

Monday, August 12, 2024

Ref:jhh:Revised modelling results for Albert St raft piling

Ms. Christine Beeby
RCP Australia Pty Ltd
Level 15, 120 Edward Street
Brisbane, QLD 4000

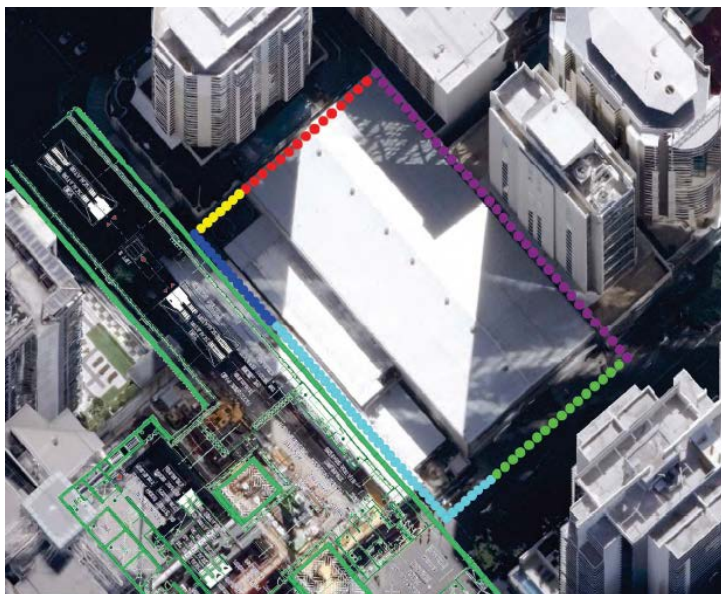
RE: Modelling of vibration from piling associated with raft slab design

Dear Christine,

Following on from our discussions, the vibration effects of the revised piling for the raft slab option assessment have been considered. The assessed piling schedule has 900mm diameter bored piles around the perimeter are of varying depth and described as follows:

Albert Street boundary (south-west face):	900mm to RL-10m with 1m (NFG5) and 2m socket
Rear boundary (north-east face) :	900mm to RL-14m with 1m socket (NFG3)
Mary Street (south-east face) :	900mm to RL-10m with 2m socket and to RL-10.5m with 1m socket
North-west boundary face :	900mm to RL-12.5m with 1m socket (NFG3) and to RL-10m with 2m socket

The piling locations (and the Mezzanine level of the Cross River at RL-21.5) are as shown below.



Albert Street piles.

