the building be restored and undergo a change of use for the purposes of retail hospitality.
- Lee 3: The Lee 3 development is currently under construction and due for completion in March 2009. It contains two towers that are an approximate residential/commercial/retail mix of 70:20:10. The approved public asset works for Lee 3 (MP 05-0007) will cover part of Worth Place Park that has already undergone remediation.

#### Park

Residential: Park Residential is proposed to be developed into 160 residential units that also have a ground floor commercial/ retail component of 5 units.

#### Existing

Commercial: This area comprises of the recently completed HQO building, the existing Honeysuckle Towers and the Hunter Water Corporation building. All of these building have long term commercial leases with public and private organisations.

### **2.2.4 Description of ‘The Site’**

The area which is subject to further remediation and which is the focus of this EA is the western portion of the lot and is referred to as ‘the site’ (see Figure 2.0). The area of the site is approximately 2820m<sup>2</sup> and is generally 0.6 – 0.7m below the original surface level. The existing land form was created by previous remedial works that involved the excavation and removal to landfill of contaminated soils. Details of these works are described in the following section of this EA.

Aside from the lowered surface levels (remedial excavations see sect. 2.3) the site is predominantly flat and is constituted by extensive filling which happened during the dredging and reclamation works in 1908. The ecology on-site is limited to small grasses which appear to be in good health. The sites catchment is restricted to its own area and it has no designated drainage routes to its outlet, the Newcastle Harbour. It is primarily underlain with quaternary alluvial deposits of the Cainozoic era comprising gravel and fine sandy clay and silts from the harbour floor (RCA 2006).

Groundwater was encountered at approximate depths of 2.0m below ground level (RCA 2006). The groundwater is expected to flow north/northeast towards the nearest receptor which is the Newcastle Harbour.

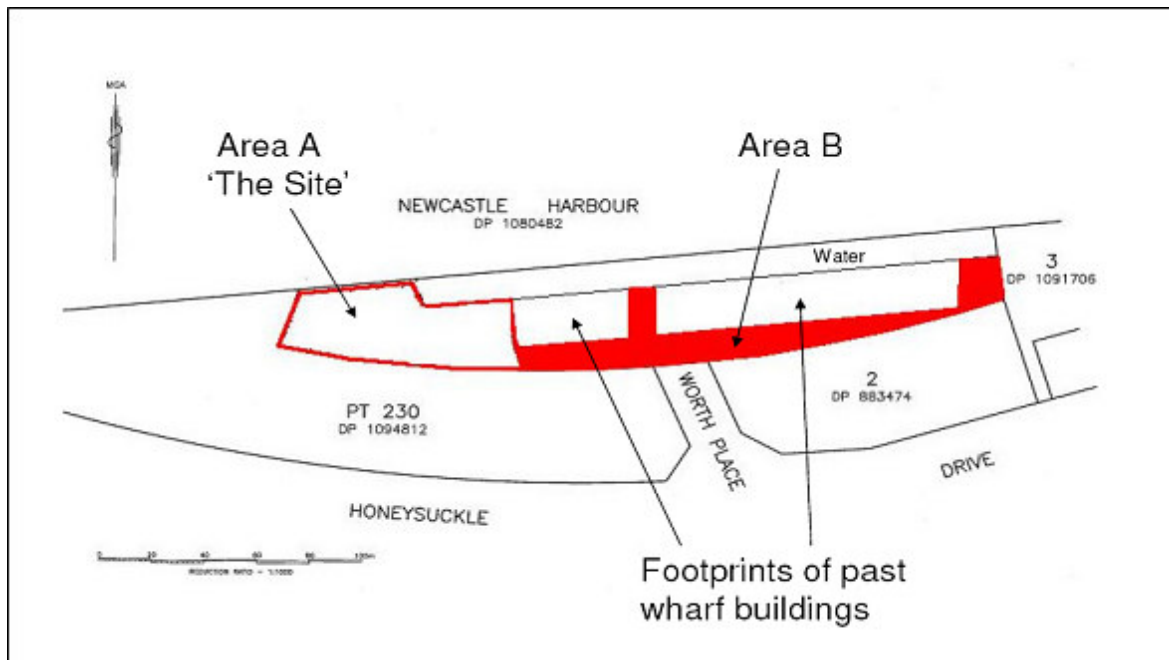
### **2.3 Previous Remedial Works**

Worth Place Park has been subject to various investigations and remedial works between 2002 and early 2006. The remedial works have appropriately removed contamination from the eastern portion of Worth Place Park. This is verified by an ‘Interim Site Audit Report’ (see Appendix E).

The western portion of the Worth Place Park is yet to be remediated. Figure 3 (below) is a chronological breakdown of the remedial works to date and gives a context the proposed remediation method.



Figure 3.0 – Previous Remedial Works



Date	Area	Work	Depth below NS
2002	WPP	Investigations by PB found TPH and PAH contaminants. WPP requiring remediation of soil contamination only.	n/a
2004	WPP	Investigations by RCA found that contaminants were in shallow layers of fill and that building footprint areas and groundwater did not require remediation. RAP recommended excavate and disposal to landfill.	n/a
2005	A + B	1 <sup>st</sup> round of excavation and disposal of TPH and PAH contaminated soils. Validation testing showed that contamination remained in Areas A and B	<0.5m
2005	A + B	2 <sup>nd</sup> round of excavation and disposal of TPH and PAH contaminated soils. Validation testing showed that PAH contamination remained in Area A. All TPH contamination had been removed. Area B does not require any further remedial activity.	<0.6m
2005	A	The 3 <sup>rd</sup> round of excavation and disposal was abandoned at a depth of 0.7m below NS because no clear visual floor to the contamination could be seen.	<0.7m
2005	A	Further validation testing showed PAH contamination in Area A to be at depths of 0.7 – 2.6m below NS.	<0.7-2.6m
2006	A	Further investigations were done in Area A to support a revised RAP. The revised RAP recommended the cap and containment of PAH contamination in Area A or 'the site'. Groundwater and Area B do not require any further remedial activity.	n/a

Source: Derived from RCA 2006

NS: - Natural Surface

WPP: - Worth Place Park

Contamination: - Concentrations above the HIL 'E' guideline of the NEPM 1999

Environmental Assessment – Worth Place Park

MP 07\_0003

## **2.4 Description of Site Contamination**

### **2.4.1 Characterisation of Soil**

Worth Place Park formerly housed two wharf buildings with the remaining areas comprising of asphalt paving and the asphalt surfacing of the former Wharf rd. The Park comprised subsurface granular filling up to depths of 0.6m, overlying fill sands, with a shallow water table.

