

January 2011

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# Sampling and Analysis Plan

## Geraldton

Department of Health

## 1.0 INTRODUCTION

The Health Department (DOH) at the request of the Department of Transport (DOT) and Department of Environment and Conservation (DEC) has prepared this Sampling and Analysis Plan (SAP) to assess lead concentration levels in soil, water and surface dust collected from Geraldton.

The SAP is based on the information contained in the 2007 DEC sampling reports of the Pollution Response Unit<sup>1</sup> and the sampling procedures and processes in the Esperance Clean-Up and Recovery Project (ECRP) SAP<sup>2</sup>.

## 2.0 BACKGROUND

A lead dust concentration of 4.2ug/m<sup>3</sup> was reported at the offshore breakwater monitor during one ship loading event of lead sulphide in October 2010. This level is significantly higher than the Geraldton Port's (Port) operating licence limit for lead of 0.5 ug/m<sup>3</sup>; not to be exceeded. Offshore winds dominated during the ship loading hence lead dust levels were not exceeded at three other monitoring stations around the port boundary facing the community. In response to the exceedance, MMG & the Port have ceased further ship exports of lead until further notice.

In December 2010, Transport Minister Troy Buswell announced that the DOH would undertake environmental sampling to investigate if people living close to the port have been put at risk from fugitive lead dust from the port.

In 2007, DEC screened the port and targeted locations in Geraldton for lead, copper and zinc as part of the DEC ports assessment program. As part of the program DOH and the City of Geraldton-Greenough (CoGG) sampled rainwater from 22 domestic rainwater tanks. The concentration of lead in 21 tanks did exceed the Australian Drinking Water Guidelines (ADWG) for lead of 0.01 mg/L<sup>3</sup>. One (1) tank showed a small exceedance of the guideline of 0.016 mg/L; the occupants were advised not to drink the tank water and to have the tank cleaned.

Surface soil and surface dust testing of the port and targeted locations in Geraldton were also found not to exceed the Health Investigation Levels (HIL)<sup>4</sup>.

In January 2011 the DOH was asked to coordinate environmental sampling of the port and community. Since there is no evidence that there has been environmental contamination by lead in Geraldton the DOH has broken down the investigation into two stages. Stage 1- Repeat sampling of rainwater tanks and targeted locations tested in 2007, Stage 2 – Sampling of houses and other premises if Stage 1 indicates probable contamination.

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<sup>1</sup> DEC – Geraldton Port Authority Inspection Report 30 May 200. DEC – Sampling Report surface & swab Geraldton 16-18 July 2007.

<sup>2</sup> ECRP – Site Sampling Methodology 2011

<sup>3</sup> ADWG- National Health and Medical Research Council (NHMRC & NRMMC, 2004)

<sup>4</sup> Health Investigation Levels - enHealth (2001)

## **3.0 OBJECTIVES AND SCOPE**

### **3.1 OBJECTIVES**

This SAP was designed to assess:

- the lead concentrations at the locations previously sampled
- whether significant<sup>5</sup> levels of lead in dust are circulating in the environment; and
- as a baseline against which to assess the effectiveness of any clean-up / remediation that may be require.

### **3.2 Scope of Work**

The scope of work incorporates the following:

- Identification of the contaminants of concern, sensitive receptors, exposure pathways,
- Locations of targeted sampling sites,
- Number and types of samples,
- Sampling methods and handling,
- Quality control and quality assurance,
- Health based reference guidelines
- Roles and Responsibility.
- Timing

## **4.0 CONTAMINANTS OF CONCERN (CoC)**

Although lead is the main contaminant of concern, based upon the practice of transporting and loading copper and zinc at the Port all samples will be analysed for copper, zinc and lead.

The type of lead that is being transported out of Geraldton (lead sulphide) is different to the type that was being transported out of Esperance (lead carbonate). Nevertheless in terms of health-based levels in the community DOH is not distinguishing on type because all lead regardless of source behaves the same in the body. This is a conservative approach since the substrates to which the lead is bound and the inherent physiochemical properties of the lead type (how soluble it is in water etc) will determine how much is available to be absorbed.

Samples will be assessed primarily for the contaminants of concern however; information on other heavy metals and elements will be collected where the standard methods of analysis

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<sup>5</sup> Significant levels are those that are above the health based guidelines in Table 1.

employed allow for such analysis. The analysis will be undertaken by the WA Chemistry Centre which is accredited by the National Association of Testing Authorities (NATA) for the methods required.