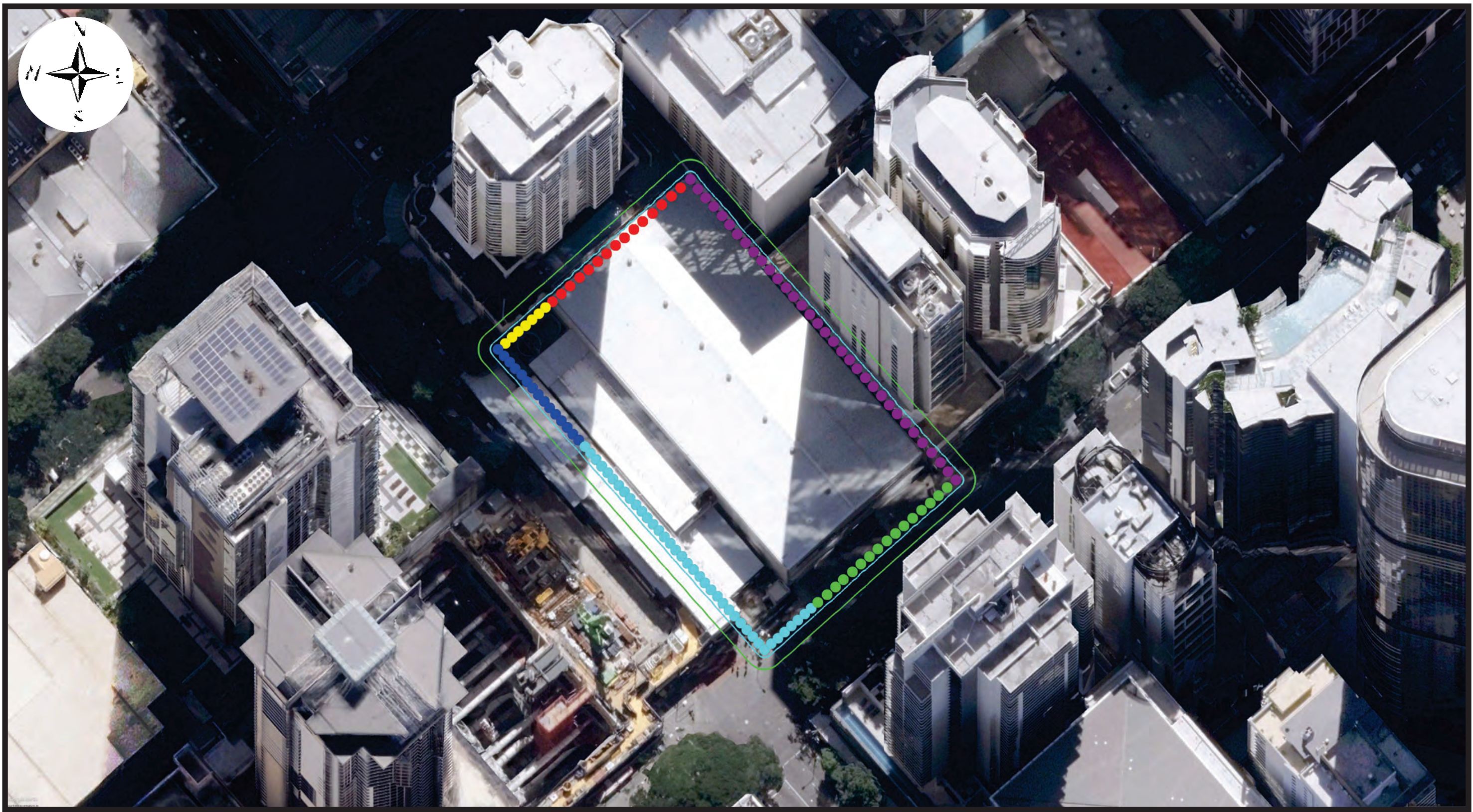
The modelling results confirm the vibration effects at all assessed locations are compliant with the permissible vibration criteria and the works will not require any further mitigation to reduce vibration levels to lower values. In particular:

- Vibration at the surface will be significantly low at the adjacent buildings and will not affect the integrity of the adjacent or amenity of persons inside.
- Vibration at RL3m representing the level of the majority of the key below ground services is low and compliant.
- Vibration at RL-5m which reflects the S1Sewer elevation are low and complaint with even stringent vibration criterion for this asset.
- The vibration level at both the Mezzanine level for the Cross River Rail (RL-21.5m) and the Albert Street Platform level (RL-28m) are less than 2mm/s because of the vertical separation by the shorter

The modelling results from the different scenarios are shown in the attached plates. The legend on each drawing describes the modelling horizon where the vibration contours are modelled. As always, let me know of any of the issues raised in this letter.

Yours truly,
John Heilig

Dr. John Heilig
Principal - Heilig & Partners Pty Ltd
RPEQ#6304



Created using TunnelTRAP Software



- Toe Level RL-14.000m
- Toe Level RL-10.500m
- Toe Level RL-10.000m
- Toe Level RL-10.000m
- Toe Level RL-10.000m
- Toe Level RL-12.500m

- Vibration Levels**
- 2 mm/s Vibration Contour
 - 5 mm/s Vibration Contour
 - 10 mm/s Vibration Contour
 - 15 mm/s Vibration Contour
 - 20 mm/s Vibration Contour
 - 50 mm/s Vibration Contour

PROJECT DESCRIPTION

Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at surface level and represent maximum expected values from piling.

