



Report Signature Page

GOLDER ASSOCIATES PTY LTD

A handwritten signature in black ink, reading "Irena Krusic-Hrustanpasic".

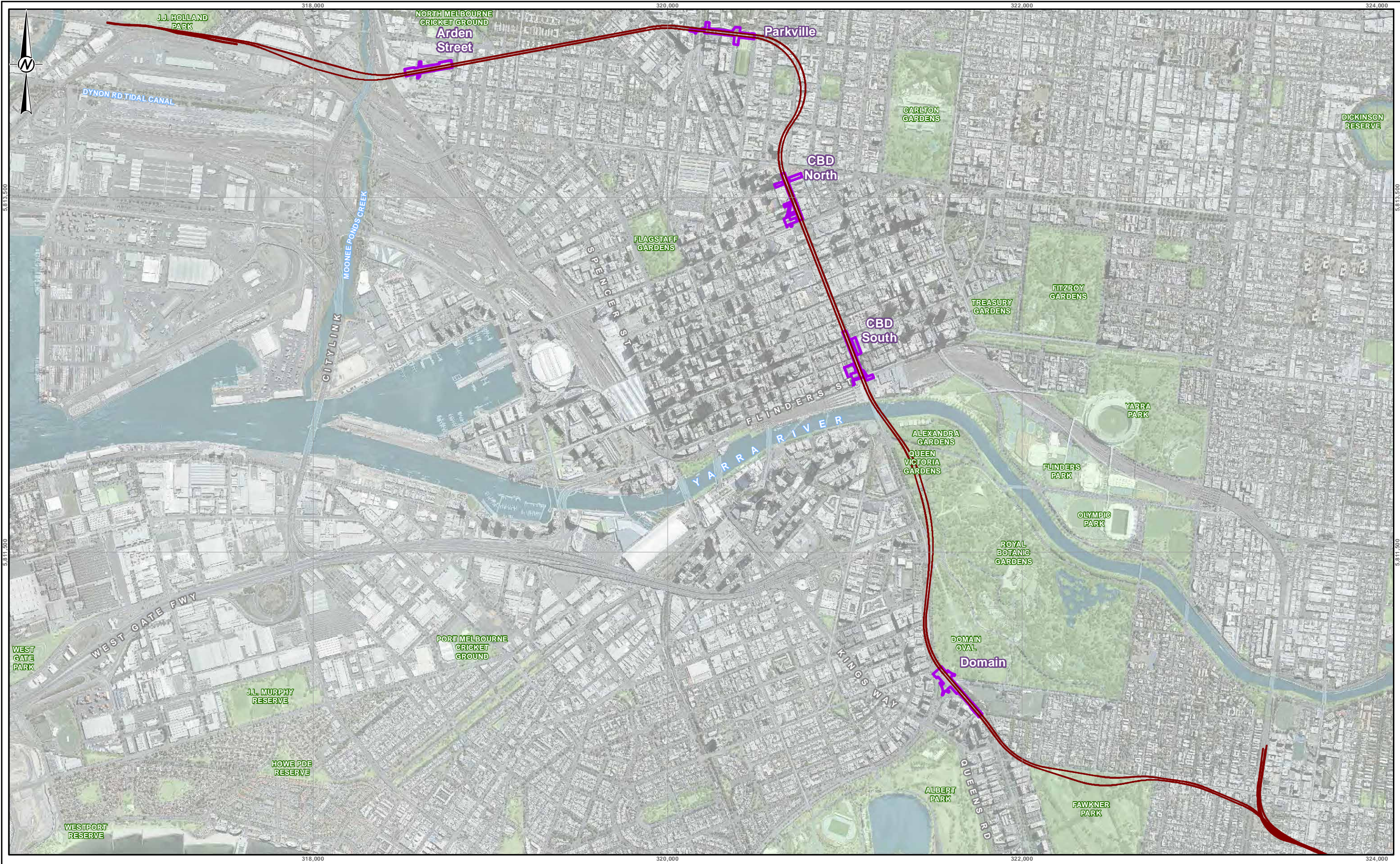
Irena Krusic-Hrustanpasic
Principal

IKH-FMC/IKH-JMM-SB/ikh-fmc

A.B.N. 64 006 107 857

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j:\geo\2015\1525532 - ajm jv melbourne metro\correspondence out\1525532-220-r-hir ees summary report\rev1\1525532-220-r-rev1 final.docx



- LEGEND**
- Water
 - Proposed Railway Track
 - Proposed Station Extent

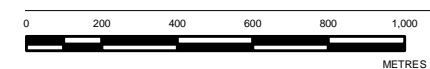
MAP INFORMATION
 The information and data contained in this map is for Melbourne Metro Rail Project, and is for information purposes only. It is to be used for reference only and may not be suitable for any other purpose including design. The information may not be accurate, current or otherwise reliable.

NOTES

1. Rail alignment sourced from AJM JV, revision P2.3 dated 26-10-2015.
2. Aerial imagery sourced from Public Transport Victoria, image resolution 10cm and date of capture February 2015.
3. Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
 AJM JOINT VENTURE

