



Appendices



Appendix A

Primary Legislation and Associated Information



Table A-0-1 Primary legislation and associated information

Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
Commonwealth				
National Environment Protection Council Act 1994	<p>NEPC 1999. The National Environment Protection (Assessment of Site Contamination) Amendment Measure 2013 (No. 1) Amendment of the National Environment Protection (Assessment of Site Contamination) Measure 1999. (known as the NEPM 2013)</p> <p>National Health and Medical Research Council (NHMRC) 2008. Guidelines for Managing Risks in Recreational Water.</p> <p>Australian and New Zealand Guidelines for Fresh and Marine Water Quality (ANZECC/ARMCANZ (2000).</p> <p>Australian Drinking Water Guidelines (NHMRC/NRMMC (2011))</p>	Project wide. Links to environmental objectives adopted in Victoria, via the State Environmental Management Policies.	None.	
Australian Standards	<p>Minimum Construction Requirements for Water Bores in Australia (NUDLC, 2012).</p> <p>Standards Australia 2005. Guide to the sampling and investigation of potentially contaminated soil, Part 1: Non-volatile and semi-volatile compounds, AS 4482.1-2005. Standards Australia, NSW.</p> <p>Standards Australia 1999. Guide to the sampling and investigation of potentially contaminated soil, Part 2: Volatile substances, AS 4482.2-1999. Standards Australia, NSW.</p>	Project wide. Applies to investigation standards.	None.	
	Environment Protection and Heritage Council and the	Applies to management of aggressive	None.	



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
	<p>Natural Resource Management Ministerial Council (2011) National guidance for the management of acid sulfate soils in inland aquatic ecosystems, Canberra, ACT.</p>	<p>ground and groundwater conditions</p>		
State				
<p>Environment Protection Act 1970</p>	<p>The <i>Environment Protection Act 1970</i> makes provisions with respect to the powers, duties, and functions of the EPA Vic and the protection of the environment. It is Victoria's primary environment protection legislation, with a basic philosophy of preventing contamination and environmental damage by setting environmental quality objectives and establishing programs to meet them. The <i>EP Act</i> provides measures for minimising contamination of air, water and land and for controlling noise; and mechanisms to impose requirements (PANs and CUNs) and penalties for breaches of the <i>EP Act</i>.</p> <p>Various Regulations, State Environment Protection Policies and Waste Management Policies are promulgated by the <i>EP Act</i> as outlined below.</p> <p>The <i>EP Act</i> provides for Environmental Audits, to provide an authoritative opinion on: risks to the environment posed by activities or conditions identified by EPA to be potentially contaminating and or as posing risk of harm or detriment to the environment; and/or the suitability of potentially contaminated land for its proposed use.</p>	<p>The EP Act includes opportunity for prosecution by EPA due to discharge to the environment in breach of the Act and/or State Environment Protection Policies (for instance loss of waste/spoil to the Yarra River, or dust to the atmosphere).</p> <p>An activity that mobilises an existing state of contamination (e.g. a groundwater contamination plume) may be deemed by EPA as an act of contamination of the environment.</p> <p>EPA has given no indication of requiring an Environmental Audit. There are no specific planning triggers in place, i.e. no environmental audit overlay corresponding to the site, and the project does not require land use changes to more-sensitive uses such as may trigger council to require an audit. Accordingly the likelihood of a requirement by the planning authority for a S53X audit is considered low.</p> <p>It is recognised however that EPA</p>	<p>(If an audit is required), satisfactory Environmental Audit outcome.</p>	<p>A requirement for environmental audit could have development process timing implications. An audit requirement embodies the objectives of the State Environment Protection Policies</p> <p>Risk – embroilment in existing contamination issues could delay development schedule.</p> <p>Risk – Not determined if EPA would require an Environmental Audit and if so what type (53V or 53X) and how long it would take – assume Audit would be undertaken concurrent with works. However,</p>



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		<p>could choose to apply the environmental audit process where / if EPA considered risks to the environment (including human health and ecosystem protection) to warrant the rigour of the audit process, despite the EES. Of the two types of environmental audit (S.53X and S.53V), the S53V-type is considered the more likely to be applied (if any) to the project. EPA Guideline 952.4 states that a '53V Audit' is an assessment in relation to the risk of any possible harm or detriment to a segment of the environment caused by any industrial process or activity, waste, substance or noise. 'Activity' means 'any industrial process or activity, waste, substance or noise' and 'is interpreted broadly'.</p> <p>Clause 19(1)(a) of the SEPP(GoV) states that the Authority would require groundwater within polluted groundwater zones (now referred to as GQRUZs) to be managed to contain that polluted groundwater within the zone. The potential for mobilisation of existing groundwater contamination identified as a GQRUZ is included in the groundwater-risk mitigation strategy in-development for the project.</p>		<p>EPA determination of whether an audit(s) is required, and subsequent approval of audit scope, may take time – assume one - three months.</p>