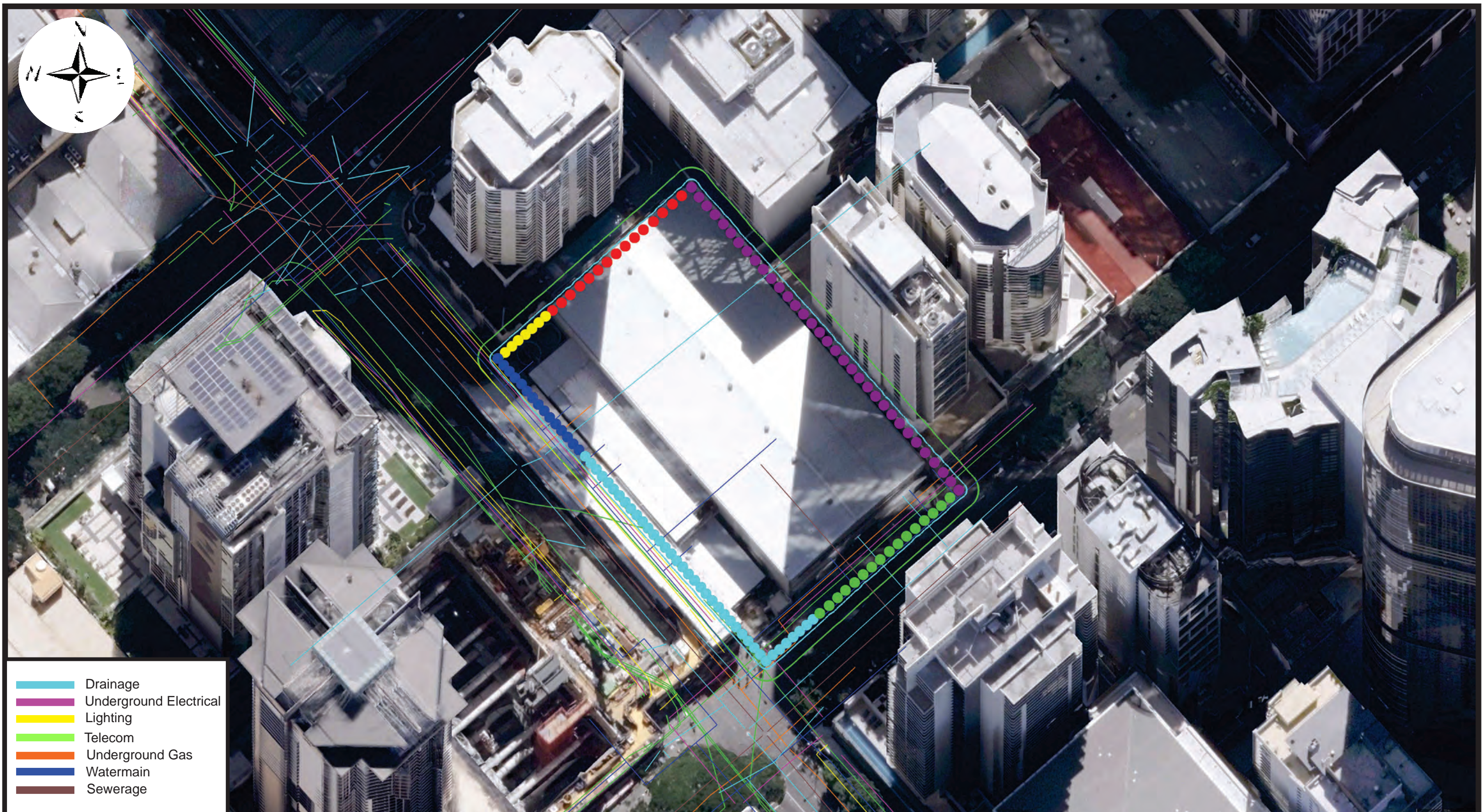
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Robert Bird Group
Member of the Surbana Jurong Group

Plate No. A	Date Drawn: 8 August 2024
Revision History	Ref No: Albert St 900mm Shoring Piers
R1: Original	Job No: HP2305-2

In preparing this drawing, HP have made certain assumptions. We have assumed that all information and documents provided to us by the Client or as a result of a specific request were complete, accurate and up to date. Where we have obtained information from a Government register or database, we have assumed that the information is accurate. Where a assumption has been made, we have not made any independent investigations with respect to the matters the subject of that assumption. We are not aware why any of the assumptions are incorrect.



