



■ Annual EMT Remediation Review

15th August 2017

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Agenda

- Project background
- Review of Clean Up Plan implementation progress for each sub-area of the Site
- Questions and discussion

■ Project background

- **January 2016:** Received Amended Clean Up Notice
- **February 2016:** Submitted CUP and Auditor Verification Report to EPA
- **April 2016:** EPA formally approved CUP
- **April 2016:** Submitted Annual Progress Report to EPA
- **April 2016 - Ongoing:** Further assessments and remediation in accordance with the CUP
- **April 2017:** Submitted Annual Progress Report to EPA
- **April 2017:** Submitted updated Groundwater Management Plan (GWMP) to EPA

■ Review of Clean Up Plan (CUP)

- The CUP is a 200+ page technical document to present and discuss:
 - Background, regulatory requirements and key drivers for clean up
 - Conceptual Site Model (CSM) unique to Altona site
 - Remediation objectives
 - Previous and current remediation measures
 - Remediation strategy, implementation and timetable
- The CUP includes key supporting documents, along with executive summaries of key source materials
- CUP was reviewed and endorsed by two EPA-appointed auditors
- Formally approved by EPA on April 2016
- Five yearly CUP review due in 2021

■ CUP – Remediation Strategy Overview

- Reduce volume of heavily impacted soil and groundwater on site
- Reduce mass of contaminants flowing off site through groundwater
- Monitor new technological developments and adopt where appropriate
- Keep independent Auditors informed and involved as work progresses



CUP Road Map

Area	Objective	#	Sub-Area	Main COPC	Stage	Technology
Onsite	Reduce mass discharge by > 1 OOM by 2021	1	Former Chloralkali Plant	Mercury	Remedial works out for tender	Soil stabilisation and off site disposal
		2	Repository	Mercury	Pre remedial studies	Soil stabilisation and off site disposal
		3	Western Source Area	Chlorinated Hydrocarbons	Remediation	EISB, SVE, ISCR
					Remedial pilot test	PRB
		4	Former Latex / Epoxy Plant	Chlorinated Hydrocarbons	Phase II ESA	-
					Remediation	MNA
		5	Former Ethylene Dichloride Plant	Chlorinated Hydrocarbons	Remediation	EISB
					Remedial pilot test	RFH
6	Waste Water Treatment Area	Chlorinated Hydrocarbons	Remediation	EISB, P&T		
7	Styrenics	Petroleum Hydrocarbons	Remediation	SVE, Soil disposal		
8	Balance of the site	TBC	Phase I ESA	-		
Offsite	Reduce contamination in groundwater by 1 OOM by 2036	9	Commercial	Chlorinated Hydrocarbons	Remediation	MNA
					Remediation system installation	EISB / Groundwater recirculation
		10	Residential	Chlorinated Hydrocarbons	Remediation	MNA

■ Site Overview



1 - Former Chloralkali Plant

- Status:
 - Remedial technology selected (i.e., Soil stabilisation and offsite disposal)
 - Remedial works out for tender
- Progress made since last EMT meeting:
 - Developed Remedial Action Plan (RAP) and received endorsement from the Statutory Auditors
 - Submitted RAP to EPA Victoria
 - Discussed RAP and process waste reclassification process with EPA Victoria
 - Initiated tender process
- Plans for 2017/2018
 - Award tender and commence remediation works



■ 2 - Repository

- Status:
 - Pre-remedial studies
- Progress made since last EMT meeting:
 - Conducted assessments
 - Initiated soil stabilisation tests
- Plans for 2017/2018
 - Complete stabilisation tests
 - Undertake remediation in conjunction with the former CAP