PROJECT
 MELBOURNE METRO RAIL PROJECT



REFERENCE SCALE: 1:20,000 (at A3)
 PROJECTION: GDA 1994 MGA Zone 55

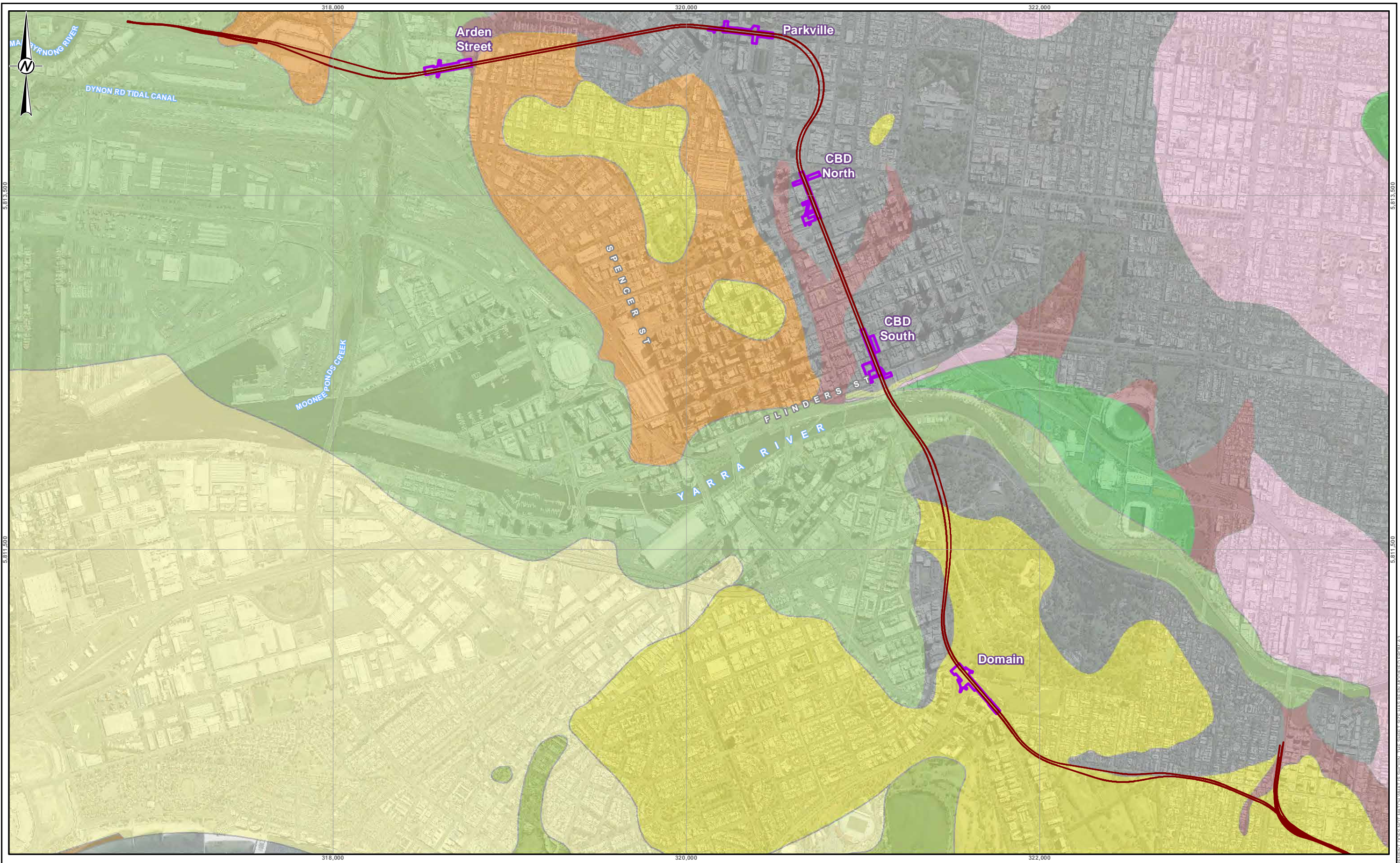
TITLE
 RAIL ALIGNMENT

CONSULTANT	YYYY-MM-DD	2016-03-23
	PREPARED	JPH / CJS
	DESIGN	-
	REVIEW	IKH
	APPROVED	IKH

PROJECT No. 1525532	CONTROL 220-R	Rev. 0	DRAWING 1
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Path: S:\OTPI\Melbourne Rail\Info\Project\Drawings\1525532_220_R\0001_Rev0.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHOWN SIZE HAS BEEN MODIFIED FROM A3



LEGEND
 Proposed Railway Track
 Proposed Station Extent

Surface Geology

Fill	Recent Silt (Qra)
Coode Island Silt (Qhi)	Newer Volcanics (Qvn)
Port Melbourne Sand (Qhp)	Melbourne Formation (Sud)
Coastal Swamp Deposits (Qrs)	Brighton Group (Tpb)
Pleistocene Alluvium (Qpa)	Older Volcanics (Tvo)
	Jolimont Clay (Qpj)

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NOTES

1. Rail alignment sourced from AJM JV, revision P2.3 dated 28-10-2015.
2. Aerial imagery sourced from Public Transport Victoria, image resolution 10cm and date of capture February 2015.
3. Road and hydro information sourced from Victorian Government Data Directory 2015.
4. Geology data digitized from Melbourne Geology Map 1:63,000 (1974). Captured at a Scale of 1:10,000. The data has been altered when more accurate data has become available.

CLIENT
 AJM JOINT VENTURE

PROJECT
 MELBOURNE METRO RAIL PROJECT

REFERENCE SCALE: 1:20,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE
 GEOLOGY PLAN