## **4.1 SENSITIVE RECEPTORS**

Young children and babies are particularly sensitive to the effects of lead. DOH has identified locations sampled in 2007 within a defined geographical area around the port that would experience the highest level of exposure to dust from the port during on-shore winds. Since private residents will not be sampled in Stage 1, DOH has targeted schools and parks as locations that present significant opportunities for young children to be exposed to surface soil and surface dust.

## **4.2 EXPOSURE PATHWAYS**

Exposure to lead dust can occur from contact with surface soil, dust on vertical and horizontal surfaces and rainwater tanks contaminated from lead dust washed into gutters and downpipes.

The main exposure pathway for babies and young children is via ingestion of surface dusts while for adults exposure is mainly via inhalation of dusts and ingestion of water.

## **5.0 SAMPLING SITES**

All rainwater tanks sampled in 2007 will be repeated but not all the port and community locations.

DOH chose locations to be resampled based on criteria such as the following:

### 1. Inclusions:

- premises with a rainwater tank on their property that was tested in 2007,
- proximity of public premises (i.e. schools) and public open spaces to the port
- public premises and open spaces representative of community exposure.
- Port locations identified with high lead levels in 2007.
- Sampling site locations that do not extend beyond the suburbs of Beresford, Wonthella, Utakarra and Beach lands.

### 2. Exclusions:

- existing locations that have been renovated, replaced or removed,
- new locations that include land fill areas, areas potentially contaminated with lead-based hobbies or paints,
- new locations that have been built on a previously identified contaminated site including landfill, industrial site etc.
- new locations that have sink wells, rainwater discharge/gutter discharge points directly onto soil.

Thirty (30) locations in the community and twelve (12) port locations have been identified [see attachment 1].

Some additional new locations may be selected by the sampling teams based on the criteria outlined above and included if appropriate.

## **6.0 NUMBER & TYPES OF SAMPLES**

Unless otherwise specified duplicate samples will be collected will be of the following types:

- Surface soil
- Rainwater tanks
- Dust on selected surfaces

## **6.1 SAMPLING METHODS AND SAMPLE HANDLING**

The sampling method and handling of samples will follow the protocols developed for the Esperance Clean-Up and Recovery Project in current use<sup>6</sup> where appropriate. Relevant sections of the ECRP are reproduced in this plan. The ECRP protocols are based on Australian Standards and have been independently audited. Bearing this in mind this does not preclude sampling according to the standards that underpin the ECRP protocols.

The order and time of sampling is flexible and will be influenced by home occupiers' availability for rainwater tank sampling, traffic movements and port activity. DOH will liaise with CGG officers and DEC will liaise with the port to make the appropriate arrangements for sampling.

A central sample handling area will be set up. All samples will be returned to the handling area to record the 'Chain of Custody' [see Attachment 3] and pack samples for transport to the laboratory.

GPS coordinates will be required. Hand held devices are preferred but the DOH Epidemiology branch guard against using phone or Google coordinates. Each sample will be geocoded with the corresponding ID from Attachment 1.

Attachment 2 – provides a simple Sampling & handling flow chart.

### **6.1.1 Surface Soil**

Soil samples will be taken from the 2007 locations [see Attachment 1] and new locations where there is reason to suspect that the levels of contaminants may be present at higher than allowable levels.

Most of the lead will be found as deposited dust on soil surfaces, horizontal surfaces or as an accumulation of roof dust washed into gutters and downpipes onto soil.

Soil sampling is not to be done of sink wells and areas under drain pipes and gutters. Playground equipment footings should not be sampled as the potential is high for lead oxide paint from the equipment to leach into soils around footings.

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<sup>6</sup> ECRP – Site Sampling Methodology 2011

## 1. Equipment and sundries:

- a) Hand held stainless steel spade or trowel
- b) Nitrile or similar powder free gloves
- c) Zip-lock bags, small and large
- d) Alcohol wipes
- e) Ghost Wipes™
- f) Distilled Water wipes
- g) Permanent Marker

Since lead dust settles on the soil surface, the first 5 to 10 cm of the soil profile would contain most of the contaminants unless the soil surface has been disturbed.

Choose areas of bare soil patches which look relatively undisturbed. One soil sample is a duplicate.