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
		<p>EPA has indicated that demonstration of compliance with this clause of the SEPP(GoV) would be required, and may include an audit process of the sites impacted by Melbourne Metroplanning; the S53V-type is considered the more likely to be applied (if any). It appears more likely that EPA would apply its "Site Determination" process in respect to the Temporary Waste Categorisation Station (Arden), than requiring an environmental audit. Site Determination process discussed below in respect to SEPPs.</p>		
<p>State Environment Protection Policy (Prevention and Management of Contamination of Land) No. S95</p> <p>Environment Protection (Industrial Waste Resource) Regulations 2009</p>	<p>Contaminated land – general:</p> <p>WorkSafe 2005. Contaminated Construction Site - Industry Standard.</p> <p>EPA Victoria 1996. Environmental Guidelines for Major Construction Sites. Best Practice Environmental Management. Publication 480.</p> <p>EPA Victoria 2009., Soil Hazard Categorisation and Management. Publication IWRG621.</p> <p>EPA Victoria 2009. Sampling and analysis of waters, wastewaters, soils and wastes. Publication IWRG701</p> <p>EPA Victoria 2009. Soil sampling. Publication IWRG702</p> <p>EPA Victoria 2009 Publication IWRG621, Soil Hazard</p>	<p>Apply to bulk earthworks.</p> <p>Applies to transport of contaminated soils to be in accordance with EPA requirements.</p> <p>Once waste soil treatment facilities are operational in Victoria (expected in 2015 by EPA; for organic contaminants (EPA Draft Position, 2015), EPA requires a contaminated soil producer to demonstrate how it has assessed the practicable accessibility of treatment before it decides to consign the material to landfill for disposal or immobilisation.</p>	<p>WorkSafe notification of trenching or excavation works.</p> <p>Demonstration of assessment of practicable accessibility of treatment at an operating treatment facility (once available) of contaminated soils before disposal (and</p>	<p>Information requirement includes analytical data of sufficient data density to meet EPA requirements for classification of Prescribed Industrial Waste.</p> <p>Risk – Data requirement to be incorporated in works schedule</p>



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
<p>Industrial Waste Management Policy (Waste Acid Sulfate Soils) No S125, Gazette 18/09/1999</p> <p>Industrial Waste Guidelines 2009 No. S177 (Asbestos – transport and Disposal)</p> <p>Environment Protection (Scheduled Premises and Exemption) Regulations 2007</p>	<p>Categorisation and Management</p> <p>EPA Victoria 2010 Publication IWRG600.2, Waste Categorisation</p> <p>EPA Victoria 2015 Publication 1589 (Draft Position), Contaminated Soil – treatment and disposal</p> <p>EPA Victoria 2015 Classification of Drilling Mud http://www.epa.vic.gov.au/business-and-industry/guidelines/waste-guidance/prescribed-industrial-waste-classifications/drilling-mud-classification As a liquid waste, drilling mud is a category A Prescribed Industrial Waste under the Environment Protection (Industrial Waste Resource) Regulations 2009 (IWR Regulations), requiring strict management conditions. Based on risks to human health and the environment, the classification recognises drilling mud as a non- Prescribed Industrial Waste, provided appropriate measures are in place to prevent contamination to the environment.</p> <p>Acid Sulfate soils and Aggressive ground and groundwater conditions:</p> <p>EPA Victoria 2009. Acid sulfate soil and rock. Publication 655.1.</p> <p>DSE, 2010. Victorian Best Practice Guidelines for Assessing and Managing Coastal Acid Sulfate Soils.</p> <p>Environment Protection and Heritage Council and the Natural Resource Management Ministerial Council, 2011. National guidance for the management of acid sulfate soils in inland aquatic ecosystems, Canberra, ACT.</p>	<p>Apply to management requirements for aggressive ground and groundwater conditions.</p> <p>Apply to treatment or containment of soil and groundwater contamination.</p> <p>Apply to Temporary Waste Categorisation Station (at Arden).</p> <p>Injection of grout for ground improvement would need to satisfy SEPP (PMCL).</p>	<p>immobilisation).</p> <p>EPA Licensed Landfill approval to accept contaminated soil for disposal</p> <p>Potentially:</p> <p>EPA approvals process referred to as “Site Determination” may be required if contaminated soils are to be stored temporarily at a designated area. This could affect Temporary Waste Categorisation Station (Arden). Process can include requirement for EIP and engagement of Environmental Auditor for review of the EIP.</p>	<p>Risk – Timing of EPA approvals processes cannot be determined at this time – assume one - three months</p>