- Drainage
- Underground Electrical
- Lighting
- Telecom
- Underground Gas
- Watermain
- Sewerage

Created using TunnelTRAP Software



- Toe Level RL-14.000m
 - Toe Level RL-10.500m
 - Toe Level RL-10.000m
 - Toe Level RL-10.000m
 - Toe Level RL-10.000m
 - Toe Level RL-12.500m
- Vibration Levels**
- 2 mm/s Vibration Contour
 - 5 mm/s Vibration Contour
 - 10 mm/s Vibration Contour
 - 15 mm/s Vibration Contour
 - 20 mm/s Vibration Contour
 - 50 mm/s Vibration Contour

PROJECT DESCRIPTION

Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at RL3 (Underground Utilities) and represent maximum expected values from piling.

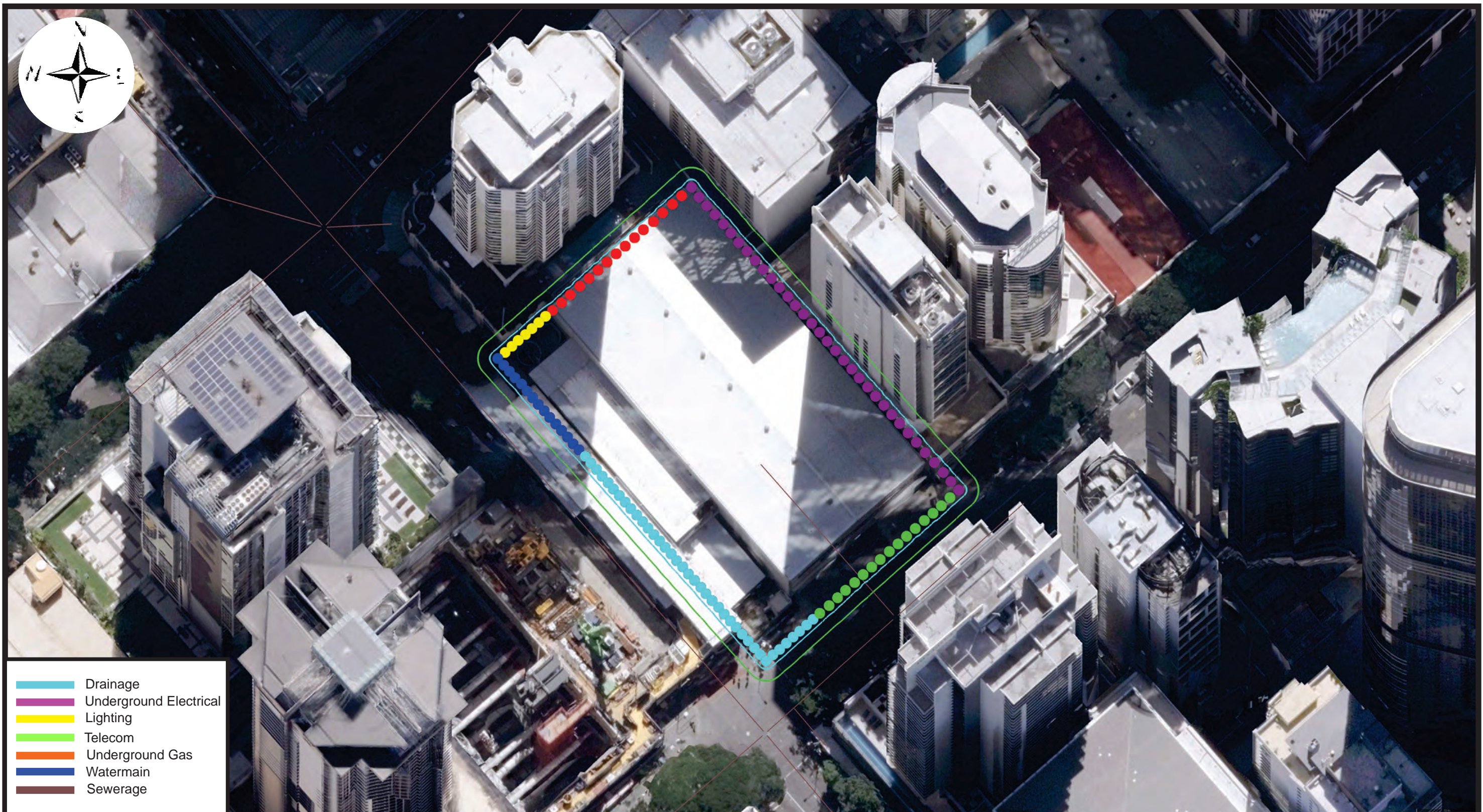
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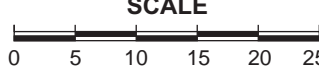
Plate No. B	Date Drawn: 8 August 2024
Revision History R1: Original	Ref No: Albert St 900mm Shoring Piers
	Job No: HP2305-2