Take extra samples in areas where children play such as sand pits and swings sets in public areas or school grounds.

Do not take samples at the bottom of downpipes if soil is present.

## 2. Sampling methods

Number of Samples: minimum of 4 (plus 1 x Replicate)

*Note:* A 'replicate' is a sample taken directly *next to* the previous sample for quality control purposes

1. Put on a clean pair of powder free examination gloves.
2. Remove the spade from the holding bag and ensure spade is clean. If spade appears contaminated, wipe with distilled and alcohol wipes, then with a Ghost Wipe.
3. Use a handheld spade or trowel to scrape off any stones and/or vegetation from the soil sample site.
4. Use the handheld spade to scrape off or dig approximately 2 spades full (120 x 120mm) of soil from the top 10 – 20mm of the surface.
5. Place the soil into a numbered and labelled small zip lock bag, push air out of bag, then close bag.
6. Geotagg and Record the details of the specific sample site on the record sheet or in a log book.
7. Use distilled water wipes followed by a Ghost Wipe to clean the trowel between the samples and after the final sample. The distilled water wipes are thrown away. Fold the ghost wipe in half five times, place the ghost wipe into a numbered and labelled small zip lock bag, push out the air and seal the bag.

### 6.1.2 Rainwater Tank

Duplicate rainwater samples are taken. The results are compared to the values contained in Table 1.

#### 1. Equipment & Sundries

- a) Nitrile or similar powder free gloves
- b) 2 x 100mL water sample bottles
- c) Large zip lock bag
- d) Permanent marker

## 2. Sampling Method

Number of Samples: 2 x 100mL bottles - per rainwater tank

- a) Put on sterile, non-powdered examination gloves
- b) Take 2 x 100ml water samples from each rainwater tank.
- c) If the tap is on the tank, flush the rainwater tank for a minimum of 30 seconds.
- d) If the tap is located away from the tank let the pipe work flush for a minimum of 3 minutes to allow for sediment in the pipe work to be flushed out of the tap.
- e) Flush empty sample bottle first and discard water
- f) Take the top off a sample bottle labelled with the sample details and fill the bottle with water from the tank, making sure there are no large air bubbles in the bottle. Affix the cap and repeat the process with another bottle.
- g) Place the full bottles into a large zip lock bag
- h) Geocode and Record the sample details on the sample record sheet.

### 6.1.3 Surface Dust

External surface wipe samples provide a relative concentration of contaminants on a surface. Contaminants on external surfaces provide an exposure pathway for contaminants to become available to adults and children who come into contact with the surfaces. The value is returned as a loading (ug/cm<sup>2</sup>) and this is compared to the values contained in Table 1. The ECRP protocols include Niton sampling pre & post surface dust sampling – where this is done, comments will be made as to the presence of lead containing pigments /surface preparations etc so that any high Niton readings can be properly contextualised.

#### 1. Equipment & Sundries:

- a) Nitrile or similar powder free gloves
- b) Metal ruler or other measuring device (Tape measure or 10cm x 10cm sampling quadrant)
- c) Small zip lock bags
- d) Ghost Wipes™
- e) Permanent marker

#### 2. Sample Method

**Number of Samples: minimum of 4 (1 x each side)**

1. Choose sample site.
2. Don sterile, powder-free examination gloves.
3. Remove a sterile Ghost Wipe from package.
4. Wipe the surface. Smooth surfaces (e.g., window sills) as opposed to rough surfaces (e.g., bricks) should be sampled. The recommended wipe area is approximately 10cm x 10cm. If the area is non-standard, measure the area with a tape measure. Avoid letting the wipe dry completely.

Suggested sampling technique: Fold the wipe in half, then in half again. Make enough vertical S-strokes to cover the entire sample area; fold the exposed side of the pad; make

horizontal S-strokes over the same area, fold the exposed side of the pad; make vertical S-strokes over the same area. Fold the exposed side of the pad.

5. Place the sampled wipe in the corner of a small zip-lock bag, squeeze the air out of the bag and seal the bag.
6. Label the bag with a unique identifying number and place it in an unused large zip-lock bag.
7. Geocode and Record the details on the sample record sheet, including the surface type and area sampled.

To collect another sample, repeat the steps above. Change gloves after taking samples.