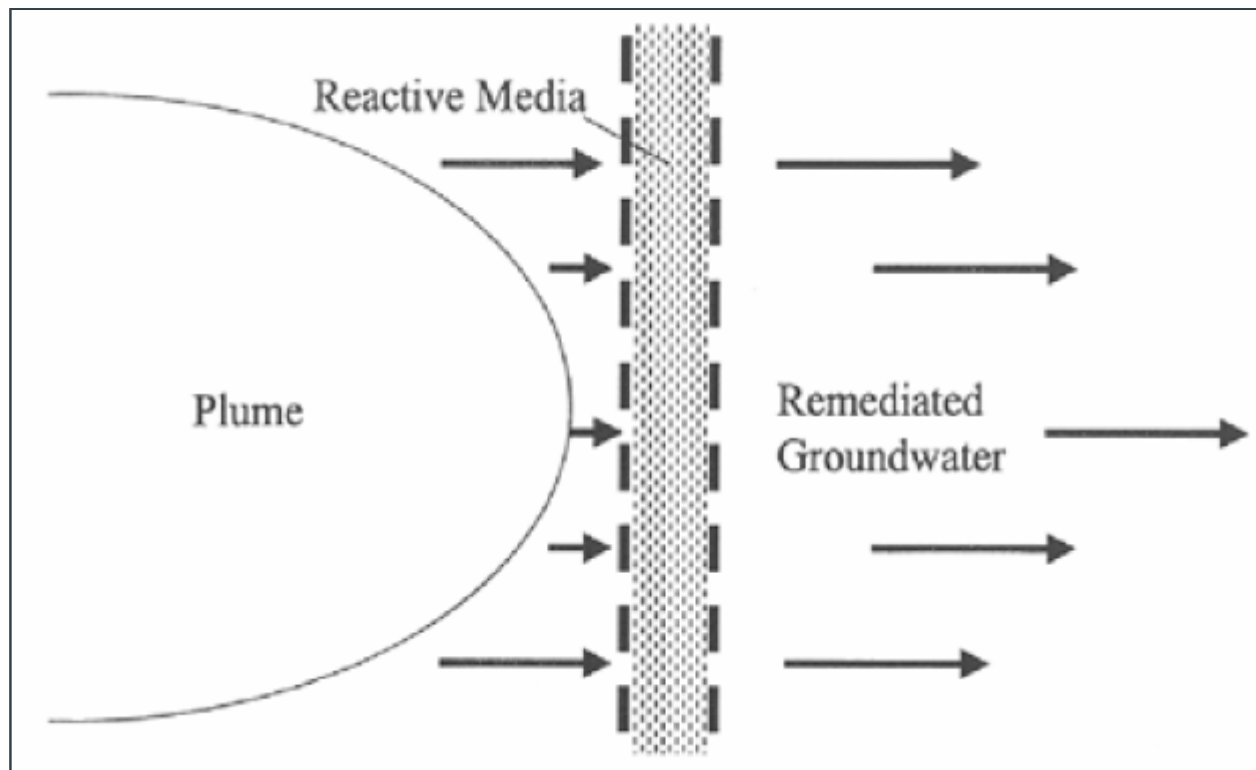
3 - Western Source Area

- Status:
 - Remediation in progress
 - Technologies applied:
 - Enhanced In-Situ Bioremediation (EISB)
 - Soil Vapour Extraction (SVE)
 - In-Situ Chemical Reduction (ISCR)
- Progress made since last EMT meeting:
 - Continued injections of Propylene Glycol (EISB)
 - Continued groundwater monitoring activities
 - Conducted further assessment to identify groundwater preferential pathways
 - Recommissioned SVE system
 - Commenced construction of a Permeable Reactive Barrier (PRB)