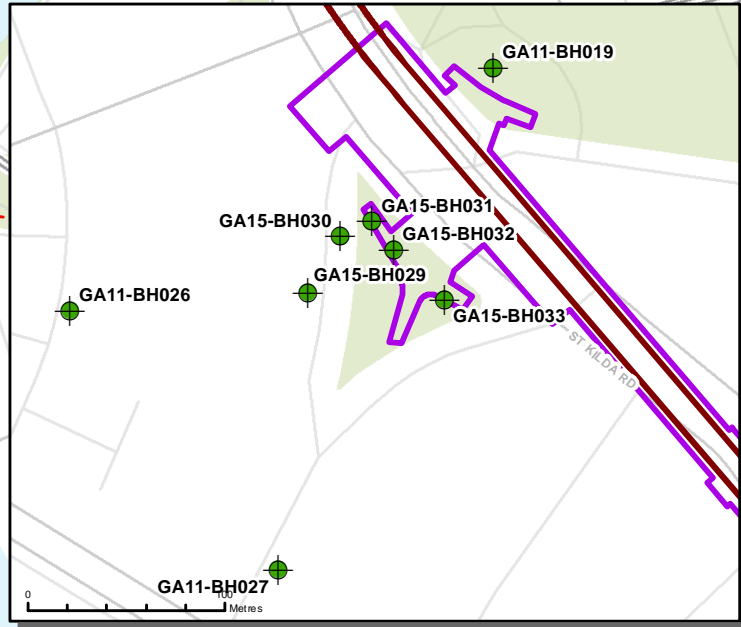
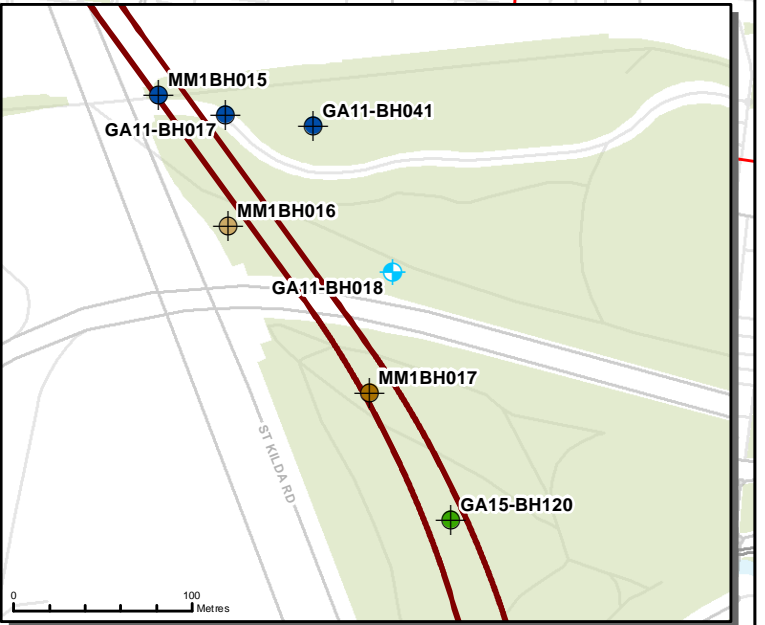
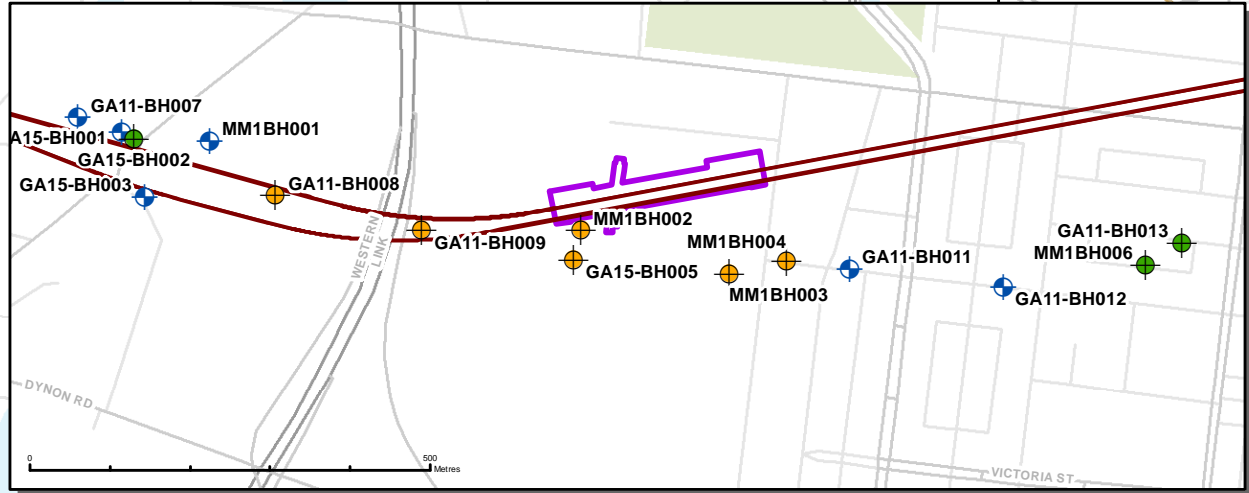
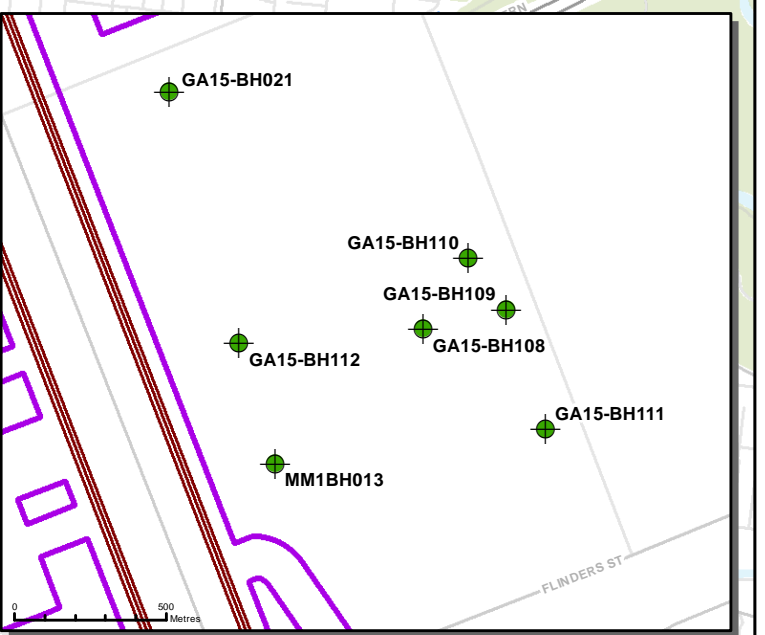
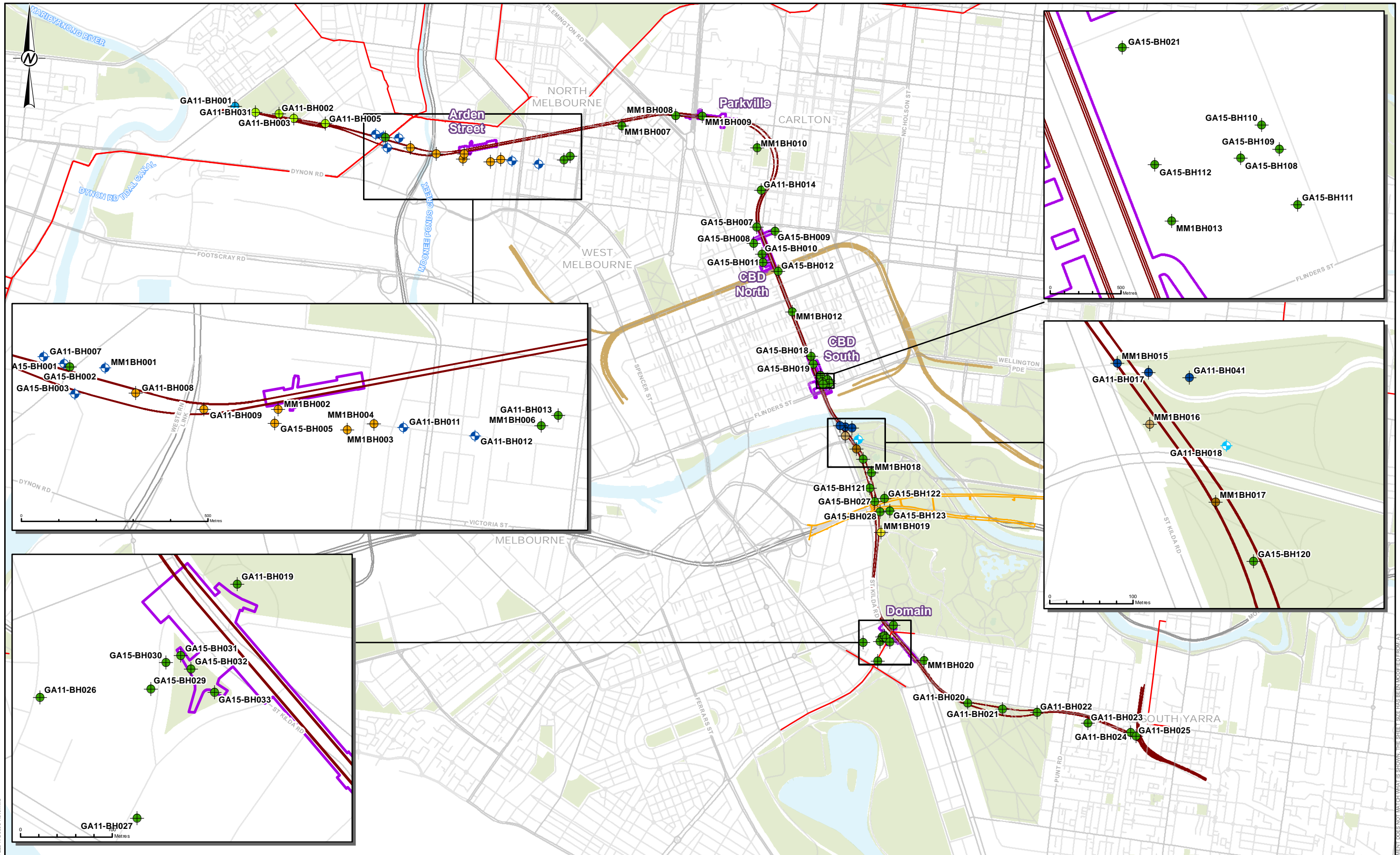
CONSULTANT