## 6.2 QUALITY CONTROL AND QUALITY ASSURANCE

Specific quality control (QC) and quality assurance (QA) procedures are to be followed including those pertaining to the analysis of rinsate blanks, field blank samples, laboratory method blanks, laboratory control samples, and replicate sample analysis. QA & QC procedures provided here relate to the ECRP protocols and the method of sampling – where sampling has been based on the underpinning Australian standards not all the procedures listed below will be required.

### 6.2.1 Rinsate Blanks

Sampling equipment must be washed and cleaned prior to use for sampling. The final rinsate solution must be collected to determine the possible levels of contamination from adhering contaminated material. Distilled or demineralised water used for the final rinsate must be collected into a sample container for wet chemistry analysis.

- For field rinsate samples, the equipment (trowel, etc) is cleaned with a Ghost Wipe for the final wash and this Ghost Wipe is placed into a labelled zip lock bag for analysis if required.

### 6.2.2 Field Blank Samples

A field blank sample is a non-exposed sample of the medium being used for testing that is analysed for lead as an assessment of potential lead contamination resulting from field collection and sample transport activities.

Prepare a blank (from the sample lot used for field sampling) at each sampling location. Ghost wipe blanks should be taken to a sampling location, prepared there, and remain at the sampling location as long as field samples are collected. Place each blank sample in a secured container. Label and date the container. Store blanks for shipment with the field samples. The field blank samples should not show lead levels above 1µg/sample.

- Field Blank *Ghost Wipe* samples are prepared at the rate of one field blank ghost wipe sample for every 10 (ten) samples taken.

### 6.2.3 Method Blanks

A method blank sample is to be analysed with each batch of samples to document any contamination resulting from the analytical process. The acceptance criteria are that the concentration of lead in the method blank should not be higher than 1µg/sample.

### 6.2.3 Laboratory Control Samples

Laboratory control samples (i.e., matrix with a known concentration of lead) are to be analysed with dust and soil samples. Each laboratory control sample (LCS) consists of a measured amount of certified reference material (CRM). The main LCS certified material reference is: Montana Soil - NIST Standard Reference Material 2711. Other certified reference materials are the GeoStats PTY LTD (09 9314 2566) CRM's GBM 305-3, 305-8 and 907-3. The Chem Centre has also supplied 3 standard reference materials (SRM) made from local soil for inclusion as a LCS. The laboratory control samples are to be analysed with each sample set processed to verify that the accuracy and bias of the analytical process are within control limits, +/- 10% of CRM or SRM values for the analyte of concern.

#### Per - 250 sample batch for analysis by Laboratory

- Prepare 1 x Method Blank Wipe Sample for each house
- Prepare and label 2 of each type of (CRM's) Certified Reference Materials – Blank, Low and High – from Large Plastic Tubs
- Prepare and label 2 of each type of (SRM's) Standard Reference Materials - Low, Medium and High – Geostats small plastic bags

If the number of samples is over 250 per batch double the amount of CRM and SRM's.

## 7.0 HEALTH BASED ASSESSMENT CRITERIA

Table 1 Assessment Criteria

Sample			
	Water <sup>7</sup>	Soil <sup>8</sup>	Surfaces
Pb	0.01 mg/L	300 mg/kg HIL-A <sup>b</sup>	0.04 µg/cm <sup>2</sup> Children
			0.4 µg/cm <sup>2</sup> Adults
			4.0 µg/cm <sup>2</sup> Remote surfaces
Cu	2 mg/L	1000 mg/kg HIL-A	
		2000 mg/kg HIL-E <sup>c</sup>	
		5000 mg/kg HIL-F	
Zn	<3mg/L <sup>a</sup>	7000 mg/kg HIL-A	
		14000 mg/kg HIL-E	
		35000 mg/kg HIL-F	

<sup>a</sup> taste guideline - there is no health based guideline for zinc

<sup>b</sup> HIL – Health Investigation Level A – Residential with gardens / home grown produce

<sup>c</sup> HIL – E – parks, garden, secondary schools

<sup>d</sup> HIL – F – commercial / industrial

## 8.0 ROLES AND RESPONSIBILITIES

DOH – Write the SAP, Coordinate between government agencies, interpret findings, approve sampling sites, respond to queries from media and public, and provide health based information, consult with local GPs.

DEC – Pollution Response Unit – Sample Port using SAP procedures and provide information to ECRP team to identify 2007 sampling locations liaise with ECRP team for sample handling procedures.