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
	<p>EPA Victoria 2002 Groundwater Attenuation Zones, EPA Victoria Publication 841.</p> <p>EPA Victoria 2002 Groundwater Quality Restricted Use Zone, EPA Victoria Publication 862.</p> <p>Australian Standard AS 2159-1995. Standards Australia 2009. Piling – Design and installation, AS 2159-1995. Standards Australia, NSW.</p> <p>Asbestos:</p> <p>EPA Victoria 2009 Publication IWRG611.1, Asbestos Transport and Disposal.</p> <p>Occupational Health and Safety Regulations 2007 S.R No 54/2007 as amended 4 April 2013.</p> <p>WorkSafe Australia Asbestos Code of Practice.</p> <p>Worksafe Victoria 2010. Asbestos-contaminated soil. Guidance Note, GUI0116/01/10.10.</p> <p>Transport and Disposal of Prescribed Industrial Waste</p> <p>EPA Victoria 2009 Permit to transport Prescribed Industrial Waste. EPA Publication IWRG811.10.</p> <p>EPA Victoria 2009 Waste transport certificates. EPA Publication IWRG821.2.</p>		<p>EPA Discharge licenses.</p> <p>EPA approved EMP (herein referred to as an acid sulfate soil and rock management plan) if acid sulfate material to be taken off site.</p> <p>EPA approved EMP at the disposal facility if acid sulfate material to be taken off site.</p>	
<p>State Environmental Protection Policy (Groundwaters of Victoria), Victoria</p>	<p>Contaminated Groundwater – general:</p> <p>EPA Victoria 2000. Groundwater Sampling Guidelines. Publication 669.</p> <p>EPA Victoria 2006. Guidelines for Hydrogeological</p>	<p>Apply to investigation, and management and remediation of contaminated groundwater and contamination.</p>	<p>None</p>	<p>RISK – As described above under EP Act for circumstance of an existing groundwater contamination issues</p>



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
Government Gazette No S160	<p>(Groundwater Quality) Assessments. EPA Publication 668.</p> <p>EPA Victoria 2014. The cleanup and management of polluted groundwater. EPA Publication 840.1.</p> <p>National Health and Medical Research Council (NHMRC) 2008. Guidelines for Managing Risks in Recreational Water.</p> <p>ANZECC/ARMCANZ 2000. Australian and New Zealand Guidelines for Fresh and Marine Water Quality.</p> <p>NHMRC/NRMMC 2011. Australian Drinking Water Guidelines National Water Quality Management Strategy.</p> <p>NUDLC, 2012. Minimum Construction Requirements for Water Bores in Australia - National Uniform Drillers Licensing Committee.</p> <p>Australian Standard AS4482.1 - 2005 Guide to the investigation and sampling of sites with potentially contaminated soil Part 1: Non-volatile and semi-volatile compounds.</p> <p>Australian Standard AS4482.2 - 1999 Guide to the sampling and investigation of potentially contaminated soil Part 2: Volatile substances.</p>	<p>Becomes pertinent in event that a groundwater contamination plume is encountered, and or mobilised by the project construction process. Clause 19(1)(a) of the SEPP (GoV) states "The Authority would require groundwater within polluted groundwater zones to be managed to contain that polluted groundwater within the zone." The term polluted groundwater zone is now replaced with GQRUZ).</p> <p>Becomes pertinent in event that EPA requires an Environmental Audit (refer to discussion under the EP Act above).</p> <p>Apply to treatment or containment of soil and groundwater contamination.</p> <p>Any underground injections (such as for groundwater elevation management), covered in detail in the Groundwater Impact Assessment, would need to satisfy SEPP(GoV) requirements, including prevention of groundwater contamination.</p>		<p>being intercepted by the development.</p> <p>RISK - As described above under EP Act in event that EPA requires environmental audit.</p>
Variation to State Environmental Protection Policy (Waters of Victoria), Victoria	<p>EPA Victoria 2009. Sampling and analysis of waters, wastewaters, soils and wastes. Publication IWRG701</p> <p>Variation of the State Environment Protection Policy (Waters of Victoria) – Insertion of Schedule F7. Waters of</p>	<p>Designates objectives and indicators for protection of Victoria's surface water environments, including Maribyrnong and Yarra Rivers</p>	<p>None</p>	<p>RISK - As described above under EP Act in event that EPA requires</p>



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Government Gazette No S107 (June 2003)	the Yarra Catchment. Victoria Government Gazette No. S 89, June 1999	Is referenced by SEPP (GoV) for derivation of groundwater objectives for maintenance of ecosystems		environmental audit.
Water Industry Regulations 2006 Environment Protection (Industrial Waste Resource) Regulations 2009	EPA Victoria 1991. Construction techniques for sediment contamination control. EPA Publication 275. EPA Victoria 1996. Environmental Guidelines for Major Construction Sites. Best Practice Environmental Management. Publication 480. EPA Victoria 2009. Guidelines for risk assessment of wastewater discharges to waterways. EPA Publication 1287.	Discharges	EPA Discharge licenses.	RISK – Timing of EPA approvals process cannot be determined at this time – assume 1-3 months