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 Created using TunnelTRAP Software

SCALE




0 5 10 15 20 25m

● Toe Level RL-14.000m	Vibration Levels
● Toe Level RL-10.500m	— 2 mm/s Vibration Contour
● Toe Level RL-10.000m	— 5 mm/s Vibration Contour
● Toe Level RL-10.000m	— 10 mm/s Vibration Contour
● Toe Level RL-10.000m	— 15 mm/s Vibration Contour
● Toe Level RL-10.000m	— 20 mm/s Vibration Contour
● Toe Level RL-12.500m	— 50 mm/s Vibration Contour


PROJECT DESCRIPTION

Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at RL-5 (Sewer) and represent maximum expected values from piling.



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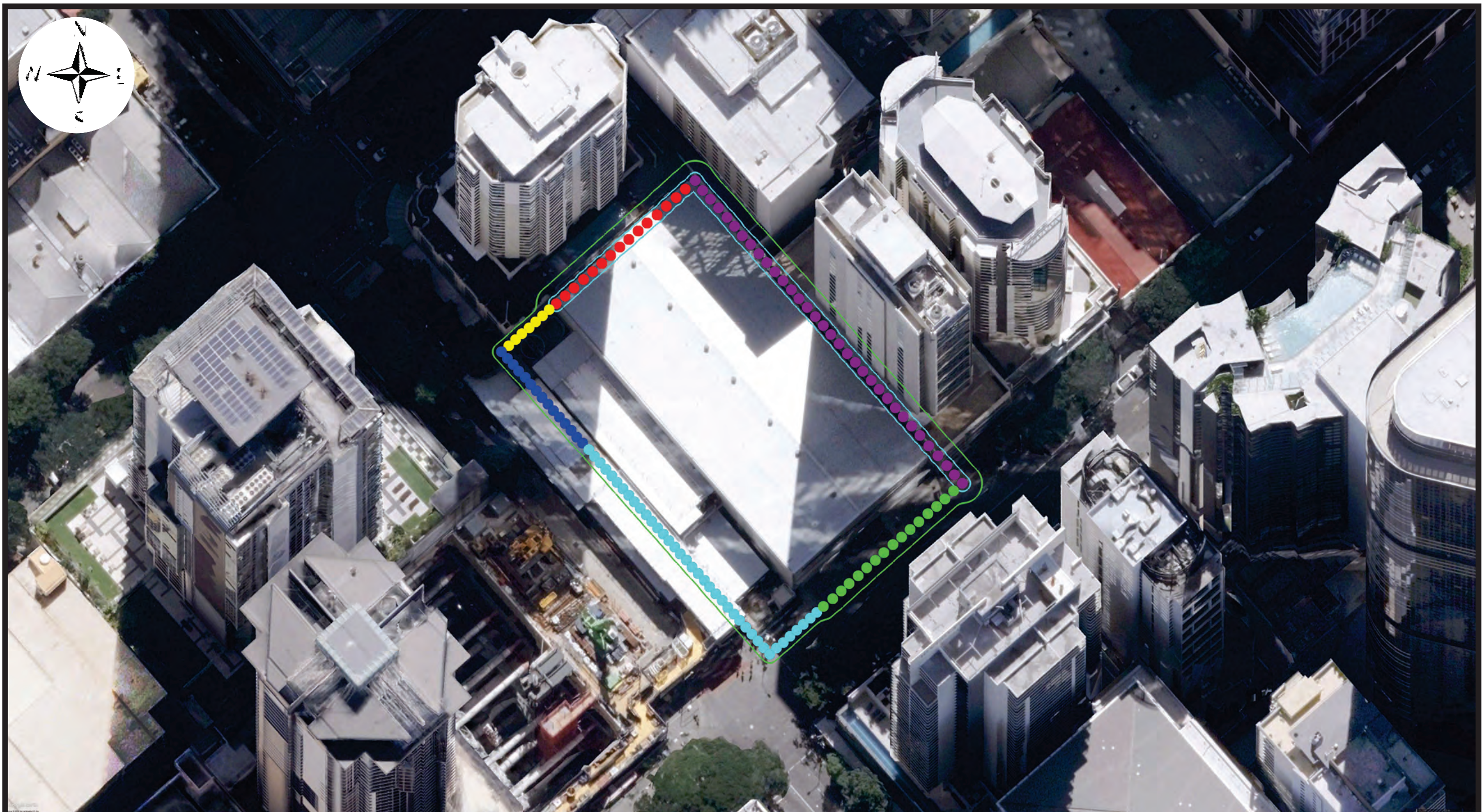
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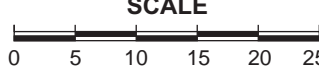
Plate No. C	Date Drawn: 8 August 2024
Revision History R1: Original	Ref No: Albert St 900mm Shoring Piers
	Job No: HP2305-2