Previous investigations have identified elevated concentrations of TPH and PAH's across the formerly paved areas. Preliminary remedial works (see section 2.3) have removed all elevated concentrations of TPH's, however some residual PAH contamination has been identified on the western portion of the Park known as 'the site'. Residual PAH contamination was found in this area, within the fill material, at depths of 0.0-2.6m below the natural surface level (see Area A of Figure 3.0).

The PAH's identified within the fill consist primarily of the heavier PAH compounds, and as such would be considered relatively immobile. Additional TCLP testing undertaken on four (4) soil samples found that the leachability of PAH's and Heavy Metals in the remaining material is low. (RCA 2006)

The remaining analytes, TPHC6-C9/BTEX and Heavy Metals, were identified to be below the relevant guideline. The relevant guideline in this case is the NSW EPA Guideline for Assessing Service Stations. It is used for analytes that are not included in the NEPM 1999. The numbers of samples for the remaining analytes were considered to be sufficient in number and quality to validate the absence of significant concentrations of these analytes.

### **2.4.2 Characterisation of Groundwater Contamination**

An extensive Honeysuckle groundwater assessment had identified that groundwater generally flowed in a northerly direction from the site toward Newcastle Harbour.

Groundwater sampling undertaken in May 2002 involved sampling of two monitoring bores. Elevated concentrations of chromium, cobalt, copper, lead and zinc were identified. In bore PRMW15, lead and zinc were identified above the regional groundwater levels observed for this area.

A more detailed groundwater sampling event was undertaken by RCA in November 2003 and involved the installation of an additional bore and re-sampling of the two original bores. The results of this analysis indicated that zinc was at similar concentrations in all bores but within the regionally observed concentrations and that lead, where detected, was also within regional concentrations. Lead was not detected in all bores. Copper was identified in one bore above the guideline but below the regionally observed concentrations.

All concentrations observed in monitoring bore PRMW15 were found to be lower in the second round of sampling than in the initial 2002 sampling. The later concentrations are more consistent with concentrations observed in all bores in 2003 and also in the 2002 sampling of bore WPMW08. This indicates that the May 2002 results PRMW15 were anomalous and not representative of actual site conditions.

The sites receptor is the Newcastle Harbour which represents regional water quality. The Harbour and surrounding groundwater are deemed to be highly modified water systems in that they have a range of accepted contaminate concentrations (i.e. lead, zinc and copper) which exceed many standards. The relevant guideline is the *ANZECC, 2000, 95% protection for marine waters*. As stated above the groundwater found at Worth Place Park has contaminants in excess of the relevant guidelines but within the accepted range of regional concentrations. For this reason no remediation of the sites groundwater is required.

In following with the principles of the NSW Groundwater Quality Protection Policy (NSWGQPP, 1999) the remediation works should ensure that degradation of groundwater is '*slowed, prevented or reversed*' and that *for new developments, the scale and scope of work required to demonstrate adequate groundwater protection shall be commensurate with the risk the development poses to a groundwater system and the value of the groundwater resource.*' (NSWGQPP pg7).

Having determined that the groundwater onsite is no less contaminated than its receptor, the potential for soil contaminants to leach into and further contaminate the groundwater must be assessed. Currently the PAH contaminants identified have shown to be heavier compounds which are unlikely to migrate. Additional TCLP testing undertaken on four soil samples found the leach-ability of PAH's and heavy metals to be low.

In its existing state the site has nil to very low risk of creating further contamination to its receptor/local groundwater. Section 3.4 will further describe how the proposed development will affect the potential risk to groundwater quality.

### 2.4.3 Assessment of the Possible Exposure Routes and Exposed Populations

At the time of investigation it is not considered that there are any populations significantly exposed to the contamination. The site is either grassed or sealed with gravel or bitumen. Ecological populations off site would not be exposed as the contamination is considered immobile. Any change in use of the site from vacant will increase the exposed population. Site remediation is required to minimise possible exposure to populations and render the site suitable for recreational open space. During remediation, risks to human health arise from ingestion, dermal contact and inhalation. These risks will be managed by RCA's RAP 2006 (Appendix J) and EMP 2006 (Appendix K).

## 3.0 PROJECT DESCRIPTION

### 3.1 Need for the Project

The site is currently vacant; however Worth Place Park is to be developed into recreational parkland for public use. Once remediation of ‘the site’ is complete the resulting open-space parkland will play a pivotal role in linking prominent harbour-side precincts as well as providing better access to the foreshore. This Park will enhance recreational, living and employment opportunities along the Harbour foreshore and will help the Honeysuckle project to achieve its objectives. Figure 4.0 (below) demonstrates Worth Place Park’s role in connecting harbour-side precincts.



Figure 4.0 – Worth Place Park Concept Drawing

### 3.2 Alternative Remediation Methods

Do Nothing – this is unacceptable as the contaminant concentrations on site, at present, render the site unsuitable for the proposed use. Remediation must be undertaken to reduce this risk of exposing this contamination.

Cap and Contain – this method reduces the risk to human health and the environment. If the contamination is leach-able and mobile, the cap and contain strategy will not reduce contaminate migration that is a result of groundwater flow. This strategy reduces the amount of water entering soil strata by using capping material which seals the contamination in place.

In Situ treatment – methods of remediation that maybe undertaken while material remains on site. These methods are slow and expensive. The most well know consist of:

- Soil Washing – contaminants are leached from the soil stratum and the fluid collected for disposal.
- Bioremediation – natural process of degradation of contaminants are hastened through the addition of nutrients and oxygen.

Both of these processes are expensive and slow. Additionally, while the processes are passive and can foreseeably be undertaken while the site is in operation.

Ex Situ treatment – methods of remediation that maybe undertaken after material has been excavated.

- Thermal Desorption – this is a combustive process which incinerates the contaminants. Due to the unwanted by-products the contractor must have a licensed, approved process. This is a soil only process.
- Disposal to Landfill – this process' viability is dependent on the contamination and concentrations present and requires rigorous testing. There are three categories of waste, ranging from inert to industrial, with increasing total and leachable concentrations. Fees are applied accordingly. This is a soil only process.

### **3.3 Remediation Strategy**

Hunter Development Corporation (HDC) is proposing to remediate Worth Place Park using the cap and contain strategy. The cap and contain strategy consists of placing a minimum of 0.5m of clean fill on the contaminated area.

An identification layer of geo-fabric will be placed at the capping layer/existing surface interface. Gardening activities or tree roots rarely exceed 0.5m depth. Services excavations, which rarely exceed 2m, would expose the geo-fabric layer and trigger the Site (Environmental) Management Plan. This plan outlines measures to manage risks associated with excavation of contaminated soil according to relevant guidelines.