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<p>State Environment Protection Policy (Air Quality Management) No. S240</p>	<p>EPA Victoria 2015. Best Practice Environmental Management - Siting, Design, Operation and Rehabilitation of Landfills (Landfill BPEM). Publication 788.3 (relating to hazards from methane).</p> <p>British Standards Institute 2007. Code of Practice for Characterisation and Remediation from Ground Gas in Affected Developments, BS8485:2007, BSI Standards Ltd, UK.</p> <p>British Standards Institute 2013. Guidance on investigations for Ground gas – permanent ground gases and Volatile Organic Compounds (VOCs). BS8576:2013. BSI Standards Ltd, UK.</p> <p>NUDLC, 2012.</p> <p>Australian Standard AS4482.1 - 2005 and Australian Standard AS4482.2 – 1999.</p>	<p>Encountering ground gases and vapours</p> <p>Monitoring.</p>	<p>Potential Audit triggers in the BEPM (where the proposed development or planning scheme amendment would have the effect of allowing development that encroaches into the recommended landfill buffer area..., EPA recommends that the planning or responsible authority require an environmental audit be conducted under Section 53V of the EP Act.</p>	<p>RISK – As described above under EP Act in event that EPA requires environmental audit.</p>
<p>Water Act. 1989.</p> <p>Water Industry Regulations 2006</p>	<p>Various Trade Waste Policies and guidelines from the Water Authorities are promulgated by the Water Act 1989.</p>	<p>Discharges.</p>	<p>Potentially:</p> <p>Water Authorities approvals.</p> <p>EPA Discharge licenses.</p>	<p>RISK – Timing of approvals process cannot be determined at this time – assume 1-3 months</p>
<p>Planning and</p>	<p>DSE 2005. Potentially Contaminated Land. General</p>	<p>A proposed re-development of land</p>	<p>Meet</p>	<p>S53X audit may be</p>



Legislation/ policy	Key policies / strategies	Implications for this project	Approvals required	Timing / interdependencies / information requirements
<i>Environment Act 1987</i>	<p>Practice Note.</p> <p>Department of Transport, Planning and Local Infrastructure 2006. Victoria Planning Provisions (VPP) Environmental Audit Overlay. Clause 45.03 Sourced from http://planningschemes.dpcd.vic.gov.au/schemes/vpps accessed 17 March 2015.</p> <p>State of Victoria 2001. Ministerial Direction No 1.</p>	triggers requirement of relevant planning authority to satisfy itself that the land proposed for development is suitable for its proposed use (Ministerial Directive No. 1 and requirements of environmental audit overlays promulgated under the P&E Act 1987).	requirement(s) of relevant Planning Authority, which could include Environment Audit (S53X) if deemed necessary by Planning Authority to confirm land condition is suitable for proposed use. .	required by Planning Authority where parcels of land are to be re-zoned and/or re-developed to a more sensitive use
<i>Occupational Health and Safety Act 2004</i>	<p>Occupational Health and Safety Regulations 2007.</p> <p>WorkSafe Australia Asbestos Code of Practice.</p> <p>WorkSafe Victoria 2010. Asbestos-contaminated soil. Guidance Note, GUI0116/01/10.10.</p>	All aspects of the project construction and operational phases.	Demonstrate provision of a safe workplace	Demonstrate provision of a safe workplace