YYYY-MM-DD	2016-03-23
PREPARED	JPH / CJS
DESIGN	-
REVIEW	IKH
APPROVED	IKH

PROJECT No. 1525532 **CONTROL** 220-R **Rev.** 0 **DRAWING** 2

Path: S:\OTPI\Melbourne Rail\Info\Project\Drawings\1525532_220-R\0302_Rev0.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SCALE HAS BEEN MODIFIED FROM A3



LEGEND

Brighton Group	Moray Street Gravels Aquifer	Major Sewer
Coode Island Silt	Older Volcanics Aquifer	Proposed Railway Track
Early Pleistocene Aquifer	Silurian Aquifer	Proposed Station Extent
Fishermans Bend Silt/Coode Island Silt	Werribee Formation Aquifer	Melbourne Underground Rail Loop Tunnel (MURL)
Holocene Aquifer		
Late Pleistocene Aquifer		

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NOTES
 1. Rail alignment sourced from AJM JV, revision P2.3 dated 28-10-2015.
 2. Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
 AJM JOINT VENTURE

PROJECT
 MELBOURNE METRO RAIL PROJECT

REFERENCE SCALE: 1:25,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE
 MMRP GROUNDWATER MONITORING WELLS

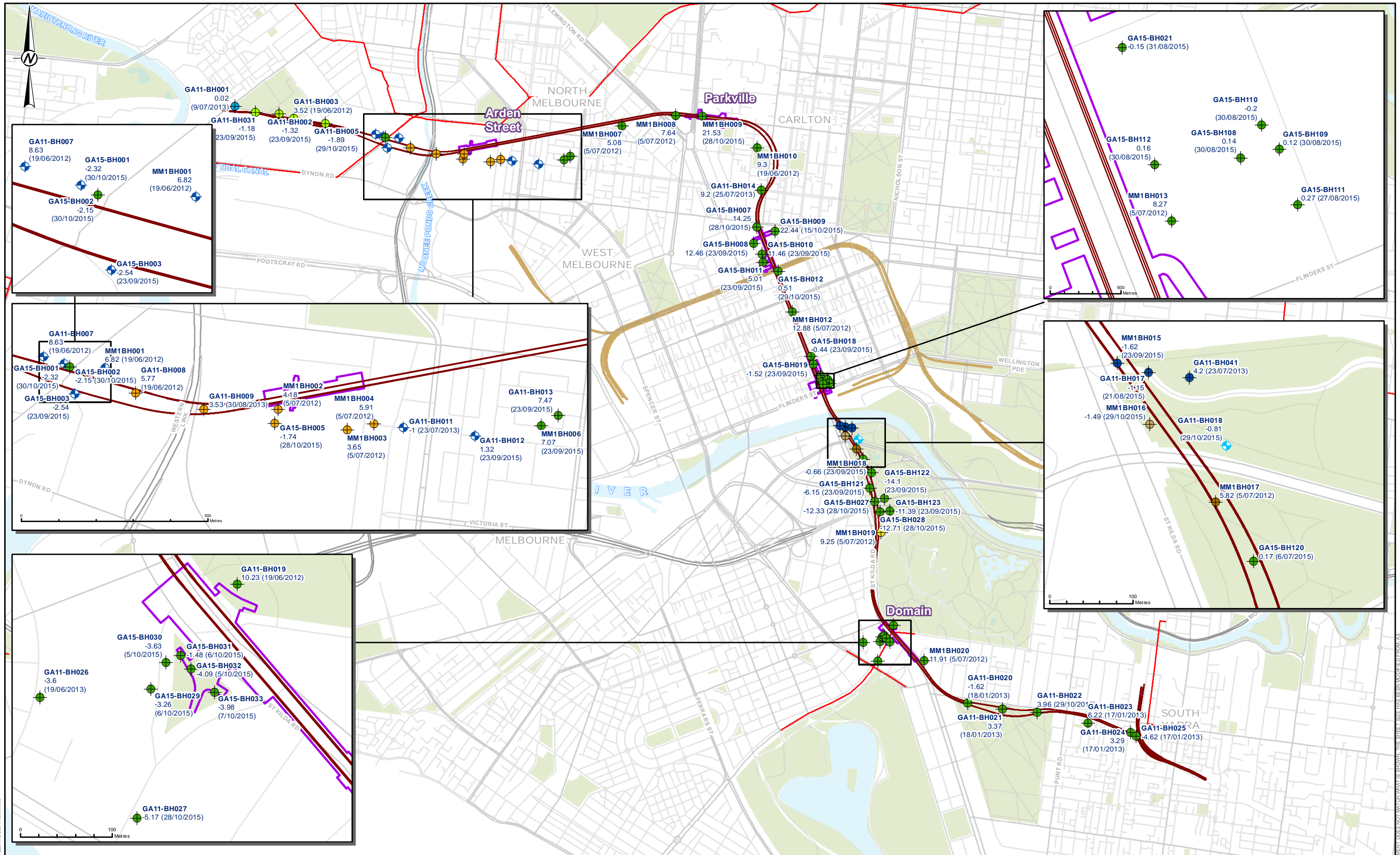
CONSULTANT

YYYY-MM-DD	2016-03-23
PREPARED	JPH / CJS
DESIGN	-
REVIEW	IKH
APPROVED	IKH

PROJECT No. 1525532 **CONTROL** 220-R **Rev.** 0 **DRAWING** 3

Path: S:\OTF\1\Melbourne Rail\1\Project\Drawings\1525532-220-R\0303-Rev0.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN ON THE SHEET, THE SIZE HAS BEEN INDICATED IN PINK



LEGEND

Groundwater Well (by Monitoring Unit)		Moray Street Gravels Aquifer		Proposed Railway Track	
	Brighton Group		Older Volcanics Aquifer		Proposed Station Extent
	Coode Island Silt		Silurian Aquifer		Major Sewer
	Early Pleistocene Aquifer		Werribee Formation Aquifer		Melbourne Underground Rail Loop Tunnel (MURL)
	Fishermans Bend Silt/Coode Island Silt		Water Level, m AHD (Last recorded event)		
	Holocene Aquifer		(20/10/2015) Gauged Date		
	Late Pleistocene Aquifer				

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NOTES

- Rail alignment sourced from AJM JV, revision P2.3 dated 28-10-2015.
- Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
AJM JOINT VENTURE

PROJECT
MELBOURNE METRO RAIL PROJECT

REFERENCE SCALE: 1:25,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE
GROUNDWATER LEVELS