The cap layer has been integrated into landscape planning for the area, considering environmental, aesthetic and functional qualities of the site (see fig 4.0). Once the geo-fabric and capping layers have been installed, validation works are planned to ensure the remedial works have achieved their purpose.



The site capping works will be validated through on-site assessment of cap and marker layer placement and validation through a photographic log and geotechnical test results. All imported fill brought to the site will be Virgin Non-excavated material (VENM). Other fill will be assessed by a suitably qualified professional as suitable for the proposed site use in accordance with NSW EPA Waste Guidelines.

All documentation including fill certification, material movement on site and imported fill volumes will be reported. At the completion of remediation a validation report will be prepared detailing the remedial works undertaken at the site.

The final land form and proposed landscaping will not only have reduced the contamination risk to ecology but enhanced it through plantings and the habitat which goes with it.

**NOTE:** No specific work is required to remediate the groundwater now or in the future at Worth Place Park (See Sect 2.4.2).

### ***3.4 Remediation Method Rationale***

The NSW EPA Guidelines for the NSW Auditor Scheme (1998) refer to the Waste Minimisation Hierarchy which clearly states that to avoid waste is the most preferred option, followed by reuse, recycling and disposal is the least preferred option.

Based on the remedial works and investigations undertaken to date, the most appropriate method of remediation would be cap and contain. This method is to be applied across the western area of Worth Place Park 'the site', with the eastern area of the site considered suitable for the proposed site use following rounds of validation testing (see Appendix E). A minimum of 0.5m of clean fill is a general requirement of a cap and contain strategy. A Site Management Plan is also provided to manage future excavations at depth (see Appendix K)

The PAH contamination which will remain in-situ has shown to be immobile through TCLP leachate analysis, the cap and contain strategy is reducing the potential for surface water to influence contamination migration and hence is in line with principles of the NSW Groundwater Quality Protection Policy. The groundwater is considered to be consistent with regional data and hence no remediation of groundwater is required.

Disposal to landfill no longer proved to be an appropriate strategy for Worth Place Park as depths of contamination reached up to 2m in the area known as 'the site'. The expenses associated with the disposal, along with the reasons mentioned above give rationale to the cap and contain strategy. The proposed strategy reflects both environmental due diligence and the responsible use of public funds.

Further rationale to the cap and contain strategy is its compliance with issues raised in Newcastle City Councils (NCC) letter 12/9/05 (see Appendix I). The letter is an agreement in principle to the capping strategy but suggests that the following be considered:

- That the strategy is justified in relation to comparative costs of other remediation methods.
- That the strategy compliments the construction and maintenance requirements of a public park.
- That the strategy be supported by a revised RAP, Validation Report and Site Audit Statement.

All of the work to date, including this EA is consistent with NCC's requirements. The remediation strategy is the most cost effective available and the capping and geo-fabric layers will provide a safe landform to work with during the parks construction and maintenance. The works have also been done in accordance with the NSW EPA, Guidelines for the Site Auditors Scheme (1998) with an Accredited Site Auditor (under the scheme) having reviewed and approved the remedial work to date as well as the Revised Remedial Action Plan (see Appendix E).

## 4.0 STATUTORY PROVISIONS

Worth Place Park is legally described as Lot 8 of DP 883474. It is zoned RE 1, Public Recreation, under the Newcastle City Centre (LEP) 2008, which has allowable uses for recreation activities and the protection of environment. It is also described as number 16 of Worth Place, Newcastle.

The Worth Place Park remediation project is considered to be a major project needing a Part 3A assessment under the NSW State Environmental Planning Policy (SEPP) *Major Projects* 2005, Schedule 2 (specified sites), 5b Honeysuckle - contaminated land. The Major Project SEPP Schedule 1 (classes of development) 28(2) states that category 1, as described in SEPP 55 - *Remediation of Land*, requires Part 3A assessment.

The proposed works are not category 1 as per Clause 9a) – e) of SEPP 55 *Remediation of Land*, however Clause 9(f) suggests that the proposed remediation works must “*comply with a policy made under the contaminated land planning guidelines by the council for any local government area in which the land is situated*”.

Under the Newcastle City Council's DCP 2005 Technical Manual, the Cap and Contain method of remediation needs to be considered as category 1. This refers the proposed strategy back to being a project needing development consent.

The project does not need any other approval or licences other than those previously mentioned. A Section 50 Certificate is required by Hunter Water before the works are undertaken. Evidence of correspondence with Hunter Water and other government agencies is included in Appendix G through to I.

Having established in what assessment context the proposed remediation exists, it is equally important to address the subsequent best practice guidelines which apply to assessing contamination. The following guidelines are used to assess the contamination and give rationale to the proposed remediation activity:

NEPM –	National Environment Protection (Assessment of Site Contamination) Measure (1999) – NSW EPA approved;
NSW EPA -	Guidelines for Assessing Service Station Sites (1994);
ANZECC 2000-	Australian and New Zealand Guidelines for Fresh and Marine Water Quality 2000.

## 5.0 KEY ENVIRONMENTAL MANAGEMENT ISSUES

The key environmental issues identified in the Director-General's Requirements are examined in the following sections of this EA. They are actions which represent the diligent management of the proposed remediation works.

### ***5.1 Remediation***

The PAH contaminants will be remediated by the cap and contain methodology. An Environmental Management Plan has been developed to ensure that the risks associated with any future uses of the site are mitigated and controlled.

The remediation of groundwater is not considered a requirement, as the contaminants identified are within region wide concentrations.

Please see section 3.3 and 3.4 for a further description of remediation and remediation rationale respectively.

### ***5.2 Soil***

Once the contamination on the western portion of the site have been remediated by the cap and contain strategy, the entire site will be within the regulatory criteria for open space and recreation uses.

The required clean fill will be stored on site, away from stormwater lines and away from any natural runoff flows with a cover to prevent contamination, erosion or dispersal. Hay bales and silt fences will be utilised to screen soil particles from any runoff water generated from the stockpiles.

All traffic leaving the site will be required to be cleaned of any potentially contaminated soil.

### ***5.3 Groundwater***

The groundwater contaminants were identified as being in concentrations which were acceptable and consistent with regional data. The PAH contaminates in the soil were also considered to be in a state of mobility which would allow them to remain in-situ. TCLP testing showed that the PAH contaminates were heavy and immobile with low potential for leaching as a result of ground or surface water flow.

### ***5.4 Stormwater***

There is no stormwater network on the site, but it is unlikely that the site would generate significant amounts of runoff. Despite this, silt fencing and straw bales will be erected to prevent soil entering the Harbour and bunds will be created to prevent runoff entering excavations. These temporary structures will be inspected routinely to ensure their function at all times. All stormwater management will be done in accordance with Newcastle City Council's guidelines.