Appendix B

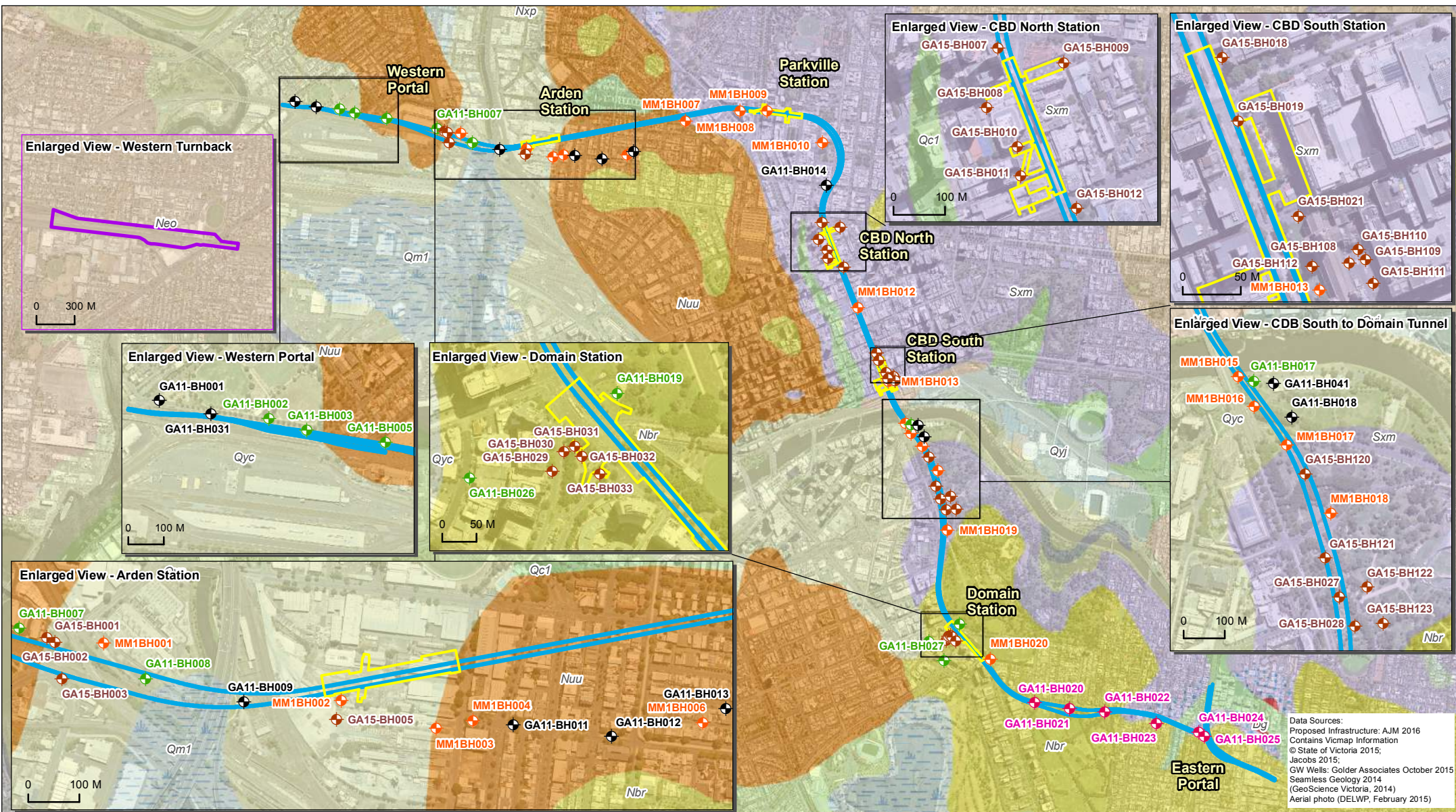
Figures

Figure 1 Geological overview

Figure 2 Groundwater salinity overview

Figure 3 Groundwater elevation and surface water bodies

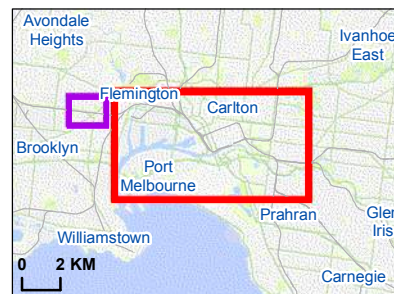
Figure 4 ASS/ASR overview



Data Sources:
 Proposed Infrastructure: AJM 2016
 Contains Vicmap Information
 © State of Victoria 2015;
 Jacobs 2015;
 GW Wells: Golder Associates October 2015
 Seamless Geology 2014
 (GeoScience Victoria, 2014)
 Aerial photo (DELWP, February 2015)

Legend

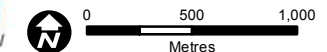
- Proposed Station Footprint
 - Proposed Alignment
 - Western Turnback
 - Groundwater Monitoring Wells**
 - Stage 1
 - Stage 2 Phase 2A
 - Stage 2 Phase 2B
 - Stage 2 Phase 2C
 - RD (to 30 Sept 2015)
- Geology 1:50,000**
- Devonian Granite (Dg)
 - Brighton Group (Nbr)
 - Newer Volcanics (Neo)
 - Older Volcanics (Nuu)
 - Nxp
 - Alluvium (Qa1)
 - Colluvium (Qc1)
 - Coastal Dune Deposits (Qd1)
 - Waste Deposits (Qhw)
 - Swamp and Lake Deposits (Qm1)
 - Coope Island Silt (Qyc)
 - Jolimont Clay (Qyj)
 - Port Melbourne Sand (Qyp)
 - Melbourne Formation (Sxm): hornfels
 - Melbourne Formation (Sxm): generic