<sup>7</sup> ADWG –Australian Drinking Water Guidelines, NHMRC 2004

<sup>8</sup> Health-Based Soil Investigation Levels enHealth 2001

DoT – ECRP team – sample rainwater tanks and community sampling sites, coordinate and manage on the ground sampling activities, handle samples and transport to laboratory for analysis.

CoGG team – contact householders of previous rainwater tanks, organise a central sampling handling area for teams,

[see Attachment 4]

## **9.0 TIMING**

Sampling is to commence in the week starting 17 January – lab results will take a further 10 days – no results will be available before the 20 of February 2010.

## ATTACHMENT 1

### SAMPLING LOCATIONS

#### GERALDTON PORT

Re-sampling of sites identified in the *Geraldton Port Authority Inspection Report* produced by DEC pollution Response Unit – There are 3 soil sampling sites and the rest are Niton sampling sites.

#### SOILS

##### Port

Geocoded Sample ID	Location No & Site	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error
		Pb	Pb	Pb	Cu	Cu	Cu	Zn	Zn	Zn
		mg/kg	ppm	ppm	mg/kg	ppm	ppm	mg/kg	ppm	ppm
	3) Tower 3, N/E corner of tower	NA								
	5) Tower 4, N/E corner of Tower	NA								
	6) Tower 4, S/E corner of Tower	NA								
	7) CV4, 10m south of CV4 (middle of mid west corp shed)	NA								
	8) Tower 2, N/E corner of Tower	NA								
	10) CV3, Approx 20m N of tower located next to dust extraction dump point	NA								
	11) CV3, Approx located at middle of heavy metal shed next to CV13 next to dust extractor.	NA								
	12)CV13, heavy metal shed western hopper conveyor next to CV13	NA								
	14)CV13, Next to CV13 located at N/W coner of heavy metal shed western hopper conveyor.	NA								
	15) oxiana heavy metal shed on South side of shed	NA								
	16)Oxiana heavy metal shed, S/E corner of heavy metal shed next to door.	NA								
	21) Westend of heavy metal shed on Marine Terrace	NA								
	22)West end of heavy metal shed on marine tce (perimeter), taken at	soil								

	intersection of Portway Rd & Marine Tce										
	23) East end of heavy metal shed (perimeter), cnr of Cream Rd and Marine Terrace.	soil									
	24) Truck Exit South side of road and West side exit (perimeter)	soil									
	27) corner Marine tce and Cream rd (offsite) on S/E corner.	NA									
	<b>Health Investigation Level A will be also apply to port premises</b>	<b>300 mg/kg</b>									

**SOILS**

**Central Geraldton**

Geocoded Sample ID	Location	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error
		Pb	Pb	Pb	Cu	Cu	Cu	Zn	Zn	Zn
		mg/kg	ppm	ppm	mg/kg	ppm	ppm	mg/kg	ppm	ppm
	<b>Beresford</b>									
	Lillian Shaw Park									
	Geraldton Grammar School									
	Saint Patricks School									
	<b>Geraldton</b>									
	Mt Scott									
	Allandale Primary School									
	Geraldton Primary School (Fitzgerald St)									
	St Francis Primary School									
	Geraldton Senior College									
	John Forrest Memorial (Foreshore Drive)									
	Geraldton Primary School (Sanford St next to school oval)									
	Geraldton Primary School (Cnr Sanford St and Fitzgerald St)									
	Geraldton Primary School (Cnr Carson St and Fitzgerald St)									
	Geraldton Primary School (Carson St approx 30m from school building)									
	Geraldton Primary School (Rear of the school bordering on Nagle College)									
	Ramshaw Place									
<b>Health Investigation Level (A)</b>		<b>300</b>			<b>1000</b>			<b>7000</b>		
<b>Health Investigation Level (E)</b>		<b>NA</b>			<b>2000</b>			<b>14000</b>		