### ***5.5 Air quality - Dust***

Dust is not considered to be an issue except for in the handling of imported material which may have dried in the intervening time. A visual scrutiny will be maintained over dust levels during the day and water used to wet material if dust is generated. Any stockpiles left on-site but not in place will be covered at the end of the day and all trucks will have appropriate dust covers.

Trucks will load on a clean area and run over a grid before leaving the site, which will be cleaned at the end of each day or as required during the day. Consideration will be given to ceasing work if winds exceed 10m/s.

All potential dust issues will be considered with reference to the Best Practice in Dust Control, Commonwealth DEH, 1998.

### ***5.6 Air quality - Greenhouse gases***

The greenhouse gases related to this proposed development will be limited to the emissions of heavy machinery namely trucks and excavators. These vehicles will be checked to ensure they are compliant and hence are producing acceptable levels of greenhouse gas emissions. There are no other specific measures which should manage the greenhouse gas impact of this project.

## **5.7 Traffic**

All vehicles leaving the site will be required to drive over a grid to vibrate any adhering soil off the wheels. The grid is to be cleaned daily or more frequently as required. Street cleaning may be required in case of grid failure.

All drivers are to be appropriately qualified and accredited and are to maintain records of all soil import deliveries. The traffic generated as a result of proposed works would be largely made up of trucks importing the clean fill for the capping layer. It is estimated that 70 loads, 33 tonne each, would be required to complete the works. So that there is adequate room for both plant and imported fill, and to help with integration of delivery trucks with local traffic demands, it is anticipated that a load will come every 45-60 minutes. Considering this rate and the operational times outlined in sect 5.9, the delivery of capping material is expected to take two weeks.

No further traffic measures are considered for the proposed remediation works.

## **5.8 Hazards**

The Cap and Contain remediation method does not fall under Clause 11 of the SEPP No.33 – *Hazardous and Offensive Development* and therefore, is not classified as a hazardous development.

## **5.9 Noise**

The site is situated in a designated commercial and residential area that is under developed. The nearest populations which would be affected by the proposed works are approximately 500m in the east direction (residential) and 300m in the south west direction (commercial). On the other side of the harbour is various industrial land uses. Plant used for the works will comprise of delivery trucks and an excavator and will be undertaken between 7am to 6pm on weekdays and from 8am to 1pm Saturdays. No work will be undertaken on Sundays or on Public Holidays, with the total time for works anticipated to be no more than two weeks. All vehicles will be registered and within the allowable limits for noise emissions.

All potential noise issues will be considered with reference to the *Environmental Noise Management – NSW Industrial Noise Policy, DEC, 12/1999*

## **5.10 Odour**

It is unlikely that odours will be generated during the works. In the event of a complaint about odours generated from the site the following may be implemented:

- Covering of contaminated material to reduce odour release;
- PID assessment to determine significance of odours;
- Application of a surfactant to reduce odour generation.



## 5.11 Flora & Fauna

There are no protected species of flora and fauna on the Worth Place Park site. The existing flora and fauna on the site will not be permanently affected by the remediation works and will be enhanced as a result of completed remediation and landscaping works.

## 5.12 Heritage

The site is not listed as an item of heritage significance in the Newcastle City Centre Local Environmental Plan 2008. Appropriate consideration will be given any to heritage items and conservation areas, within the vicinity of site, to ensure they are not adversely affected.

## 5.13 Occupational Health and Safety

The site should be considered as potentially contaminated and strict hygiene principles adhered to during remediation operations at the site. These include, but need not be restricted to:

- All personnel will be required to wash thoroughly before meal breaks; and
- Protective clothing such as long sleeves and long pants should be encouraged to prevent dermal exposure to contaminants.

## 5.14 Operational Plan

The operational hours of the remediation work will be subject to the NSW EPA and the NCC DCP 2005 and should be:

- Weekdays 7am to 6pm;
- Saturdays 8am to 1pm and;
- No work should be undertaken on Sundays or Public Holidays

The works will be undertaken according to the following schedule of events.

	WEEK									
	1	2	3	4	5	6	7	8	9	10
Pre Remediation Survey										
Installation of Geo-Fabric										
Construction of Capping Layer										
Validation Sampling										
Draft Validation Report										
Auditor Review										
Possible 2nd Round Sampling										
Possible 2nd Auditor Review										
Final Validation Report										
Auditor Review										
Site Audit Report										

## **5.15 Contingency Plans**

The following plans are to consider events which are unexpected but necessary for deliberation and the responsible management of the remediation issues.

### **5.15.1 Stormwater**

If stormwater breaches the preventative measures/structures outlined in section 5.4, the appropriate actions will be taken to ensure that the stormwater does not further exasperate contamination. These actions may include, but not be limited by the following:

- Installing further temporary water/sediment control structures as required to reduce the risk of migration;
- Newcastle City Council or any other stake holder to be informed as soon as practical.

### **5.15.2 Excessive Noise**

If Newcastle City Council registers a complaint in relation to activities being undertaken on site, HDC will immediately cease the remediation works. Consultation will be held with the Council as to the most appropriate course of action and may include:

- Restricted hours of operation;
- Use of alternative machinery.

### **5.15.3 Excessive Dust**

If excessive dust is registered off site, work will cease immediately. Increased dust controls will be implemented and work may be continued, with increased alertness as to a potential problem.

### **5.15.4 Odour**

If a complaint about odours originating from the site is registered, HDC will immediately cease work upon being informed. Application of a surfactant will be initiated, or increased if already being applied.

## **6.0 STATEMENT OF COMMITMENTS**

In accordance with the Director-General's Requirements received 13/03/06 (ref: 9041162-1), this section of the EA provides a Draft Statement of Commitments. It identifies measures that are needed to minimise the impacts of the remediation on the environment.

It is acknowledged that this Statement of Commitments does not remove any obligations pursuant to any other acts. The proponent will ensure approvals are obtained and kept current, as required throughout the construction and operational phase.

### ***6.1 Remediation process***

The Council will be given at least 48 hours notice prior to commencement of remediation works.

The hours of work, including deliveries of materials to and from the site, shall be within the Council's regulations.

The following considerations (as detailed in the section above) will be adhered to throughout the remediation process:

- Soil Management
- Groundwater management
- Stormwater management
- Air Quality Management
- Traffic management
- Noise management
- Odour management
- Occupational Health & Safety management
- Operational Plans
- Contingency Plans

### ***6.2 Post-Remediation Process***

The Site (Environmental) Management Plan has been developed to mitigate the contamination risks associated with construction and maintenance of Worth Place Park. The Site (Environmental) Management Plan will always apply to the site and will be given compliance by the Site Auditor before a Site Audit Statement is issued.