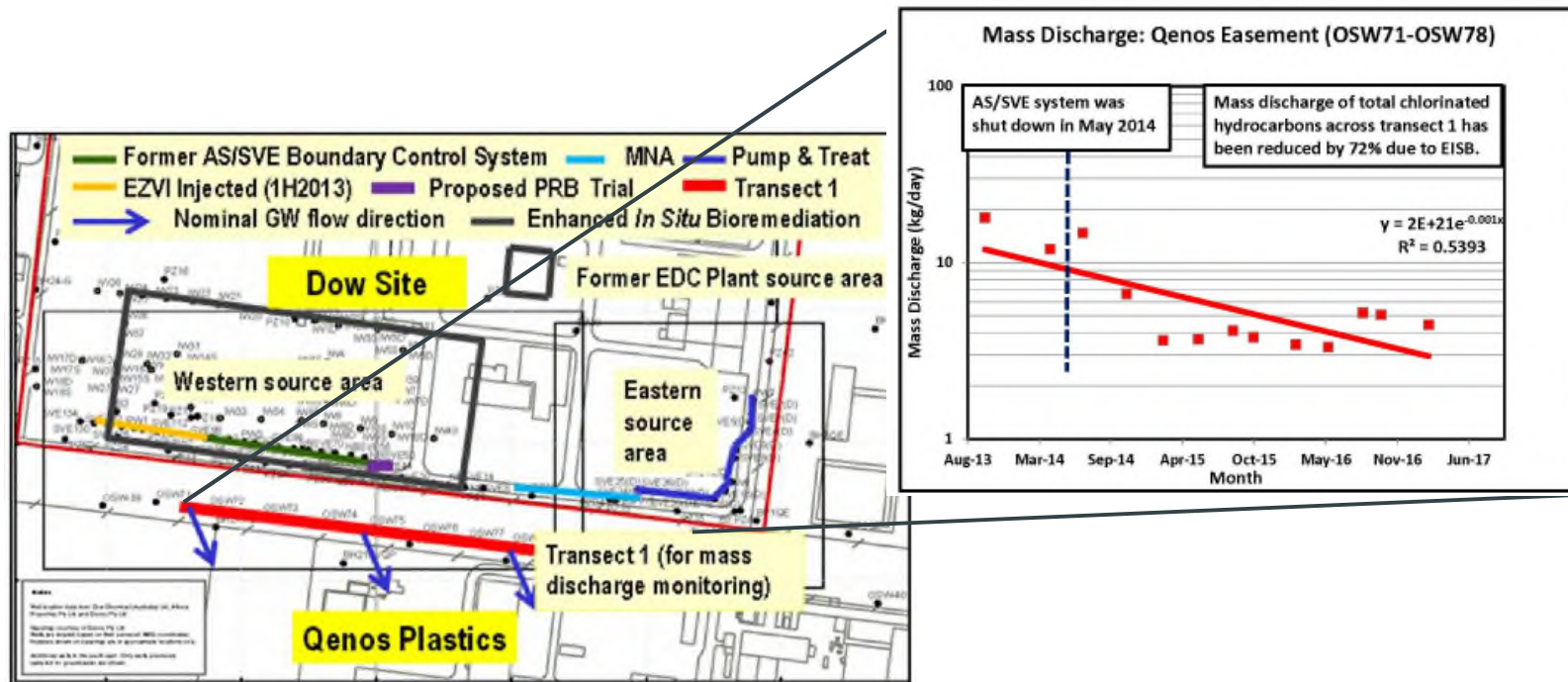
■ 3 - Western Source Area

- A Permeable Reactive Barrier is a trench that has been filled with reactive material. The reactive materials treats the groundwater as it flows through the reactive material.



3 – Western Source Area

- Progress towards CUP objectives:
 - Mass discharged across Transect 1 reduced by 72%
 - Approximately 3.5 tonnes of chlorinated hydrocarbons have been removed in the last six months



■ 3 – Western Source Area

- Plans for 2017/2018
 - Continue groundwater monitoring
 - Continue remediation by EISB, ISCR and SVE
 - Complete construction of the PRB trial



■ 4 – Former Latex / Epoxy Plant

- Status:
 - Remediation in progress
 - Technologies applied:
 - Monitored Natural Attenuation (MNA)
 - Further assessments in progress
- Progress made since last EMT meeting:
 - Continued groundwater monitoring activities
 - Conducted further assessment to identify groundwater preferential pathways
- Plans for 2017/2018
 - Continue groundwater monitoring
 - Install additional monitoring wells



■ 5 – Former Ethylene Dichloride Plant

- Status:

- Remediation in progress
- Technology applied:
 - EISB
- Remedial pilot test in progress for Radio Frequency Heating (RFH)

- Progress made since last EMT meeting:

- Continued injections of Propylene Glycol (EISB)
- Continued groundwater monitoring activities
- Conducted further assessments for the RFH pilot test and to identify groundwater preferential pathways
- Commenced RFH Field Pilot Trial (i.e., design and procurement)



■ 5 – Former Ethylene Dichloride Plant

- Plans for 2017/2018
 - Continue groundwater monitoring
 - Continue remediation by EISB
 - Complete RFH field pilot trial design and procurement
 - Install RFH system and commence operation



6 – Waste Water Treatment Area

- Status:
 - Remediation in progress
 - Technology applied:
 - EISB and Pump and Treat (P&T)
- Progress made since last EMT meeting:
 - EISB is now extended into this area
 - Continued groundwater monitoring activities
 - Conducted further assessments to identify groundwater preferential pathways
- Plans for 2017/2018
 - Continue groundwater monitoring
 - Continue remediation by EISB



7 – Styrenics

- Status:
 - Remediation in progress
 - Technology applied:
 - SVE and Soil excavation and offsite disposal
- Progress made since last EMT meeting:
 - Conducted further assessments to identify groundwater preferential pathways
 - Removed and disposed shallow impacted soil
- Plans for 2017/2018
 - Continue removal of impacted soil



