

A Data Gaps Evaluation

**The Value of Existing Information to
Achieve Reclassification**

Shimona Babra

Introduction

- Background
- Objective/Scope
- Approach
- Findings
- Lessons Learnt
- Questions



Background

- Former mine site located somewhere in WA
- The site had numerous reports, investigations undertaken in a rehabilitation perspective (19 2015)
- The Site was classified under the CS Act as *Contaminated- remediation required (C-RR)*
 - As well as part of other nearby ecological receptors (possibly a water body)
 - The Site had not been investigated since 2015 and Client was looking to reclassify s but establishing a suitable proposed deposited plan for interest purposes only (DP-IPO)



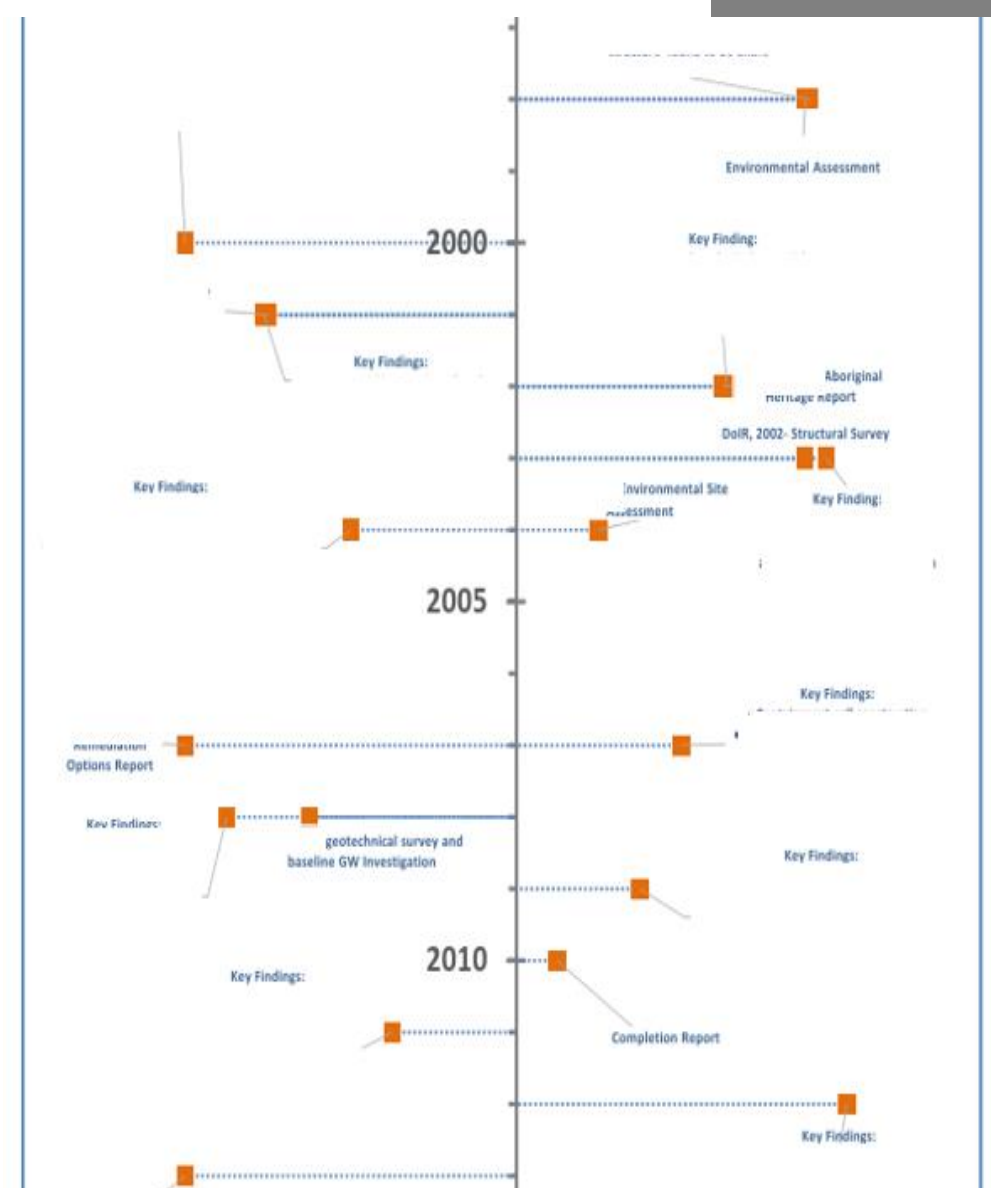
Objective

Technical Objectives of the works included:

- Update of information relating to the environmental setting of the site
- Extract and compile all available data
- Gain an understanding of the current site conditions through a site walkover
- Develop a CSM from the site using the above information to assess the potential risks to receptors from contamination
- Determine (where possible) any data gaps in the site characterisation and whether additional investigation or risk assessment is required
- Provide technical bases for the creation of a DP-IPO to allow hopeful reclassification

Approach

- A 'front-end loaded' assessment approach
- What was important about that report and why?
- Is it Relevant? Why?
- What are the impacts?
- Potential gaps in relation to objective?
- Filter of information for relevance



Report#	Key Findings#
1	1 → 1
2	
3	



Available Information

- Classic PSI Searches
- Understand the site and surrounds
- Use available resources



GOVERNMENT OF
WESTERN AUSTRALIA

Department of
**Water and Environmental
Regulation**



Previous reports

National Acid Sulfate Soils
Guidance

Aboriginal Heritage Inquiry System

Water Information Reporting

Missing Elements

Soil

- Samples were collected for demolition purposes
- A lot of data with no end result (total of 67 soil samples between 2009-2013)
- Exceeded guidelines

Groundwater

- Exceeded guidelines
- No trend analysis (2009- 2015)
- Analysis conducted for limited COPC analysis

Quality Of Analytical Data

Criteria ^α	Data Integrity Assessment Factors ^α	1
Representativeness ^α	Sampling locations and analytical suite; sampling methodology appropriate for matrix and analyte; samples extracted and analysed within acceptable holding times; rinsate blank samples; field blanks, trip blanks and laboratory blank samples included. ^α	1
Comparability ^α	Appropriate methodologies used for sample collection and handling; analytical methods and laboratory limits of reporting (LORs) consistent and appropriate. ^α	1
Completeness ^α	Chain of custody (COC) documentation available; decontamination procedures and records available and satisfactory results and frequency of QC samples. ^α	1
Precision ^α	Field duplicates, field triplicates and laboratory duplicates. ^α	1
Accuracy ^α	Surrogate spike samples, matrix spike samples and laboratory control samples. ^α	1



Investigation Levels: Soil

HIL-D

- Given that the site is fenced, is a former industrial site and currently houses containment cell,

EILs

- Site Specific ABCs were derived from soil samples three background samples (BG01-BG03) which were collected in January 2010 and one background sample (SS08) in July 2012
- ABCs were derived by calculating the mean average of the concentrations of the background samples. The limit of reporting (LOR) was used in the calculation for metals where the concentration was below the laboratory detection limit in all background samples.
- pH – 5.4
- CEC – 11 cmol/kg
- Clay content – 9%

Inputs
Select contaminant from list below
Cu
Below needed to calculate fresh and aged ACLs
Enter cation exchange capacity (silver thiourea method) (values from 0 to 100 cmolc/kg dwt)
20
Enter soil pH (calcium chloride method) (values from 1 to 14)
9
Enter organic carbon content (%OC) (values from 0 to 50%)
1

Outputs		
Land use	Cu soil-specific EILs	
	(mg contaminant/kg dry soil)	
	Fresh	Aged
National parks and areas of high conservation value	75	85
Urban residential and open public spaces	130	230
Commercial and industrial	180	320

Analyte ^a	Background Sample (mg/kg) ^a				Average concentration ^g (mg/kg) ^a
	BG01 ^a	BG02 ^a	BG03 ^a	SS08 ^a	
COPC ^a	14 ^a	17 ^a	16 ^a	35 ^a	21 ^a
COPC ^a	22 ^a	54 ^a	35 ^a	1,100 ^a	303 ^a
COPC ^a	10 ^a	14 ^a	10 ^a	18 ^a	13 ^a
COPC ^a	42 ^a	48 ^a	52 ^a	220 ^a	91 ^a

Soil investigation: Findings

- Three of the eight COPCs were found to exceed the derived EILs
- Elevated concentrations of one COPC were recorded above HIL-D in three of the 67 Soil samples!