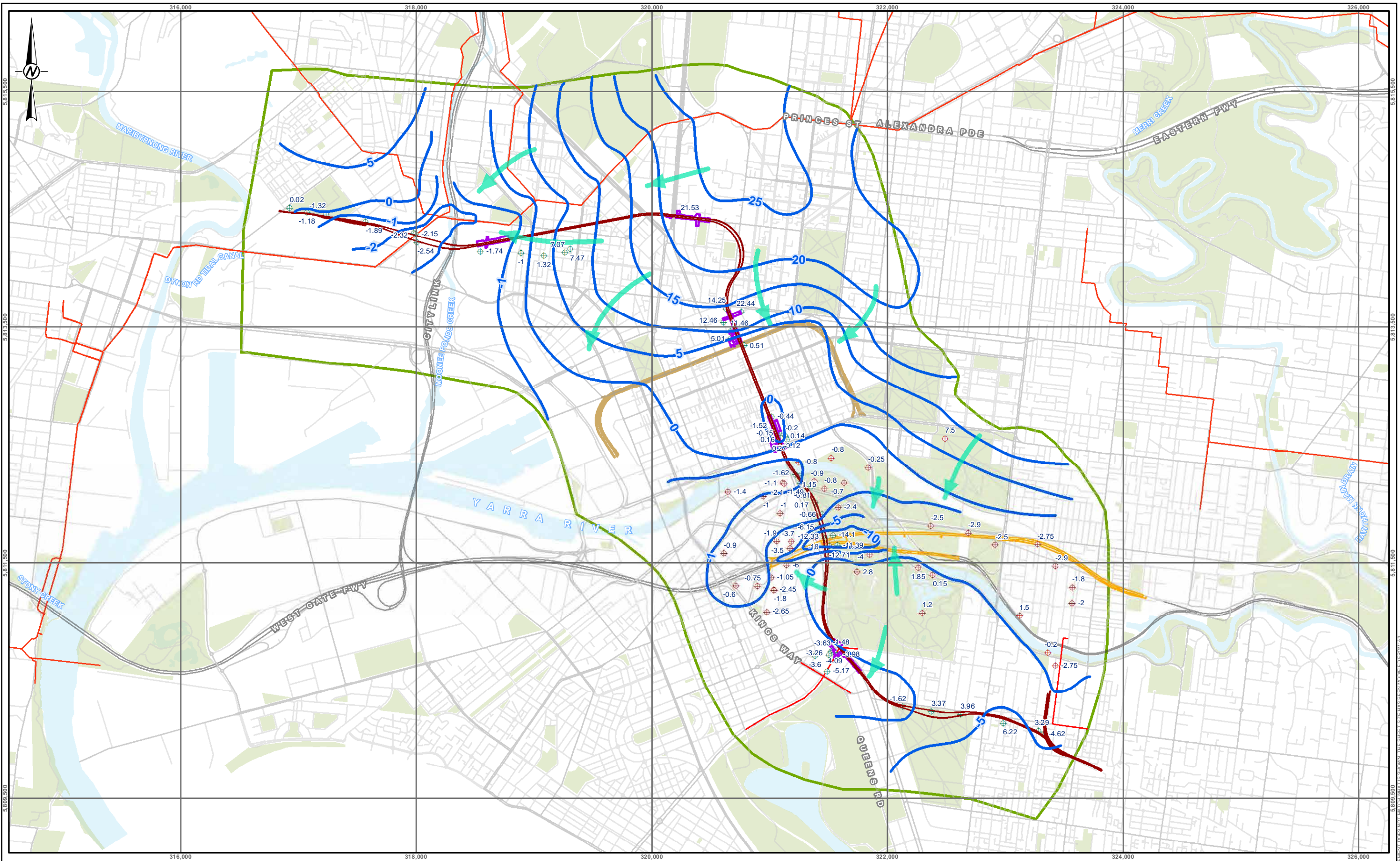
CONSULTANT
 Golder Associates

YYYY-MM-DD	2016-03-23
PREPARED	JPH / CJS
DESIGN	-
REVIEW	IKH
APPROVED	IKH

PROJECT No. 1525532 **CONTROL** 220-R **Rev.** 0 **DRAWING** 4

Path: S:\OT\PM\Melbourne Rail\Info\Project\Documents\1525532_220-R\0004_Rev0.mxd

THIS MEASUREMENT DOES NOT CONSTITUTE A GUARANTEE OF ACCURACY. THE SIZE OF THE SPREADSHEET HAS BEEN INDICATED BY THE SCALE BAR.



- LEGEND**
- ⊕ Citylink Borehole
 - ⊕ MMRP Groundwater Wells
 - Groundwater Flow Direction
 - Groundwater Contours (m AHD)
 - 21.53 Groundwater Elevation (m AHD)
 - Citylink
 - Proposed Railway Track
 - Proposed Station Extent
 - Sewer
 - Melbourne Underground Rail Loop Tunnel (MURL)
 - Study Area Extent

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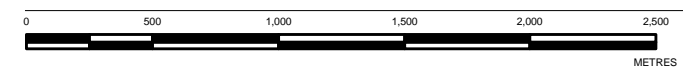
NOTES

- Rail alignment/station extents sourced from AJM JV, dated 13-05-2015 for Concept Design.
- Aerial imagery sourced from Public Transport Victoria, image resolution 10cm and date of capture October 2014.
- Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
 AJM JOINT VENTURE

PROJECT
 MELBOURNE METRO RAIL PROJECT

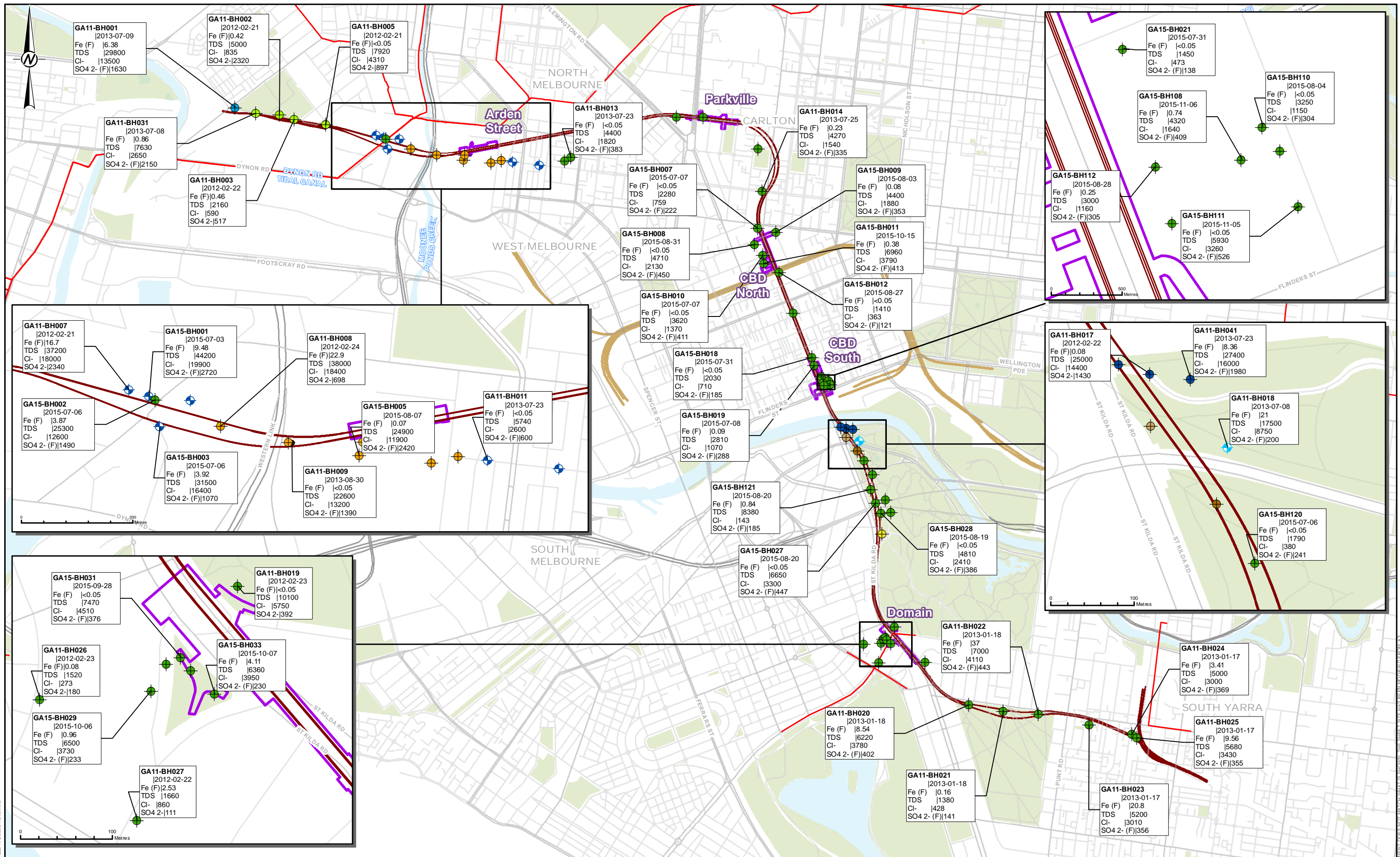
TITLE CONCEPTUAL GROUNDWATER FLOW	
CONSULTANT	YYYY-MM-DD 2016-03-23
	PREPARED CJS
	DESIGN -
	REVIEW FC
APPROVED IKH	
PROJECT No. 1525532	CONTROL 220-R
Rev. 0	FIGURE 5