8 – Balance of the Site

- Status:
 - Need to revisit the lower priority areas on Site
 - Phase I assessment in progress
- Progress made since last EMT meeting:
 - Commenced desktop review (i.e., Phase I Environmental Site Assessment) to:
 - Develop a comprehensive history of the site
 - Identify any data gaps
- Plans for 2017/2018
 - Complete Phase I assessment



■ Offsite area overview



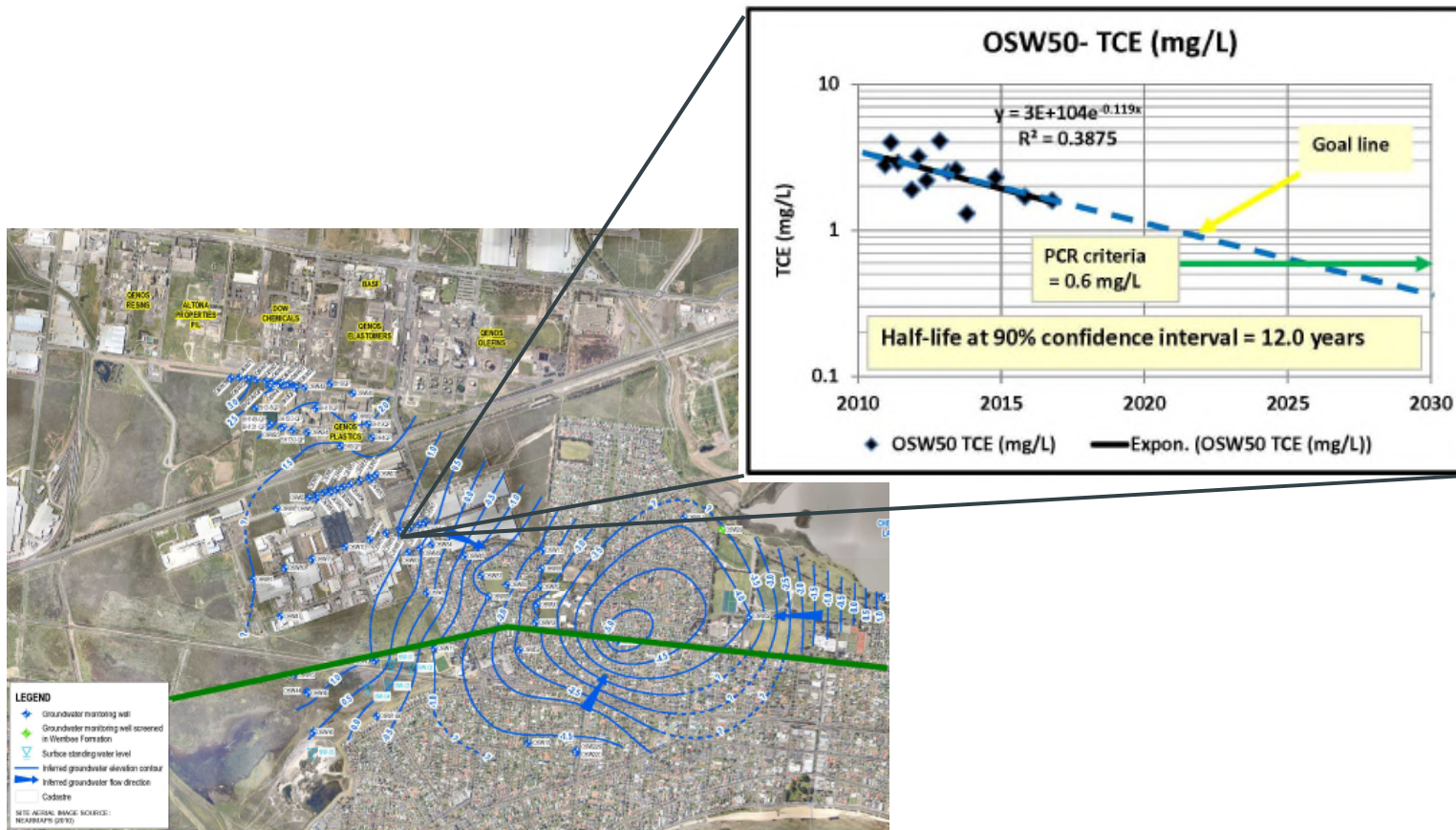
9 – Offsite

- Status:
 - Remediation in progress and upgrade design
 - Technology applied:
 - MNA and EISB
- Progress made since last EMT meeting:
 - Continued groundwater monitoring activities
 - Develop RAP for a EISB groundwater recirculation system