**SWABS**

**Central Geraldton**

<b>Geocoded Sample ID</b>	<b>Location</b>	<b>Swab (Lab)</b>	<b>Swab (Lab)</b>	<b>Swab (Lab)</b>
		<b>Pb</b>	<b>Cu</b>	<b>Zn</b>
		<b>ug/cm2</b>	<b>ug/cm2</b>	<b>ug/cm2</b>
	<b>Beresford</b>			
	Lillian Shaw Park			
	Lillian Shaw Park			
	Geraldton Grammar School			
	Geraldton Grammar School			
	Saint Patricks School			
	Saint Patricks School			
	<b>Geraldton</b>			
	Mt Scott			
	Mt Scott			
	Allandale Primary School			
	Allandale Primary School			
	Geraldton Primary School (Fitzgerald St)			
	Geraldton Primary School (Fitzgerald St)			
	St Francis Primary School			
	St Francis Primary School			
	Geraldton Senior College			
	Geraldton Senior College			
	John Forrest Memorial (Foreshore Drive)			
	John Forrest Memorial (Foreshore Drive)			

**SOILS**  
**East Geraldton**

Geocoded Sample ID	Location	Soil (Lab)	XRF	XRF Error		Soil (Lab)	XRF	XRF Error		Soil (Lab)	XRF	XRF Error
		Pb	Pb	Pb		Cu	Cu	Cu		Zn	Zn	Zn
		mg/kg	ppm	ppm		mg/kg	ppm	ppm		mg/kg	ppm	ppm
	<b>Wonthella</b>											
	Wonthella Catholic Community Park											
	Wonthella Bowling Club											
	Geraldton Community Library											
	Utakarra Ball Park											
	St Johns Primary School											
	St Johns Primary School (Digby St)											
	St Johns Primary School (Banksia St)											
	St Johns Primary School (Cnr Tamar Rd and Cypress St)											
	<b>Health Investigation Level (A)</b>	<b>300</b>				<b>1000</b>				<b>7000</b>		
	<b>Health Investigation Level (E)</b>	<b>NA</b>				<b>2000</b>				<b>14000</b>		

**SWABS**

**East Geraldton**

<b>Geocoded Sample ID</b>	<b>Location</b>	<b>Swab (Lab)</b>	<b>Swab (Lab)</b>	<b>Swab (Lab)</b>
		<b>Pb</b>	<b>Cu</b>	<b>Zn</b>
		<b>ug/cm2</b>	<b>ug/cm2</b>	<b>ug/cm2</b>
	<b>Wonthella</b>			
	Wonthella Catholic Community Park			
	Wonthella Catholic Community Park			
	Wonthella Bowling Club			
	Wonthella Bowling Club			
	Geraldton Community Library			
	Geraldton Community Library			
	Utakarra Ball Park			
	Utakarra Ball Park			
	St Johns Primary School			
	St Johns Primary School			

**SOILS**

**Geraldton West**

Geocoded Sample ID	Location	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error
		Pb	Pb	Pb	Cu	Cu	Cu	Zn	Zn	Zn
		mg/kg	ppm	ppm	mg/kg	ppm	ppm	mg/kg	ppm	ppm
	<b>Beachlands</b>									
	Railway Football Club									
	Cnr Crowther St and DuBoulay St									
	Portway St (Wheat Bins)									
	<b>West End</b>									
	Pages Beach Park									
	Beliar Gardens Caravan Park									
	Greys Beach									
	<b>Health Investigation Level (A)</b>	<b>300</b>			<b>1000</b>			<b>7000</b>		
	<b>Health Investigation Level (E)</b>	<b>NA</b>			<b>2000</b>			<b>14000</b>		
	<b>Health Investigation Level (F)</b>	<b>NA</b>			<b>35000</b>			<b>5000</b>		

## SWABS

### West Geraldton

Geocoded Sample ID	Location	Swab (Lab)	Swab (Lab)	Swab (Lab)
		Pb	Cu	Zn
		ug/cm2	ug/cm2	ug/cm2
	<b>Beachlands</b>			
	Railway Football Club			
	Railway Football Club			
	Cnr Crowther St and DuBoulay St			
	Cnr Crowther St and DuBoulay St			
	Portway St (Wheat Bins)			
	Portway St (Wheat Bins)			
	<b>West End</b>			
	Pages Beach Park			
	Pages Beach Park			
	Beliar Gardens Caravan Park			
	Beliar Gardens Caravan Park			
	Greys Beach			
	Greys Beach			