## 7.0 DIRECTOR-GENERAL'S REQUIREMENTS

The table below provides a summary of the individual matters listed in the Director-General's Requirements and cross references these with the relevant sections in this report. A detailed list of the Director-General's Requirements, are located in Appendix F.

Director-General's Requirements	Location in report
Executive Summary	Preface
Description of project	Section 2&3
Consider relevant statutory provisions	Section 4.0 and entire report
Assessment of key issues <ul style="list-style-type: none"> <li>- Remediation</li> <li>- Soil &amp; water</li> <li>- Air quality</li> <li>- Traffic and transportation</li> <li>- Hazards</li> <li>- Noise</li> <li>- Odour</li> <li>- Flora &amp; Fauna</li> <li>- Heritage</li> <li>- Occupational Health and Safety</li> <li>- Operational Plan</li> <li>- Contingency Plans</li> </ul>	Section 2.3, 2.4, 5.1 Section 2.3, 2.4, 5.2, 5.3, 5.4 Section 5.5 & 5.6 Section 5.7 Section 5.8 Section 5.9 Section 5.10 Section 5.11 Section 2.1, 5.12 Section 5.13 Section 5.14 Section 5.15
Draft Statement of Commitments	Section 6.0
Consultation	Section 8.0
Conclusion	Section 9.0
Statement of validity	Page 23

## 8.0 CONSULTATION

As part of the DG requirements for the application to remediate Worth Place Park, HDC has had to consult with other government agencies so that their potential concerns relating to the project can be addressed. The following matrix has been prepared to summarise these concerns.

Department	Issues	Resolution
Dept. of Energy and Water	See Appendix G	Issues addressed in EA. Sections 2.4
Hunter Water	See Appendix H	Hydraulic Consultant engaged to decommission an existing water main.
Newcastle City Council	See Appendix I	All points have been addressed.

## 9.0 CONCLUSION

This Environmental Assessment is for Worth Place Park which is located on part Lot 8 of DP 883474. The land is currently vacant, but proposed to be developed into recreational parkland for public use. Remediation will be required before the site can be used for its intended purpose.

The contamination of concern is Polycyclic Aromatic Hydrocarbons (PAH). They are found in the western portion of the site at varying depths. The contamination will not leach into groundwater or migrate off site and does not pose a future ecological risk. This along with the high cost of disposal indicates that the most appropriate remediation method is the 'Cap and Contain Strategy'. This involves the placement of a high visibility marker layer, followed by a minimum capping layer of 0.5m of clean fill across the site. The capping later will be integrated into the future landscape works. A Site (Environmental) Management Plan has been prepared to accompany the site for its safe management in the future.

The Environmental Assessment and investigations have been carried out with due diligence and in accordance with the legislative framework which supports it. The remediation of Worth Place Park is an important part in revitalising the Newcastle harbour foreshore. It will create open space for recreation and amenity, while encouraging the access and connectivity of emerging and existing inner city precincts.



## STATEMENT OF VALIDITY

Environmental Assessment prepared by:

Name                      Jeremy Amann  
Address                  Level 5, Suite B, 26 Honeysuckle Drive  
Newcastle NSW 2300  
Email                     Jeremy.amann@hdc.nsw.gov.au

### Applicant & Land Details

Applicant                Hunter Development Corporation  
Subject Site            Worth Place Park  
Lot & DP                part Lot 8 in DP 883474  
Project Summary      Cap and Contain Remediation for Recreation Area

### Declaration:

I certify that I have prepared the contents of this Environmental Assessment in accordance with Part 3A of the *Environmental Planning and Assessment Act 1979* and Regulation and that, to the best of my knowledge, that information contained in this report is not false or misleading.

Jeremy Amann on 26/09/08



## REFERENCE

1. Parsons Brinkerhoff (PB), 2002, *Environmental Site Assessment, Fig Tree Park, (Lot 105 DP 1015391), Honeysuckle NSW*
2. RCA, 2006, *Revised Contamination Delineation and Remedial Action Plan.*
3. NSW Government 1999, *NSW Groundwater Quality Protection Policy*

## GLOSSARY

95%UCLave	A statistical calculation – 95% Upper Confidence Limit of the mean concentration.
LEP	Local Environmental Plan
NEPM	National Environment Protection (Assessment of Site Contamination) Measure 1999
NSWEPA	New South Wales Environment Protection Authority
RAP	Remedial Action Plan
TPH	Total Petroleum Hydrocarbons
Benzo(a)pyrene	A type of Polycyclic Aromatic Hydrocarbons
ANZECC	Australian and New Zealand Environment Conservation Council
EIL	Environmental Investigation Levels
EPL	Environmental Protection Licence
Leachate	The potential for fluid that has passed through a soil stratum to collect contaminants.
TCLP	Toxicity Characteristic Leaching Procedure. An analysis designed to mimic the transfer of contaminants from soil into water. It is often used to determine impacts of landfill conditions.
PAH	Polycyclic Aromatic Hydrocarbons