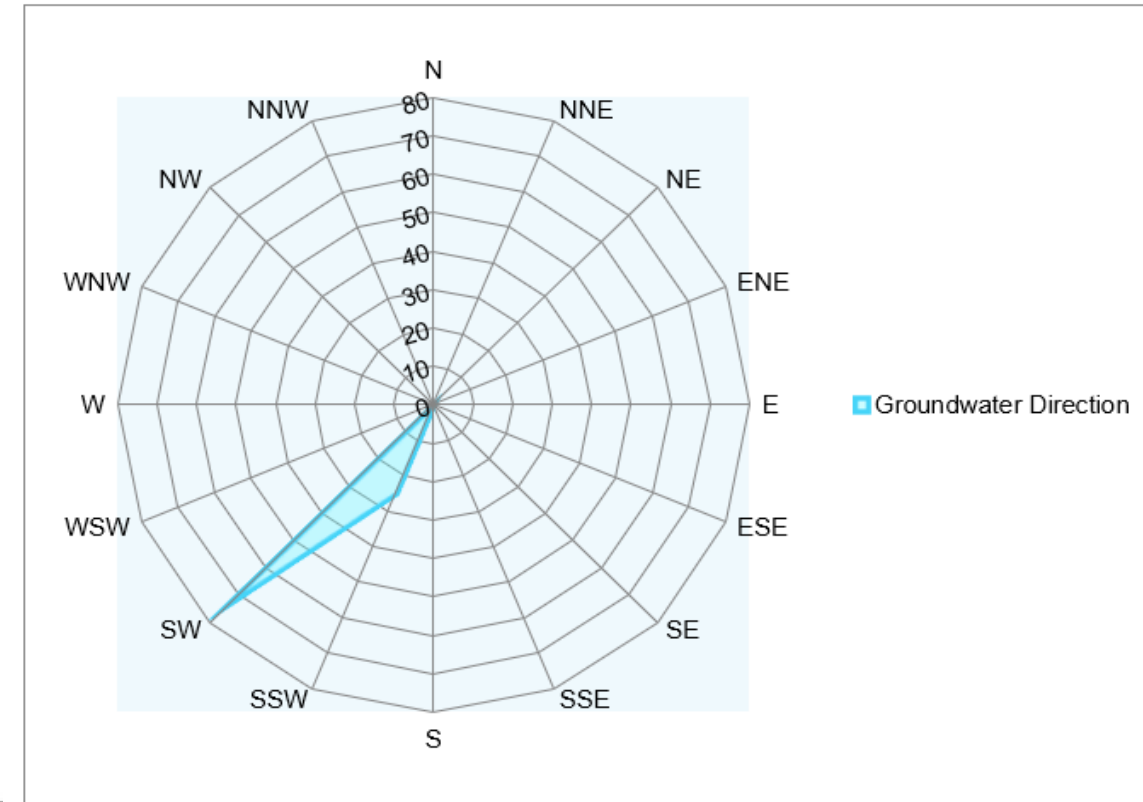
Depth (m bgl)†	Lithology†
0.0-1.5‡	Silty/clayey gravel and clayey sands with gravel (variable thickness)‡
1.5-16‡	Weathered bedrock (granite)‡

Findings: Groundwater

Monitoring well	COPC	COPC	COPC	COPC	COPC
MW01	Decreasing	Stable	Decreasing	Decreasing	Decreasing
MW02	Stable	Decreasing	Stable	Stable	Stable
MW03	Stable	Stable	No-Trend	No-Trend	Stable
MW04	No-Trend	No-Trend	Stable	No-Trend	No-Trend