REFERENCE SCALE: 1:30,000 (at A3)
 PROJECTION: GDA 1994 MGA Zone 55

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IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SCALE HAS BEEN INDICATED FROM A3



LEGEND

Brighton Group	Moray Street Gravels Aquifer	Major Sewer
Coode Island Silt	Older Volcanics Aquifer	Proposed Railway Track
Early Pleistocene Aquifer	Silurian Aquifer	Proposed Station Extent
Fishermans Bend Silt/Coode Island Silt	Werribee Formation Aquifer	Melbourne Underground Rail Loop Tunnel (MURL)
Holocene Aquifer	All concentrations shown are in mg/L.	
Late Pleistocene Aquifer	Iron	Total dissolved solids
	Chloride	Sulphate
	Indicated a filtered analyte	

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NOTES

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- Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
AJM JOINT VENTURE

PROJECT
MELBOURNE METRO RAIL PROJECT

REFERENCE SCALE: 1:25,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE
CONCENTRATIONS OF KEY INORGANIC IN GROUNDWATER

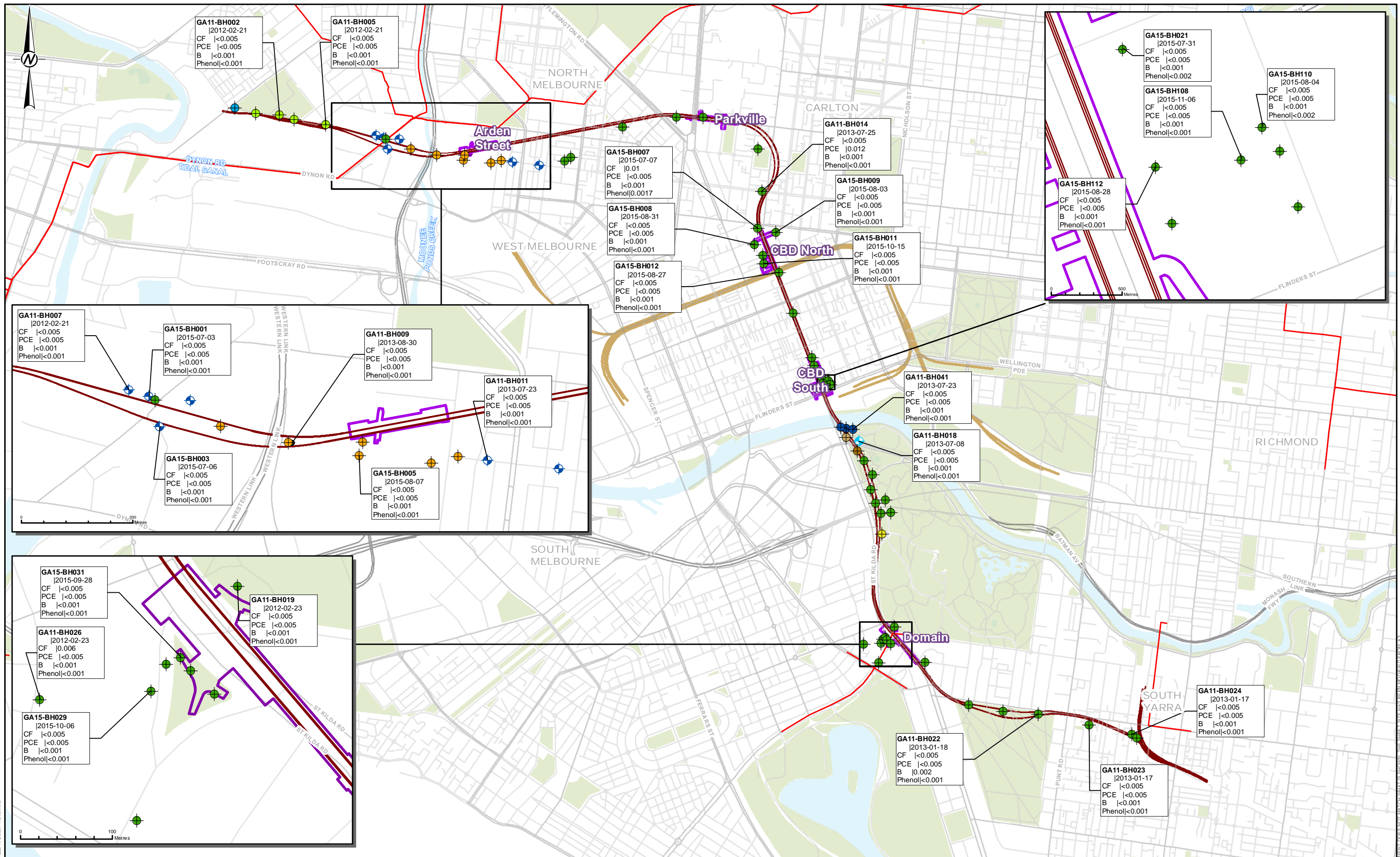
CONSULTANT
 Golder Associates

YYYY-MM-DD	2016-03-23
PREPARED	JPH / CJS
DESIGN	-
REVIEW	FC
APPROVED	IKH

PROJECT No. 1525532 **CONTROL** 220-R **Rev.** 0 **DRAWING** 6

Path: S:\OTF\Map\Bourne Rail\InfoProject\Documents\1525532-220-R\00016-Rev0.mxd

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE GREY SHADE HAS BEEN INDICATED PROBABLY



LEGEND

Groundwater Well (by Monitoring Unit)		Monitoring Unit	
	Brighton Group		Moray Street Gravels Aquifer
	Coode Island Silt		Older Volcanics Aquifer
	Early Pleistocene Aquifer		Silurian Aquifer
	Fishermans Bend Silt/Coode Island Silt		Werribee Formation Aquifer
	Holocene Aquifer	CF	Chloroform
	Late Pleistocene Aquifer	PCE	Tetrachloroethene
		B	Benzene
		Phenol	Phenol

All concentrations shown are in mg/L.