Environmental Assessment – Worth Place Park  
MP 07\_0003

## Appendix B - Site Photos



Photo 1: “The Site” shown indicatively in red

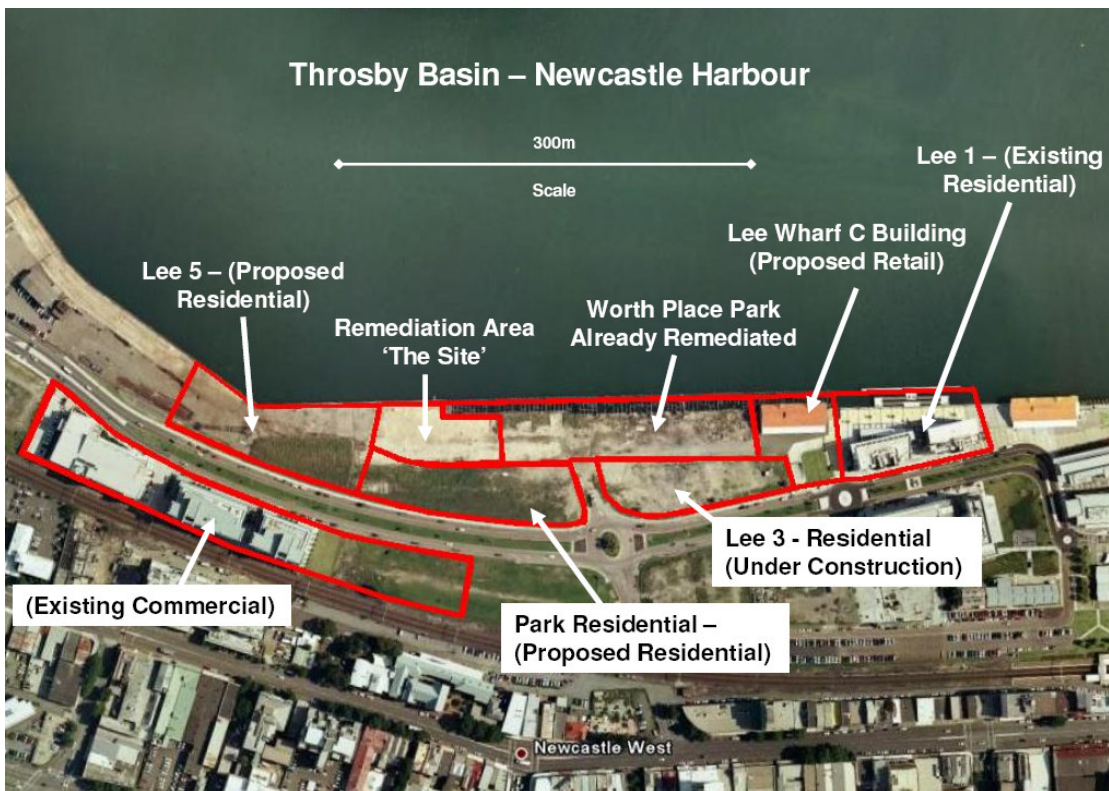
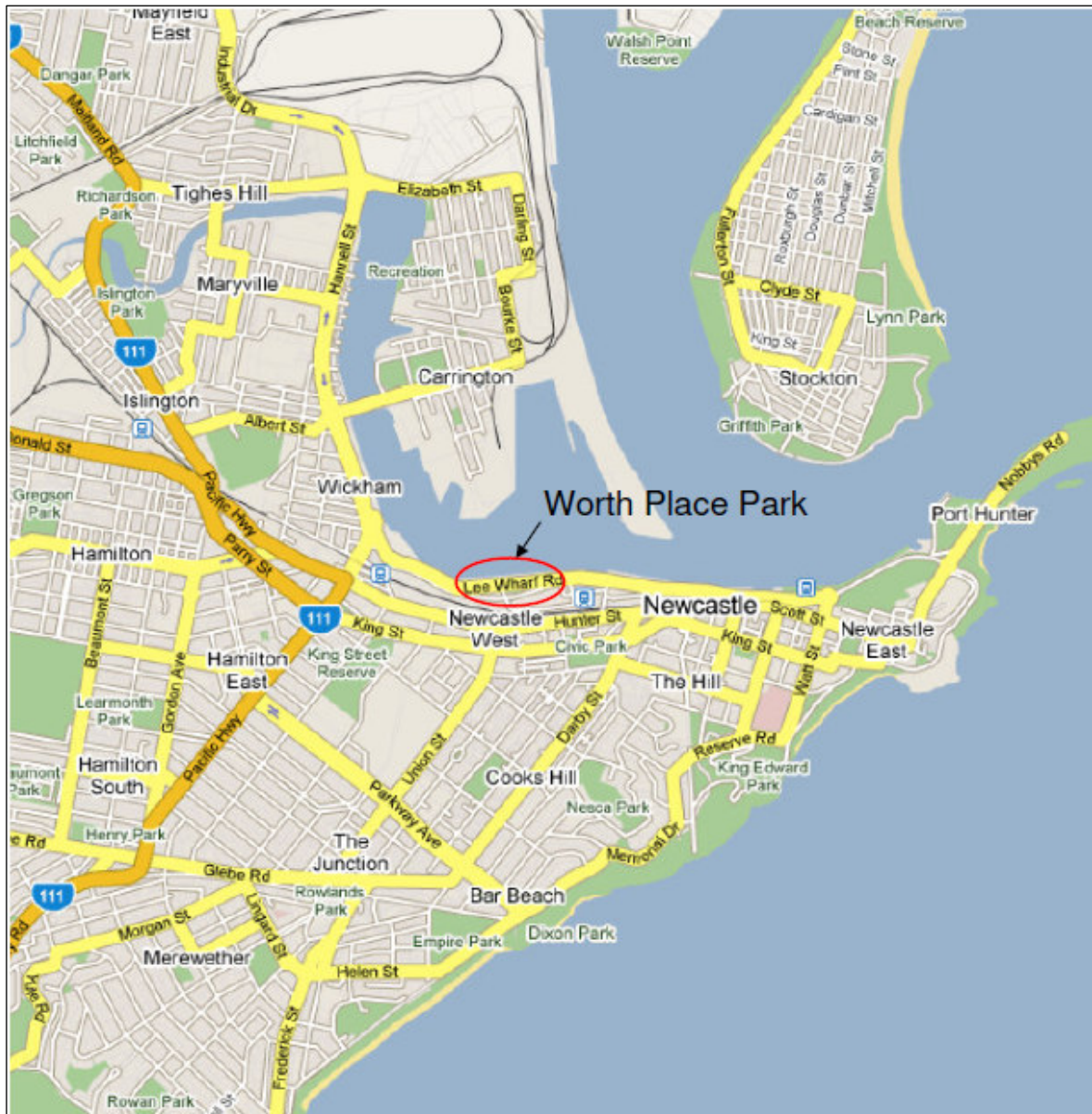


Photo 2: Aerial Photo with Existing Land Uses overlain



## Appendix C - Locality Map





## Appendix D – Previous Remedial Works

The first round of investigations for Worth Place Park in 2002 (PB) suggested that the land should be remediated prior to its use as parkland. Soil concentrations of TPH and PAH's were found to be in excess of the HIL 'E' (parks, recreational open spaces and playing fields) guideline of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM 1999). Further investigations were carried out in 2004 by RCA. They confirmed the nature of the soil contamination and found that it was in the shallow layers of fill only. It was also confirmed that the contamination was only present in areas which were previously surfaced by asphalt. Soil contaminants were not found in the areas of the former buildings indicating that the contamination was a residual effect of the bituminous materials used in the early 1900's (see fig. 3.0 in EA).

Both PB 2002 and RCA 2004 investigations confirmed that groundwater was contaminated with chromium, cobalt, copper, lead and zinc. Analysis of the sites receptor (Throsby Basin of Newcastle Harbour) however indicated that the Worth Place Park groundwater contamination was consistent with regional groundwater data. This indicated that remediation of groundwater at Worth Place Park was not required (see sect 2.4.2). A Remedial Action Plan (RAP) was prepared by RCA in 2004 in conjunction with an EPA Accredited Auditor from Environ Australia Pty Ltd. The RAP identified the nature of the contamination and examined the most appropriate scope of work which would be used to remediate the area. Because the contamination was found at shallow depths, the RAP's recommendation was to 'excavate contaminated material and dispose to landfill'.