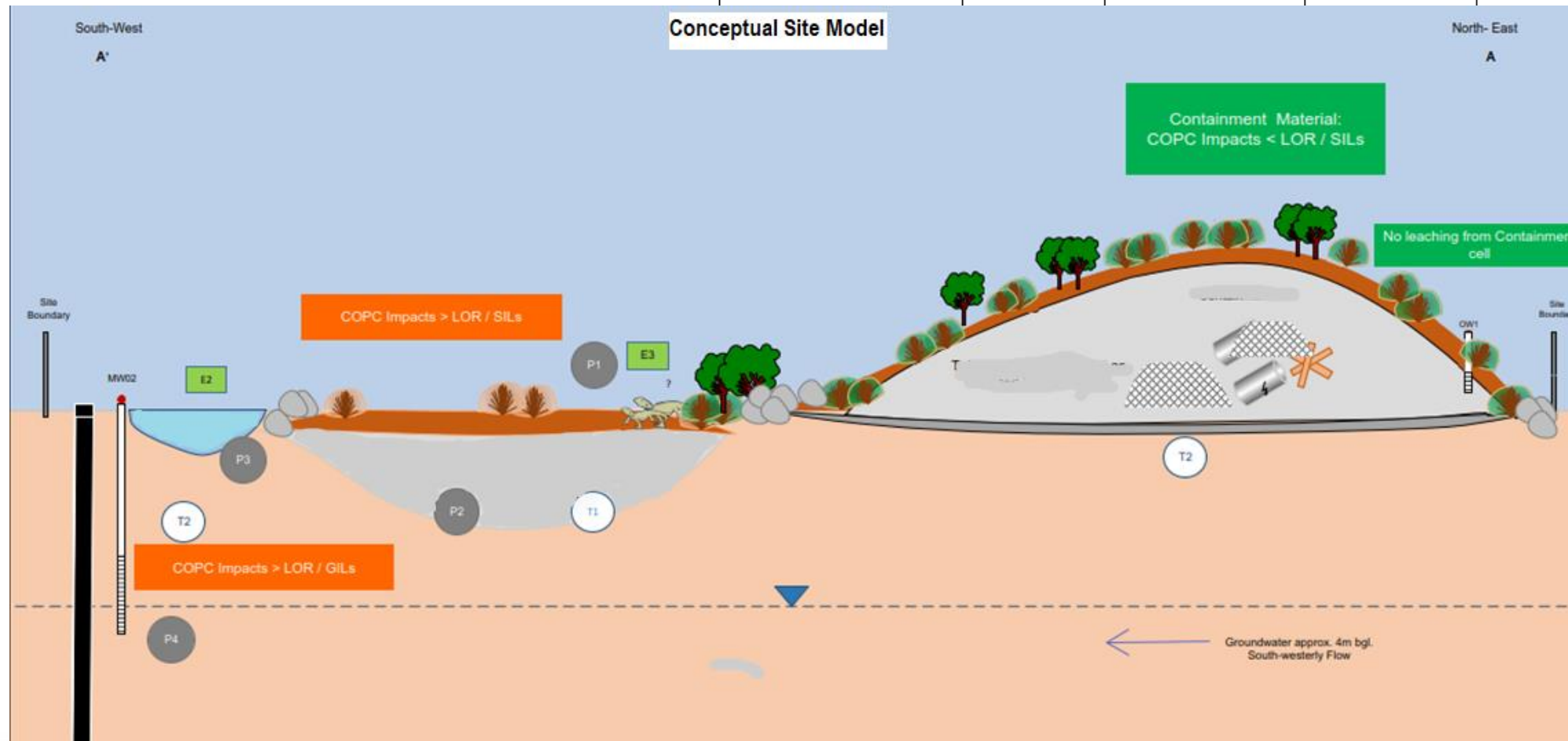
- Concentrations in downgradient monitoring wells MW02 and MW03 are either decreasing, showing a stable trend or showing no trend.
- No groundwater data is available after 2015

- The aquifer is likely to be slightly acidic to neutral with only slight variability observed across the site;
- The observed dissolved oxygen levels are likely to indicate that conditions within the aquifer are aerobic; and
- Although some negative redox values were observed in groundwater purged from monitoring well MW04, the broader aquifer is likely to be characterised by oxidising conditions.
- Groundwater was generally slightly turbid and red brown to brown in colour with no odours identified during purging



SPR & CSM

Source	Receptor	Transport Mechanism and Pathway	SPR-Linkage?	Discussion	Data Gaps
			Incomplete		None
			Possibly		



Findings : Site Walkover

- Monitoring wells surveyed and dipped to confirm DTW and location
- Current Site Condition
- Survey of DP-IPO
 - Extents of contamination
 - Existing fence line
 - Existing rehabilitation area