- Major Sewer
- Proposed Railway Track
- Proposed Station Extent
- Melbourne Underground Rail Loop Tunnel (MURL)

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NOTES

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- Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
AJM JOINT VENTURE

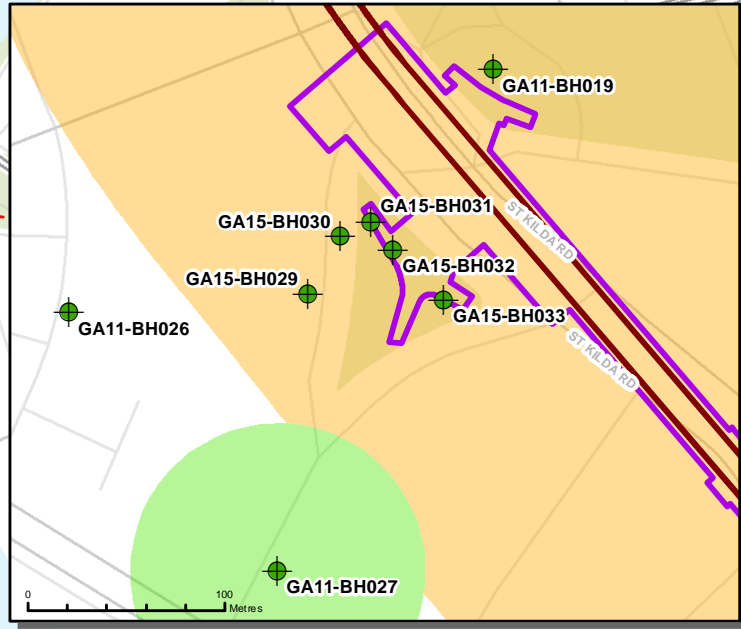
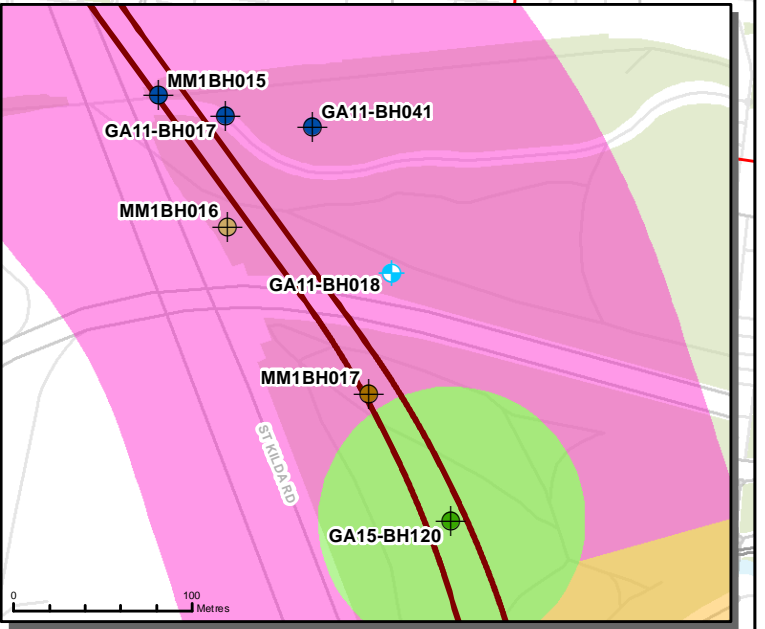
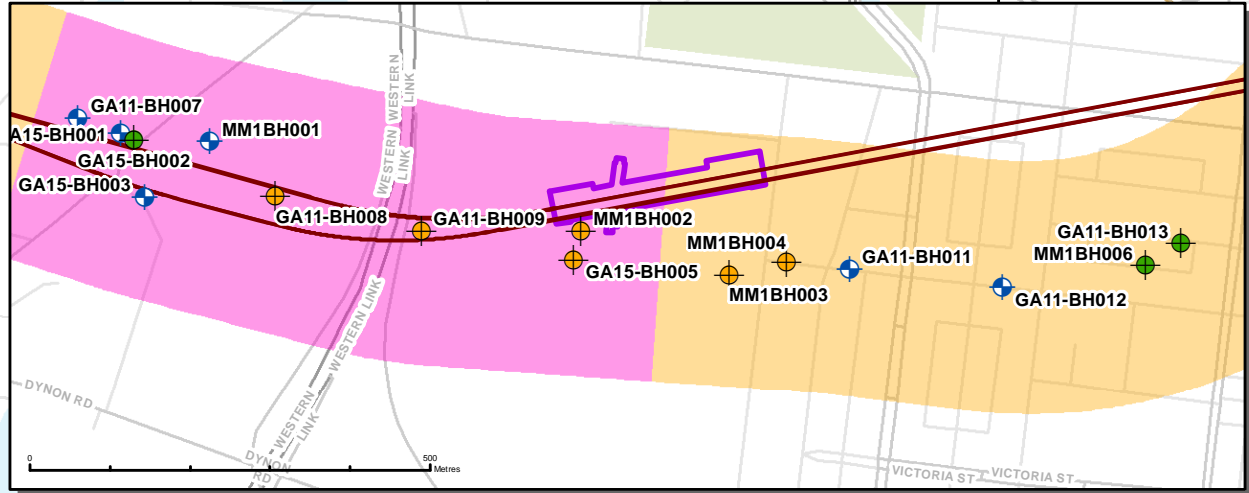
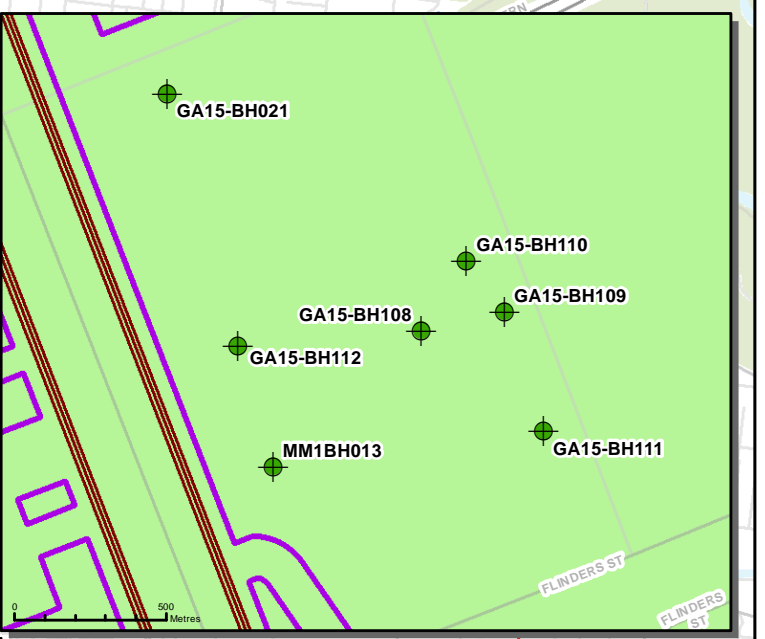
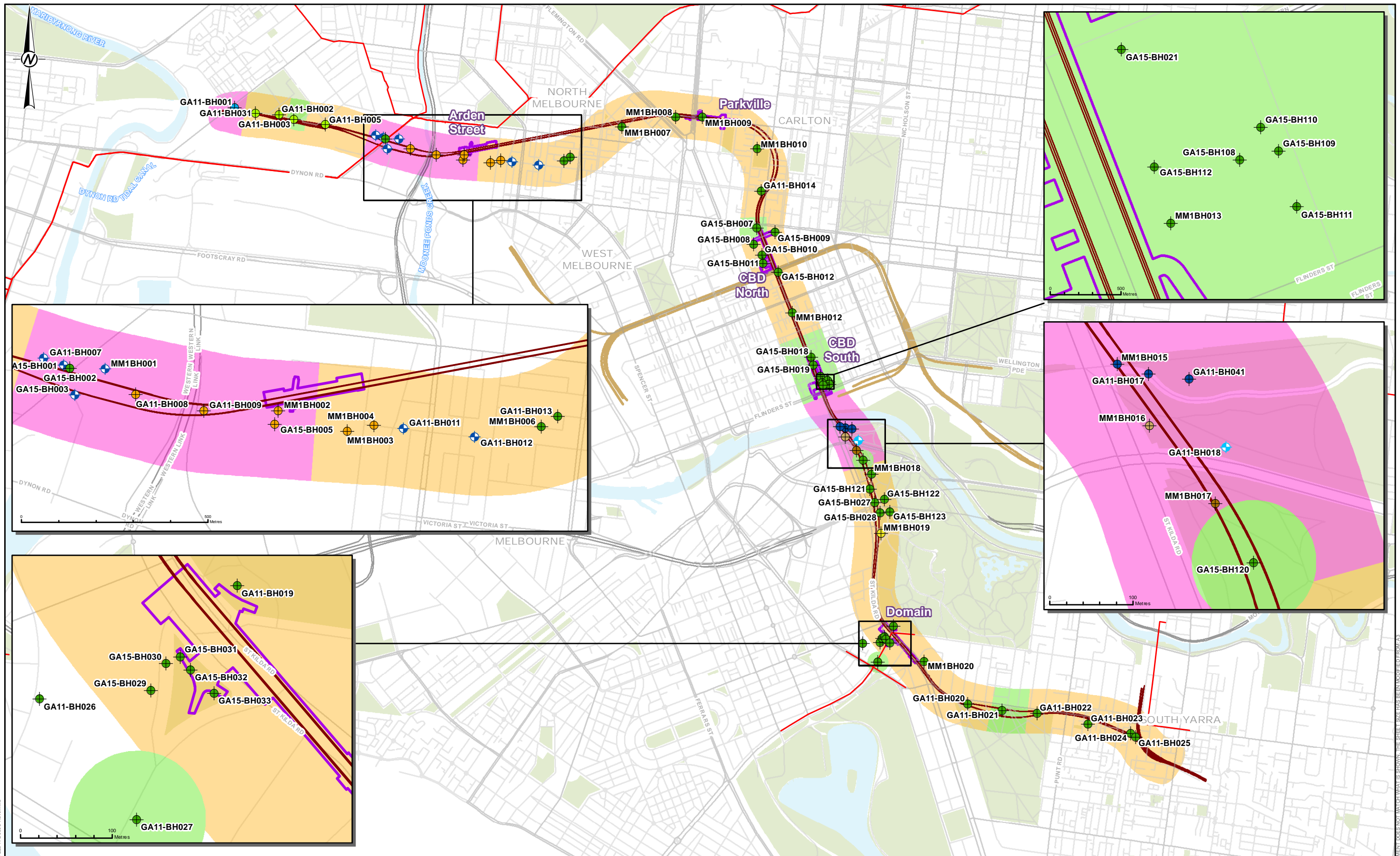
PROJECT
MELBOURNE METRO RAIL PROJECT