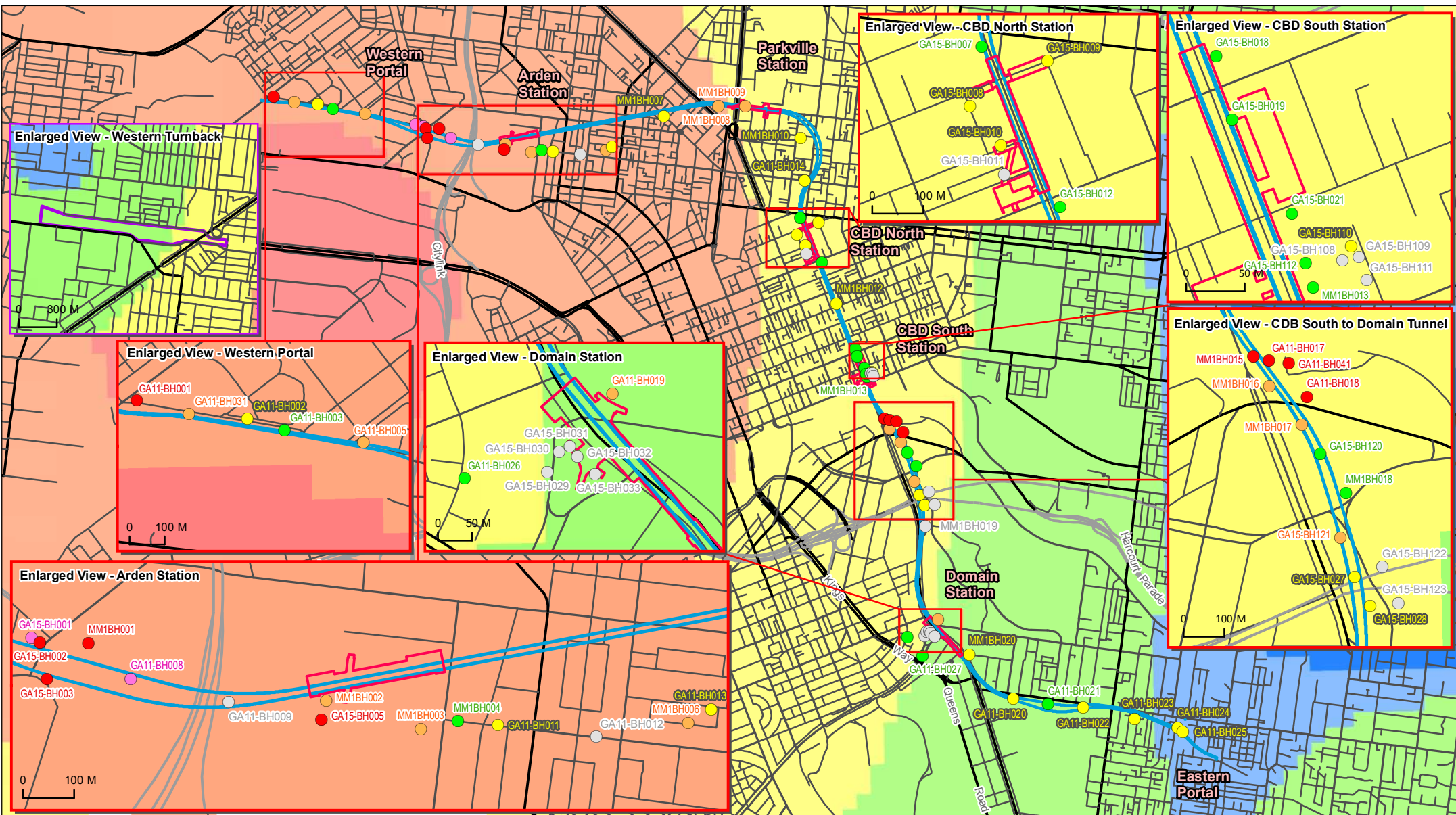


Melbourne Metro Rail Project

Figure 1 Geological overview

Drawing Number: MMR-AJM-UGAA-MP-NL-500339		Revision: P1	
Drawn By: A. Davy	Approved By: C. Sivertsen	Date: 16/02/2016	Map Size: A4

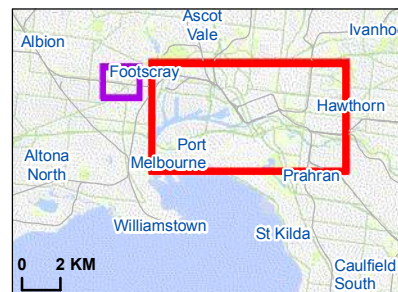




Legend

- | | | |
|---------------------------|-----------------------------|------------------------------|
| TDS (mg/L) | Water Table Salinity | — Proposed Station Footprint |
| ● 0 - 3500 | ■ <500 | — Proposed Alignment |
| ● 3500 - 7000 | ■ 500 - 1,000 | ▭ Western Turnback |
| ● 7000 - 13000 | ■ 1000 - 3,500 | |
| ● 13000 - 35000 | ■ 3,500 - 7,000 | |
| ● 35000 - 50000 | ■ 7,000 - 13,000 | |
| ● No Value for TDS (mg/L) | ■ 13,000 - 35,000 | |
| | ■ >35,000 | |

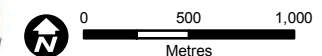
Data Sources:
 Proposed Infrastructure: AJM 2016
 Contains Vicmap Information
 © State of Victoria 2015;
 Bores: Golder Associates October 2015