**SOILS**

**South Geraldton**

Geocoded Sample ID	Location	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error	Soil (Lab)	XRF	XRF Error
		Pb	Pb	Pb	Cu	Cu	Cu	Zn	Zn	Zn
	Utakarra									
	Rangeway Community Centre									
<b>Health Investigation Level (A)</b>		<b>300</b>			<b>1000</b>			<b>7000</b>		
<b>Health Investigation Level (E)</b>		<b>NA</b>			<b>2000</b>			<b>14000</b>		

**SWABS**

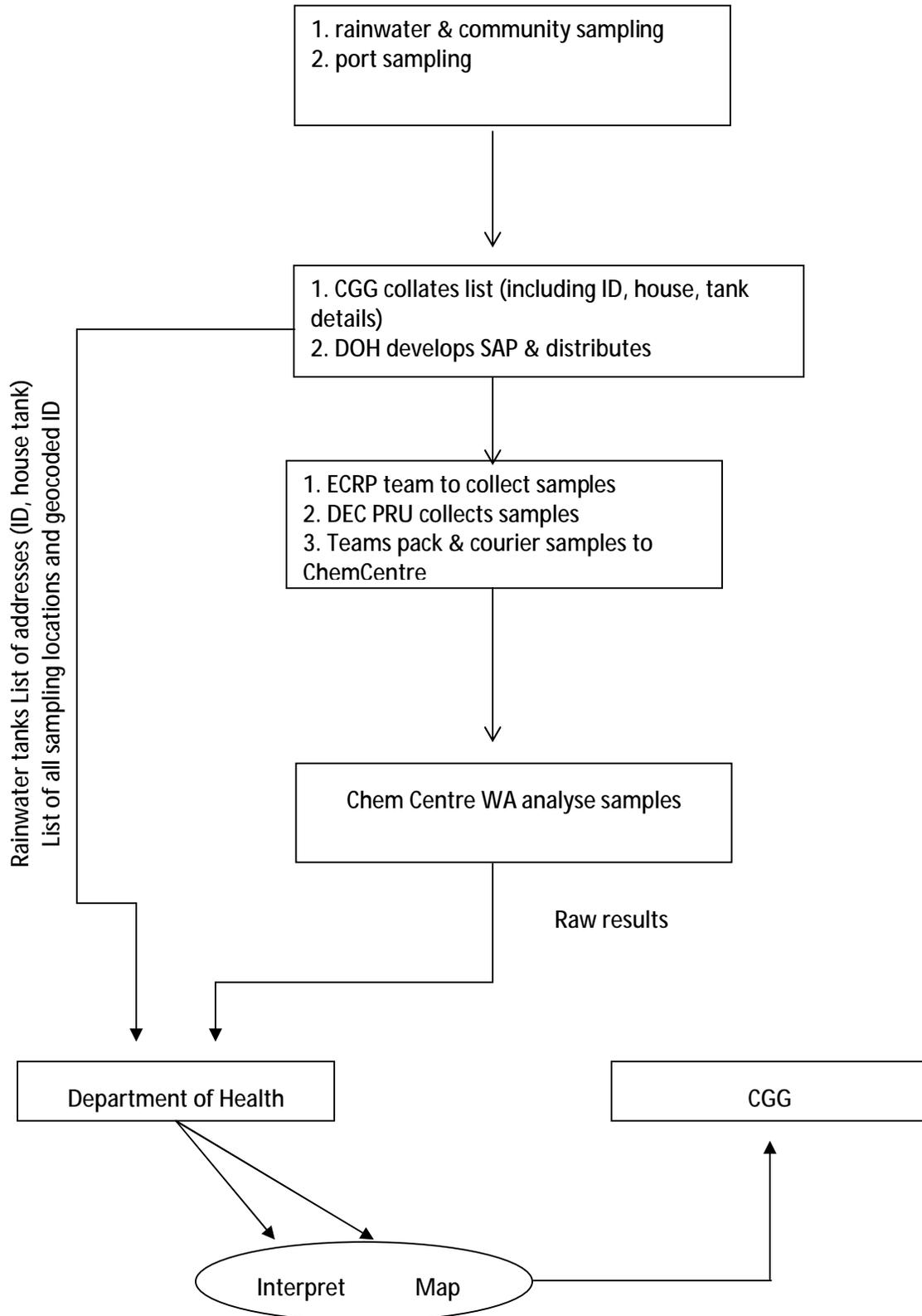
**South Geraldton**

Geocoded Sample ID	Location	Swab (Lab)	Swab (Lab)	Soil (Lab)
		Pb	Cu	Zn
		ug/cm2	ug/cm2	ug/cm2
	Utakarra			
	Rangeway Community Centre			
	Rangeway Community Centre			



## ATTACHMENT 2

### Sampling & Handling Flow Chart



## ATTACHMENT 3

### Chain of Custody (COC) Procedure

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The Chain of Custody (COC) is a document that records the transfer of certain samples from ECRP Lab to an external laboratory for analysis.