REFERENCE SCALE: 1:25,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE		DISTRIBUTION OF KEY CONTAMINANT	
CONSULTANT		YYYY-MM-DD	2016-03-23
		PREPARED	JPH / CJS
		DESIGN	-
		REVIEW	FC
		APPROVED	IKH
PROJECT No.	1525532	CONTROL	220-R
		Rev.	0
		DRAWING	7

Path: S:\OT\PM\Melbourne Rail\Info\Project\Documents\1525532_220-R\00007_Rev0.mxd

THIS MEASUREMENT DOES NOT INDICATE THE SIZE OF THE SPILL. THE SPILL SIZE HAS BEEN INDICATED IN THE DRAWING.



LEGEND

Groundwater Well (by Monitoring Unit)	Moray Street Gravels Aquifer	Inferred Groundwater Segment Classification (mg/L)
Brighton Group	Older Volcanics Aquifer	Segment A (0 - 1,000)
Coode Island Silt	Silurian Aquifer	Segment B (1,000 - 3,500)
Early Pleistocene Aquifer	Werribee Formation Aquifer	Segment C (3,500 - 13,000)
Fishermans Bend Silt/Coode Island Silt	Major Sewer	Segment D (13000+)
Holocene Aquifer	Proposed Railway Track	
Late Pleistocene Aquifer	Proposed Station Extent	

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NOTES
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 2. Road and hydro information sourced from Victorian Government Data Directory 2015.

CLIENT
 AJM JOINT VENTURE

PROJECT
 MELBOURNE METRO RAIL PROJECT

CONSULTANT
 Golder Associates

REFERENCE SCALE: 1:25,000 (at A3)
PROJECTION: GDA 1994 MGA Zone 55

TITLE
 GROUNDWATER SEGMENT CLASSIFICATION

PROJECT No.	CONTROL	Rev.	DRAWING
1525532	220-R	0	8

YYYY-MM-DD	2016-03-23
PREPARED	JPH / CJS
DESIGN	-
REVIEW	IKH
APPROVED	IKH

Path: S:\OTPI\Map\Bourne\Rail\Project\Documents\1525532_220-R\03016_Rev0.mxd

THIS MEASUREMENT DOES NOT MATTER AS SHOWN, THE SIZE HAS BEEN INDICATED PROXIMATE TO THE SCALE OF THE DRAWING.