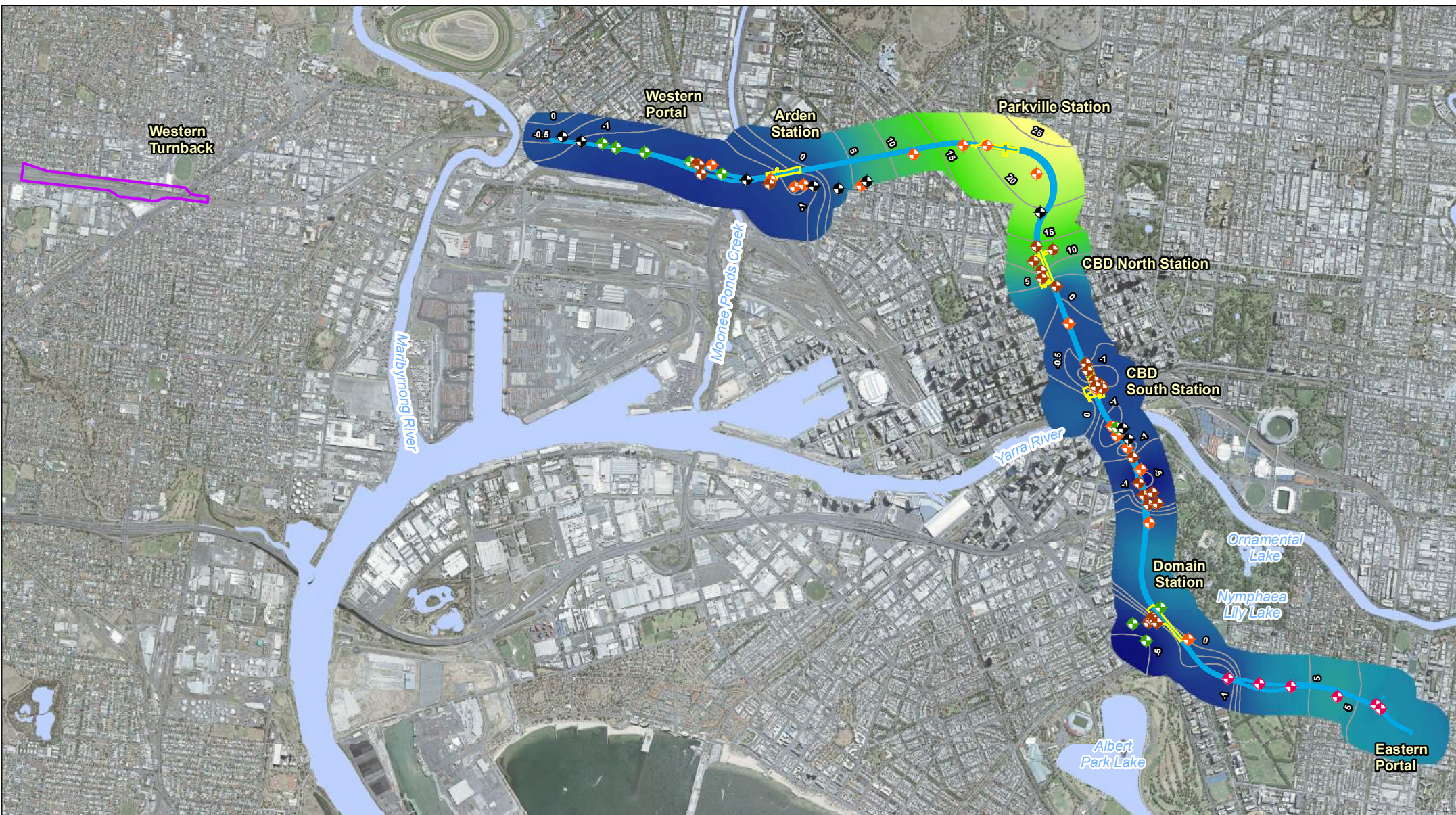


Melbourne Metro Rail Project

Figure 2 Groundwater salinity overview

Drawing Number: MMR-AJM-UGAA-MP-NL-500340	Revision: P1
Drawn By: A. Davy	Approved By: C. Sivertsen
Date: 16/02/2016	Map Size: A4

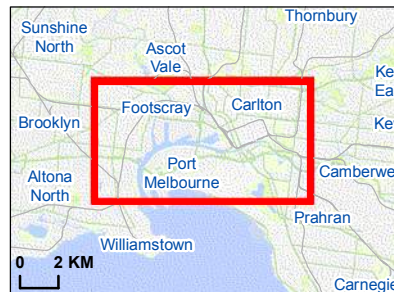




Legend

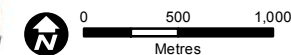
- Groundwater Monitoring Well Stage 1
 - Groundwater Monitoring Well Stage 2 Phase 2A
 - Groundwater Monitoring Well Stage 2 Phase 2B
 - Groundwater Monitoring Well Stage 2 Phase 2C
 - RD (to 30 Sept 2015)
 - Proposed Station Footprint
 - Proposed Alignment
 - Watertable Contours
- Watertable (Jacobs, 2015)**
- High : 26.4m
 - Low : -6.2m
 - Waterbody
 - Western Turnback Precinct