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SCALE

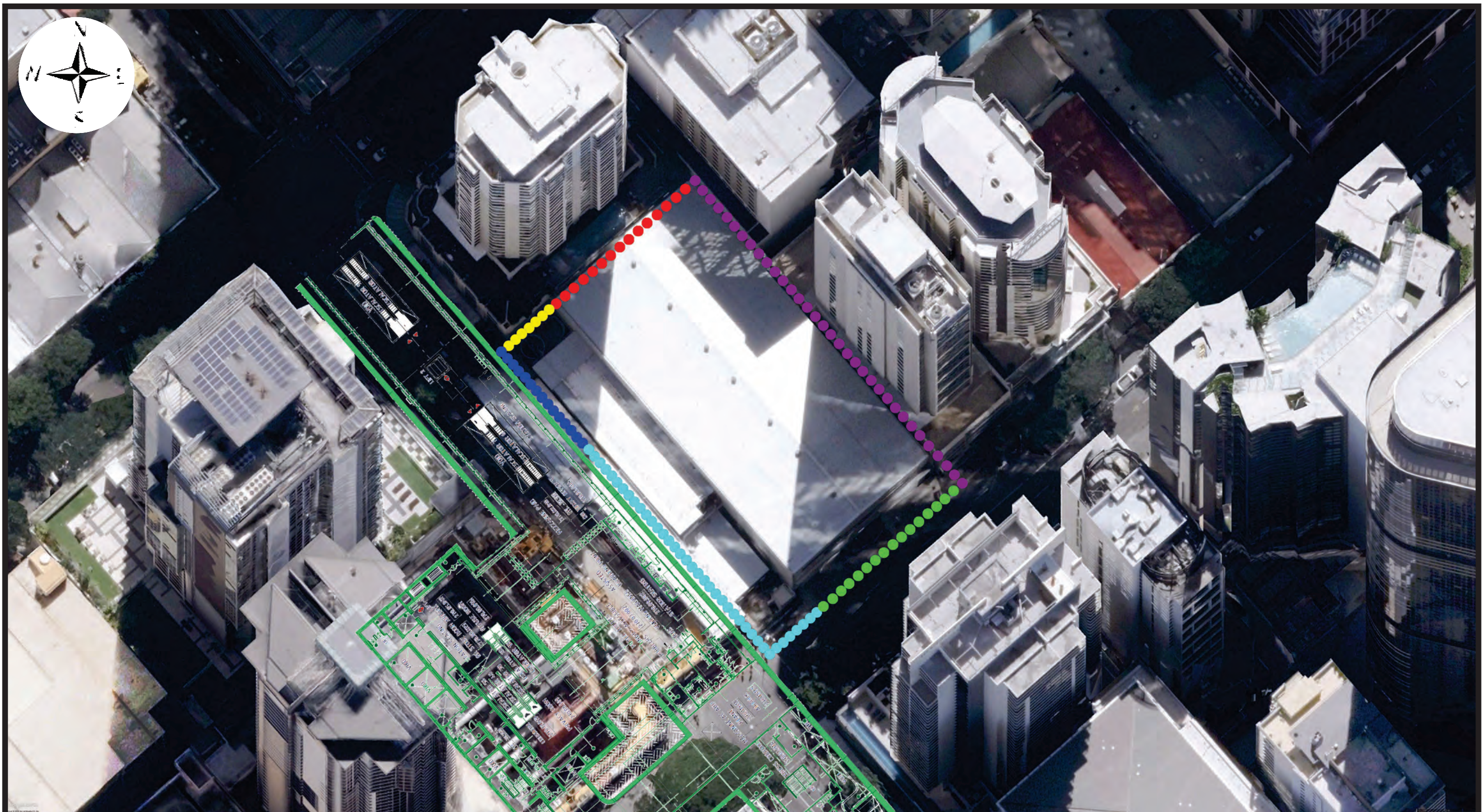


0 5 10 15 20 25m

	Toe Level RL-14.000m
	Toe Level RL-10.500m
	Toe Level RL-10.000m
	Toe Level RL-10.000m
	Toe Level RL-10.000m
	Toe Level RL-12.500m

	2 mm/s Vibration Contour
	5 mm/s Vibration Contour
	10 mm/s Vibration Contour
	15 mm/s Vibration Contour
	20 mm/s Vibration Contour
	50 mm/s Vibration Contour

PROJECT DESCRIPTION Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at RL-12.9 (Tunnel Crown) and represent maximum expected values from piling.			
 <p>Telephone +61 7 3715 7599 P.O. Box 1176 Mobile 0419 196 369 Mt.Ommaney Facsimile +61 7 3715 7588 QLD. 4074. Australia Email john@heiligandpartners.com.au</p>	 <p>Member of the Surbana Jurong Group</p>	Plate No. D	Date Drawn: 8 August 2024
		Revision History R1: Original	Ref No: Albert St 900mm Shoring Piers
			Job No: HP2305-2
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PROJECT DESCRIPTION

Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at RL-21.5 (Albert Street Station Mezzanine) and represent maximum expected values from piling.

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Plate No. E

Revision History
R1: Original

Date Drawn: 8 August 2024