#### Required information on COC document:

- Sender's company name, address and contact details
- Commencement date
- Name and phone number of contact person
- When results are required
- Receiver's company name, address and contact person
- Job reference number
- Purchase order number
- Indicate if fax results are needed
- Courier consignment note number
- Lab number: Each sample is allocated a lab number starting from one for that particular batch of COC
- Sample PIN number: Property Identification Number indicated on sample
- Sample code: Unique code indicated on sample to identify what kind of sample was taken. Example: soil (D1, D2), gutter sludge (A7, A8), internal swab (G1, G2)
- Sample Date: recorded on sample when it was taken
- Description: Description of sample code. Example: the description for A7 = "sludge"
- Type of analysis required. Example: nickel and lead
- Other comments. Example: Additional Isotopic test required
- Special instructions. Example: samples that may contain asbestos
- Name and signature of person relinquishing the COC
- Date and time COC is prepared
- Name and signature of person receiving the COC
- Date and time COC is received by receiver

## **COC Procedure**

1. All samples are sorted into groups: (i) Surface wipes, (ii) Cleaning wipes, (iii) Carpet and roof filters, (iv) Carpet bulk dust, (v) Soil, (vi) Gutter sludge, (vii) Rainwater (viii) Roof bulk dusts.
2. The roof bulk dust, roof filters and roof cleaning wipes are each labelled with a warning sticker that it may contain asbestos. In addition, any other samples known to contain asbestos are labelled with a warning label. The roof bulk dust samples are bagged together in a plastic bag, separate to all other samples (sample bags are labelled on site when samples were taken).
3. Each rainwater sample and the duplicate rainwater sample are bagged together in a plastic bag to prevent contamination if a water bottle should leak during transportation (rain water bottles are bagged on site when samples are taken).
4. Add two Vacuum Filter Blanks (VFB) with each COC.
5. Add one of each Reference Material with each COC of 250 samples or less of gutter sludge/dust/soil samples. Certified Reference Material-High (CRM-H), Certified Reference Material-Low (CRM-L), Certified Reference Material-Blank (CRM-B), Standard Reference Material-High (SRM-H), Standard Reference Material-Low (SRM-L), Standard Reference Material-Medium (SRM-M).
6. A Method Sample Wipe (MSW) should be included with all sample wipes taken from a property. This is a blank wipe that is prepared at the ECRP lab on arrival.
7. All samples are issued a Lab number in chronological order for a COC batch. Keeping the samples in their groups, but mixing the Property Identification Numbers. *It is recommended that all samples taken from individual properties are sent off together with a batch in order to receive the results for all samples of a property simultaneously to enable data analysis to complete the Post-sampling Evaluation Report.*
8. Record the samples on the COC document.
9. Place samples in chronological order in larger plastic bags. Place in courier box with an original COC document. Seal with fragile tape and label with appropriate warning stickers that contents may contain lead or asbestos.

## **Recording of samples on COC**

1. Issue a job reference number and enter the number of the Courier Consignment note on the COC.
2. Enter required information as mentioned above.
3. Verify entered sample details.

4. Send original signed COC document with the samples to a laboratory for analysis and file a copy. Also e-mail a copy to the laboratory the same day. Request for a signed/faxed copy from the laboratory with the batch number issued by them and file.
5. File a copy of the courier consignment note.

## **ATTACHMENT 4**

### **DOH INVESTIGATION TEAM**

Environmental Health Coordinator  
Coordinator of interagency teams  
Toxicologists  
Medical advisor

### **DEC INVESTIGATION TEAM**

DEC Coordinator  
Pollution Response Unit coordinator  
Scientific Officers -sampling

### **CoGG INVESTIGATION TEAM**

CoGG Coordinator

### **DoT INVESTIGATION TEAM**

DoT Coordinator  
ECRP Director  
ECRP Project Manager Sampling  
Sampling team  
Chain of Custody Coordinator