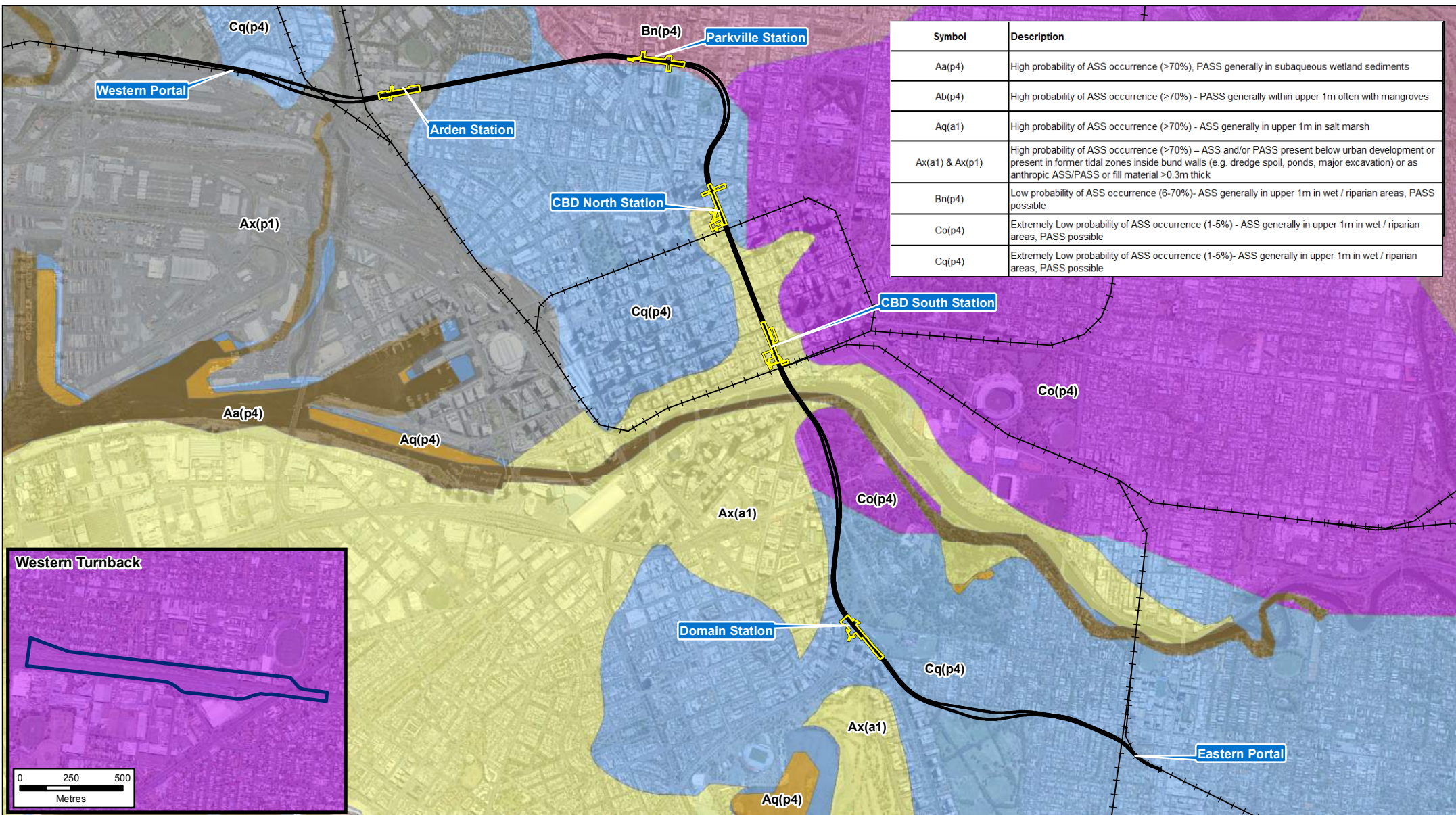
Data Sources:
 Proposed Infrastructure: AJM 2016
 Contains Vicmap Information
 © State of Victoria 2015;
 Jacobs 2015;
 GW Wells: Golder Associates October 2015
 Aerial photo (DELWP, February 2015)



Melbourne Metro Rail Project
 Figure 3 Groundwater elevation and surface water bodies

Drawing Number: MMR-AJM-UGAA-MP-NL-500341		Revision: P1	
Drawn By: A. Davy	Approved By: C. Sivertsen	Date: 16/02/2016	Map Size: A4





Symbol	Description
Aa(p4)	High probability of ASS occurrence (>70%), PASS generally in subaqueous wetland sediments
Ab(p4)	High probability of ASS occurrence (>70%) - PASS generally within upper 1m often with mangroves
Aq(a1)	High probability of ASS occurrence (>70%) - ASS generally in upper 1m in salt marsh
Ax(a1) & Ax(p1)	High probability of ASS occurrence (>70%) - ASS and/or PASS present below urban development or present in former tidal zones inside bund walls (e.g. dredge spoil, ponds, major excavation) or as anthropic ASS/PASS or fill material >0.3m thick
Bn(p4)	Low probability of ASS occurrence (6-70%) - ASS generally in upper 1m in wet / riparian areas, PASS possible
Co(p4)	Extremely Low probability of ASS occurrence (1-5%) - ASS generally in upper 1m in wet / riparian areas, PASS possible
Cq(p4)	Extremely Low probability of ASS occurrence (1-5%) - ASS generally in upper 1m in wet / riparian areas, PASS possible

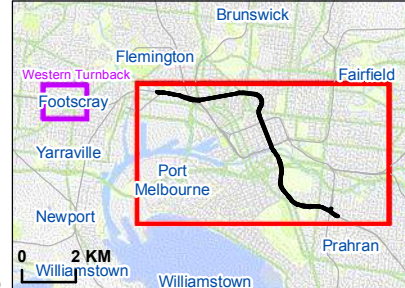
Legend

- Proposed Station Footprint
- Proposed Alignment
- Western Turnback Precinct

NatCASS

- Aa(p4)
- Ab(p4)
- Aq(p4)
- Ax(a1)
- Ax(p1)
- Bn(p4)
- Co(p4)
- Cq(p4)

Data Sources:
 Proposed Infrastructure: AJM 2016
 Contains Vicmap Information
 © State of Victoria 2015
 ASS (CSIRO, 2015)
 Aerial photo (DELWP, February 2015)



Joint Venture GRIMSHAW

Melbourne Metro Rail Project

Figure 4 ASS/ASR overview

Drawing Number: MMR-AJM-UGAA-MP-NL-500241 Revision: P1

Drawn By: A. Berman Approved By: D. Coutts Date: 16/02/2016 Map Size: A4