9 – Offsite

- Progress towards CUP objectives:
 - Concentrations in groundwater continue to attenuate



9 – Offsite

- Plans for 2017/2018
 - Continue groundwater monitoring activities
 - Conduct further assessments, groundwater modelling and pumping tests
 - Complete design of the EISB groundwater recirculation system
 - Commence construction of the groundwater recirculation system



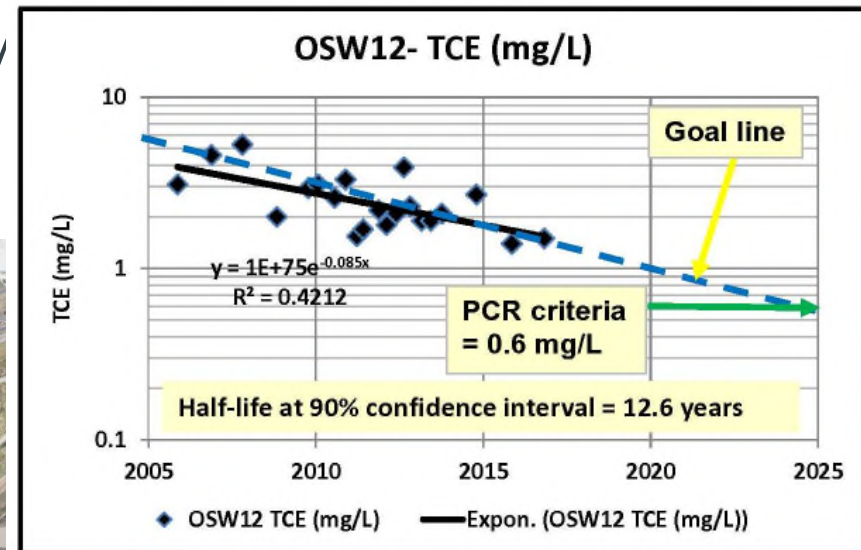
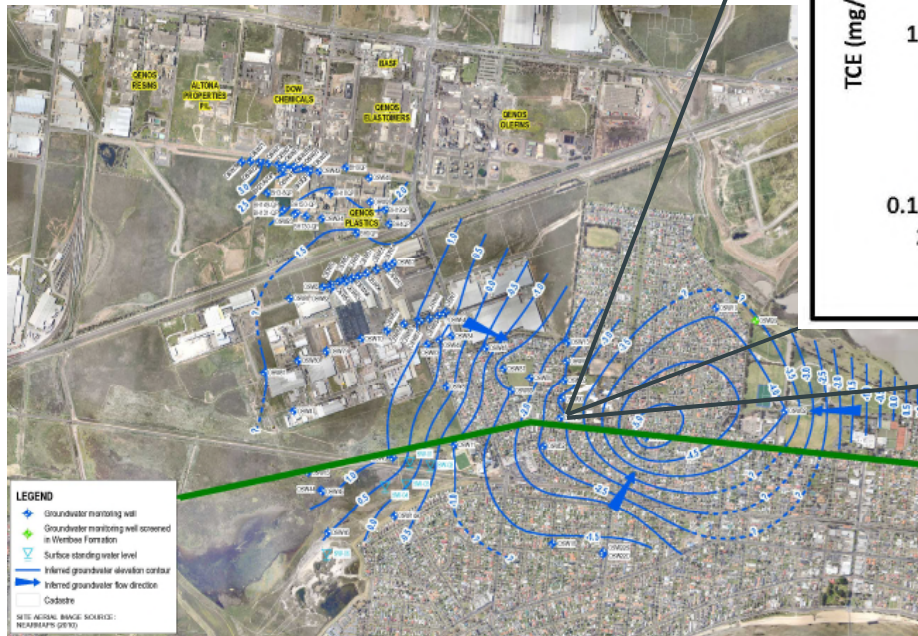
10 – Offsite

- Status:
 - Remediation in progress
 - Technology applied:
 - MNA
- Progress made since last EMT meeting:
 - Continued groundwater monitoring activities



10 – Offsite

- Progress towards CUP objectives:
 - Concentrations in groundwater continue to attenuate



■ 10 – Offsite

- Plans for 2017/2018
- Continue groundwater monitoring activities



■ Conclusions

- Divided the site into specific sub-areas for ease of management and communication
- Good progress on all implemented technologies
- Emerging technologies are being actively investigated and applied
- Meeting timelines to achieve CUP objectives