The remedial works were first undertaken in 2005 with the initial round of excavations (see fig. 3.0 in EA) completed some contamination remained. The second round of excavations involved scraping another shallow layer off the same area. Further testing and visual inspections showed that the western portion of the lot, referred to as the 'site' still had residual contamination (see fig. 3.0 in EA). These excavations had removed the TPH and benzo(a)pyrene concentrations which were higher than NEPM guidelines with only PAH's remaining in excess. The third round of excavations were carried out on this western portion but were abandoned because the excavation depth had reached approximately 0.7m in depth without finding a clear visual floor to the contamination.

In June 2005 further investigations of the 'site' were undertaken to fully determine the extent of the residual contamination. The results showed that from the excavation base, there were PAH contaminants found at depths between 0.0m and 1.9m, which were in concentrations higher than the NEPM 1999 guidelines. Extra testing has been subsequently undertaken to further delineate the contamination on the 'site' and a revised RAP was produced by RCA 2006 outlining a remedial strategy for the remaining contaminants. The remediation works to date have left the majority of Worth Place Park suitable for its intended use as Open Space and Recreation. Validation works to support this were carried out during the preliminary stages and is summarised in an Interim Site Audit Report (Appendix E).

## Appendix E – Interim Site Audit Report

21 December 2007

Our Ref: AS120069F

Honeysuckle Development Corporation  
Attn: Jeremy Amann  
Level 5 / 26 Honeysuckle Drive  
NEWCASTLE NSW 2300

Dear Jeremy

**Re: Worth Place Park – Eastern Section**

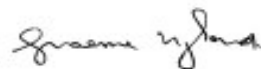
I have prepared a draft Site Audit Report (SAR) for 'Worth Place Park' Honeysuckle Drive, Newcastle, regarding the nature and extent of contamination. No formal interim advice has been provided pending finalisation of remedial works.

The draft SAR considers remediation and validation works, consisting of the excavation and off-site disposal of TPH and PAH impacted fill materials, that were undertaken over the entire site in 2005. The premise of the works was that the impacts were limited to a sandy gravel fill associated with the former road (asphalt) and paved areas to a depth of 0.5m. However, following three rounds of remediation and validation works the western half of the site still required further remediation. A report entitled 'Contaminant Delineation and Revised Remedial Action Plan' dated February 2006 by RCA concluded that 'the site would be suitable for the proposed use as a parkland given the remediation of the fill material across the western area of the site only'. It is understood that HDC plan to remediate the western section in accordance with RCA RAP (2006) by cap and containment. Following the successful implementation of the RAP the SAR could be prepared which would be subject to compliance with a site specific environmental management plan (EMP).

It is understood that Lee Wharf Developments have lodged a DA with Newcastle City Council for 'public asset works' over the eastern half of the site. The boundaries of the works are shown on a draft plan covering the eastern end of the site over 4716m<sup>2</sup> (attached). The boundaries between the west and the east are consistent with those discussed by the RCA RAP. Following a review of the results I am comfortable that the eastern section has been adequately validated and that no further assessment is considered necessary before the site is developed for open space recreational uses. Note that this conclusion is limited to site suitability and does not consider waste classification for off-site disposal.

As the SAR has been prepared for the entire site the suitability of the site would be subject to compliance with the EMP. This EMP is specific to the western half of the site only.

Yours faithfully,



Graeme Nyland  
Principal

/ Attachment



## Appendix F - Director Generals Requirements

### Director-General's Requirements



Section 75F of the *Environmental Planning and Assessment Act 1979*

<b>Project</b>	The proposed remediation of Worth Place Park utilising cap and contain methodology to prepare the site for public use as a recreational parkland
<b>Site</b>	Worth Place, Newcastle, Part Lot 8 DP 883474
<b>Proponent</b>	Honeysuckle Development Corporation
<b>Date of Issue</b>	6 March 2007
<b>Date of Expiration</b>	6 March 2009
<b>General Requirements</b>	<p>The Environmental Assessment (EA) must include</p> <ul style="list-style-type: none"> <li>• an executive summary;</li> <li>• a detailed description of the project including the: <ul style="list-style-type: none"> <li>– need for the project;</li> <li>– alternatives considered; and</li> <li>– various components and stages of the project;</li> </ul> </li> <li>• consideration of any relevant statutory provisions;</li> <li>• an overview of all the environmental impacts of the proposal, identifying the key issues for further assessment and taking into consideration any issues raised during consultation;</li> <li>• a detailed assessment of the key issues specified below and any other significant issues identified in the general overview of the environmental impacts of the proposal (see above), which includes: <ul style="list-style-type: none"> <li>– a description of the existing environment;</li> <li>– an assessment of the potential impacts of the project, including any cumulative impacts;</li> <li>– a description of the measures that would be implemented to avoid, minimise, mitigate, offset, manage, and/or monitor the impacts of the project;</li> </ul> </li> <li>• a draft Statement of Commitments, outlining environmental management, mitigation and monitoring measures;</li> <li>• a conclusion justifying the proposed development, and</li> <li>• a signed statement from the author of the EA certifying that the information contained in the report is neither false nor misleading.</li> </ul>
<b>Key Issues</b>	<ul style="list-style-type: none"> <li>• <b>Remediation</b> – including characterisation of the nature and extent of contaminated material, and details of management measures, including justification of remediation criteria and compliance with the <u>Contaminated Land Management Act 1997</u>;</li> <li>• <b>Soil &amp; Water</b> – including surface, stormwater, groundwater, impacts on Newcastle Harbour, emergency procedures and proposed processes for erosion and sediment control;</li> <li>• <b>Air Quality</b> – including dust emissions and greenhouse gas generation;</li> <li>• <b>Traffic and Transportation</b>– including details of traffic volumes likely to be generated during the remediation and procedures for transporting any hazardous material leaving the site;</li> <li>• <b>Hazards</b> - including consideration of the proposal against the relevant provisions of <i>State Environmental Planning Policy No.33 – Hazardous and Offensive Development</i>;</li> <li>• <b>Noise</b>;</li> <li>• <b>Odour</b>;</li> <li>• <b>Flora and Fauna</b>; and</li> <li>• <b>Heritage</b>.</li> </ul>

<b>References</b>	The Environmental Assessment must take into account relevant State government technical and policy guidelines. While not exhaustive, guidelines which may be relevant to the project are included in the attached list.
<b>Consultation</b>	<p>During the preparation of the Environmental Assessment, you should consult with the relevant local, State or Commonwealth government authorities, service providers, community groups or affected landowners.</p> <p>In particular you should consult with;</p> <ul style="list-style-type: none"> <li>• Department of Environment and Conservation;</li> <li>• Department of Natural Resources;</li> <li>• Newcastle City Council; and</li> <li>• Hunter Water.</li> </ul> <p>The consultation process and the issues raised should be described in the EA.</p>
<b>Deemed Refusal Period</b>	60 days