Ref No: Albert St 900mm Shoring Piers

Job No: HP2305-2

- Toe Level RL-14.000m

Toe Level RL-10.500m

Toe Level RL-10.000m

Toe Level RL-10.000m

Toe Level RL-10.000m

Toe Level RL-12.500m
- Vibration Levels**

2 mm/s Vibration Contour

5 mm/s Vibration Contour

10 mm/s Vibration Contour

15 mm/s Vibration Contour

20 mm/s Vibration Contour

50 mm/s Vibration Contour

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- Toe Level RL-14.000m
- Toe Level RL-10.500m
- Toe Level RL-10.000m
- Toe Level RL-10.000m
- Toe Level RL-10.000m
- Toe Level RL-12.500m

- Vibration Levels**
- 2 mm/s Vibration Contour
 - 5 mm/s Vibration Contour
 - 10 mm/s Vibration Contour
 - 15 mm/s Vibration Contour
 - 20 mm/s Vibration Contour
 - 50 mm/s Vibration Contour

PROJECT DESCRIPTION

Albert St 900mm Shoring Piers - Modelled vibration levels and associated vibration contours from piling activities involving 900mm bored piers. Vibration levels are shown at RL-28 (Albert Street Station Platform) and represent maximum expected values from piling.

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Plate No. F	Date Drawn: 8 August 2024
Revision History	Ref No: Albert St 900mm Shoring Piers
R1: Original	Job No: HP2305-2

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