# Appendix G – Department of Energy and Water

NSW Government  
**DEPARTMENT OF WATER AND ENERGY**

Your Ref: S07/00122  
Our Ref: ER7530A

29 February 2008

Major Development Assessment  
Department of Planning  
GPO Box 39  
SYDNEY NSW 2001

**Attention: Kerry Hamann**

Dear Madam

Received  
- 5 MAR 2008  
Major Development Assessment  
ORDAA

G 08 / 171

**MP07\_0003 - Adequacy Review of Environmental Assessment**  
**Proposed Remediation of Worth Place Park \* FTP Stage 2**  
**Off Honeysuckle Drive and Worth Place, Newcastle**

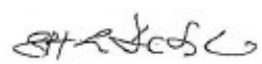
I refer to your letter of 7 February 2008 concerning the above proposal.

You are advised that there are no statutory approvals required for legislation administered by the Department of Water and Energy (DWE) for the project, however the following comments are provided for your consideration:

- The draft Environmental Assessment (EA) recognises that the groundwater at the site is contaminated.
- The proposed program of remediation may not remediate contaminated groundwater and may not achieve the objects of remediation.
- Whilst the cap proposed will reduce the infiltration of surface runoff and rainfall (vertical) it may not improve the quality of groundwater.
- If the groundwater continues to flow through the property, it has the potential to discharge contaminants to the receiving waters (Newcastle Harbour).
- The EA should incorporate measures to minimise the risk of impacts and prevent sub-surface off-site migration of contaminants.
- The EA needs to address the NSW Groundwater Policy Framework Document – General and the NSW Groundwater Quality Protection Policy.
- The issue of potential contamination of the groundwater and receiving waters needs to be deferred to the NSW Department of Environment and Climate Change to administer under its legislation.

Should there be any further enquiry in this matter, please contact me on 4904 2525.

Yours sincerely



**Hemantha De Silva**  
Senior Licensing Officer  
Licensing North

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Level 3 26 Honeysuckle Drive, Newcastle NSW 2300  
PO Box 2213, Dangar NSW 2300  
Telephone (02) 4904 2500 Facsimile (02) 4904 2501



## Appendix H – Hunter Water Consultation



NSW GOVERNMENT  
**Hunter Development Corporation**

Reference: [HS3835B1]

16 April 2008

Robert Daniels  
Hunter Water Corporation  
PO BOX 5171  
Newcastle NSW 2300

Dear Robert,

**Worth Place Park Remediation Works:  
Re: Notice of Formal Requirements**

In response to Hunter Waters 'Notice of Formal Requirements' dated 4/02/2008, Hunter Development Corporation (HDC) is advising that it has initiated the process of decommissioning the identified water main. These works will be carried out with due diligence and in accordance with the conditions specified in the above-mentioned notice.

HDC understands its responsibilities as described in the Notice of Formal Requirements and will ensure that evidence of the decommissioning works will be forwarded upon completion.

I trust that this letter gives re-assurance of HDC's intent to make good the concerns of Hunter Water. If you have any further queries relating to the nature or status of these works, please contact the undersigned.

Yours sincerely

**Jeremy Amann**  
DEVELOPMENT OFFICER

Ph: 02 4904 2762  
Fax: 02 4904 2751  
Email: [jeremy.amann@hdc.nsw.gov.au](mailto:jeremy.amann@hdc.nsw.gov.au)

Emailed to [bob.daniels@hunterwater.com.au](mailto:bob.daniels@hunterwater.com.au) on 16/4/2008

## Appendix I – Newcastle City Council Consultation

D&E PM. PMC  
Phone: 4974 2533

12 September 2005

Mr Jacob Whiting  
Honeysuckle Development Corporation  
PO Box 813  
NEWCASTLE NSW 2300



PO Box 489, Newcastle  
NSW 2300 Australia  
Phone 02 4974 2000  
Facsimile 02 4974 2222  
Email mail@ncc.nsw.gov.au

Dear Mr Whiting

### **WORTH PLACE PARK CAP AND CONTAIN STRATEGY REMEDIATION AND SITE AUDIT STATEMENTS**

I refer to your letter dated 1 August 2005 seeking Council's response to:

- the proposed change in remediation strategy for Worth Place Park; and
- a comparison of Council's contaminated land records to information held by Honeysuckle Development Corporation (HDC) for all HDC land.

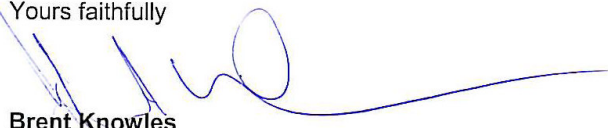
At the meeting last week between Council and HDC, the above matters were discussed and information was provided to allow a comparison of Council and HDC contamination records as requested. Information and copies of any contamination reports regarding the HDC land should be forwarded to Council's Contaminated Land Project Officer – Daniel O'Brien.

Following the above mentioned meeting, Council has given further consideration to the proposed cap and contain remediation strategy proposed for the western portion of Worth Place Park. Council is prepared to give in principle support to the proposed change in remediation strategy, however the following issues should be addressed:

- In accordance with Council's DCP 43, the proposed cap and contain strategy is considered to be Category 1 remediation works, and therefore requires development consent.
- The proposed remediation strategy should be justified in relation to the comparative costs of alternative remediation methods.
- The remediation strategy should be related to a design layout plan of the proposed park area, showing details such as hardstand areas, garden and tree planting areas, play areas and any services or easements. In this regard, Council requests that any planting areas or service trenches to be excavated and backfilled with clean validated fill. In addition, a geofabric marker layer should be considered to delineate clean vs contaminated layers on the site.
- The development application should be supported by a revised remediation action plan, and a site management plan. Following remediation Council would require a validation and monitoring report and site audit statement to be submitted validating the successful implementation of the proposed remediation and confirming the suitability of the land for the proposed use.

If you wish to discuss this matter in further detail, please contact Council's Environmental Services Coordinator, Paul McMurray on 49742533.

Yours faithfully



**Brent Knowles**  
GROUP MANAGER  
DEVELOPMENT AND ENVIRONMENT

## CD CONTAINING: Appendix J and Appendix K

Appendix J – Contaminate Delineation and Revised  
Remedial Action Plan – RCA 2/2006

Appendix K – Worth Place Park Environmental  
Management Plan – RCA 6/2006